

# ViWaT-Operation

## Integrated solutions for sustainable development in the Mekong Delta – Land, water, energy and climate



### Project Objectives

#### Drinking Water Supply

- Develop a cost-effective technology for drinking water supply in remote settlements which have no or very difficult access to clean drinking water
- Various membrane filter are combined in a compact and largely automated device
- Energy self-sufficient power supply (solar cells)
- Develop a financing and operating concept

#### Mobile Monitoring System

- Innovative concept for a mobile water monitoring system

#### Water Re-Use in Aquaculture

- Develop a sustainable wastewater re-use concept
- Reduce the water consumption and the pollution of surface water by discharges of untreated wastewater.
- The focus is to be on small-scale shrimpfarms.



Representative shrimp pond in the Mekong Delta (IEEM, March 2019)

#### Water Utility Governance

- Case studies to investigate the management and regulation of regional water companies

### Current Work Status

#### Pilot Locations

- The concepts are initially developed for several sites selected in cooperation with the project partners
- The sites are representative for the regional water-related supply and environmental problems (such as increasing pollution of surface water, lack of water use and re-use concepts in aquaculture and therefore the use of expensive bottled water or scarce groundwater for drinking water supply).

The map of the southern Mekong Delta shows the pilot sites selected jointly with the project partners for the construction of the drinking water facilities (marked in red) in the provinces of Kien Giang and Ca Mau as well as the aquafarm (marked in blue) in Bac Lieu.



#### First Test Operation

- Field studies and successful on-site testing of a filter component at the pilot site in Ca Mau in July (2019)
- Significant reduction of turbidity and reduction of coliform bacteria was observed during the on-site test.



The photo shows the test application of a membrane for pre-cleaning at microfiltration level. The aim is to supply a newly built kindergarten, which can be seen in the background on the photo, with the planned pilot plant.

On-site testing (IEEM, July 2019)

### Perspectives

#### Drinking Water Supply:

- Set-up of pilot plants and optimization with regard to automation and compactness (see figure below)
- Start of pilot operation phase and make adjustments
- After successful pilot operation, the technology is to be replicated for a large number of other locations in Vietnam and beyond.

The picture on the right shows the main part of the treatment technology; the ultrafiltration plant. In pilot operation, the plant is to be adapted and optimised to the local requirements, in particular the specific contamination of the raw water.

Figure by MARTIN SYSTEMS



#### Water Re-Use

- Preparation of technical and operational concepts for water re-use for the selected aquafarm in Bac Lieu

#### Monitoring und Water Utility Governance

- Further monitoring and investigations at the pilot sites
- Start of the interviews and visit of the waterworks of the Soc Trang Water Company for the case studies on Water Utility Governance

In order to ensure a long-term operation and sustainable implementation of the concepts, all project activities are carried out in close cooperation with Vietnamese scientific partners as well as farmers, institutions and stakeholders in the implementation areas.

**Contact:** IEEM gGmbH – Institute of Environmental Engineering and Management at the Witten/ Herdecke University

Prof. Dr. mult. Karl-Ulrich Rudolph mail@uni-wh-ieem.de  
M.Sc. Judith Zimmer judith.zimmer@uni-wh-ieem.de  
Dr. Ngo Nghia Pham nghia.pham@uni-wh-ieem.de  
Prof. Dr. Dr. W. Genthe wolfgang.genthe@uni-wh-ieem.de  
Mr. Nguyen Van Long vanlong.nguyen@uni-wh-ieem.de