SWIBANGLA Managing saltwater intrusion impacts in Bangladesh

SWIBANGLA: Managing saltwater intrusion impacts in coastal groundwater systems in Bangladesh

An integrated approach based on salinity monitoring, modelling and stakeholder participation to improve water safety plans

Final report: Faneca Sanchez, M., Bashar, K., Janssen, G.M.C.M., Vogels, M., Snel, J., Zhou, Y., Stuurman, R. and Oude Essink, G.H.P., 2015. SWIBANGLA: Managing salt water intrusion impacts in coastal groundwater systems of Bangladesh, p.153.

Introduction

Bangladesh is densely populated and it is expected that the population increases significantly in the coming decade, up to 60% more by 2050 according to IIASA (2013). Demand for drinking water will increase accordingly. These developments may cause significant changes in the hydrological system, e.g. leading to a drop of groundwater pressures. Moreover, climate change and a sea level rise are predicted by the scenarios drawn by the International Panel of Climate Change (IPCC, 2013). This leads to, among others, an increase of salt water intrusion, in surface water as well as in groundwater.

The goal of the BRAC WASH II programme is to contribute to the attainment of the Millennium Development Goals by providing integrated water services, sanitation and hygiene promotion expanding to hard-to-reach areas and to under-served populations, in collaboration with government and other stakeholders. As part of the programme, innovative research is addressed in six relevant themes, one of which is the theme salt water intrusion. This project, *SWIBANGLA – Managing salt water intrusion impacts in Bangladesh*, contributes to the theme salt water intrusion.

In this project, the focus is on salt water intrusion in coastal groundwater systems, as groundwater is the main resource of drinking water. So, intrusion of sea water into the coastal surface water courses that are under the influence of tidal effect and storm surges are not studied here.

When the salt water intrusion processes and dynamics in groundwater systems are understood, adequate water management measures are feasible. Otherwise, a shortage of sufficient, clean fresh water at the right moment for domestic water supply as well as for agricultural use will occur. Currently, a blue print for accurate policy measures on the issue of salt water intrusion does not exist. In current water safety planning practices in Bangladesh, the issue of salt water intrusion in groundwater systems is underexposed.

The Department of Public Health and Engineering (DPHE) is the main authority in developing and improving Water Safety Plans for water supply technologies in Bangladesh. The outputs of SWIBANGLA are mainly meant for DPHE, which has been the main stakeholder during the project, but they are also meant for all governmental agencies, NGOs, universities and others that study, manage or have to deal with salt water intrusion impacts in Bangladesh. SWIBANLGA has two main general objectives which contribute to the achievement of the Millennium Development Goals:

1. **increasing WASH sector stakeholders' awareness of the salinization of drinking water resources and the threats posed by this process;**
2. **increasing WASH sector stakeholders' knowledge and skills necessary to anticipate on the salinization of drinking water resources.**

The specific additional objectives leading to the main ones are:

- **Create a better understanding of the process of salinization of drinking water resources in Bangladesh**
- **Provide recommendations for monitoring**
- **Provide recommendations for adaptation and mitigation**
- **Achieve an effective, tailored knowledge transfer between the Netherlands and Bangladesh**
- **Advise on the integration of the salinization issue in Water Safety Planning**

Dissemination Workshop: 2-3 September 2014: program

- Scope of the Project and Final Recommendations of the Workshop
- Salt water intrusion in the Coastal area of Bangladesh
- Grondwater Monitoring
- Salt Water Intrusion Modelling
- Strategies for mitigating salinity impacts on drinking water
- Water Safety Plans: Importance and improvement
- Short demonstration on the Smart Phone Water App on measuring EC
- For more information

blog IRC: Introduction

blog IRC: Modelling and Monitoring Workshops

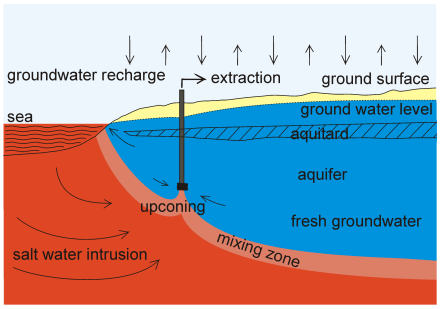
Spring 2013 - Autumn 2014

Goal

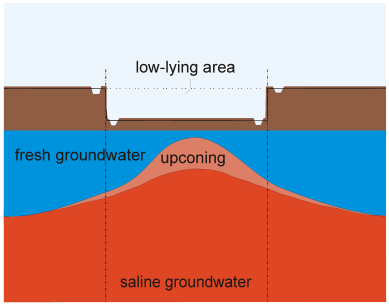
The goal of the project is to make mitigation and adaptation to salinization of drinking water an integral part of Water Safety Planning in Bangladesh.

Objectives

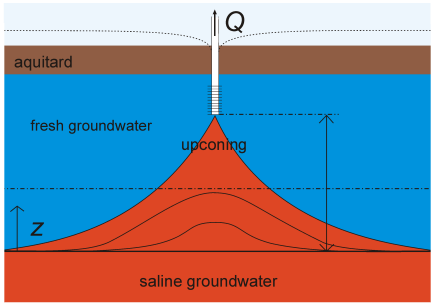
*Create a better understanding of the process of salinization of drinking water resources in Bangladesh
*Provide recommendations for monitoring
*Provide recommendations for adaptation and mitigation
*Achieve an effective, tailored knowledge transfer between the Netherlands and Bangladesh
*Advise on the integration of the salinization issue in Water Safety Planning



saltwater intrusion groundwater system



upconing under low-lying area



upconing under exctraction well

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