

IWMI's support to post-tsunami water supply rehabilitation

Water contamination and the break-down of water supply systems were among the greatest problems affecting coastal communities after the 2004 Asian tsunami. Responding to the emergency call, IWMI provided significant support to the immediate relief operations as well as longer term rehabilitation of water supply systems in Sri Lanka's coastal areas. One priority was to put in place a sound well cleaning program with timely technical guidance, training, and policy advice on best practices for groundwater protection and sustainable rehabilitation of the wells.

The traditional water supply systems in Sri Lanka's east coast were based on shallow, open dug private wells, on which 80% of the coastal population depended. More than half a million wells and an even larger number of people were affected by saltwater flooding after the tsunami. Due to the lack of technical knowledge, haphazard and counter-productive rehabilitation measures were adopted by numerous people responding to urgent humanitarian needs. Realising the far-reaching consequences of such action, IWMI provided timely, sound and simple guidance on best practices of well cleaning and rehabilitation in a pro-active and collaborative manner. IWMI's contributions impacted both the tsunami relief efforts as well as the development of international emergency relief guidelines.

Field visits to the tsunami-hit areas revealed the need for a rapid response. IWMI staff quickly developed a network of partners of national and international NGOs, national and local authorities, and research organizations for dialogue, information sharing and on-the-ground action. IWMI participated in several emergency coordination meetings at local/national level, as well as training sessions for water and sanitation practitioners on salinity impacts and best practices. Together with other partners, IWMI developed a well cleaning protocol, comprised of simple step-by-step procedures for cleaning wells in order to facilitate provision of safe water, to minimize saltwater intrusion and the potential for irreversible damage to the coastal groundwater, and to prevent the collapse or destruction of the wells. Stakeholder involvement and household surveys among the affected communities were a significant element in the remediation approach. A water quality monitoring program was also carried out to offer evidence for the extent of the problems and the recovery of wells.

The results of this work not only ***directly impacted the tsunami recovery efforts*** as described, e.g., in Saltori and Giusti, 2006, but has also ***significantly contributed to the international knowledge base*** on impacts of seawater flooding on groundwater and best rehabilitation practices. IWMI, in collaboration with local and international partners, was the first to publish field-level systematic and comprehensive results from water salinity monitoring in surface and groundwater (Villholth et al. 2005, http://www.iwmi.cgiar.org/tsunami/pdf/Tsunami_Impacts_on_Shallow_Groundwater.pdf). The publication has been widely cited as a key document on the impacts of the tsunami on groundwater and provided consolidated information for rehabilitation, dialogue and procedures. Several joint publications and practical guidelines have been released targeting humanitarian and local relief workers as well as the scientific community. Further, research collaboration has been developed with several US and European universities (e.g. Auburn University, Colorado School of Mines, Utah State University, including a Ph.D. project in collaboration with the University of Copenhagen) on the understanding of fundamental processes related to saltwater flooding and saltwater intrusion in coastal areas and a first-ever *in-situ* investigation on the consequences of a tsunami.

Consequently, IWMI has been invited to give keynote speeches at several international scientific meetings and conferences (including the meetings of the International Association of

Hydrogeologists, the American Geophysical Union and the 2nd International Salinity Forum) related to salinity issues, groundwater, and disasters, thereby increasing the knowledge and awareness on tsunami impacts. Inputs to international publications and books have been solicited continuously since the tsunami, with four recent publications. Finally, and significantly from an IPG perspective, in 2008 the **WHO officially endorsed** the well cleaning protocols and recommendations from IWMI and partners as part of its series of Emergency Guidelines, with broader applicability to emergency relief after seawater flooding.

In summary, IWMI as a lead institution provided a highly recognized, innovative approach and strategy for integrated and informed emergency relief and post-tsunami water rehabilitation which had impact at both local and global scales. This was achieved through fundamental research, stakeholder involvement, capacity building, training, impact assessment, policy advice, and dissemination of lessons learned.

Citations of IWMI Research on Post-Tsunami Water Supply Rehabilitation

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