

Saph Pani

Saph Pani is a EU funded collaborative research project which started in October 2011 with duration of three years involving a consortium of 20 partners from India, European Union, Switzerland, Sri Lanka and Australia. Its full name is “Enhancement of natural water systems and treatment methods for safe and sustainable water

supply in India” and it addresses the water challenges of the 21st century. Saph Pani builds on already existing Indian projects for natural treatment and storage of water identifying potential for their improvement by applying hi-tech measurement equipment and conducting field trials. For more information, visit: www.saphpani.eu

Special Feature

Work Package 1 of Saph Pani is called “Bank filtration in urban areas under varying pollutant loads and flood situations” Bank filtration, is a natural pre-treatment technology, which enables the utilisation of surface water sources such as lakes or rivers. The water passes through the natural porous sub-surface (aquifer) to the production well. The porous media serves as a natural filter and reduces the amount of suspended solids and pathogens. Find on our homepage [more information to the WP1](#).

Interview with Cornelius Sandhu

Cornelius Sandhu from the HTW Dresden is the rather young scientist leading the Work package 1. Having parents from India and Germany, he is familiar with both cultures and has a good understanding of the collaboration in this project. In this short interview Mr. Sandhu tells us about his view of Saph Pani.



Figure 1: Cornelius Sandhu

What do you think is the Potential of Bank Filtration in India?

Bank filtration has been used in India at only a few sites during last decades. We estimate the potential of BF to contribute to at least 10% of the drinking water supply in India. Today, BF accounts for less than 1%. The main

advantage compared to direct surface water abstraction lies in the significant removal of pathogens during this natural pre-treatment step. The potential of BF especially for many towns and cities located by rivers is still largely unexplored.

What are your expectations for the Saph Pani project?

The research so far has concentrated on analyzing hydrogeological and water quality aspects of BF in India. In Saph Pani we investigate in more detail the effect of floods and monsoons on the removal efficiency of pathogens at BF sites. I hope that the visibility through Saph Pani will motivate more institutions to use BF in India. A coordinated effort in India is required to prepare a comprehensive and holistic long-term plan to develop the potential of BF. If such a concerted plan were to eventually be incorporated into the mechanisms of the 12th and 13th Five-Year Plans (2013 – 2018 and 2018 – 2023), then the potential of BF for India can be explored

and development of BF schemes can commence on a large scale.

How is your experience in this project so far?

The experience has been positive. I feel that talking personally to the partners and being present at the sites is very valuable. One gets a feel of the problems each partner faces, this helps to find timely solutions. The field work requires much liaison with various authorities. Many tasks demand much more time than typically in Europe. A good thing is that networking between the project partners has significantly increased the visibility of the application of BF in India.

Water quality monitoring wells constructed at Haridwar and Srinagar bank filtration sites

Two monitoring wells were constructed in Haridwar (Bhopatwala) in May 2012 for the Saph Pani project (Figure 2). They are located in between a riverbank filtration well and the Ganga River by the project partner Akshay Jaldhara, with logistical and technical support from the project-partners Uttarakhand State Water Supply and Sewerage Organisation (Uttarakhand Jal Sansthan) and the Dresden University of Applied Sciences. The monitoring wells will be used to measure water levels and to observe the quality of the bank filtrate originating from the Ganga.

Another monitoring well was constructed by Akshay Jaldhara in Srinagar later in May 2012 at the new RBF site under development by Uttarakhand Jal Sansthan (Figure 3). This well is situated in between a production well and the Alaknanda River. In order to investigate the removal efficiency of pathogens during monsoons, the monitoring well is close to the river (4 m).



Figure 1: Construction of monitoring wells at the bank filtration site in Haridwar by Akshay Jaldhara (Photo: K. Heinze & M. Lesch, HTWD, May 2012)



Figure 3: Monitoring well 5 constructed in Srinagar in between the Alaknanda and PW5 (right), on which a pumping test is being conducted.

(Photo: V.D.A. Nguyen, HTWD, September 2012)

Training Course on Bank Filtration at the Indian Water Week in New Delhi

The training course on bank filtration, organised by the National Institute of Hydrology, Roorkee and the Dresden University of Applied Sciences, with lectures delivered by different project partners was held within the India Water Week 2012 on 13 April in New Delhi. Fundamental

knowledge about bank filtration for natural treatment of drinking water and for adopting it on a larger scale in India in India was provided. Course material on the delivered lectures was distributed amongst the 40 participants.



Figure 4: Training course on bank filtration at the Indian Water Week in New Delhi



Figure 5: Walking to the "Lange Erlen"

Second Saph Pani Meeting held in Basel

From the 9th until the 11th of May delegates of the consortium were invited to Basel for the second Saph Pani meeting which was organized by the FHNW. There were very productive meetings where the progress of the past six months was discussed and the activities for the coming year were planned. Two advisors of Saph Pani, Haim Cikurel and D. K. Chadha, gave feedback on the work plan. According to Haim Cikurel the project start was good and the consortium of Saph Pani should be able to answer the challenge to keep going and produce results.

First Practitioners Day in Basel

As part of the dissemination activities of Saph Pani the first practitioners day was held on the 10th of May. There were specific examples for the use of natural treatment systems for various applications presented by distinguished European and Indian speakers as well as from project partners and invited experts.

P.C. Kimothi (UJS) reported on a BF site in Nanital. D.K. Chadha and Shyam Asolekar (IITB) gave a talk on their evaluation of the situation in India and where they see challenges and solutions for the future. Elango Lakshmanan of ANNA University spoke on the situation in Chennai and how MAR is used to prevent saltwater intrusion. Regina Gnirss of the BW Berlin, Haim Chikurel (Mekorot), Emmanuel van Houtte (IWVA) and Daniel Rüetschi (IWB) gave specific examples for the use of natural treatment systems in Europe. Over sixty people took part in the event. The practitioners day was concluded with a visit to the "Lange Erlen" site where MAR is applied since 1911.



Figure 6: Explaining the MAR principle at the "Lange Erlen"

Pilot pond excavation and GPR survey completed in Chennai

As a part of the Chennai pilot study, a percolation pond was constructed at Andarmadam, Thiruvallur district of Tamil Nadu, India. An electrical resistivity survey carried out the location that is suitable for locating the pilot site. The pond has a size of 8x8 m and a depth of about 1.75m.

Piezometers of different depths (2 m, 4 m and 6 m) were drilled in July 2012 at about 0.75 m distance on the eastern side from the percolation pond. Water level indicators were installed in these piezometers for continuous monitoring of the water level fluctuation. Rainfall, wind speed, wind direction, outdoor temperature, pressure and humidity will be automatically measured and stored by the rain gauge and anemometer attached to the automatic weather station, which is installed in the study area. The water level fluctuation near to the percolation pond is being monitored every 6

hours by a digital automatic water level indicator. Monthly groundwater sampling and field measurements are being carried out from the piezometers and nearby monitoring wells. Groundwater parameters such as pH, EC, TDS, temperature and DO are being measured in the field using CyberScan Series 600 water proof portable meter. Ground penetrating radar (GPR) with 50 MHz antenna was used to capture the subsurface geophysical signatures of the area.



Figure 7: Percolation pond construction in Andarmadam



Figure 8: GPR profiling and groundwater analysis in the field



Figure 9: GPR profiling and groundwater analysis in the field

Dissemination activities

11th June 2012

The planned work on salt water intrusion by Saph Pani was presented at the "Indian science day" at the Freie Universität Berlin.

28th August 2012

Saph Pani was presented at the [Indo German Urban Mela](#) in Chennai by the Freie Universität Berlin and Anna University.

10th September 2012

Prof. Elango Lakshmanan presented Saph Pani as a successful example in the "Awareness Raising and Information Campaign" in Chennai.

October 2012

The Journal of Indian Water Works Association will publish a special issue on RBF with articles from nearly all WP1 partners.

8th-8th November 2012

Saph Pani will be presented by Prof. Elango Lakshmanan at the [EU-INDIA STI Cooperation Days](#) at the National Geophysical Research Institute in Hyderabad.

11th - 12th December 2012

There will be a two day course on MAR at Anna University. Find more information on our [homepage](#).

