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The Social Challenges of Global Change

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Time: Monday 27 April, 16:00 - 17:30. Session: A140

Water Pollution and its Implication on Human Health: Challenges Ahead (II)

Location: Verwaltungsanbau World Conference Center Bonn, P86

Convenors: Saravanan Subramanian, ZEF, Germany and Shahbaz Khan, UNESCO, Paris

Water pollution has emerged as a major public health concern as a result of man-made and environmental changes at local and global scales. Increasing population, geological factors, rapid urbanisation, agricultural developments, global markets, industrial development and poor wastewater regulation have affected the quantity and the quality of water. These developments represent a multi-layered complex process affecting the environment-human activities-food production and human health, thereby placing human health and their environment at risk. Although there is considerable interest among researchers in understanding water pollution and its causes there is surprisingly little work in understanding the linkage between water pollution and health. This session welcomes theoretical approaches, methodological discussions and application of transdisciplinary knowledge in exploring this linkage and identifying the challenges involved for human health. The session would address the following questions: (1) What are the various socio-economic, ecological and institutional changes that contribute to water pollution and its implications for human health? (2) What is the relationship among diverse socio-economic, ecological and institutional factors influencing water pollution? (3) What are the uncertainties associated with water pollution impacting on human health? (4) Who are vulnerable and prone to risk from water pollution? (5) What are the various mitigation measures taken by various development agencies in addressing water pollution and to what extent do these address human health? The session expects to publish the collection in a special issue and to develop research projects with the presenters.



Water Pollution and Human Health in Asia - Agenda for Research

Presenters: Saravanan Subramanian and Peter Mollinga, Centre for Development Research, Germany

Authors: Saravanan Subramanian (1), Peter Mollinga (1)

Centre for Development Research, Bonn., Germany (1)

Water pollution has emerged as a major public health concern as a result of man-made and environmental changes at local and global scales. These unprecedented developments are a multi-layered complex process placing human health at risk. The proposed research aims to address these by examining the context of water pollution and human health, the linkage among them, and analyse the socio-economic and institutional factors affecting the linkage. The research will be conducted by Centre for Development Research and the Institute for Hygiene and Public Health of University of Bonn in Central and South Asian countries over a period of three years.

The research proposes to take four case studies under different themes: (i) Understanding the Influence of land and water use on Human Health in Khorezm region of Aral Basin; (ii) Urban Wastewater Reuse Peri-urban and Rural Region in India - Implications on Health; (iii) Arsenic Contamination in the Indo-Bangladesh Gangetic Region; and (iv) Political Economy of Industrial Water Pollution and Health - a Case of India. This transdisciplinary research with multi-method approach proposes to examine the local and global to a more integrated global-local interface of water pollution and human health, with an inherent objective of targeting the policy making process. This will help to develop a vision, to create a process, generate a product and ensure implementation and monitoring of the environmental health risks for advising various countries involved to direct programmes and resources.

Water and Health: A Review from South Asia

Presenters: Anjal Prakash and Jayati Chhorey, SaciWATERS, Secunderabad, India

Authors: Narayanan N (1), Chanda Goodrich (1)

SaciWaters, Secunderabad, India (1)

Water is one of the most precious resources for day-to-day survival for humans. Its decreasing availability in terms of quality and quantity has been a major public health concern, particularly in South Asia. Water acts as a conduit for virus, other microbes and chemicals to enter human body. It affects human health through water-transmitted diseases, through contamination of geogenic minerals and through contamination of man-made pollutants. The linkage between water and health is not a linear process, rather complex and uncertain. The paper reviews various theoretical and practical approaches to understand and address this complexity in the South Asian countries. The paper reviews various policies and programmes in South Asian countries, evaluation reports from international agencies, and critical theoretical reviews. The review reveals the reluctance among policy makers, research community and international agencies to embrace change, complexity, uncertainty and conflicts associated with the water and health. However differences exist among South Asian countries, which are strongly influenced by their history, their Constitutions, socio-cultural and economic factors. The review emphasise the importance of health as an integrated index of social, physical, institutional and political factors. It calls for moving beyond interdisciplin-



ary causal-effect relationship towards transdisciplinary research on water and human health as a complex system. It identifies several cross cutting research themes; importance of transdisciplinary research investigation; recognition of uncertainty, analysis of socio-economic, institutional analysis, political economy of health, technological options for mitigating ecosystem related human health, impact analysis and vulnerability analysis.

"From Sea to Shining Sea." Canada: A Country of National Abundance and Local Shortages

Presenter: Mark Rosenberg, Queen's University, Canada

Authors: Mark Rosenberg (1)

Queen's University, Kingston, Canada (1)

There are few countries in the world where there is more fresh water than in Canada. Potentially, clean fresh water is available in every community. Two high profile cases of water pollution resulting from contamination of local sanitation systems, Walkerton, Ontario in 2000 and the Kashechewan First Nation in 2005, both of which resulted in deaths and severe illness have raised questions about the reliability of local water supplies in Canada. These two examples can be interpreted as isolated instances, a problem of small towns and isolated First Nations, or more general indicators of aging infrastructure, declining institutional responsibility, and changing governance.

The organization of this paper is to first examine the fresh water supply of Canada and how clean water is delivered to communities through local, publicly operated sanitation systems. The cases of Walkerton, Ontario and the Kashechewan First Nation are then briefly described and are used as exemplars of the growing problems of local, public management of sanitation systems and the delivery clean water. This is followed by a more general analysis of water and sanitation system problems resulting in health events across Canada in the past ten years. In the final part of the paper, aging infrastructure, declining institutional responsibility and governance issues are examined as the challenges facing Canadian communities, as they try to deliver safe, clean water through their sanitation systems. This argument is then extended to a more general conclusion about the challenges that communities face globally.

Towards an Improved System of Public Services Provision for Reducing Child Mortality in Eritrea: A Case Study of Water and Health

Presenter: Mesfn Debrezion, South Africa

Authors: Mesfn Debrezion (1)

Independent Researcher (and MSc Candidate in Environmental Management and Policy, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden), Pretoria, South Africa (1)

Eritrea is a country with an estimated per capita GDP of US\$ 200. Provision of public services, such as health and clean water, to help improve the lives of its people, is expected from the government. The Eritrean government has initiated development institutions, strategies and policy reforms. But, the result has been mixed. We think this is in part due to institutional failure. Hence, an effective and efficient institutional setup is imperative if the government



is to deliver adequately.

We take the case of child mortality. Child mortality is a significant problem in most developing countries; a major environmental and public health issue. Child mortality has become part of the UN Millennium Development Goals (MDGs) - fourth. An estimated 10 million infants and children under the age of 5 die yearly in the developing world.

We assess the government's performance in public service provision. We use some indicators to detect some of the government's failure(s) in its duty. We employ institutional analysis (on causality, performance and design) and rights-based approach (entitlement - poverty alleviation as a right) to development. We investigate when, why and under which circumstances public service delivery is successful in reaching environment-health-development objectives for the poor. From our findings, we provide suggestions on improving public service delivery vis-à-vis child mortality.

The study is useful for policy on public service provision, environmental health, poverty alleviation and development in Eritrea. It would also help assist the country progress towards realising the fourth MDG.