

Resumé of the Symposium

INTRODUCTION

Planet Earth is the natural basis of our lives, its resources are limited. If these resources are polluted or exhausted the future development of any society will be at stake.

The Federal Institute for Geosciences and Natural Resources (BGR) is the federal and independent geoscientific advisory institution to the German Government. We are committed to the protection of the environment in order to sustain human habitat and to a sustainable use of natural resources.

Sanitation has been elevated on the political agenda as a result of the United Nations declaration of 2008 as the International Year of Sanitation (IYS). The Federal Institute for Geosciences and Natural Resources (BGR) aimed to highlight the immense problems of groundwater pollution due to absent or inadequate sanitation facilities in developing countries by organising an international symposium on “Coupling Sustainable Sanitation and Groundwater Protection” from 14-17 October, 2008 in Hannover, Germany. In cooperation with international co-convenors (BMZ, UNEP and WHO) and supporting organizations (BORDA, DED, DWA, GTZ, IAH, KfW and TTZ), BGR offered this symposium as the first event dealing with both topics. About 130 participants from more than 30 countries discussed the links between sustainable sanitation and groundwater protection. A comprehensive poster exhibition covered the vast variety of lessons learnt, mainly in developing countries. The symposium was one of the activities of BGR realized within the framework of the Sustainable Sanitation Alliance.

The international symposium served as a forum for exchange between professionals and decision-makers as well as hydro-geologists and sanitary engineers, discussing common issues, listening to each other and forming new partnerships. Representatives from other disciplines such as water resource management, water supply engineering, planning, health, and agriculture enriched the discussions.

The Bellagio Principles ⁽¹⁾ and the following statements of the Sustainable Sanitation Alliance ⁽²⁾ were taken as the basis for elaborations :

- The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease.
- In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and the natural resources.
- Sanitation plays a big role in gender equity: One of the many aspects included in this statement is that the amount of girls attending school would increase substantially if clean and separated sanitation facilities were provided in schools.

Equitable access to water and sanitation services is considered a human right, which constitutes the basis for a life in dignity. Water and improved sanitation both must be available, accessible, of good quality and affordable.

The symposium was considered to be very useful and a way forward to further integrate the various disciplines under the common objective of managing the limited resources in a sustainable manner for the benefit of the present and future generations.

CONCLUSIONS OF THE SYMPOSIUM

During the symposium the following conclusions have been drawn:

- Prevention is better than cure. If drinking water wells are located in direct neighborhood to a pollution source such as malfunctioning pit latrines, microbiological pollution of the well triggers a vicious faecal oral infection cycle causing severe sickness and 2 million deaths per year. Appropriate sanitation solutions reduce microbiological pollution, as well as unwanted dissolved organic and inorganic substances in the groundwater body. Unaffected groundwater is an inexpensive and safe drinking water source, which makes distance water supply or expensive surface water treatment unnecessary. Thus, every precaution in form of sustainable sanitation and appropriate groundwater protection is much more cost-effective than any subsequent and costly treatment of spoiled water resources or distance water supply.
- Groundwater protection needs reliable information about spatial extend, quantity and quality of groundwater bodies. Existing data have to be evaluated and made transparent to all stakeholders. Geo-scientific investigations are necessary in order to achieve a better understanding of complex groundwater systems and their dynamics. Information drawn from these studies are an essential input to land-use planning.
- The successful promotion of sustainable sanitation will often at the same time improve groundwater quality, or contribute remarkably to the protection of vulnerable aquifers; however, other groundwater protection measures need to be introduced as well, in order to be align with an Integrated Water Resource Management process.
- The failure of past sanitation approaches is often related to a mindset based on colonial urban planning principles. Town planning is dominated by top-down technocratic approaches. Supply driven planning usually benefits high and middle income families without covering operational and maintenance costs. Innovative planning requires stakeholder participation. There is a set of new sanitation planning tools which help to facilitate sustainable sanitation. They inspire planners to understand power relations, ensure effective participation and build in the user perspective; be comprehensive but realistic about the complexity of sanitation; and identify the drivers of sanitation⁽³⁾. Planning concepts require the poor to be served.
- Major reasons for limited activities of decision-makers in the sanitation crisis are seen in the unclear responsibilities for sanitation, the resulting difficult management structures of involved institutions, the complexity of necessary measures, as well as the lack of the awareness for immediate and responsible action. Nevertheless, the positive role of the governments in providing a legal and institutional framework must not be neglected in order to establish an enabling environment for reforms as well as the introduction of new concepts and technologies.
- Investments into sustainable sanitation result in development and pay back economically. This is one of the key-drivers for decision-makers to improve the sanitation situation. Consequently, this fact must be communicated more comprehensively in order to convince decision makers that sustainable sanitation returns investments multiply.
- There is a demand in the sanitation sector, especially within the planning community, for more information on groundwater vulnerability. Hydrogeologists emphasize the importance for closer cooperation. The link between sustainable sanitation and groundwater protection is considered as a substantial factor in achieving the Millennium Development Goals (MDGs).

RECOMMENDATIONS OF THE SYMPOSIUM

The following recommendations were developed by the participants of the symposium:

- Both, groundwater protection and sustainable sanitation represent basic tasks for every development planning. Every new settlement should take groundwater resources into account and the protection of the aquifer should have high priority. Past planning approaches failed and innovative sanitation planning including participatory and demand driven approaches must be adopted now. Land-use planning, based on a holistic approach and therefore economically, socially and ecologically sound, is required to protect precious resources like groundwater.
- There is a wide range of sanitation solutions available which need to be adapted to the specific conditions of the regions of concern in order to be sustainable. To fulfil the five sustainability criteria, a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, it should also protect the environment and the natural resources. Herein, geo-scientific aspects have to be considered during sanitation planning, such as climate, hydro-geology, soil characteristics and geomorphology.
- Participation of all stakeholders at all levels of planning, implementation and operation is considered the key issue for success of any water and sanitation project. Approaches like IWRM and IWM exist, which cater for the need for participation and holistic concepts.
- Technical standards for all components of sanitation systems are necessary and serve as a tool for a reliable and sustainable planning, contracting and construction of sanitation systems.
- Waste water is considered a valuable resource; however, its uncontrolled and unregulated utilisation must be prohibited. Guidelines for the safe reuse of excreta and wastewater have been published by WHO⁽⁴⁾, including the WHO multi-barrier approach; these guidelines and concepts need to be translated into practise and become implemented. Additionally, the reuse of wastewater, human excreta and greywater in agriculture requires further studies and implementation policies in developing and developed countries.
- There is a huge need to increase capacity in developing countries to monitor and manage groundwater. Vitally required data such as groundwater quality and quantity as well as recharge and backflow need to be collected and analysed on a regular basis in order to protect the groundwater resource. Furthermore, capacity development as a multi-faceted approach is needed, covering groundwater protection, planning, and sustainable sanitation systems (including construction, monitoring, operation and maintenance).
- Awareness creation and education concerning health, hygiene and sanitation, serve as a basis for the successful participation and involvement of all stakeholders which are key-factors to develop ownership. Appropriate incentives and the clear formulation of benefits are necessary in order to change attitudes and introduce new concepts.
- Efficient political structures, policies and legal set-ups are essential. Neglecting the improvement of general sanitation conditions and thereby contaminating groundwater endangers the overall national gross product due to increasing costs in the health, labour and production sector. Therefore sanitation and groundwater issues have to be addressed on the highest political level.

REFERENCES

- (1) SuSanA Vision Document: Towards more sustainable sanitation solutions. Version 1.2, February 2008. (<http://www.susana.org/images/documents/02-vision/en-susana-vision-statement-l-version-1-2-feb-2008.pdf>)
- (2) The “Bellagio Principles for Sustainable Sanitation” were endorsed by the members of the Water Supply and Sanitation Collaborative Council in 2000:
 - a) Human dignity, quality of life and environmental security at household level should be at the centre of any sanitation approach.
 - b) In line with good governance principles, decision making should involve participation of all stakeholders, especially the consumers and providers of services.
 - c) Waste should be considered a resource, and its management should be holistic and form part of integrated water resources, nutrient flow and waste management processes.
 - d) The domain in which environmental sanitation problems are resolved should be kept to the minimum practicable size (household, neighborhood, community, town, district, catchments and city).
- (3) SuSanA factsheet: Planning for Sustainable Sanitation. Version 1.1, October 2008. (<http://www.susana.org/images/documents/05-working-groups/wg06/final-docs/en-susana-factsheet-WG06-planning-version-1.1.pdf>)
- (4) WHO/FAO/UNEP (2006): Guidelines for the safe use of wastewater, excreta and greywater. Geneva, Switzerland, World Health Organization - WHO-FAO-UNEP, ISBN 9241546832