



AKIZ – Integrated Waste Water Concept for Industrial Zones as Shown for an Industrial Zone in Vietnam

Integrated Water Resources Management: From Research to Implementation – IWRM

Due to the rapid economic development over the past two decades, there are now more than 200 registered industrial zones in Vietnam. The number will continue to increase in the years to come. Most of the industrial zones have no, or only inadequate, waste water infrastructures. This leads to considerable environmental pollution and risks to public health. The purpose of the AKIZ project is the development of an integrated management concept ensuring sustainable operation of waste water systems in industrial zones in Vietnam. In addition to technical aspects, such as decentralized and centralized waste water treatment, the scheme also includes economic issues.

Approximately 40 % of all industrial zones in Vietnam have no adequate waste water systems. Where central waste water infrastructures exist, significant shortcomings in their operation and management can be observed. Functioning and sustainable operation of the waste water systems in industrial zones in Vietnam often is not ensured.

This means that waste water from industrial zones in Vietnam continues to pollute significantly the surrounding water bodies which, in many cases, are used as drinking water resources. Besides polluting the environment, this also presents an immediate health risk to people.

Development of an integrated management concept ...

In the AKIZ project, German and Vietnamese universities and industrial partners cooperate on various aspects of a comprehensive management concept as shown here for the Tra Noc Industrial Zone in Can Tho. The purpose of the work is to investigate and develop technical ap-

proaches to the treatment of various types of industrial waste water, on the one hand, and to develop economic approaches to sustainable management of waste water systems, on the other hand. The concept includes the operation of decentralized waste water treatment plants, located on the sites of industrial enterprises, as well as of a centralized waste water treatment plant currently under construction. The concept ranges from metrological monitoring to cost accounting and financing.

... for sustainable waste water disposal ...

Specific technical solutions for decentralized pre-treatment of industrial waste water are tested and implemented in pilot plants directly on site at the industrial enterprise. This includes concepts for removal of toxic substances, for energy generation, and for recovery of valuable materials. The relevant technologies are established and employed in industrialized countries, but must be adapted to the specific conditions and the



Operation of a pilot plant with membrane technology for the treatment of process waste water of an industrial operation in Vietnam.

tropical climate in Vietnam and other emerging countries. The necessary investigations are carried out on pilot plants built by the German industrial partners and located at companies' sites in the Tra Noc Industrial Zone. The industries involved include pesticide processing, fish processing, brewery, and life science. Furthermore, a treatment concept is worked out for the disposal and recycling of sewage sludge produced in both centralized and decentralized waste water treatment plants. The development of a sustainable solution for waste water disposal in industrial zones is based on studies of the problem of applying environmental standards in Vietnam and on research into sustainable financing of waste water infrastructure operation by waste water tariffs.

... in Vietnam and other emerging countries

The results of the project will be published in guidelines on the development of integrated waste water concepts and funding concepts. These will be provided to decision makers in both Germany and Vietnam. At the same time, these guidelines should advance waste water management in industrial zones located in other developing countries under tropical conditions similar to those in Vietnam.

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Integrated Water Resources Management:
From Research to Implementation – IWRM

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