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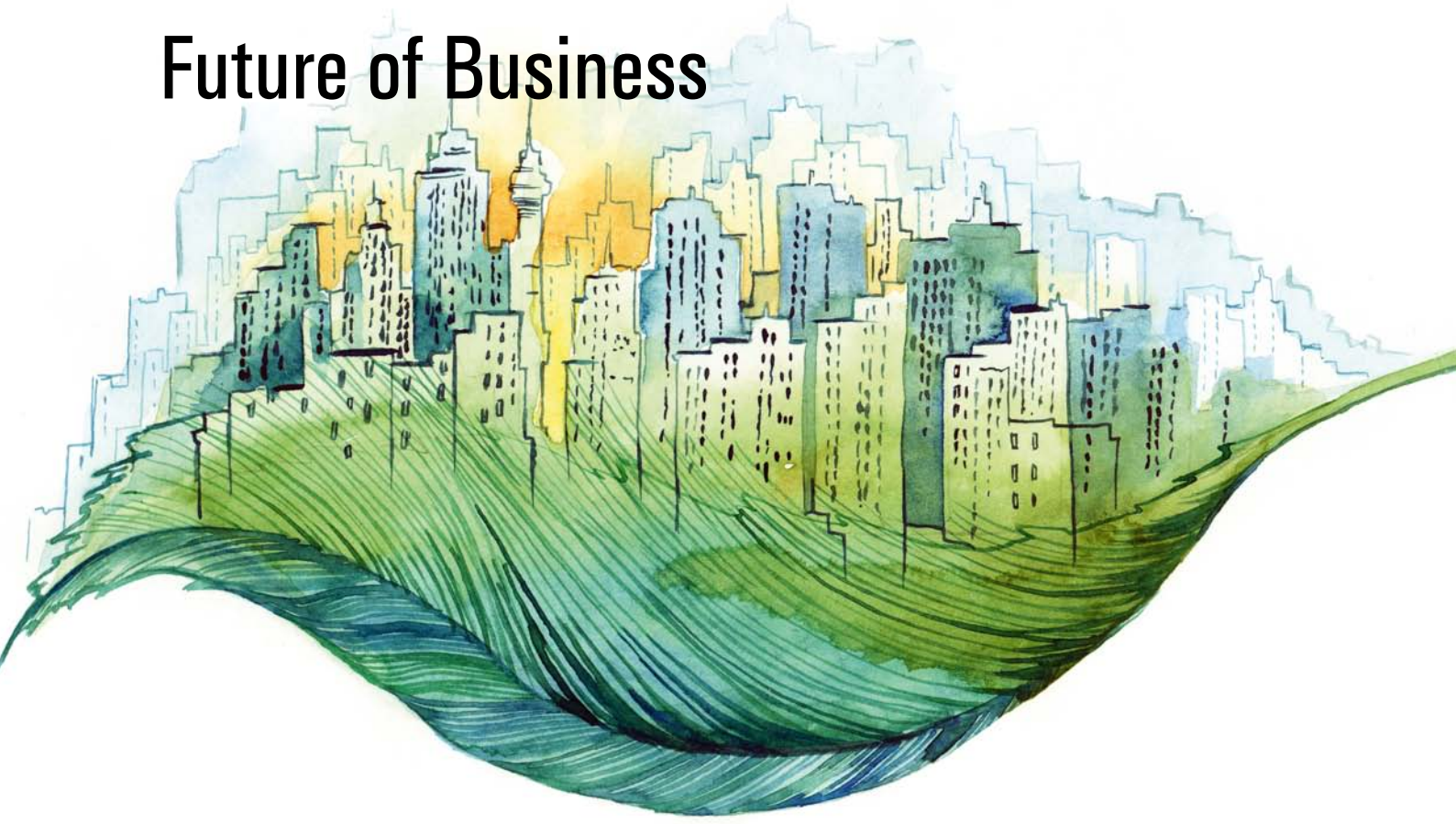

Business & Biodiversity • Economics of Ecosystems • Green Economy in Vogue
Worldwide Energy Revolution • Education • Water Treatment • Climate Change

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Sun Meets Water

Innovative water supply for remote developing regions

by Philipp Otter

A new system provides an impressive example of how renewable energies can be reliably utilized for the sake of mankind. In many developing regions, using solar energy has become a matter of fact simply because it is more cost efficient and comfortable than any alternative source, and is continuously pushing mankind towards exploiting a sustainable future energy supply.

One of the goals outlined in the publication of the UN Millenium Development Goals (MDG) in 2002 was to half the population without access to drinking water by 2015. At that time, 2 billion people suffered from lack of access to drinking water sources.

On World Water Day this March, the UN announced that this MDG had already been reached. Considering the ongoing population growth, this announcement should have satisfied the world community. However, critical consideration of the bare facts reveals a different view on the topic:
according to the WHO, there is access to drinking water as soon as a tap point is established in the proximity of any population. Nothing is said about its accessibility or the quality of the water. Often people have to walk several hundreds of meters to reach the tap point and there is no guarantee on the quality of the water. Furthermore, most of the progress was achieved in urban, densely populated areas. 84 % of the currently 800 million people without access to drinking water live in remote rural areas. This is where the challenge lies.

So called „low tech“ and „point of use“ technologies, like simple clay pot filters, work very well if operated correctly. However, such solutions very are often no longer accepted by the affected population. The gap between water supply systems in the developed world and the affected people in off-grid regions just seems to be too big. Simply to encourage acceptance, it is suggestible to implement technologies that elevate of the standards of living. Long distances and bad water quality are not justifiable anymore. This however requires technical solutions.

Technologies that are used in urban areas for disinfection such as reverse osmosis or ultraviolet light are, in principle, capable of delivering an excellent quality of drinking water. In off-grid regions, however, these technologies cannot be operated by locals nor can they be supplied sustainably with the energy they require. Here, even simple pumping systems are powered by diesel generators which waste

The greatest water related threats to human health are water-borne pathogens, such as vibrio cholera, spores or helminth eggs. Still today, even after achieving the MDG, 3.000 children die every day due to the consumption of contaminated water resources. The disinfection of drinking water is therefore most important for assuring safe water conditions.

CEO Alexander Goldmaier explains the function of SuMeWa|SYSTEM to hospital staff in Darsilami Gambia. This system has been operating for two years now, without the need of maintenance, and it has supplied the hospital and a training center with safe drinking water. Due to solar energy there are no operating costs.

90 % of their energy content through heat. Furthermore, the fuel needs to be transported across very long distances. For example, in remote regions of the Amazon, each liter of diesel made available requires two liters for its transportation. The communities do not have the necessary resources for this. Furthermore, the mentioned technologies require the addition of chlorine, for example, to allow for a water quality assurance after the treatment process. Questions like, where the disinfectant comes from, by whom and in which concentrations it is added remains unresolved.
Solar energy to supply treatment systems is a viable alternative. The transient nature of such energy sources, however, requires battery storage. Even optimally designed systems fail due to battery related issues as they need maintenance and have to be changed on a frequent base. Again, the communities in off-grid regions have neither the means to come up with this, nor the expertise to assure continuous operation.

It was AUTARCON`s vision to develop a technical solution that would allow a continuous, simply operated and robust supply of safe water to rural areas. With the development of SuMeWa|SYSTEM, this challenge has been overcome in a very innovative yet deceptively simple manner. SuMeWa – from Sun Meets Water – is supplied by two small solar PV Modules that pump and filter daily up to 10.000 L of raw water. To safely kill off the pathogens and to assure safe water conditions during its distribution, the water is disinfected by chlorine. This, however, is produced directly in an electrolytic process from the salts that are naturally present in the water. No chemicals are required. As the chlorine remains in the stored water, safe water conditions will be maintained even during times of low radiation. Batteries are not required anymore. An intelligent sensor continuously measures the water quality and sends all relevant parameters to the responsible utilities and to AUTARCON.

AUTARCON has been awarded several times for this development. The energy globe award e.g. was given for a project being implemented in Gambia where a SuMeWa|SYSTEM supplies a small health and educational center with drinking water. The people accept the system simply because now the water comes directly out of the tap. Ever since, diarrhea has become a thing of the past. As a result of this, the initial investment costs of 20.000€ have already been quickly amortized. Meanwhile, AUTARCON has implemented 10 systems in India, Pakistan, Brazil and Ghana. Only organisations such as the GIZ or the UN still have to be convinced to take advantage of the SuMeWa|SYSTEM.

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