



YOUR SOURCE FOR  
WATER, ENERGY, AND  
FOOD SECURITY  
INNOVATION INFO

# Water Life

water life  
systems



## What We Do

### WATER & WASTEWATER

Water is life... for both people and business. Our scalable prefabricated systems treat ground, surface, and wastewater sources to supply:

- Drinking / Domestic Water
- Industrial / Process Water
- Agricultural / Irrigation Water

The COVID-19 pandemic has raised the awareness of global water challenges and the lack of proper sanitation. Public health conditions related to clean drinking water, and adequate treatment and disposal of human excreta and sewage, are a top priority.

### RENEWABLE ENERGY

**GREEN HYDROGEN ENERGY HARVESTING** - Hydrogen (H<sub>2</sub>) is a WLS wastewater treatment system byproduct that is recovered to allow small municipalities and businesses to participate in the Green Energy revolution. Standalone H<sub>2</sub> production systems also provided.

**SOLAR POWER READY** - WLS systems are designed for low energy consumption. Optional Solar Power kit designed for WLS systems.

### FOOD SECURITY

WLS systems recover water and nutrients from wastewater for reuse, and provide closed-loop plumbing hydroponics and aquaculture infrastructure for significant resource and cost savings. WLS systems can optimize nutrient levels based on crop species.



Image source: Indo-African Chamber of Commerce & Industry

## Water-Energy-Food Nexus Infrastructure Challenges & Solutions In Africa

In a July 2018 report [“Assessing the State of the Water-Energy-Food \(WEF\) Nexus in South Africa”](#) to the South Africa WATER RESEARCH COMMISSION, “This is a major challenge in South African policymaking, especially when referring to the country’s limited water availability, the scarcity of high potential arable land, and its reliance on fossil fuel-based energy generation. Furthermore, it is predicted that climate change will have a negative impact on the availability of resources in South Africa, where ecosystem services, rainfall frequency and distribution, and natural disasters will impact the reliability of the ecosystem.”

This conclusion reached in the WEF report is a common policymaking challenge realization in African developing countries. Lack of cohesion and coordination between policymakers and institutions, as well as stakeholder power and political dynamics, hold back WEF infrastructure development. From the water viewpoint, major freshwater resources are often shared by multiple countries, and along with the significant population growth projections, add to the policymaking complexities.

The other primary challenge to developing the required WEF infrastructure to support developing

nations is funding. While the revenue streams of  
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sustainable and adaptive infrastructure including renewable energy, water, sanitation, and food production systems can pay for themselves once in operation, the upfront capital costs are often the primary inhibitor.

Implementing WEF infrastructure development from a decentralized approach can often help solve these policy and cost challenges. Projects can be quickly implemented for benefit verification at relatively lower costs compared to centralized infrastructure.

When national deployment becomes desired, economies of scale can be achieved to lower costs, provide more jobs than centralized infrastructure, and reduce population security risks. A more diverse set of private and government financing institutions can come to the table to provide blended financing vehicles, as a variety of infrastructure and social benefits are provided with Water-Energy-Food Security integrated systems.

WLS is working with both public finance institutions and private capital family funds to finance major African and other infrastructure projects.



Water, Energy & Food Security

## OUR MARKETS

### INDUSTRIAL

Agriculture | Aquaculture |  
Automotive | Commercial  
Livestock | Disaster Management  
| Environmental Rehab | Food &  
Beverage | Military | Mining | Oil  
& Gas | Paper & Pulp |  
Petrochemical | Pharma | Power  
| Specialized Industry | Steel |  
Tourism

### MUNICIPAL

Urban, Peri-Urban & Rural  
Utilities | Commercial Buildings |  
Public Facilities | Mixed-Use  
Buildings | Developments | Multi-  
Tenant Residences | Single  
Homes

### OUR GUARANTEE

Water Life Systems guarantees that you will receive enhanced security and higher quality with Water Life Systems' products and services. The service starts with customizing our solutions to your specific needs and continues through equipment delivery and life cycle maintenance. We back up what we design and manufacture to ensure that you receive complete technical and process support on-demand.



## CASE STUDY

# A Policy Initiative: Distributed Pathogen Sensor Integration in the Built and Natural Environments

**In the October issue we took a look at ferrous chloride injection for phosphate removal in wastewater treatment plants, its hidden disadvantages, and the cost-effective solution provided by the WLS PureBOX. This issue will reexamine pathogen monitoring in water and wastewater infrastructure.**

The United Nations SDG Help Desk recently published a policy brief authored by WLS President, Thomas Murphy, that provides a starting point for pathogen monitoring initiatives in the built and natural environments.

The goal of this paper is to provide policy makers, urban planners, and other pandemic-related prevention and response interests with the justification to proactively integrate distributed microchip bioelectrical sensors into the Fourth Industrial Revolution (4IR)-supported built and natural environments. Sensors are outfitted with Internet of Things (IoT) networking via mobile Wi-Fi, Lo-Ra, or satellite communications for air and liquid pathogen detection in centralized and decentralized water supplies, wastewater treatment systems, and other distributed applications.

Urban populations are the most susceptible to pathogen spread in part due to interconnected infrastructure and population density. From a wastewater treatment standpoint, fecal transmission pathways via the aerosolization of liquid waste is now known to transmit

COVID-19, with a virus survival timeline in water and sewage between numerous days and weeks. Aerosolization of human excrement can take place at any point of the wastewater service chain, such as during the flush of a toilet, in pipeline leaks, and wastewater treatment plant effluent discharge.

The global systemic risks associated with the COVID-19 pandemic and rapid global urbanization can have debilitating effects on life and activities within human populations. COVID-19, caused by a new strain of the coronavirus family, SARS-CoV-2, starting at the onset of 2020, became the latest infectious disease to rapidly evolve into a global pandemic. As of the week of Dec 15, 2020, there were over 70 million cumulative COVID-19 cases and 1.6 million deaths reported globally since the start of the pandemic. Of the 195 countries recognized by the United Nations (2020), only 11 have reported no COVID-19 cases.

*The full policy brief can be viewed and downloaded at <http://sdghelpdesk.unescap.org/technical-assistance/best-practices/policy-initiative-distributed-pathogen-sensor-integration-built>*

# SUSTAINABLE DEVELOPMENT GOALS



## #WeCanSaveTheWorld

The core mission of WLS is to increase global resiliency and sustainability in water, renewable energy, and food security systems.

The world's rapid population growth, coupled with rapid climate change, is increasing the competition for resources. At WLS, we're committed to doing our part to operate sustainably. Our innovative solutions provide resource conservation, energy savings, the reuse of water, food security, and better population well-being and health outcomes.

Advanced O3In-Gen™ technology is one example of WLS' focus on cost savings and increased treatment effectiveness. O3In-Gen™ is used in WLS' PureBOX™ decentralized wastewater treatment package plants with closed-loop capabilities, Hydrogen production, and food security systems. The systems are ideally suited for a scalable solution to provide clean water, wastewater treatment, and food security for all by 2030 in a world where billions of people do not have access to sufficient water supply and sanitation services. We envision a world without waterborne pollution

and the abundance of freshwater for all using our water treatment and monitoring systems, which correspond most directly to the United Nations Sustainable Development Goals SDG 6 - Clean Water and Sanitation.

At WLS, we're committed achieving the United Nations Sustainable Development Goals (SDGs) by the 2030 goal date. This collection of 17 global goals is designed to be a "blueprint to achieve a better and more sustainable future for all." Our operations and solutions contribute to all the UN's SDGs.

## This Issue's SDG Provided by Water Life Systems

**World Economic Forum 2020: "The global water crisis is one of the greatest threats to humanity."**

The "traditional" way of living is not sustainable for life on Earth. Water Life Systems leadership, in living through their own climate-caused near disasters, being Vancouver 100-year drought in 2015 and the 2017-18 Day Zero scare in Cape Town, South Africa, have developed water supply, sanitation, and food security Micro-Utility solutions that can be deployed into the built environment on a global scale. Tech components can be integrated into centralized systems.

**WLS systems are at the core of providing water stressed populations with clean water and sanitation services. Currently some 2.2 billion people worldwide do not have sufficient drinking water services, 4.2 billion people do not have safely managed sanitation services, and 3 billion lack basic handwashing facilities.**

Much of the world is not set to meet United Nations Sustainable Development Goals with current systems thinking. No single solution will result in universal access by 2030. A range of adaptable and scalable solutions are needed to overcome geography, gender, and socioeconomic barriers.

## SDG 9

### Industry, Innovation, and Infrastructure

#### 9.2 Target

Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries **17. 2.1**

#### 9.2.1 Indicator

Manufacturing value added as a proportion of GDP and per capita

#### 9.2.2 Indicator

Manufacturing employment as a proportion of total employment

#### 9.3 Target

Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

#### 9.3.1 Indicator

Proportion of small-scale industries in total industry value added

#### 9.3.2 Indicator

Proportion of small-scale industries with a loan or line of credit

#### 9.4 Target

By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

#### 9.4.1 Indicator

CO2 emission per unit of value added

#### 9.5 Target

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries by 2030

#### 9.5.1 Indicator

Research and development expenditure as a proportion of GDP



Would you like to participate in the WLS Investor & Partnership Program? Please fill out the application to help us determine how to best approach the partnership to ensure mutual success.

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## Partnership Tracks

WLS offers various partnership solutions including:

- Integrated product distribution
- Individual tech component licensing
- Complete tech transfer programs for national solution integration

Technical expertise, geography and solution area of your business will determine which track best fits your business model. Partners can participate in one or more tracks, based on expertise and available production facilities.

[Click here for more information and to complete the inquiry form](#)

### For More Information

<https://waterlife.systems>

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