

IWAS - Latin America (Brazil)



Lago Paranoá, DF / Brasília

Project Area

Brasília is located at the *Planalto Central*, in the interior of Brazil, the so called *Centro Oeste* region. It is situated on the watershed of three of Brazil's main catchments, Tocantins-Araguaia, São Francisco and Paraná. The elevation varies between 1000 and 1200 meters asl. Climatic conditions are semi-humid and typical for the outer tropics with pronounced dry and rainy seasons. The annual precipitation varies between 1500 and 1700 mm.

Natural vegetation is composed mainly of different types of cerrado (savannah) and by gallery forest along rivers. With only a few exceptions (e.g. *Parque Nacional de Brasília*) natural vegetation has been changed substantially by anthropogenic influence. Cropland with varying size and intensity of cultivation is the main land use, beside urban areas.

Brasília was planned to become the new capital of the country, and was founded in 1960. Brasília was projected and built for an estimative of 500,000 inhabitants. The city itself has the shape of an airplane (the so called *Plano Piloto*), and was conceived by the urbanist Lúcio Costa and the architect Oscar Niemeyer. The Federal District today aggregates 29 urban settlements and administrative regions. Today, Brasília and its surrounding urban areas count more than 2.5 million residents, and it is Brazil's fourth biggest city.

Water that attends the city's supply comes mainly from reservoirs. Brasília has two main water

supply systems, the Torto/Santa Maria and Descoberto systems, which supply 81 % of the water, produced by Caesb. The remaining 19 % come from smaller catchments, from which less than 5 % are gained from groundwater.

Objectives and Contents

As a consequence of accelerated non-planned urbanisation and changes in land use (e.g. intensification of agriculture), there is a strong impact on water resources. Predictions by the local water supplier (Caesb) are that as soon as in 2010 water demand will exceed the systems capability of supply.

Facing the urgency to take action that will guarantee the water supply of Brazil's capital, IWAS Água DF's main objective is to develop an Integrated Water Resources Management System. The system has to cover natural boundary conditions (climate, hydrological cycle, land use among others), the water supply systems (drinking and sewage water treatment and distribution system) and management. In order to achieve this goal, the project is subdivided into eleven working and task groups as follows:

1. Climate Change
2. Land Consumption and Land Use
3. Hydrological Cycle
4. Sediment Formation, Transport and Sedimentation, including Sediment-Water Interactions
5. Water Quality
6. Drinking Water Treatment
7. Urban Drainage and Wastewater Treatment
8. Drinking Water Distribution System Modelling
9. Data Base and GIS
10. Sustainable Utility Management
11. Decision Support System – Integrated Water Resources Management

Workshops

Three workshops have been held between the partners of the IWAS Água DF consortium so far. The initial workshop took place in Leipzig in July 2008, with the attendance of a Brazilian delegation. This initial meeting resulted in the signature of a letter of intent between the counterparts. The second workshop took place in Brasília in Sep-

tember 2008. The German delegation gained deeper insights about the situation of water supply in Brasília and the existing infrastructure. The workshop resulted in a detailed project outline, with the setting up of working and task groups. The third workshop took place in Brasília in March 2009 together with the Kick-Off event of the IWAS Água DF project. The German delegation was composed of coordinators of each working group. The intention of the workshop was to establish the research lines, contents, and activities for the working groups.

Kick-Off Meeting

In March 2009, the Kick-Off meeting of IWAS Água DF was held in Brasília, in the form of a ceremony, with the signature of Cooperation Agreements between the institutions involved in the project. Attending the event, among project co-workers and researchers, was the project coordination of German and Brazilian sides, Governmental and representatives of local authorities, and the BMBF.



Field Activities

In two field campaigns, as part of the studies about the hydrological cycle, geophysical investigations were conducted by geoelectrical methods (electrical resistivity measurements) in order to evaluate aquifer vulnerability and the impact that leachate plumes originating from a landfill have on groundwater and potential recharge areas.



Partners

IWAS Água DF is coordinated on the German side by the Helmholtz Centre for Environmental Research – UFZ and the TU Dresden, in partnership with the University of Brasília and Caesb (The Water Supplier and Sanitation Company of the Federal District) on the Brazilian side. Other German partners are the Karlsruhe Institute of Technology, the UniBW München and Sachsenwasser. Other Brazilian partners are INMET (The National Institute for Meteorology), Embrapa (Brazilian Agency for Agricultural Research) and Novacap (Company responsible for the capital's urbanisation).

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