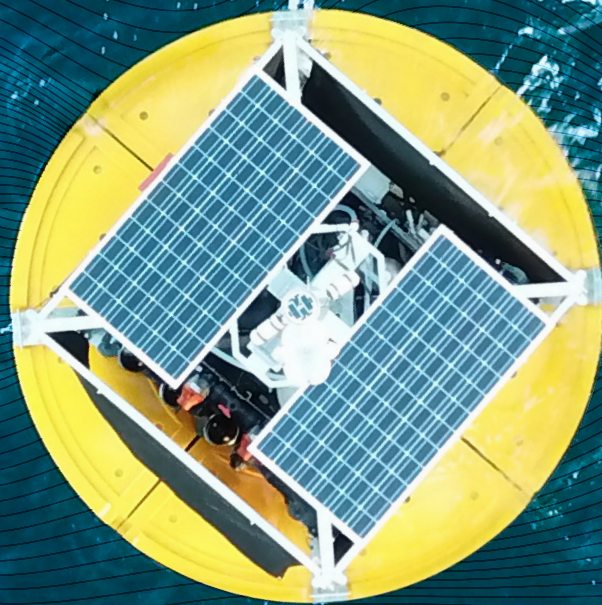


# MAKE THE OCEAN A *sustainable* SOURCE OF DRINKING WATER



SUSTAINABLE  
DEVELOPMENT GOALS



Oneka

[onekawater.com](http://onekawater.com)





Oneka Technologies  
envision a future  
where drinking water  
will be accessible  
to a greater number  
of individuals  
without negatively  
impacting the health  
of our planet.



[onekawater.com](http://onekawater.com)

# INITIATE A *transition* TOWARD A MORE SUSTAINABLE SOCIETY

Wave energy, or energy derived from wave movements, is the potential energy stored in the ocean swells. This energy is dense, renewable, highly predictable and ever present.

Using this green energy to process sea water into drinking water affordably, results in zero greenhouse gases being emitted. Our solution is particularly ideal for isolated coastal communities and commercial enterprises.

«Oneka is a Canadian company that engineers, markets and sells all-in-one, stand alone water desalination systems which produce drinking water using only the energy of the ocean swells.»



**« OUR INNOVATION OFFERS ORGANIZATIONS, BOTH PRIVATE AND PUBLIC, THE OPPORTUNITY TO MEET 6 OF THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS TO IMPROVE IN A SUSTAINABLE WAY THEIR ECONOMIC ACTIVITIES. »**

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION



**7** AFFORDABLE AND CLEAN ENERGY



**15** LIFE ON LAND



**13** CLIMATE ACTION



**6** CLEAN WATER AND SANITATION



**14** LIFE BELOW WATER





« MORE THAN 2 BILLION PEOPLE AROUND THE  
WORLD HAVE NO ACCESS TO CLEAN DRINKING  
WATER AND SANITATION. <sup>1</sup> »





# MORE PEOPLE, LESS WATER TO DRINK

«According to the United Nations, by 2025, two-thirds of the world's population could be living under water stressed conditions.<sup>2</sup>»

Today, one of the main challenges of sustainable development is the scarcity of fresh water.

This is a situation which concerns all of us and requires a radical change in consumption habits.

## THE PRINCIPAL CAUSES OF THE SHORTAGE OF FRESH WATER:

- Population growth and migration towards urban centers.
- Excessive use (agriculture, industries, irrigation )
- Accelerated rate of climate change (drought, melting glaciers, irregular precipitation, reduced river flows)
- Pollution and contamination of ground water.

Fresh water is unevenly spread over the planet. Certain regions are under water stress much more than others.

<sup>1</sup> UN. United Nations World Water Development Report. 2019

<sup>2</sup> UN. Water for life decade. 2019 <https://www.un.org/waterforlifedecade/>

# Water: a resource unequally distributed on Earth

SALTWATER

97%

FROZEN FRESH WATER

2,1%

« THERE IS 100 TIMES  
MORE SALTWATER THAN  
LIQUID FRESH WATER ON  
THE PLANET. »

LIQUID FRESH WATER

0,7%





# DESALINATE WATER FROM THE OCEAN TO FACILITATE ACCESS TO DRINKING WATER

«Almost one out of every two people lives near a coast.<sup>3</sup>»


Although underutilized, desalination of ocean water remains the one and only viable option to obtain fresh water in many areas where springs, wells and groundwater resources are insufficient or non-existent.

Desalination will become the most viable option as the population grows, standard of living increase and the effects of climate change intensify.

«It is expected that the desalination industry will double by 2030.<sup>4</sup>»

<sup>3</sup> ONU. Ocean conference. 2017

<sup>4</sup>International desalination association. 2018



**« REVERSE OSMOSIS (RO)  
IS BY FAR THE MOST  
PREVALENT TECHNOLOGY  
EMPLOYED BY 85% OF  
DESALINATION FACILITIES.<sup>5</sup> »**



# DESALINATION IN THE MAJORITY OF INDUSTRIES



Saltwater from the sea or the ocean...



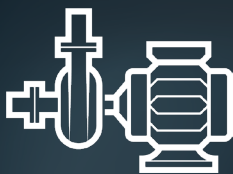
is processed by a desalination plant...



which uses enormous amounts of fossil fuels...



to power diesel-electric generators.....



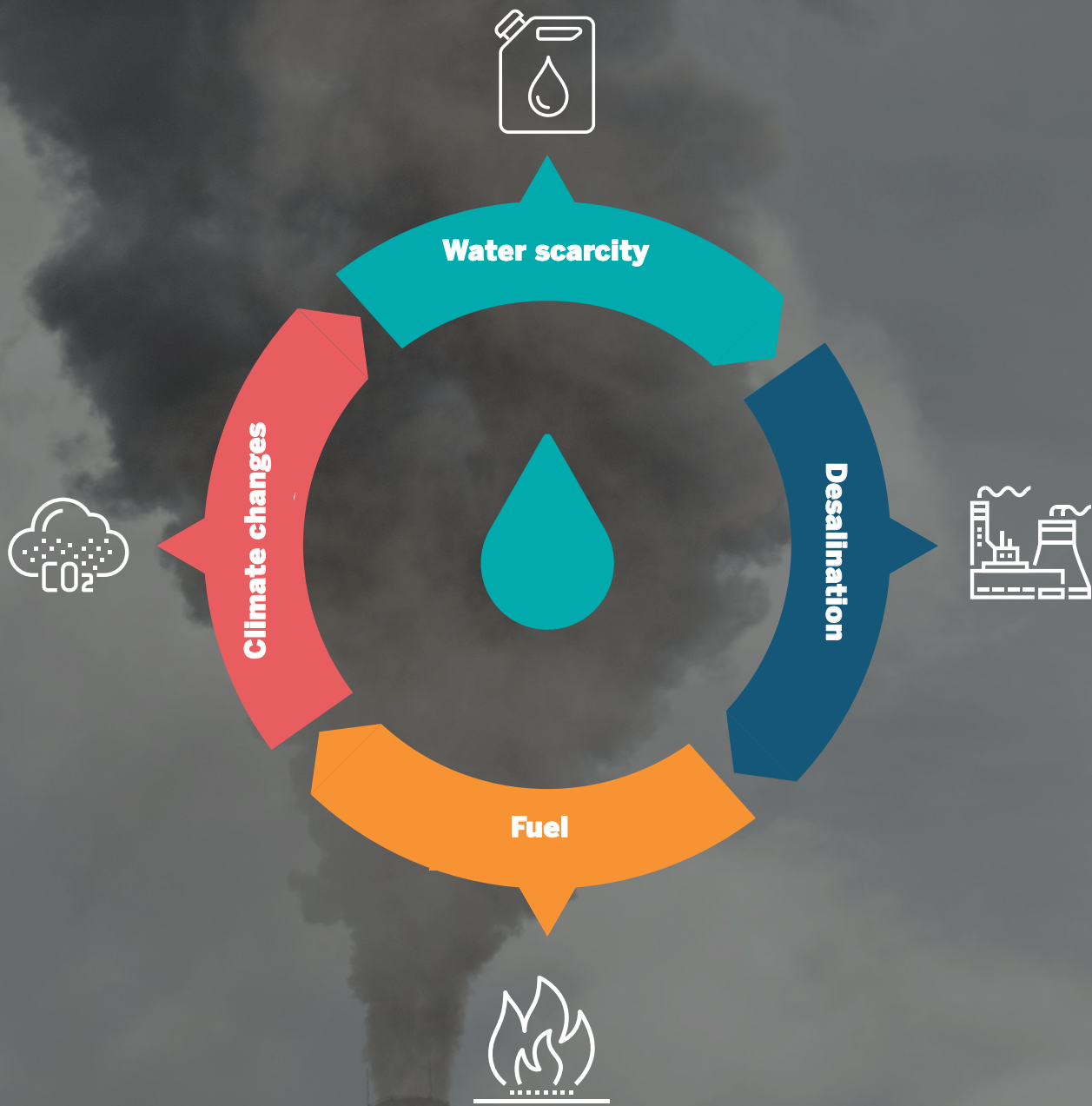
providing electricity to drive pumps...



which force saltwater across reverse osmosis membranes...



to produce drinking water.



Typically, industrial desalination plants burn non-renewable fossil fuels to power diesel-electric generators (in order to turn salt water into fresh water). The use of this type of energy source results in the release of tons of greenhouse

gases into the atmosphere, which accelerate climate change and in turn exacerbates water shortages. Current desalination practices perpetuate a vicious circle and do not offer a sustainable solution to water scarcity.



# CONVENTIONAL DESALINATION: EXPENSIVE AND TOXIC FOR THE PLANET

«Every year, conventional desalination practices emit millions of tons of CO<sub>2</sub> into the atmosphere.<sup>6</sup>»

Also, the salt brine concentrations rejected by conventional desalination are 100 to 150 times higher than sea water. Such concentrations are deleterious to the marine environment.

In some plants, chemical products are used to clean reverse osmosis (RO) membranes. These chemicals are then released into the ocean causing harm to marine life and the ecosystem in general.

Even if the cost of RO technology falls as it becomes more and more prevalent, desalination remains inaccessible for many communities due to escalating operating costs driven principally by the cost of fossil fuel and availability.

<sup>6</sup> Alon Tal. MDPI. Water 2018. Addressing Desalination's Carbon Footprint: The Israeli experience.







# THE OCEAN, AN EXISTING SOURCE OF RENEWABLE ENERGY AND FRESH WATER

The potential in ocean swells is unique as it is the densest renewable energy on Earth. Far more ubiquitous and constant than either solar or wind energy.

Oneka's technology offers a sustainable and affordable solution to the shortage of fresh water to coastal communities around the world. Our desalination systems use neither electricity nor fossil fuels to produce drinking water. The entire desalination process takes place in a floating unit anchored offshore.

«Using ocean swells as the sole energy source for the desalination process, we wish to help curtail the production of fossil fuels as well as decrease the onshore land area occupied by conventional desalination plants.»

# OUR BUOYS

Powered by the action of waves

## TECHNICAL SHEET FOR ONE UNIT:

Diameter: 5 m (16 ft)

Installation depth: 10-20 m (32-65 ft)

Minimum height of wave needed to produce water: 1 m (3-4 ft)

Installed distance from shore:  
0.2 - 1 km

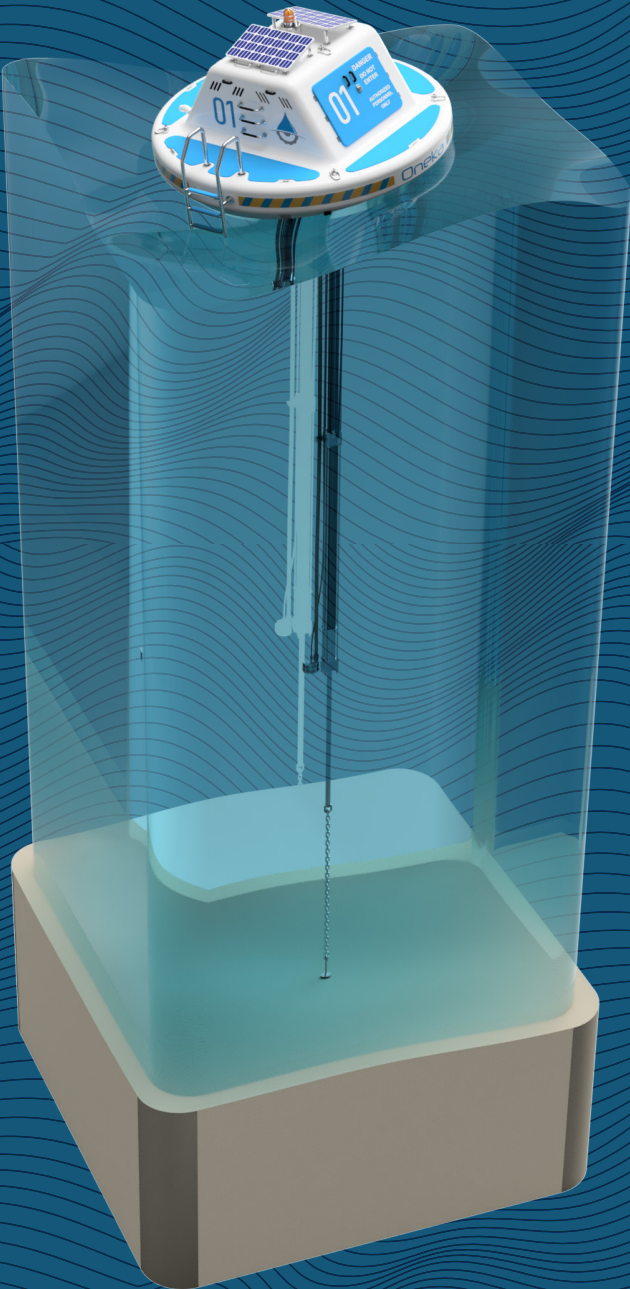
Installation time required for two people: 1 day

Production capacity:

- For one buoy: 40 m<sup>3</sup>/day
- For an array: 50 to 2,000 m<sup>3</sup>/day

Projects comprise min 5 units and +

Each buoy eliminates between 75 and 140 tons of CO<sub>2</sub> / year.



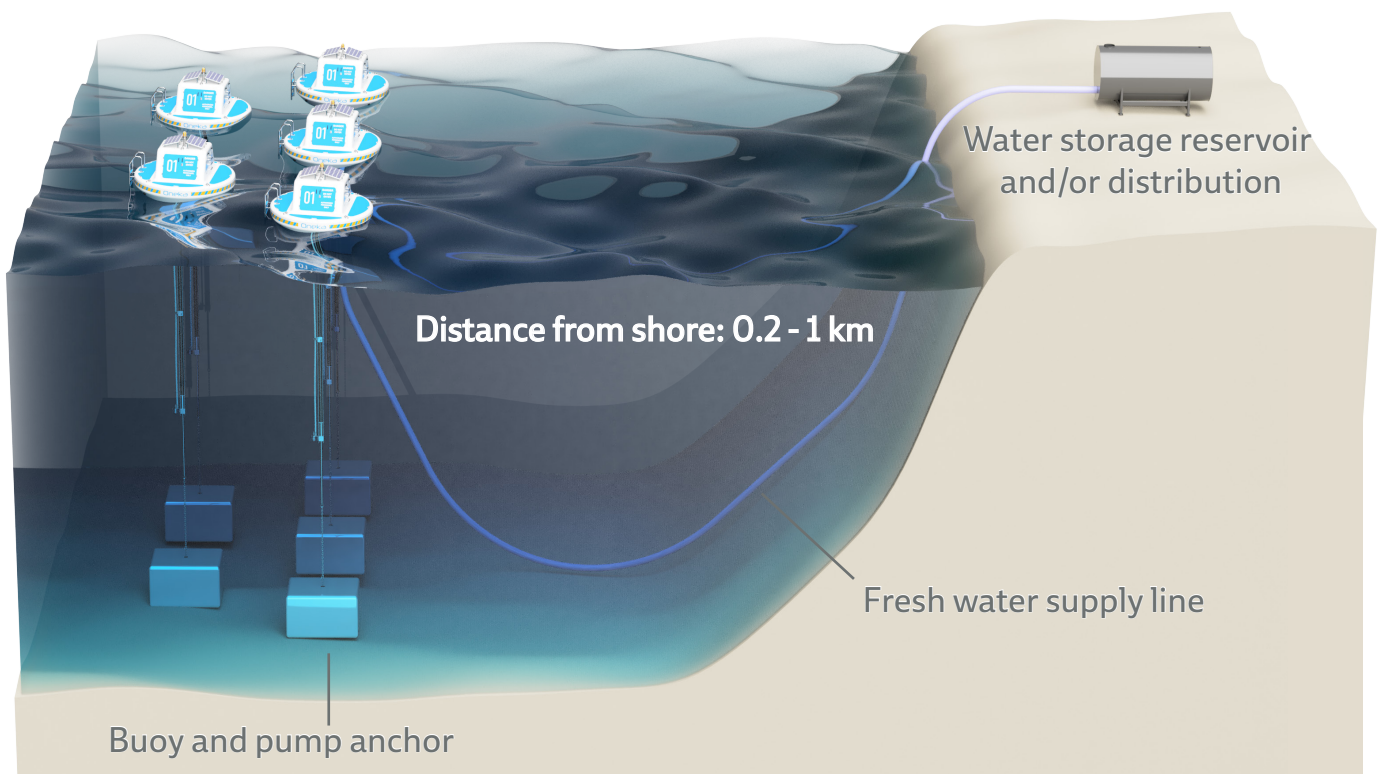


# MODULAR SYSTEM

## HOW DOES IT WORK?

Wave power forces the seawater through reverse osmosis membranes located on the unit itself to produce drinking water. A small part of that energy is also used to pump this fresh water onshore via a single underwater pipe. This fresh water is then stored and distributed locally by the user.

«The modular nature of the design allows each system to be scaled up or down to meet the specific requirements of each user.»





6 CLEAN WATER  
AND SANITATION



7 AFFORDABLE AND  
CLEAN ENERGY



12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



13 CLIMATE  
ACTION



14 LIFE  
BELOW WATER



15 LIFE  
ON LAND





# THE IMPACTS ON SUSTAINABILITY OF OUR WAVE POWERED INNOVATION

## Social impacts



### **PROVIDE CLEAN DRINKING WATER TO A GREATER NUMBER OF PEOPLE**

A single Oneka buoy will provide 100 people with clean drinking water to satisfy all their daily needs.



### **COASTAL POPULATION AUTONOMY**

Our technology allows commercial and industrial users as well as coastal populations to reduce their dependence on fossil fuels which must be imported to operate desalination plants.



### **BETTER HYGIENE CONDITIONS**

By supplying clean, fresh drinking water, Oneka contributes to reducing the risk of target populations from contracting water borne diseases through contaminated and unsanitary water supplies.

## Environmental impacts



### REDUCE CO<sub>2</sub> EMISSIONS

Each installed unit keeps between 19 and 35 tons of CO<sub>2</sub> / year from being produced. This is the equivalent of eliminating 5 to 7 cars from the road annually.



### NO USE OF LAND

Because each array is operating offshore, no land is needed for infrastructure other than the supply line and fresh water reservoir.



### USE OF A RENEWABLE RESOURCE

Environmentally responsible freshwater production which is 100% mechanical and wave powered.



### BRINE IS RESPECTFUL OF THE MARINE ENVIRONMENT

The brine discarded in the ocean is only 25% more salty than the seawater itself and it is distributed over a large area.



### NO CHEMICAL PRODUCTS

Unlike conventional processes, the Oneka system never releases chemicals of any sort into the ocean.



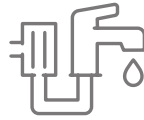


## Economic impacts



### REDUCED DESALINATION COSTS

By eliminating the need for an external source of power, Oneka offers drinking water at an affordable cost.



### A CONSTANT SUPPLY

Water storage and consumption is easy to manage due to the predictable nature of the ocean swells.



### EASE OF DEPLOYMENT, OPERATIONS AND MAINTENANCE

The Oneka system is quick to install and easy to maintain. Local users can be trained on site in operations and maintenance by Oneka staff.



### SCALABLE

As water demand increases, additional units can be added to the existing array at any time to increase production capacity.



# OUR TEAM AND OUR TECHNOLOGY IS LOOKING TOWARDS THE FUTURE

## OUR APPROACH

Identifying fundamental needs while respecting and following responsible business practices allows us to seize new business opportunities in the environmental sector.

Our goal is to help you improve the economic, social and environmental impact of your operations while at the same time, responding to your needs.

Partnering with Oneka allows us both to reinforce the positive aspects of your operations while mitigating the negative aspects.

## «Design a system for your specific needs»

- 1-Site identification and evaluation by Oneka based on your specific circumstances.
- 2-Preliminary project proposal.
- 3-Discussions and adjustments.
- 4-Detailed proposal and contract.
- 5-Local installation by Oneka.
- 6-Connection to your existing storage / distribution system.
- 7-Remote monitoring of water quality, production rate and other critical metrics.





 Oneka

# OUR TECHNOLOGY AIMS TO ENCOMPASS ALL THE AGENTS OF CHANGE IN COASTAL COMMUNITIES

«Contact us and we will help you evaluate, plan and execute your goals for improved operating efficiencies by providing responsible and sustainable solutions.»

## **SERVICES IN SUSTAINABLE WATER MANAGEMENT:**

- Achievement of quantifiable goals.
- Calculation of greenhouse gas emissions saved.
- Calculation of freshwater quantities saved.
- Water quality assessment and compliance with international standards.
- Achievement of mid and long-term goals thanks to the scalability of the Oneka system.
- Remote site monitoring in real time.







We are the agents  
of sustainable change.

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