WATER MANAGEMENT IN LIMA (Peru)

PROJECT IN BRIEF

Facts on Lima (Peru):
Population: 9.7 Mio (2012)
Population Growth Rate (2010-2015): 1.55 %
Level of urbanisation 2010 (Peru): 76 %
Human Development Index (Peru Rank): 81

CONTEXT

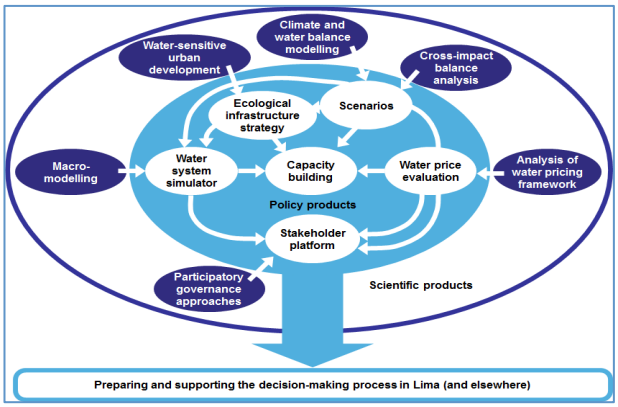
Lima, a desert city (9 mm annual precipitation), has a population of approximately 9,7 million and is growing at an annual rate of about 2%, largely due to the influx of poorer people from the provinces. This development puts additional pressure on informal settlements, which lack an appropriate supply of electricity, water, and sanitation. Consequently, the polarisation between rich and poor districts is increasing.

Water supply is mainly sourced from the Rímac River, which has an irregular flow due to the arid climate and due to significant seasonal rainfall variations in the Andean mountains. Furthermore, river flows from the Amazon catchment area are diverted in order to contribute to Lima's water supply while groundwater resources remain limited. The scarcity of water resources will further aggravate the situation, as Peru is the third-most sensitive country to impacts of climate change on precipitation and water availability. This is likely to intensify even more in the future due to the El Niño phenomenon.

At present, the water supply network covers 80,6 % of the population of Lima, whilst about 77 % of the population are connected to the public sewer network. At present, only about 17 % of wastewater receives some form of treatment. New plants are under construction; however they will only offer a limited degree of wastewater treatment. The major quantity of wastewater is simply discharged into the rivers or directly into the Pacific Ocean. Furthermore, the potential for water reuse has not yet been fully exploited. The water sector strongly interconnects with the energy system, not only in the inherent need for energy for water and wastewater pumping and treatment, but even more so for the joint use of reservoirs for water supply and for energy production.

OBJECTIVES

The Lima Water Project (LiWa) aims to improve sustainable planning and management of the water and sanitation system in Lima through informed decision- making and stakeholder participation. The project draws particular attention to the impacts of climate change and to the promotion of energy efficiency in water and sanitation systems. More specifically, the project intends to develop adequate and locally beneficial solutions for different problems and contexts that contribute to an overall favourable water management concept.



Overview of the LiWa project methodology and its products

APPROACH

The LiWa project focuses specifically on the development and application of fundamental procedures and tools for participatory decision-making, based on informed discussions. The project builds upon modelling and simulation of the entire water supply and sanitation system within the megacity system of Lima. Furthermore, the project integrates findings from global circulation models, regionalised to Peruvian river catchments. The project also develops and evaluates options for reorganising the water tariff system in order to meet economic, ecological, and social requirements. Additionally, urban planning aspects are considered by developing the ecological infrastructure strategy, which is based on the concepts of water-sensitive urban design. With this holistic project approach, key issues and challenges of energy and climate-efficient structures of water and wastewater management can be adequately addressed.

Hence, the following work packages are being addressed:

1. Integrated scenario development
2. Downscaling of climate models and water-balance modelling
3. Macro-modelling and simulation system
4. Participation and governance approach
5. Education and capacity-building
6. Economic evaluation of water-pricing options
7. Integrated urban planning strategies and planning support

SOLUTIONS

- Simulator for macro-modelling of the urban water system for informed decision-making
- Simulation of Lima's future development, taking into account climate change effects on the water system for long-term planning
- Round table discussions as new forms of governance in the water sector
- Water-pricing options and improvement of tariff structure
- Integrated urban planning strategies and planning support
- E-Academy for education and capacity-building

CONTACT

Project: LiWa - Energy sustainable water and waste water management in urban growth centres coping with climate change - concepts for Metropolitan Lima, Peru
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