EUROPEAN COMMISSION / European Research Area / Environment

SAPHPANI

THE CHALLENGE

India has 18% of the world's population, 1.15 billion people, but access to only 4% of world's fresh water resources. Climate change causing a frequent failure of monsoons coupled with limited surface water resources has led to an increased dependence on groundwater. Today, 70% of India's irrigation needs and 80% of its domestic water supplies come from groundwater. This practice has led to rapidly declining groundwater tables in most states in India and is no longer sustainable.
Urbanization and increasing population has led to an encroachment of urban areas onto wetlands, swamps and floodplains of rivers. The people living in these areas generally have access to neither traditional potable water supply systems nor adequate sanitation facilities.

AT A GLANCE

Title: Enhancement of natural water systems and treatment methods for safe and sustainable water supply in India

Instrument, Funding Scheme: FP7, Collaborative project (small or medium-scale focused research project) for specific cooperation actions (SICA) dedicated to international cooperation partner countries

Total Cost: 4.781.225 €

EC Contribution: 3.499.620 €

Duration: 36 months

Start Date: 01/10/2011

Consortium: 20 partners from 8 countries

Project Coordinator: Thomas Wintgens, FHNW – Fachhochschule Nordwestschweiz (Switzerland)

Project Web Site: www.saphpani.eu

Key Words: water scarcity, natural water treatment, river bank filtration, managed aquifer recharge, constructed wetlands

ENVIRONMENTAL TECHNOLOGIES

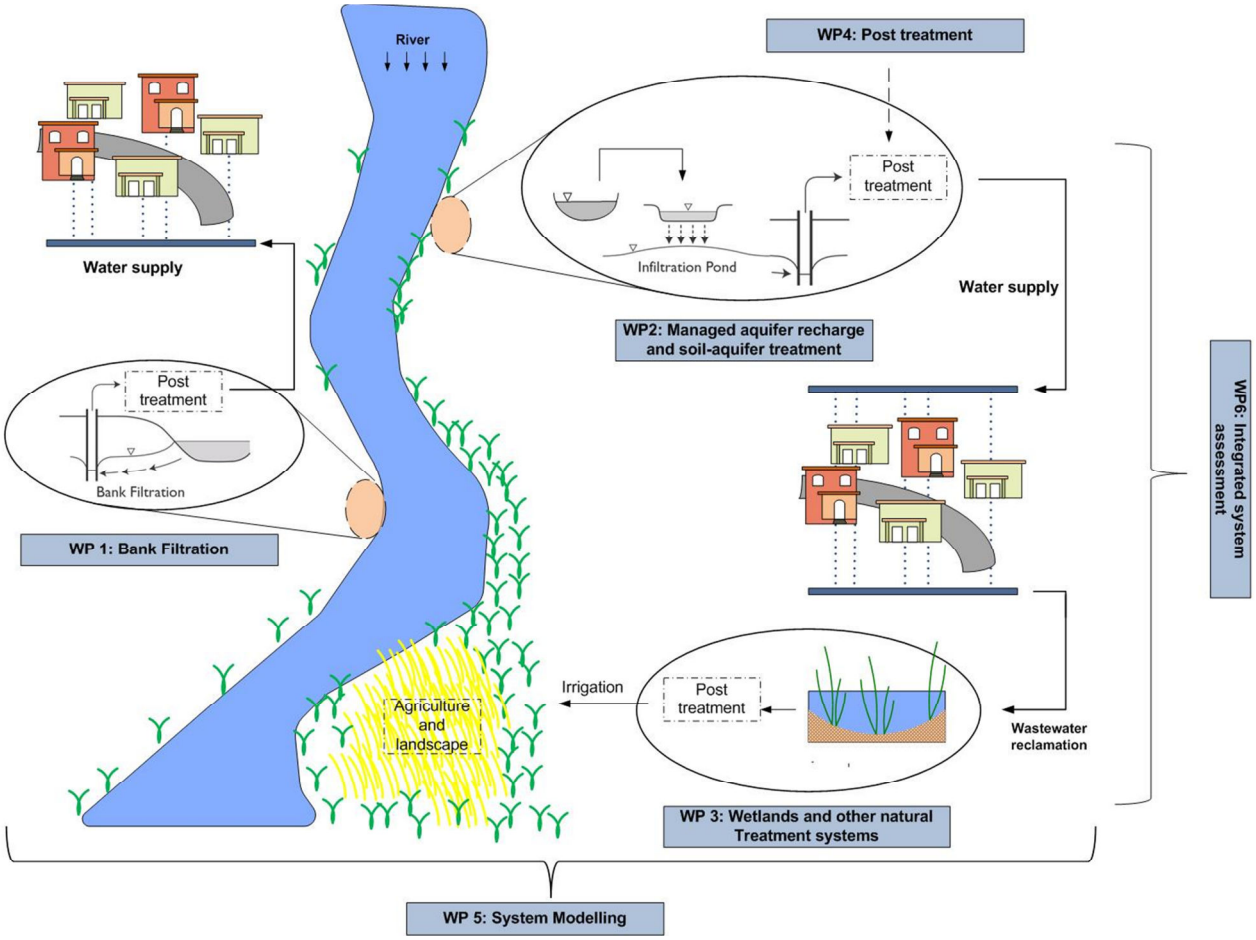
SAPH PANI

PROJECT OBJECTIVES

The Saph Pani project aims to study and improve natural water treatment systems such as river bank filtration (RBF), managed aquifer recharge (MAR) and wetlands in India building local and European expertise in this field. The project aims to enhance water resources and water supply particularly in water stressed urban and peri-urban areas in different parts of the Indian sub-continent.
The objective is to strengthen the scientific understanding of the performance-determining processes occurring in the root, soil and aquifer zones. The removal and fate of important water quality parameters such as pathogenic microorganisms and faecal indicators, organic chemicals, nutrients and metals will be considered. The hydrologic characteristics (infiltration and storage capacity) and the eco-system functions will also be investigated since they influence the local or regional water resources management strategies (e.g. by providing buffering of seasonal variations in supply and demand).

METHODOLOGY

The project focuses on a set of specific case studies in India. These include a range of natural water systems and engineered treatment technologies investigated by different work-packages including RBF, MAR and constructed wetlands.
The field site investigations will include hydrogeological, hydrological and geochemical characterisation and depending on the degree of site development water quality monitoring or pre-feasibility studies for new treatment schemes. In addition to the natural treatment systems the investigation will recommend appropriate pre- and post-treatment steps to optimise production of potable water quality and to avoid operational issues such as clogging of aquifers. The experimental and conceptual studies will be supported by modelling to improve the conceptual understanding of the sites and enhance the transferability of results across India and to Europe.



A sustainability assessment will be performed for these sites, covering human health, environmental, economic, institutional and social aspects. Water management plans for natural treatment systems will be developed and suitable policy frameworks established and promoted. The Indian sites will be linked to an "end-user pool" of European RBF and MAR sites to facilitate the information exchange on operational experiences.

Expected Results

The expected results of Saph Pani are:

- Knowledge on optimal hydrologic and hydrogeologic settings and methodologies for extending RBF to other areas in India.
- A set of Indian MAR guidelines for aquifer recharge and storage schemes covering different hydro-geologic settings to cope with changing supply and demand of groundwater
- Strategies to make use of natural and constructed wetlands for conserving eco-balance of sprawling urban areas and recycling of wastewater for peri-urban agricultural production

These results will be complemented by optimised post-treatment for effective re-use of treated water, mathematical modelling and an integrated sustainability assessment. The knowledge base and technologies will be extended, shared and translated to the implementing agencies and the private sector, especially SME, through conferences, technical reports and training.

Project Partner	COUNTRY
Fachhochschule Nordwestschweiz (FHNW; Coordinator)	Switzerland
Uttarakhand Jal Sanstan (UJS)	India
National Institute of Hydrology (NIH)	India
Indian Institute of Technology Roorkee (IITR)	India
Veolia Water (India) PVT Ltd (VEOLIA)	India
Anna University Chennai (ANNA)	India
SPT Consultancy Services Partnership (SME)	India
Municipal Corporation of Raipur (RMC)	India
Akshay Jaldhara (Arun Gulati) (SME)	India
Council of Scientific and Industrial Research (NGRI)	India
Indian Institute of Technology Bombay (IITB)	India
DHI - (India) Water & Environment PVT Ltd	India
Kompetenzzentrum Wasser Berlin, Gemeinnützige GmbH (KWB)	Germany
Bureau de Recherches Géologiques et Minières (BRGM)	France
Zentrum für Umweltmanagement und Entscheidungstheorie (CEMDS)	Austria
Hochschule für Technik und Wirtschaft Dresden (HTWD)	Germany
United Nations Educational, Scientific and Cultural Organization- UNESCO (IHE)	Netherlands
International Water Management Institute (IWMI)	Sri Lanka
Commonwealth Scietific and Industrial Research Organisation (CSIRO)	Australia
Freie Universität Berlin (FUB)	Germany