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Arab Water World
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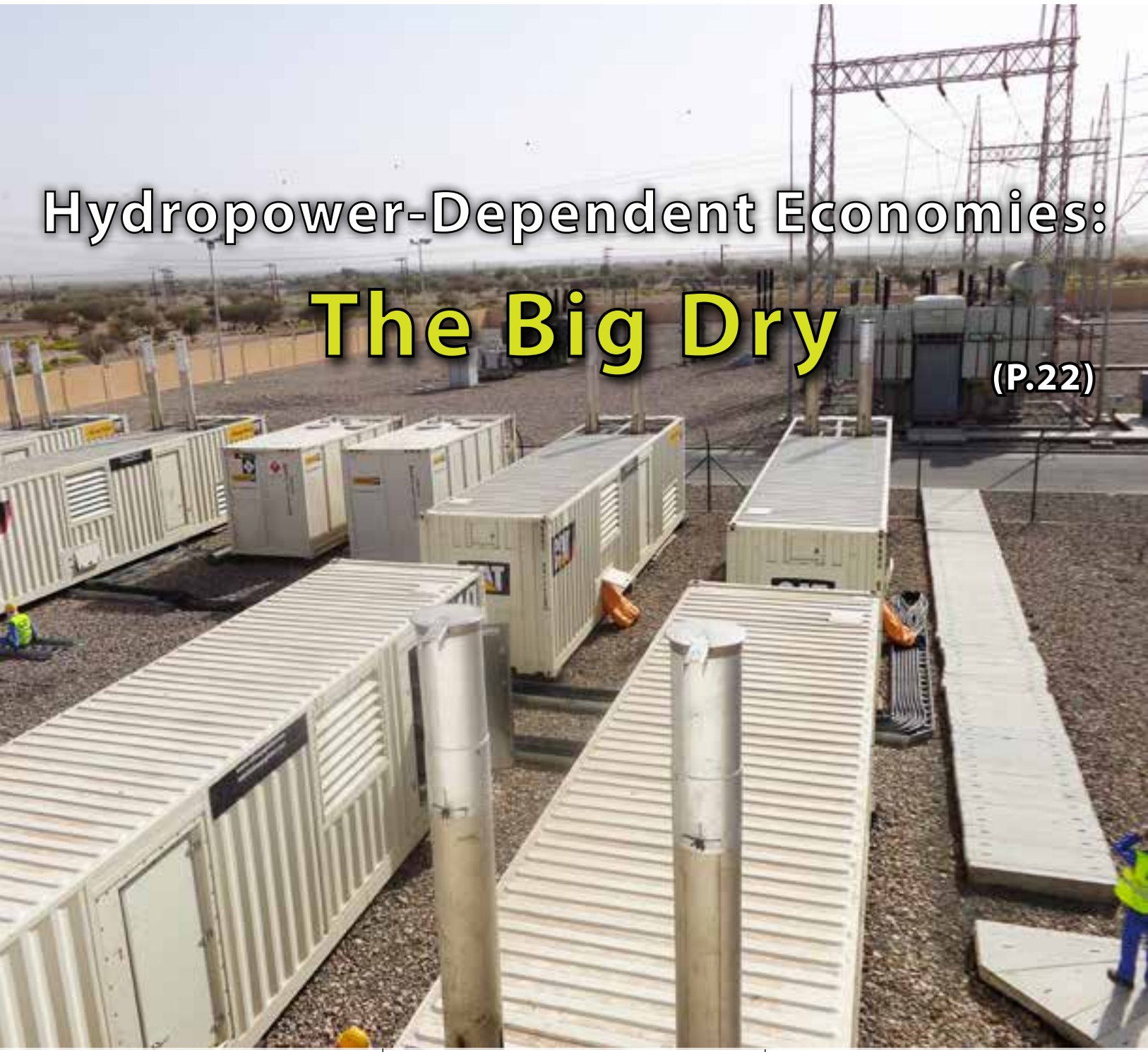

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Warka Water Tower:
A Revolutionary Invention

Ethiopia suffers from lack of potable water as the villagers live in a beautiful natural environment but often without running water, electricity, a toilet or a shower. To survive there, women and children walk every day for miles towards shallow and unprotected ponds, where the water is often contaminated with human and animal waste, parasites, and diseases. They collect the water using dry carved pumpkins and carry the water back in old plastic containers (20-liters), which are extremely heavy. For these people and more, motivation constituted to dedicate skills in creating the Warka Water project: An environmentally, socially and financially sustainable solution to clean water.

Water poverty

Water is the source of life. The quality and availability of water are fundamental to humankind. Living in modern developed societies, majority may take clean water for granted. However, clean water sources are rapidly disappearing because of growing populations, deforestation, climate change and desertification. Furthermore, it is critical to ensure the availability of safe water sources for future generations, especially for those in rural areas who lack the simple water infrastructure to fulfill basic needs.

Ethiopia is endowed with abundant water and land resources and showcases a wide range of altitudinal and climatic variation. This diversity in agroecology enables the country to produce numerous kinds of crops and livestock. Nevertheless, the country has limited water supply systems and road infrastructure in place. The country has suffered from recurring droughts that caused food shortages in the last 20 years. During these periods of famine, water-borne diseases are violent. Countless young lives have been lost due to diarrhea and water-borne diseases; many still suffer from scabies and eye infections, which can be alleviated by being able to bathe regularly. In consequence, various international organizations have worked hard to solve the water issue. They have invested funds to build wells in these communities. However, maintaining them has been a challenge, as local governments cannot always keep them in function or successfully repair damages.

Water tower at the Holy Spirit University of Kaslik, Lebanon

Warka Water: collecting water out of thin air

The Warka Water tower is made with environmentally sustainable and biodegradable materials, many of those can be sourced locally. It is a vertical structure with a special fabric hanging from its interior that collects potable water from the air. The outer shell made of junco or bamboo provides structural support and holds up the hanging mesh. Comprised of local materials, built and easily looked after by villagers themselves, it is inexpensive to produce and maintain. With the tower, water can be collected directly and locally from the environment without wasting energy in transport. The harvested water can be used as drinking water and stored eventually for other purposes like irrigation. It is estimated to collect, on annual base, an average of 50 up to 100 liters of drinking water a day. Furthermore, the Warka Water is designed for multiple harvesting methods such as dew, fog and rain collection, providing varying amounts of potable water throughout the year. Beyond solving water needs, the inventors hope to invigorate the local economy through manufacturing initiatives and give children opportunities to invest their time in education and other productive activities. The project is believed to be a stepping stone that empowers communities to build greater independence.

"The Warka Water tower is made with environmentally sustainable and biodegradable materials"

Inspiration and future outlook

From the aesthetic point of view, the inventors acquired methods from the Ethiopian traditional craftsmanship

and their basket weaving skills, as the structure is inspired by the beautiful Mediterranean fish taps. By observing nature, they studied the incredible example of a little insect, the Namib Beetle, and its way to obtain water from the sky. Moreover, their social vision is inspired by the Warka Tree, which combines many ecological and sociological facets of Ethiopia.

The project has been two years in the making while a few versions of the Warka Water have been built and showcased. The latest development, Warka Water 3.0, is still in the developmental phase, as various tests are being conducted both with physical prototypes and virtual simulations. Apart from collecting water out of thin air, it is meant to provide a shelter for public gathering space. Moreover, the inventors, focused on creating a beautiful structure that can blend into the natural and cultural environments of the rural Ethiopian communities, aim to build a test pilot tower in Ethiopia by the end of 2015. The 14m-tall structure weighing around 70 kg needs six people on the course of six days for construction and three hours for the final assembly. ■

Architecture and Vision' (AV) is an international and multidisciplinary team working in architecture and design, engaged in the development of innovative solutions and technology transfer between different fields from aerospace to terrestrial applications. Directed by the Italian architect Arturo Vittori athe office is based in Bomarzo (Viterbo, Italy).

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تعاني أثيوبيا من نقص هائل في المياه الصالحة للشرب إذ يعيش سكان القرية في بيئة طبيعية جميلة ولكن في معظم الأحيان يفتقرون إلى المياه أو الكهرباء أو دورة المياه أو الحمامات. ومن أجل البقاء على قيد الحياة، تسير النساء والأطفال كل يوم على الأقدام لأميال نحو البرك والمستنقعات الضحلة وغير المحمية حيث غالباً ما تكون المياه ملوّثة بالفضلات الحيوانية والنفايات البشرية والطفيليات والأمراض. يجمع الأطفال والنساء المياه بواسطة القرع الجاف المنحوت ويحملون من بعدها المياه في حاويات بلاستيكية قديمة ذات سعة ٢٠ ليتراً. يشكّل الحافز لهؤلاء الأشخاص وغيرهم الأساس من أجل تكريس مهاراتهم لإنشاء مشروع (Warka Water) وهو حل مستدام بيئي واجتماعي ومالي من أجل الحصول على المياه النظيفة. إن مشروع المياه هذا هو هيكل رأسي ذات نسيج خاص معلّق من باطنه يجمع مياه الشرب من الهواء.