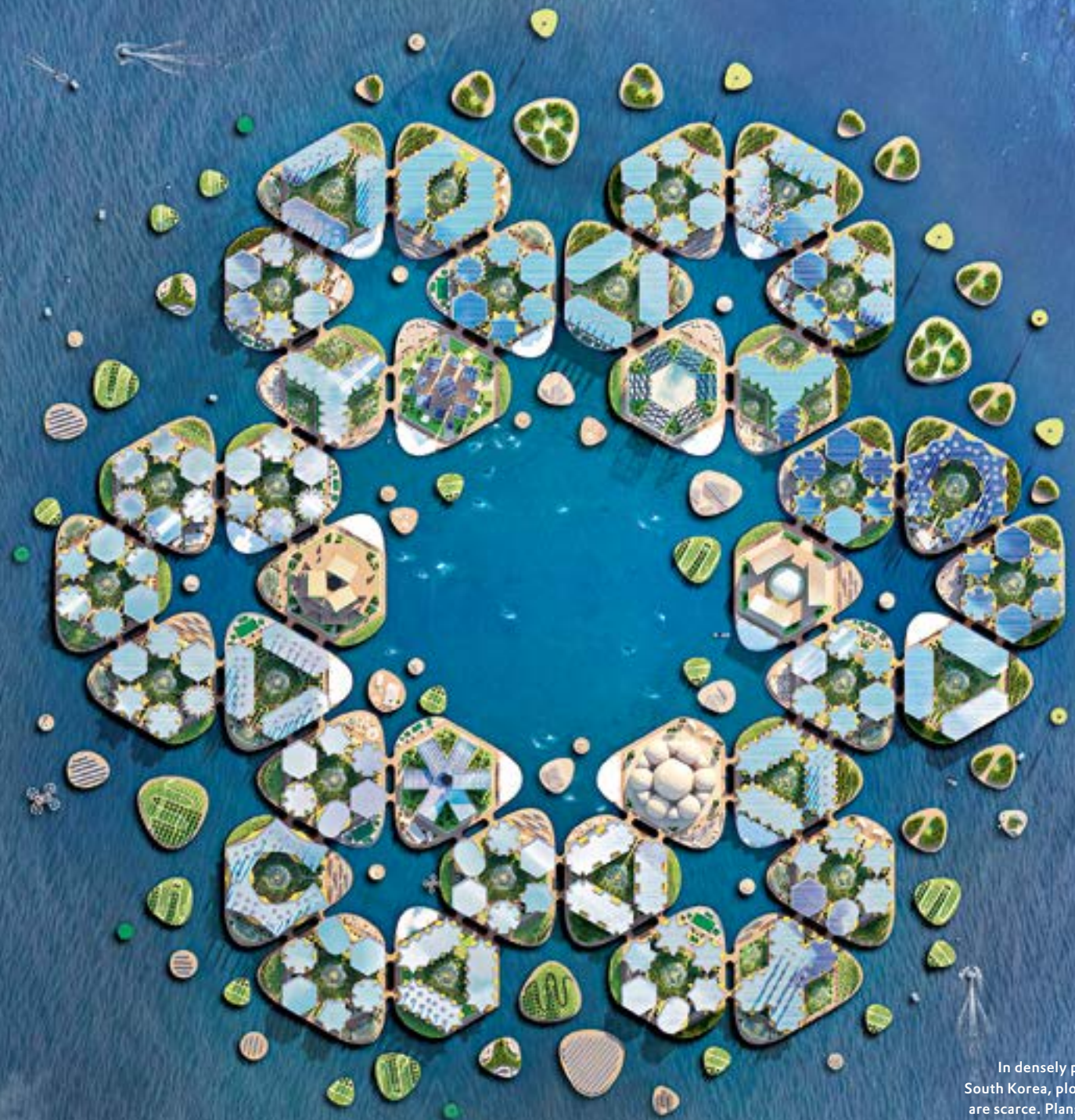


OCEAN TREASURE

TEXT BJÖRN THEIS



In densely populated South Korea, plots of land are scarce. Plans are now afoot to build a floating city for 12,000 inhabitants offshore from the port metropolis Busan

Water is the wellspring of innovation. But progress often results in additional consumption. “Soft innovations” demonstrate that this precious resource can also be used responsibly

Our history is a history of water. Many cultures have developed along the earth’s major rivers. Thanks to waterways such as the Euphrates and the Tigris in Mesopotamia, the Nile in Egypt, and the Yellow River in China, these “hydraulic cultures” had a surplus of drinking water and food. The water economy gave rise to countless innovations. Agriculture and the construction of dikes, ships, and locks were optimized, and chemistry, hygiene, physics, and mathematics also reaped the benefits.

Thousands of years later, industrialization launched an era during which the innovative power of mankind grew by leaps and bounds. Simultaneously, water consumption increased. According to estimates, the volume of water that is used worldwide could increase tenfold between 1900 and 2025. It seems clear that innovation uses (up) water.

THE SOFT PATH

This could change in the future. For a long time, the human race depended on “hard” water-related innovations such as canal systems, reservoirs, and seawater desalination plants to satisfy its increasing need for water. However, today more and more universities and startups are choosing a “soft” innovation path and placing their bets on developments aimed at using water responsibly. An innovative rediscovery of water is in full swing.

One example of such a transformation comes from California. This is where the project development firm Solar Aquagrid is

now working to optimize the most important components of the “hard” water infrastructure. Together with the state government, the project developers are planning to cover California’s 6,000-kilometer-long open canal system with a roof consisting of solar modules. This would reduce evaporation and make about 13 gigawatts of solar power available year after year. That would be enough to supply 9.8 million of California’s 13 million households with power. Under the name Project Nexus, the construction of an initial test stretch has already begun.

By contrast, the Oceanix firm would like to open up new habitats for human beings. Together with the United Nations, Massachusetts Institute of Technology, and the Bjarke Ingels Group architecture firm, Oceanix is working on a project for building floating cities. The construction of the first prototype will begin this year under the name Oceanix Busan. This first floating city is being built off the coast of Korea. Plans call for it to offer a climate-positive home for about 12,000 people on an area of six hectares.

DRINKING WATER FROM VAPOR

Meanwhile, researchers at the University of Illinois Urbana-Champaign are aiming to use the natural water cycle and transform the water vapor from the surface of the oceans into drinking water. In contrast to existing desalination plants, this system would need hardly any energy to vaporize the water. As a result, it’s considerably more cost-effective. In a study, the team investigated a total of 14 cities including Abu Dhabi, Barcelona, and Los Angeles and came to the conclusion that between 38 and 78 billion liters of drinking water could be extracted annually per plant, depending on local conditions [BL1].

In December 2022, Ruhr University Bochum presented a brand-new use for water. Researchers at the university had developed a water-based computer switch that is an entire order of magnitude faster than semiconductors. The scientists succeeded in doing this by dissolving sodium iodide in water, then spraying the solution as a flat jet a few micrometers thick, and bombarding it with a laser. They were able to demonstrate that the very short laser pulse releases electrons from the iodide ions, making the water electrically conductive so that it can thus act as a switch.

These examples show that even in the 21st century, water still offers a veritable ocean of innovation opportunities. That’s a good reason for the Creavis Foresight team to pay particular attention to the topic of water-related innovations as part of the new Foresight focus theme GameChanger 2040. —



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