

Research

Ideas against water shortages

Young scientists from various countries are developing concepts for a sustainable future perspective.



This is how idyllic it can look on the river in the Latin American city of León. Picture: See Urban Water

Water shortage, climate change, microplastic - in order to develop solution strategies for such complex ecological problems, it is helpful if researchers from different disciplines work together with practitioners, social actors and citizens. Almost 30 young scientists from more than ten countries exchanged views on such transdisciplinary approaches during the international Summer School of the Frankfurt Institute for Social-Ecological Research (ISOE). More than 80 applicants wanted to attend the six-day event "Brilliant Minds for Social-Ecological Transformations", which is financed by the Volkswagen Foundation.

Various working groups are meeting this morning at the "Forschungskolleg Humanwissenschaften" in Bad Homburg to define the problem. Bertha Hernández Aguilar comes from Mexico City and describes the catastrophic water shortage in about 870 informal settlements which, unlike other residential areas, have no water connection. "There are problems because the city water truck doesn't come every week," reports the scientist. The 300 families that Bertha Hernández Aguilar looks after in her project in the south of the megacity often have to buy water for a lot of money. "I'm looking for a collective alternative that costs the state and the poor families as little as possible."

The Institute

For 25 years, the Institute for Social-Ecological Research (ISOE) based in Frankfurt has been conducting independent sustainability research. 36 scientists are conducting research there on the topics of water, energy, climate protection, mobility, urban spaces, biodiversity and transdisciplinary concepts and methods.

The institute also offers courses at Goethe University in Frankfurt and Leuphana University Lüneburg.

Shailendra Mandal from India is also familiar with the problem: he comes from Patna, a two-million metropolis in north-eastern India that, like many of the country's cities, is struggling with water shortages. "More than 90 percent of the water used to supply the cities in India is groundwater. Mandal was able to show that the decline of the groundwater level in Patna is further exacerbated by climate change. "Between 1979 and 2015, the average temperature in Patna rose by two degrees. It takes centuries for the groundwater level to return to its previous level," warns the researcher.

His task is now to develop a solution together with various experts and stakeholders. "A climate researcher and a hydrologist are involved from the scientific side, as well as a city planner who designs future scenarios, an urban expert who regulates water distribution and the city administration.

José Chapa from Ecuador is also confronted with various social groups in his project. His research group at the TU Darmstadt is currently investigating water pollution in León, a provincial capital in western Nicaragua. "Water from upstream residents is heavily polluted, causing problems downstream in informal settlements that require water for agriculture and household purposes." Only if we succeed in combining the two can we find an alternative solution," says Chapa.

Lisa Zimmermann from Frankfurt's Goethe University is investigating whether plastic is an ecological problem in the water cycle and which actors are involved. "In social perception, plastic is increasingly perceived as problematic, but from a scientific point of view we need to investigate the effects on the environment more closely. For example, it is possible, but not yet proven, that microplastic enters the bloodstream of marine organisms." When it comes to avoiding plastic waste, it must also be looked closely to see whether alternative materials are actually more environmentally friendly.



The downside: The same river in Nicaragua is so heavily polluted elsewhere. Picture: See Urban Water

"It is often a challenge to present the scientific research results in a language that is also understood by the actors in practice," reports geographer Robert Lütke-meier, one of the organizers of the Summer School. Even at his institute it is not always easy to talk to a physicist or an engineer about technical questions.

"But exactly this transdisciplinary approach is a core element of our work at the Institute." The Institute for Social-Ecological Research has been conducting independent sustainability research for 25 years now. This brings together a great deal of know-how on how to develop practical solutions for politics, civil society and business.

In addition, the individual actors in the projects often pursue different interests. This must also be taken into account, says Lütke-meier. "While scientists aim to publish a paper in a journal, practitioners want concrete instructions for action."

Original text:

<http://www.fr.de/wissen/forschung-ideen-gegen-den-wassermangel-a-1557358.0#artpater-1557358-1>