

SUBsurface Water SOLutions

Report

Mission Series IV in

Ho Chi Minh City, Vietnam, 10.-14.03.2018

Solution Promotion and Capacity Development in Vietnam, Mission Series IV

This report aims to inform the reader about the Subsurface Water Solution concepts presented and discussed in a Public Promotion Event and a Project Development Workshop in Ho Chi Minh City. These activities were part of the scope of the Mission IV Series in Ho Chi Minh City and the Mekong Delta, Vietnam, in the SubSol project.

This report is shared with the participants of the event, the SUBSOL consortium members, associated partners as well as prospective partners in SUBSOL's designated target regions.

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SubSol promotion in Vietnam

Ho Chi Minh City is with its 13 million inhabitants the biggest city in Vietnam. Industries range from construction, mining, agriculture and seafood processing to finance, hi-tech, tourism and trade, making Ho Chi Minh the economic center of Vietnam. Placed along the Mekong Delta the city has too much water in the wet season and too little during the dry season. Moreover, escalating groundwater extraction has led to a steady decline of groundwater levels in the Ho Chi Minh City region. The low groundwater levels have led to saltwater intrusion, occasionally forcing the water supply company Saigon Water Corporation to halt drinking water production from river water during dry periods. Additionally, groundwater overexploitation has contributed to land subsidence, increasing the risk of urban flooding in the rainy season.

The surrounding regions along the coast are struggling with saltwater intrusion and seasonal drought, among other things causing problems for land-based aquaculture and agriculture in the urban areas.

In order to discuss the possible application of Subsurface Water Solutions with local stakeholders, the SubSol team, represented by Ronjon Chakrabarti from adelphi and Ditte Degnbol from the Danish Board of Technology Foundation (DBT), organised Public Promotion Event and a Project Development Workshop in Ho Chi Minh City in March 2018.

The Public Promotion Event

The aim of the Public Promotion Event was to present Subsurface Water Solutions to stakeholders and invite them to discuss possible applications in Ho Chi Minh City and the surrounding regions. The event took place on the Renaissance Riverside Hotel Saigon and received broad interest: 28 participants representing universities and other research institutions, authorities and water companies joined – hereunder representatives from the



Mission IV: Solution Promotion and Capacity Development at Target Sites

Ministry of Natural Resources and Environment (MONRE), Department of Natural Resources and Environment (DONRE – the regional division of MONRE), Division for Water Resources Planning and Investigation for the South of Vietnam, Saigon Water Company and Vietnam National University HCMC (Center of Water Management & Climate Change and Faculty of Geology & Petroleum Engineering).

The event involved 3 parts: 1) Providing inputs, 2) discussing possible applications in Ho Chi Minh City and the surrounding regions, and 3) considering possible pilot projects and partners. Interested potential partners were invited to join the Project Development Workshop the next day to develop joint project ideas.

The interest in Subsurface Water Solutions among participants was big, and the discussion, which was very engaged, quickly turned into Vietnamese.

Saigon Water Company (SAWACO) in general supported the idea of groundwater recharge and water storage. They do, however, have to follow the masterplan from the People's Committee. The strategy of the People's Committee is to reduce groundwater extraction and to build a big reservoir. Using groundwater recharge as a means of water storage does not fit with the People's Committee's current policy to prevent further groundwater extraction.

The main interest of representatives for the Department of Natural Resources and Environment (DONRE) was whether groundwater recharge can reduce land subsidence and hence flooding. The SubSol technologies are, however, developed with the aim of water storage and of preventing groundwater salinization. Hence, DONRE representatives wanted a potential pilot project to explore the potential of groundwater recharge to reduce land subsidence.

The participants agreed about the importance of a pilot project to prove the efficiency of Subsurface Water Solutions in a local setting, and DONRE and SAWACO wanted the pilot project to focus on groundwater level rise, water storage, reduction of subsidence and reduction of flooding. A number of universities expressed interest in being partners in a pilot project, and DONRE was pointed out as a main partner in order to provide the needed political support.

The Project Development Workshop

The project development workshop the next day was organised by adelphi and DBT together with Center of Water Management and Climate Change (WACC) at Vietnam National University, who hosted the event. The purpose was to move on from the discussions the day before and develop concrete ideas for pilot projects applying SUBSOL tools, agree on partnerships and plan the further proposal process. Besides from WACC, representatives from HCMC University of Technology and HCMC University of Science participated. DONRE was not able to join, but expressed their support and interest in partnership over mail and repeated their focus on land subsidence.

Ronjon Chakrabarti from adelphi initiated the meeting stressing that the SubSol technologies have not been developed with the main intention of addressing land subsidence, and that a pilot project might not be able to demonstrate any potential effect of a large-scale implementation on land subsidence. The participating university representatives agreed that the SubSol technologies are still interesting for Ho Chi Minh City and the surrounding regions due to their ability to store water and prevent salinization. It was expected that DONRE would also be interested in such a project.

With this focus in mind, three concrete pilot sites were selected:

- Domestic and industry areas in the city: The Southern part of HCMC is struggling with saline water intrusion and land subsidence. Concrete industrial as well as domestic areas were suggested. A policy component could look into setting up regulations for requiring groundwater users to infiltrate certain amounts, especially real estate companies.
- Storage for aquaculture and agriculture: Coastal areas of Ho Chi Minh City and the Mekong Delta are struggling with saline water intrusion, particularly in the dry season, and could be of interest for the SubSol freshmaker technology. In the areas Thanh Hai, Thanh Phu District and Ben Tre, sand dunes could be used for storing water for agriculture and aquaculture.
- Stable groundwater supply for industry plants: In some industrially used coastal areas the water supply is disrupted during the dry season when saline water intrudes the estuary rivers and the surface water based treatment plants have to stop their processes or use water supplied by tanker boats or trucks. Especially areas like Ca Mau and Tra Vinh are affected. One possible site for its application could be the Fertilizer and Gas plant in Ca Mau.

The participants agreed that the technical elements of the pilot should be supplemented by a socio-economic part exploring local water needs and practices, willingness to pay, regulative needs etc.

It was agreed to start collecting the basic information for the three identified sites and apply the SUBSOL technical and economical guide. On the basis of these assessments project proposals for detailed feasibility studies and pilots could be developed.

All in all, the two events demonstrated broad support among stakeholders in and around Ho Chi Minh City for pilot projects testing the potential of SubSol technologies in the region. Three potential pilot sites have been identified, and the SubSol team and local partners will be cooperating in the further process to apply for funding research pilot projects.

List of participants

Organisation	Name	Designation
MONRE/SIHYMECC	Tran Thi Thu Hoai	
MONRE/SIHYMECC	Huang Thi Van Anh	
HCMUT	Dang Thuong Huyen	Earth Resources and Environment Department, Faculty of Geology and Petroleum
HCMUT	Nguyen Viet Ky	Asc Prof, Ex Dean Geology faculty and Petroleum
CTU	Trung Phan	
DONRE	Nguyen Van Nga	Ex- chief of water resource and mineral Dept, DONRE (just retired)
DONRE	Huynh Thanh Nha	Chief of water resources, minerals & Islands Dept, DONRE
DONRE	Nguyen Thi Thu Hang	Ms. Staff of water resource and mineral Dept, DONRE
DONRE	Mai Tuan Anh	Ass. Prof., Head of division of hydrometeorology and climate change
SAWACO	Tran Kim Thach	Manager WQ
SAWACO	La Ngoc Hanh	Vice Manager of Corporate Office
SAWACO	Vo Xuan Khanh	
SAWACO	Tran Cuong	
VNU HCM / WACC	Nguyen Duy Hien	Researcher
VNU HCM / WACC	Nguyen Hung Quan	Ass. Prof. and Head of Department of Research and Development and Socio-Hydrology Group
VNU HCM	Ng Thy Dung	
VNU HCM	Phan Ky Trung	
HCM US	Ngo Minh Thien	Vice-Dean, Faculty of Geology Lecturer, Department of Hydro-Geology - Engineering Geology & Environmental Geology. University of Science, VNU-HCMC
HCM US	Nguyen Dinh Thanh	
HCMUT	Tran Bich Thuy	
IU HCM	Le Hung Anh	Assoc.Prof.Dr. , Director Institute for environmental science, engineering & management
IU HCM	Lun Vat Viet	Professor
DWRPIS	Bui Tran Vuong	Deputy Director General DWRPIS
adelphi	Ronjon Chakrabarti	Senior scientist and senior project manager
DBT	Ditte Degnbol	Project manager
	Dao Minh Trung	
Bochum Uni	Pham T. Viet Ha	
Bochum University	Harro Stolpe	Prof. and Head of environmental Technology and Ecology in civil engineering
Geographic Institute	Dang Hoa Vinh	

Link to the presentations:

https://fileexchange.adelphi.de/E6LTM1P1Z13V/presentations_subsol_event_vietnam_20180313.ZIP.html