FEATURE

The University of Campinas will have a Water Research Center

The scarcity of drinking water is a problem that affects everyone across the world. Despite having 12% of the total fresh water available on the planet, which, according to the Food and Agriculture Organization of the United Nations (FAO), is the largest reserve of fresh water in the world, Brazil already feels the impact of the pollution of rivers and the unrestrained consumption of treated water.

Data from the United Nations (UN) indicate that more than 2.7 billion people are expected to suffer from water shortages in 2025 if the planet's consumption continues at the current levels. The data are even more frightening when we analyze the current situation, where about 2.2 billion people worldwide do not have safe managed water services, according to a report by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) 2019.

According to a report in 2019 by the World Health Organization and UNICEF, about 2.2 billion people in the world do not have safe managed water services. Image: *Divulgação*

In order to develop advanced research to deal with the needs related to water quality, sewage treatment, and water security in general, the city of Campinas (State of São Paulo, Brazil) will create an inaugural research center as a result of a partnership between the Campinas Water Supply and Sanitation Society (Sanasa), São Paulo Research Foundation (Fapesp) and the University of Campinas (Unicamp). This research center, whose name is the Brazilian Water Research Center (BWRC), will be implemented on the Unicamp campus, close to the Science and Technology Park, in an area of 5,000 square meters, with investments in the order of R$ 130 million.

In addition to the advanced lines of research that will be developed at the BWRC, some technical aspects, such as losses in water distribution and telemetry, and diversified themes such as formal and informal education, the development of technological products, and the formal regulation of the area, will also play a role in the activities of this research center, as a social commitment to provide benefits to consumers and the environment.

Lauro Tatsuo Kubota, Full Professor at the Institute of Chemistry at Unicamp and coordinator of the BWRC, points out: "With a focus on changing the culture of populations and disseminating the idea that water is a finite consumption good, as a commodity that, despite being essential for the maintenance of life, it is moving towards having a value regulated by the circumstances of availability, that is, of the supply/demand relationship. Therefore, the BWRC will act to change culture, education and public policies locally and in underdeveloped or developing countries".

Aerial view of the Unicamp campus in Campinas (SP, Brazil). Photo: *Reprodução*/EPTV

Partnership Sanasa–Unicamp

The Campinas region is considered one of the most populous in the state of São Paulo and is already very concerned with water supplies. “The city of Campinas could be one of the pioneers in Brazil to obtain the benefits of holistic management of water resources, fostered by the new technologies and culture that will be developed by the BWRC” explained Adriana V. Isenburg, Demand Coordinator for Sanasa and BWRC Technical Support.

Arly de Lara Romêo, president of Sanasa, has a special interest in water desalination processes, which, according to him, are the future of public treated water supplies, making cities independent of rivers as a source of water for the population. “The BWRC will discuss and develop research on major topics, such as desalination, telemetry, development of cheaper filter membranes, to extend the results to the whole country, “said Romêo.

Still according to Romêo, another line of research will be the replacement of chlorine by ozone in the treatment of water. Chlorine and other chemicals decrease the levels of pollutants in the water of treatment plants, swimming pools and fish farming tanks. Ozone is also used in the treatment of water and, because of its oxidizing action, it is able to disinfect water in a shorter time of contact with the infective agents, therefore, providing a faster treatment than other disinfectants.

The partnership between Unicamp and Sanasa in the area of Research, Development and Innovation has been established for a long time, which demonstrates the company’s concern regarding the use of innovative and more efficient technologies in the treatment of water and sewage, in addition to new analytical methods for proving the quality of water supplied to the population.

According to Dr. Cassiana Montagner, Professor at the Chemistry Institute at Unicamp and Coordinator of research lines at BWRC, Sanasa’s role in this triple partnership “Sanasa-Unicamp-Fapesp” is to stimulate the generation of more efficient and sustainable water treatment and distribution technologies, and assimilate improved analytical techniques that guarantee quality. Regarding the treatment of effluents, the company is interested in technological innovation that contributes to the recovery of water resources. In addition, Sanasa invests in training specialized professionals, at both the undergraduate and postgraduate levels, ready to work in the water supply and basic sanitation market, and in the training of citizens who exercise conscious use of water. To this end, the company has developed educational programs in elementary schools and media awareness campaigns, in addition to maintaining two museums in Campinas, an old

museum in “Torre do Castelo” with objects related to water distribution, and a new “Museu da Água” in the “Centro de Conhecimento da Água”, which presents water as an element that guarantees life and environmental balance on the planet.

Campinas Water Supply and Sanitation Society, Sanasa.

Results and Deadlines

According to Prof. Kubota, there are already institutional commitments between Fapesp-Unicamp-Sanasa that will be evaluated annually. However, as the BWRC brings together several researchers who already have research in progress in the area, the expectation is that the first results may appear soon.

The BWRC project involves different units at Unicamp; as Kubota explained: “There is no way to precisely define the role of each Unicamp unit in the project because our themes are multi and interdisciplinary. Our competencies will be added to those of other partners in Brazil and abroad, to carry out priority researches strategically defined by the BWRC management committee. Our focus will be on the development of scientific and technological solutions and on the innovative ways of implementing these solutions. Even the promotion of new municipal, state and national public policies will be contemplated. The training of human resources with a multi and interdisciplinary perspective will also be one of the great motivations for the actions of the BWRC, which aims to train specialists focused on problem solutions”.

In addition to the Institute of Chemistry, the BWRC involves the Campinas Agronomic Institute, the Environmental Company of São Paulo State (CETESB) and the following Unicamp units: Institute of Biology, Institute of Education, Institute of Geosciences, Institute of Computing, Faculty of Electrical and Computer Engineering, Faculty of Mechanical Engineering, Faculty of Chemical Engineering, Faculty of Technology, Faculty of Civil Engineering, Architecture and Urbanism, Faculty of Agricultural Engineering, Pluridisciplinary Center for Chemical, Biological and Agricultural Research, and the Meteorological and Climate Research Center Applied to Agriculture.

“We believe that, together, it will be possible to innovate both in the way of doing science and in the way of training professionals, as we will have a partnership with experienced and very well trained specialists from Sanasa who will participate in the research with a pragmatic look, so that the innovations generated have short-term applicability and economic viability” concluded Prof. Kubota.