About the Project

The FP7 project "*Saph Pani* - Enhancement of natural water systems and treatment methods for safe and sustainable water supply in India" addresses the improvement of natural water treatment systems such as river bank filtration (RBF), managed aquifer recharge (MAR) and wetlands, building on a combination of local and international expertise. The project aims at enhancing water resources and water supply particularly in water stressed urban and peri-urban areas in different parts of the sub-continent. The project focuses on a set of case study areas in India covering various regional, climatic, and hydrogeological conditions as well as different treatment technologies.

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Our Partners

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- National Institute of Hydrology, India
- IIT Roorkee, India
- Veolia Water, India
- Anna University, India
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How can natural treatment systems mitigate water scarcity in India?

Highly variable rainfall over time and space and human pressure has driven India's society to depend increasingly on groundwater (Wyroll 2012) and its use in India has been constantly rising in the last 60 years (Shah 2010). Groundwater covers 85% of drinking water supplies, but the resource is not infinitely: it is projected that by 2030 around 60% of the groundwater sources will be in critical state of degradation (World Bank 2010).

Therefore, new approaches to fight water scarcity are required. The FP7 project "Saph Pani" investigates possible ways to address water scarcity with natural treatment systems. Natural wastewater treatment systems (NWWTS), riverbank filtration (RBF) systems and managed aquifer recharge (MAR) are investigated, but how can they mitigate water scarcity?

This leaflet provides an overview of the three sectors and explains the potential to mitigate water scarcity. The most relevant strengths, weaknesses, opportunities and threats (SWOTs) are highlighted.

Natural wastewater treatment systems (NWWTS)

How can NWWTS contribute to mitigate water scarcity?

NWWTS are able to treat wastewater in a way that the reuse of the effluent for different purposes is possible.

Constructed wetland in Bhopal (Picture: L. Essl, CEMDS, 2012)

What are the main SWOTs?

NWWTS have low energy requirements and provide treated wastewater for reuse. The drawbacks are high land requirements compared to conventional wastewater treatment systems. NWWTS have a potential to be implemented in rural areas and an increased use of side products (e.g. sludge, duckweed, treated wastewater) would be possible. The identified threats are related to problems caused by improper operation and maintenance and possible health risks for those coming in touch with the raw wastewater and the effluent.

Riverbank filtration (RBF)

How can RBF contribute to mitigate water scarcity?

RBF is an alternative water source to conventionally abstracted surface water that supplements groundwater abstraction.

What are the main SWOTs?

RBF is an alternative to direct abstraction of river water and groundwater. Where already in use in India, the water is accepted by the consumers. However, river water quality and quantity can affect the performance of the systems. It has potential for rural areas and should be considered in the catchment planning as possible water supply option for unserved communities.

Large-diameter RBF caisson well adjacent to the Ganga River in Haridwar (Picture: L. Rossoff, HTWD, 2011)

Managed Aquifer Recharge (MAR)

How can MAR contribute to mitigate water scarcity?

MAR systems replenish the aquifer with rainwater and contribute to the rehabilitation of watersheds

What are the main SWOTs?

MAR schemes increase the recharge of groundwater compared to the natural recharge scheme and provide an accepted water source. The uneven distribution of benefits was identified as main weakness, but a catchment based approach that considers all involved stakeholders can ensure equality.

References

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