

A JOINT PROJECT BY

p2mberlin GmbH are the consulting engineers of the Berlin Water group, combining engineering and design know-how with 160 years of practical knowledge in water supply and wastewater disposal.

Kleine Solutions GmbH offers holistic and economic optimisation of wastewater treatment plants and sludge dewatering, specialised in software-based automated operating systems for highest efficiency in process and energy management.

Technische Universität Berlin (TUB) focuses on environmental process engineering and acts as project coordination and content management. Through its "Campus El Gouna" in Egypt, it provides reliable and cost-efficient local analyses.

The Holding Company for Water and Wastewater (HCWW) is in charge of treatment, desalination and distribution of drinking water and collection, treatment and safe disposal wastewater in Egypt. **The GIZ Water and Wastewater Management Programme** is cooperating in Egypt with the HCWW in the fields of water supply and sanitation.

German Water Partnership e.V. is the only network in the German water sector with an international focus and unites around 350 companies, trade associations and institutions from business, science and research.

p2mberlin

KLEINE
Die Klärwerksoptimierer

**Technische
Universität
Berlin**

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**Holding Company
for Water & Waste Water**

**German Water
Partnership**

CONTACT

Dr.-Ing. Johannes Wellmann
Research Assistant
Technische Universität Berlin
Institute of Environmental Technology
Environmental Process Engineering
+49 30 314 28633
johannes.wellmann@tu-berlin.de

Imprint: German Water Partnership e.V.
Reinhardtstraße 32, 10117 Berlin, Germany
+49 30 300199-1200
pr@germanwaterpartnership.de
www.germanwaterpartnership.de

Cover picture: TU Berlin
Design: www.corporate-new.de

This project will contribute significantly to reaching the following UN Sustainable Development Goals (SDGs):



PROJECT ATLANTIS

Turning Egypt's sewage treatment plants into a resource for water, energy and nutrients in arid zones

Supported by:

 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety



based on a decision of the German Bundestag

OPTIMISING EGYPT'S WASTEWATER TREATMENT PLANTS

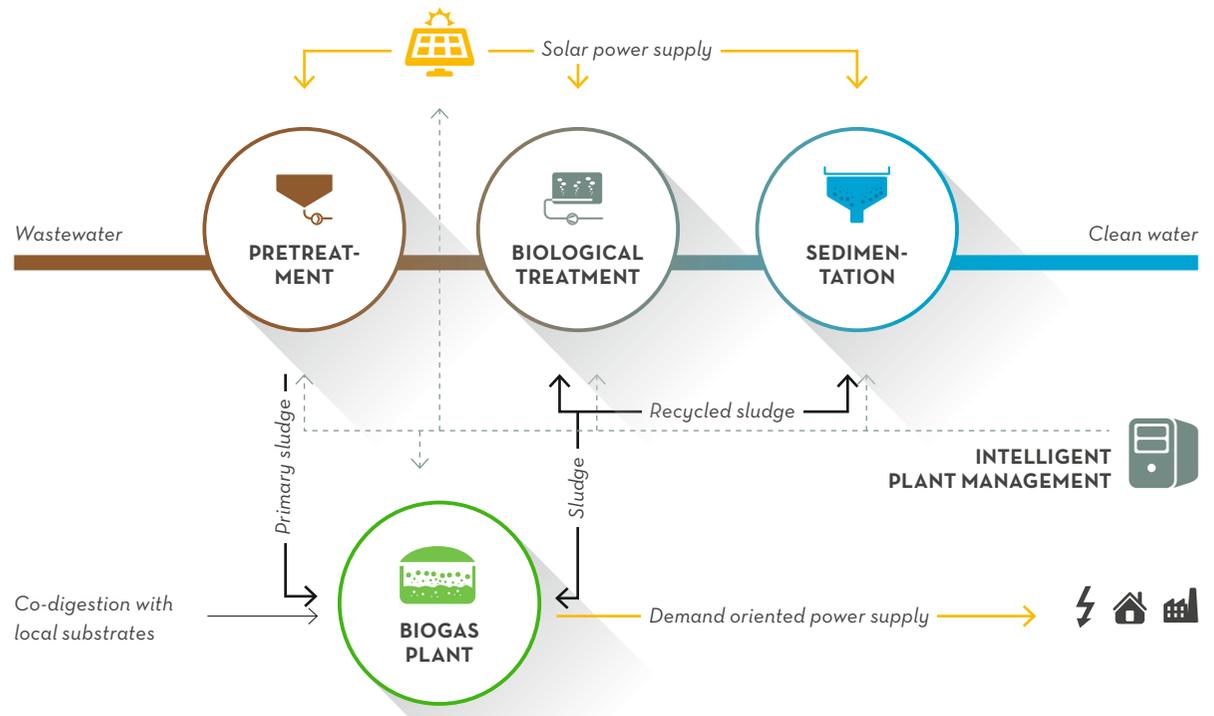
The growth of Egypt's population and the increasing water consumption lead to a higher energy demand for water supply and disposal. The energy costs are a central cost factor in wastewater treatment. Due to decreasing subsidies, they are expected to rise in the near future.

Inefficient technologies and processes at existing wastewater treatment plants also cause rising CO₂ emissions. Furthermore, the availability of ground and surface water will decrease. The same is expected for nutrients like nitrogen and phosphorus for agricultural fertilisers.

If the current situation does not change, the availability of water, energy and nutrients will deteriorate. By means of a feasibility study, the project ATLANTIS aims at creating the groundwork for sustainable and energy-efficient optimisation of Egypt's more than 458 wastewater treatment plants.

Capacity development for wastewater treatment in Egypt until 2037 (capacity in million m³/day).

Source: Presentation by Dr. Ahmed Moawad, Vice Chairman, HCWW; status February 2019



OUR OBJECTIVE

The project focuses on the preparation of a feasibility study for the conversion of two existing plants to a resource for water, energy and nutrients or a specific plant design and for a new construction. For this purpose, the concepts are examined in detail and practice-oriented, necessary measures are derived in cooperation with local stakeholders and staff is trained for sustainable operation in workshops.

The feasibility study is to be carried out for two selected wastewater treatment plants in Egypt, which are selected as examples for comparable plants on the basis of a catalogue of requirements. The study is based on the results from the completed project ENOSIS, which was funded by the German export initiative for environmental technologies.

INTENDED IMPROVEMENTS

1. Lowered energy demand of the treatment process through energetic optimisation of the oxygen supply by adaption of the necessary aeration tank volume and the treatment process
2. Biogas production from sewage sludge covering the major part of the energy demand.
3. Cost savings due to highest process efficiency through automated operating process and resulting reduced energy demand and sludge disposal expenses.
4. Integration of renewable energy sources like solar photovoltaic power to generate electricity for the plant supply onsite.
5. Conversion of wastewater treatment plants into net electricity suppliers.
6. Nutrients recovery of Nitrogen and Phosphorus from treated wastewater effluent for irrigation and fertilisation
7. Integration of automated measurement and control technology for optimised plant management