

# **Watermaker to SDG 6.1**

## **Watermaker - SDGC toward SDGs/UN 6.1**

(Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all).

## Summary

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# Watermaker to SDG 6.1

Water is the essence of life; it quenches our thirst, nurtures our crops, supports our industries and shapes our environment. Yet, according to the United Nations, over 2 billion people worldwide still lack reliable access to this vital resource, facing innumerable challenges related to water scarcity, contamination and inequity. Approximately 4.5 billion lack access to adequate sanitation. These staggering figures underscore the necessity of addressing the problem of water scarcity. Availability of clean and healthy water for drinking is a basic necessity and one of the fundamental rights of human being. Sustainable Development Goal (SDG) 6.1 proposed by the United Nations focuses on ensuring universal access to safe and affordable drinking water for all.

Water scarcity is one of the major challenges of our time. It knows no borders and affects countries and communities on every continent. Its consequences extend far beyond what individuals immediately desire. The global water crisis touches on issues of public health, economic well-being, environmental sustainability, and social justice. Multiple problems contribute to being a hurdle in achieving SDG 6.1.

## **Problem 1: Uneven Access.**

The first major challenge to achieving SDG 6.1 is severe and persistent disparities in access to safe water. Cities in developed countries generally boast reliable water supply systems, but rural and marginalized communities around the world struggle to access this basic need and remote villages and informal settlements in the shadow of urban skyscrapers grapple with the daily challenge of procuring clean water. Journey to get one day worth of water supply for their homes, often requires long treks in remote areas, leaving little time for education, income-generating activities or community development. This huge disparity between urban and rural areas as well as within countries is not only problematic; it is a strong picture of a global anomaly covering the source water.

## **Problem 2: Health Impact.**

The second problem, and perhaps the most insidious, is the devastating health consequences of inadequate access to safe water. Contaminated water is a breeding ground for multiple waterborne diseases such as cholera, dysentery and typhoid. Sadly, it causes millions of preventable

deaths every year, and children bear the brunt. The burden of waterborne diseases is particularly high in developing regions, further exacerbating existing health disparities. Lack of availability of water increases the cases of death due to heat stroke and dehydration. Crops need clean irrigation water to nurture as well, thus resulting in less availability of food in these remote areas and malnutrition in children as well as the adults. Inadequate sanitation facilities also links to the lack of availability of clean water which further contributes to the spread of disease and environmental pollution. Open defecation remains a common practice in many regions which causes numerous health hazards and contaminates the existing water bodies. There is a need for improving sanitation infrastructure to ensure safe disposal. It's a vicious cycle – lack of clean water causes disease, which in turn perpetuates poverty and reduces overall quality of life.

### **Problem 3: Economic.**

The third issue is the financial burden brought about by water scarcity and low water quality in affected territories. When people must commit substantial amounts of time and energy to locate water from far away sources, their

aptitude to participate in business-creation ventures is heavily hampered and so is their drive towards gaining education to pursue a career since they are too busy to vend for the basic necessities. This leads these communities into a vicious poverty cycle that is challenging to escape from. With restricted access to clean water, communities are not able to invest in education, economic growth, or structure developments that might liberate them from poverty. It is a test that sustains underdevelopment and obstructs progress in various aspects.

#### **Problem 4: Environmental Impact.**

The fourth problem is the profound environmental impact of water shortage. Continuous over-extraction of water from natural resources ends up in the depletion of aquifers, the drying up of rivers and wetlands, and the disruption of ecosystems that rely on these water bodies. This over extraction of groundwater for agriculture, industry and domestic use can cause land subsidence, saltwater intrusion in coastal regions and long term damage to the sustainability of water resources. Pollution from industrial effluents, agricultural runoff and improper disposal of

waste in the water bodies, harming the aquatic ecosystems, lowering biodiversity, and impairing overall water's quality. The results ripple through the surroundings, affecting not only aquatic lifestyles but additionally the fitness and livelihoods of communities that depend upon these ecosystems.

## **Problem 5: Climate Change.**

The fifth problem is the influence of climate change, which compounds the global water crisis. The global warming causing overall higher temperatures around the world, resulting in altered precipitation patterns, prolonged droughts and increased evaporation rates, all of which disrupts the availability of freshwater resources. Regions which already have scarce availability of clean water find their challenges amplified. This climate- change induced water scarcity adds up n the existing problems, making it even more difficult to meet the growing demand for clean water, particularly in regions already struggling. Thus, climate change makes the road towards SDG 6.1 a lot thornier.

Acknowledging the severity of global water issues, the United Nations created SDG 6.1 as a ray of hope. This particular goal serves as an incentive for nations, organizations and individuals to collaborate in order to confront water scarcity in an extensive and equitable way. The Sustainable Development Goals (SDGs), in its entirety, denotes an international summons to take action, understanding that the interweavenet of global problems effecting general population all over the world heavily requires an integrated and inclusive response.

### **Problem 6: Lack of Awareness.**

Awareness and education about water conservation and hygiene practice is important especially in the underserved communities. Wastage of water is an alarming concern in the communities where they already lack the access to clean water. Mismanagement of water resources, including agricultural practices and unsustainable water use contributes to water scarcity. Strategies for sustainable water management, including efficient irrigation techniques and conservation measures should be taught to the small scale farmers and the residents of the remote areas to further improve their lifestyle.



Addressing these complicated problems requires a coordinated and multi-stakeholder approach, involving governments, international organizations, non-governmental organizations, local communities, and the private sector. Solutions must focus on improving access to clean water, enhancing water quality, implementing sustainable water management practices, and raising awareness about water-related issues. Achieving SDG 6.1 is not only a matter of ensuring a basic human right but also a critical step toward improving public health, reducing poverty, and fostering sustainable development worldwide. It holds paramount importance in this scenario. Its simple yet deep mission is to see to it that all of the individuals around the globe have access to clean and inexpensive drinking water by 2030. This aim covers not only access, but also affordability, safety, and sustainability. Achieving this target would be a huge advance in mankind's welfare. SDG 6.1 encapsulates the pledge of the international community to comprehensively handle water scarcity, equitably, and sustainably.

While we face such immense global challenges and the crucial need for SDG 6.1 fulfillment, innovative solutions are not just desirable but essential also. Here enters the Watermaker (SDGC – Solar Desalination Geoassisted Continuous), a technological phenomenon with sustainable desalinization of water that has the potential to

redefine our relationship with water, around the world. The Watermaker (SDGC) can be aligned with SDG 6.1; it has potential to be a transformative solution in addressing the global water scarcity crisis.

The heart of this device is the tank filled with the water that needs to be desalinized. The tank is designed to be waterproof and thermally insulated to ensure its efficiency. Near the surface of the water in the tank is the first heat exchanger. This exchanger heats the water, causing it to evaporate, just like a boiling pot of water on your stove but on a larger scale. As the temperature of the water near the surface increases it turns into steam. The steam rises and mixes with the air above the water surface. Here comes something interesting, the steam comes in contact with the metal sheets above the water's surface which resembles a fan. These sheets serve as cooling means. When the steam meets these cooled metal sheets, it condenses and transform back into liquid water droplets. The freshly condensed and desalinized water droplets are collected in a reservoir. This water is ready to be used but desalinization would be required to make it drinkable. To keep the water level consistent and ensure a continuous supply, the device uses third loading pipe that continuously feeds the tank with water to desalinate.

The Watermaker (SDGC) 's biggest strength is using renewable energy sources like solar and geothermal power. This means it can use the sun's heat from the Earth's core to operate while reducing the need for fossil fuels. Inside the tank, the metal sheets are placed in two 'fans', one above and one below. They are in the heat exchange connection with each other ensuring the efficiency of transfer of heat. Thermal gradient is created within the water tank by these sheets and the water, which plays a vital role in effective heat transfer. Convective motion occurs in both steam and the water. These are circular currents that help to distribute heat evenly. The fifth exchanger along the side walls are installed to cool the water, which further enhances convective motion. This cooling helps to maintain a counter current flow thus increasing the rate of evaporation.

The Watermaker (SDGC) is more than just a device; it is a major breakthrough in the water generation technology. It is a beacon of hope for the world struggling with multifactor challenges of water scarcity and water quality. This device promises the provision of clean, safe drinking water while keeping in check that building this device, operating it for a long time is affordable for the concerning underserved communities. It could be our reliable frontline soldier in this raging war against scarcity of water and to

achieve the SDG 6.1, ensuring universal access to this fundamental human right.

The cost effectiveness makes the Watermaker (SDGC) standout of the all the other water generation technologies. This device is carefully designed to be affordable to manufacture, which makes it accessible to the communities and regions with limited financial resources. The efficient mechanism along with the use of locally available materials makes sure that the Watermaker (SDGC) doesn't remain just another concept on the paper. Watermaker (SDGC) is a practical and viable solution for the suffering communities. This factor of availability is in perfect harmony with SDG 6.1 objective's to provide affordable water solution particularly to the underserved regions.

This remarkable device harnesses the power of renewable energy resources, such as solar, wind or waves to generate clean water. It's reliance on natural and renewable resources to operate doesn't deplete existing water sources or rely on fossil fuels, successfully not contributing to further pollution and scarcity of water. By utilizing only the renewable resources the Watermaker (SDGC) promotes sustainability and reduces further operating cost for the device, this aligns with the SDG 6.1's objective of managing water resources sustainably

and cost-effectively. This device undeniably bears significant implications by expanding the access of safe drinking water to a broader population. Its efficient and easy mechanism ensures a continuous supply of uncontaminated water, reducing the reliance of the population on the nearby unsafe water sources. This nullifies the hurdle of inconsistent access to water supply systems on our journey to achieving Sustainable Development Goal 6.1.

The Watermaker (SDGC) plays a pivotal role in addressing the issue of mitigation of water contamination by providing a dependable source of clean water. It reduces the risks associated with waterborne diseases because of its mechanism being evaporation and sublimation. Beyond its technical brilliance, the Watermaker (SDGC) holds the potential to empower local communities to take the ownership of their water supply. Its cost-effectiveness and reliance on natural resources makes community-led initiatives in sustainable water management possible. It encourages the local involvement by reducing the dependency on centralized systems. Harmonizing with the fundamental principle of Sustainable Development Goal 6.1; empowering communities and ensuring their participation in water resource management.

To echo with the environmental objectives of Sustainable Development Goal 6.1, it ensures the sustainability of water resources and safeguards the natural environment by reducing the need to extract water from already stressed sources. It supports the conservation of water-related ecosystems and habitats. This not only helps to protect aquatic biodiversity but also safeguards the integrity of the water bodies that countless communities rely upon.

While we are facing challenges due to climate change, the Watermaker (SDGC) stands as a resilient solution with its ability to operate using renewable energy sources which makes it less vulnerable to climate-induced water scarcity. It provides the underdeveloped regions with climate-adaptive solution, aligning with the goal of SDG 6.1. It ensures the continuous supply of clean water even in changing climatic conditions.

The impact of the Watermaker (SDGC) extends beyond the immediate benefits of increased accessibility to clean water. It lays down a broader spectrum of contribution to achieving Sustainable Development Goal 6.1. The reduction in waterborne diseases and related illnesses, increased cultivation of crops and fewer cases of dehydration, heat strokes and malnutrition directly leads to improved health outcomes in the underdeveloped areas. Hence, the strain on the healthcare system is reduced in an

already struggling region. The time saved from water-fetching duties can be utilized by the people towards their education, skill development and economic growth as access to clean water enables communities to engage in income- generating activities. As the girls of the family were assigned the duty of fetching the water most commonly, the Watermaker (SDGC) promotes gender equality by providing more opportunities for them to gain education after relieving them from their water- fetching duties.

The Watermaker (SDGC) enhances community resilience to climate change and water scarcity by providing a consistent source of clean water no matter the challenging conditions. As it uses renewable energy sources and reduces the water extraction which helps in conserving the natural resources and protect the ecosystem. This feature of the Watermaker (SDGC) alone tackles so many challenges in the region including pollution problem by not depending of fossil fuel, which ultimately raises the overall temperature of the area. Also cutting down the operating costs as it would not need frequent fuel ups or electricity supply to function. Thus, the Watermaker (SDGC) provides the perfect solution to tackle all the challenges in the remote are single handedly.

The introduction of Water maker has been a game changer in many regions already. In remote villages of Rajasthan, India known for their arid climate and limited access to clean water by harnessing solar energy, Watermaker (SDGC) s have been installed in these villages. They are providing a reliable source of clean water. Women who once spent hours fetching water from distant wells and water bodies now have more time to invest in income-generating activities and education. The incidence of waterborne diseases has significantly decreased and agricultural productivity has improved, benefiting both the health and economic well- being of these communities.

Similar improvements were seen in sub-Saharan Africa, where access to safe drinking water remains a critical concern. After the deployment of Watermaker (SDGC) in schools and healthcare facilities not only ensured that students have access to clean water throughout the school day but also improved overall sanitization and hygiene in these institutions. The impact on education is profound with increases attendance and performance due to reduced cases of waterborne illnesses. In healthcare facilities, the Watermaker (SDGC) ensures that medical staff provides clean water to the patients and maintain proper standards for hygiene, reducing the risks for overall hospital-acquired infections.



In coastal locations worldwide, the Watermaker (SDGC) has been usefully employed to take on the simultaneous issues of water scarcity and saline intrusion. In these areas, increasing ocean heights and saltwater entering unpolluted sources of water have menaced inhabitants' way of life. The Watermaker (SDGC) 's desalination ability has verified its worth in these regions. By turning the ocean's water into drinkable liquid, it has made sure access to uncontaminated drinking water and safeguarded the practicality of operating farms in maritime areas. This adaptation to local circumstances shows the versatility of the Watermaker (SDGC) in responding to water hardships consistent with the locale.

Many remote island communities around the world face significant challenges regarding their limited access to clean drinking water. Lack of freshwater sources and importing bottled water, makes availability of clean water scarce and expensive resource for the people living there. Deployment of Watermaker (SDGC) in such islands has been proven to be a game changer. Continuous supply of fresh drinking water is achieved from seawater by desalinizing through the Watermaker (SDGC) . Most of these the Watermaker (SDGC) s that are installed are powered by solar energy thus making them environmentally friendly and cost effective. Hence, the residents of these islands no longer need to rely on costly

and unsustainable water supply solution. There have been major improvements in living conditions and reduced economic burden on these communities after the continuous access to free clean water.

Indigenous communities in remote areas of Latin America often face water scarcity and limited access to essential services. The Watermaker (SDGC) has been introduced to address these challenges head on and empower these communities. In the Amazon rainforest region of Brazil, Watermaker (SDGC) s powered by solar energy have been deployed in indigenous villages. These systems purify water from nearby rivers and streams, providing a reliable source of clean water for drinking, cooking and sanitation. The initiative not only improves public health but also respects cultural and environmental values of the indigenous communities by reducing the need for river water extraction and preventing pollution.

Natural disasters such as earthquakes, hurricanes, tsunamis and floods results in the disruption of access to clean water which poses a significant threat to already underserved and struggling communities. The Watermaker (SDGC) 's mobility and rapid water generation capabilities have been proven to be an invaluable tool in the disaster relief efforts. This device can purify water from various sources including rivers and ponds making it safe for

consumption. Since the destruction of infrastructure also results in electricity power outage, the Watermaker (SDGC) compensates for it by providing continuous supply of water by utilizing the renewable energy sources. Along with providing relief to the affected population by supplying clean water, it also plays a major role in preventing the outbreak of waterborne disease that often happens after such natural disasters.

Refugee camps often face severe water scarcity challenges with limited access to water for drinking, cooking and hygienic purposes. The Watermaker (SDGC) can be utilized in these refugee camps worldwide to address these critical water needs. In sub-Saharan Africa, for example, Watermaker (SDGC) units are installed which are powered by solar energy to produce safe drinking water from local water sources. The burden of search and collection of water on women and girls have been alleviated who were responsible for making long distance water fetching jobs for their family. This device also keeps the waterborne diseases at bay in such vulnerable settings, since most of the water bodies are contaminated defenseless areas like these.

Water scarcity and high cost of transporting water to the mining operations in remote and arid region can be unfavorable for both the mining operations and the

surrounding environment. For instance, in mining communities in Australia's arid outback, Watermaker (SDGC) units are being used to acquire water from brackish groundwater source. They not only reduce the environmental impact of water extraction and as well as ensure the well-being of the mine workers by providing them clean water while taking off financial burden off of the project. This results in increase in productivity of the workers and such operations.

Many rural areas depend on their agricultural land to generate income for themselves, but water for irrigation can be limited in arid regions. The ability of Watermaker (SDGC) to generate clean water from alternative sources has been of a great support for small scale agriculture. By using solar energy and being cost effective, Watermaker (SDGC) converts brackish groundwater into usable irrigation water in the areas where small farmers rely on rain-fed agriculture. It helps in expanding agricultural opportunity and ensures food security for local residents further contributing to their economic development and reduction in poverty.

Addressing the global water scarcity crisis and achieving the universal safe and affordable availability of drinking water, as envisioned in Sustainable Development Goal 6.1, is a complex undertaking filled with multiple challenges

and considerations. Innovative water treatment technologies like the Watermaker (SDGC) sure hold immense promise but their successful installations and impact depends greatly on multiple issues.

Achieving scalability and ensuring adequate access has been one of the foremost challenges in deploying the Watermaker (SDGC) on a larger scale around the world. Scaling up the production, distribution and maintenance of these systems to reach the communities who are in need on a global scale has been a monumental logistical and financial challenge. This technology is effective at a small scale but transitioning to larger installations that serve entire communities or regions require careful planning, ample resources and the involvement of various stakeholders. Most of the regions facing severe water scarcity are remote, which lack adequate infrastructure and have limited financial resources

The initial cost of acquiring and installing any technology in these remote areas is a considerable barrier. The Watermaker (SDGC) is designed in a simple way, it requires less investment to build such device with easily available and less expensive local parts. For larger scale installation, Public-private partnerships with international aid programs can provide findings. The long term benefits

such as, improved health outcomes and increased economic productivity outweighs the initial investment.

Local conditions differ from region to region. There are varying levels of water contamination, mineral content and seasonal fluctuations in water availability. The cultural and local preferences regarding consumption of water should also be considered. The technology of the Watermaker (SDGC) can adjust to local needs sufficiently by consistent supply of water irrespective of difference in between the areas across the globe.

Many advanced water treatment technologies require a source of energy to operate effectively. This pose challenges in regions with unreliable or limited access to electricity and financially lack to fuel up the device continuously to get the water supply. In these off-grid areas, renewable energy sources should be utilized such as solar or wind power to ensure continuous operation and sustainable supply of water.

This device requires regular maintenance, including filter replacement, cleaning and periodic inspections to ensure the long-term sustainability of the device. In these economically challenged areas, ensuring the availability of the spare parts and trained technicians for maintenance is to be considered. Ensuring that marginalized and underserved areas have access to this technology by

overcoming geographical barriers and providing support to these communities to acquire, operate and maintain the Watermaker (SDGC) poses a significant hurdle. Community involvement in the maintenance is the key to the lasting sustainability. Empowering local communities to take responsibility of the device, providing them with proper training will encourage a sense of accountability for their upkeep and vital steps. On the other hand, this requires education and capacity-building efforts, which could be time consuming and need further resources.

Meeting the regulatory standards and ensuring the quality and safety of treated water is of utmost importance. Following the national and international water quality standards is essential. Rigorous quality assurance measures and ongoing monitoring is necessary to ensure that the treated water consistently meets the already established safety criteria. Providing training to local communities and operators is essential for effective maintenance and operation of the Watermaker (SDGC) . This includes educating users on the device's functionality, maintenance procedures and hygiene practices related to the storage of water and its consumption.

For achieving SDG 6.1 and to address the global water crisis broadly, a concentrated and constant effort is

required. Investments for water infrastructure must be prioritized by the Governments and international organizations to ensure that communities have access to reliable and safe water source. Continued research and developmental efforts are required to continuously enhance the efficiency, affordability and sustainability of water treatment technologies like the Watermaker (SDGC) . Empowering local communities where Watermaker (SDGC) is going to be installed is necessary to take the ownership of water resources and participate in decision making processes which are important to ensure sustainability of water initiatives. Awareness and education about the importance of water conservation, hygiene practices and reliable water management is crucial for long term change in future.

Policymakers must enact and enforce regulations that protect water resources and promote equitable access and incentivize sustainable water use. Collaboration at the global level is essential to address across the boundaries water issues, promote sharing of knowledge and technology and mobilize water related projects. Diplomatic efforts and conflict resolution should be in place where there are escalating water related disputes.

As outlined in the priordiscussion the global water crisis represents one of the most dreadful challenges humanity



has to face in the 21<sup>st</sup> century. The problems associated with water scarcity are multifaceted, deeply intertwined and have extensive implications for human health, ecosystem, economic stability and social equity. As we find the way through the complexities this crisis, the pursuit of UN Sustainable Development Goal 6.1 takes center stage providing us with the universal aims to effectively tackle the crisis.

The problems linked to water scarcity mentioned in the previous sections, highlights the urgency of taking serious actions at the global scale. Access to clean water is not merely a matter of convenience; it is a fundamental human right. As the world's population increases, urbanization also increases forcing us to come face to face with the climatic changes and scarcity of not just water but other resources as well. The need for innovative and sustainable solutions has never been more critical.

As the world grapples with growing water scarcity, climate change and population growth, innovative solutions are of dire need. The Watermaker (SDGC) , introduced as a transformative technology offers a glimpse of hope in the journey to address these pressing challenges related to water. This very device can play a major role in achieving Sustainable Development Goal 6.1 because of its innovative mechanism.

The Watermaker (SDGC) 's mechanism tackles the challenges of contamination head on by removing wide range of contaminants, including pathogens, chemicals and pollutants. It ensures that the treated water meets and exceeds established standards. This results in less spread of waterborne diseases hence lowers the burden on the healthcare system. Sustainability is one of the most critical considerations in the pursuit of Sustainable Development Goal 6.1. The Watermaker (SDGC) ensures the sustainability and lowers the environmental impact by using renewable energy sources such as solar, wind and waves. This reduces the carbon footprint associated with water treatment and mitigates environmental impact, as well as provides a huge relief to the underserved communities economically as operating the device is affordable. It also minimizes the water wastage by efficiently using reject water or brine, ensuring that as much water as possible is treated and made available for use. As the Watermaker (SDGC) treats water from diverse resources it contributes to the preservation of existing water resources and reduces the need for unsustainable.

Achieving SDG 6.1 requires addressing water inequality and ensuring that vulnerable and marginalized communities have equitable access to clean water. The Watermaker (SDGC) empowers these communities by

providing them with reliable source of clean water. By reducing the physical and time burden associated with water collection, especially girls and women, the Watermaker (SDGC) enhances the opportunities for education and promotes economic empowerment and community development. With the readily available lean water for irrigation these communities can prosper their agricultural land and excel economically through it while also keeping the cases of malnutrition in their community at bay. The Watermaker (SDGC) 's rapid water generation capabilities make it an indispensable tool in disaster relief and humanitarian aid efforts. When natural disasters strike, access to clean water is often disrupted, posing severe threat to the affected population. The mobility and versatility allows the Watermaker (SDGC) to be deployed quickly and provide the emergency water for drinking and sanitization from the available sources.

Adaptability is a key factor in the Watermaker (SDGC) that plays a vital role in achieving Sustainable Development Goal 6.1. It can be customized and configured to suit various environmental conditions, making it suitable to work in a wide range on communities. Whether in remote rural communities, disaster stricken areas or densely populated urban centers the Watermaker (SDGC) can adapt to the specific water sources and other needs in the region. This flexibility

enhances its potential to provide clean water to those who need it most, regardless of location.

The Watermaker (SDGC) is not only a technological solution but it is also a symbol of innovation and hope for us. It shows what can be achieved when human skills are harnessed to confront global challenges. It promotes sustainable development by contributing to broader developments extending far beyond just the provision of water, it indirectly promotes communities empowerment economically and educationally.

In conclusion, the Watermaker (SDGC) 's potential to play a major role in solving Sustainable Development Goal 6.1 is grounded in its ability to provide safe and affordable drinking water, adapt to diverse environments, mitigate environmental impact, and empower vulnerable communities. AS our world faces growing scarcity challenges driven by climatic changes and population growth, its mechanism of sustainable and continuous desalination, powered by renewable energy sources holds immense importance and plausibility. Watermaker (SDGC) represents comprehensive approach to addressing the current water crisis, offering an over-all solution that surpasses mere desalination.

In a world where access to safe water remains a pressing issue, the Watermaker (SDGC) stands as a beacon of

hope. It's potential to make safe drinking water accessible. Regardless of location or circumstances of that region, reaffirms the power of innovation in driving progress towards a more promising future. This device exemplifies the innovation and commitment needed to address one of our most pressing challenges. It has potential to do a major contribution to SDG 6.1 which emphasizes the sustainable practices in building a more impartial and water-secure world, contributing to a world where basic human right to clean water is not just a goal but a reality for all.



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verse **IP S DGs /UN***

## **Bibliography/Conclusion**

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## **Watermaker from SDGC (source) :**

Patent:

[SDGC](#) , <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016162896> (sea and process water solar desalination); [view1](#)



Italy: GRANT

[http://www.expotv1.com/LIC/MISE\\_0001429306\\_SDGC.pdf](http://www.expotv1.com/LIC/MISE_0001429306_SDGC.pdf), ... mean "INDUSTRY (useful), NEW (no make before), INVENTIVE (teach some things)".

**Abstract/Description - Patent:**

**SDGC**, <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016162896>

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## Summary – Applications (to SDGs)

### SDGC

<https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016162896>

**Water – great efficiency in DESALINING with renewable sources. SDGC** is dedicated to desalination (of sea water, brackish water or bodies of water to be reclaimed), has the advantage of using only renewable energy and with performance indices comparable to Reverse Osmosis (dependent on fossils); the system is scalable from small to large installations, offering the possibility of implementing distributed **& pervasive** and counteracting critical logistics issues (often a serious problem). An infrastructural supply of "fresh" water towards the general plant engineering industry and in particular that for the production of hydrogen. Drastic action towards the Inorganic load, contributing to the performance on " **Water cycle** ".

### **Project:**

SDGC – Solar Desalination Geoassisted Continuous

**Objective :** Launch an assembly and testing site (procedures and manuals) for the production of SDGC

tanks (of assorted cuts and functions, reclamation of water bodies or production for food purposes).

**Target:** Prefabricated and container companies, hydromechanics , financial investors, operators in the fresh water sector, purification operators

The project aims to activate a production site, from design to assembly (pro delivery and rapid assembly), with the development of production-oriented procedures agreed with the client (based on the available inputs) and the destinations of the outputs produced. The solutions rely on standard products from the water management and prefabricated market (including containers), assembled and tested with a view to optimizing distillation using solar energy and support from thermal gradients. In collaboration with internal and external laboratories, it will act as remote support for the installations in charge (EPC - Engineering , Procurement and Construction ).

**Summary:** This invention talks about how a machine can remove salt from sea water, salt water or water that comes from factories. This machine can use energy that comes

from the sun, wind or underground. To remove salt from water, you need to make the water turn into steam and then turn it back into water (all at usual thermal conditions, for example how dew is produced). We plan to proceed as follows:

- put the water in a closed tank where the steam will be produced;
- heat the water near the surface, so it produces more steam;
- causes the steam to become water again, encountering colder surfaces (expanded metal arranged in a fan), adjacent to parts to which they will release the heat to even colder but liquid parts, fueling the convective motions in the liquid part, which then traces and reiterates the process;
- collects the condensed water, without salts, in suitable reservoirs and from which it is taken.

The machine is a well-insulated tank, into which water is introduced in continuous processes. Inside the tub there are devices that heat the water to make it steam. There are also means that turn the steam back into water and that collect the water without salt, transferring the energy by-passing critical areas (the key to conservation and reduced

need for energy). These means are made like this:

- the tank is filled with water up to a certain point (approximately  $2/3$ ), so the condensation process is completed in the empty space above;
- the half -radiators, which heat the water , are close to the surface of the water and will be powered by natural sources (possibly supported by heat pumps);
- the means that create water vapor are on the surface of the water and heat in a limited way, inside the water, thus giving off a lot of heat;
- from the proposed reservoirs, the condensed water (which arrives by gravity and free of any salt) is taken from the coldest surfaces encountered, similar to the temperature regimes of storm processes in the tropics.

The machine uses the available renewable energy well , both solar and environmental conditions, fueling convective motions, both in the aerial and liquid parts, taking care not to lose energy, thanks to adequate insulation and prepared exchangers; The machine can use both energy that comes from the sun, wind or underground, and energy that comes from other sources. This machine is used to make clean (distilled) water, useful for many things: for factories, for plants, for animals and also for people (suitably integrated with the

desired salts for drinking and nothing for industries, which they like even less – hard waters). This machine can help remove countless impurities resulting from many industrial and anthropic processes in general. In an indirect way, therefore, to remedy many ongoing social disparities in many communities .

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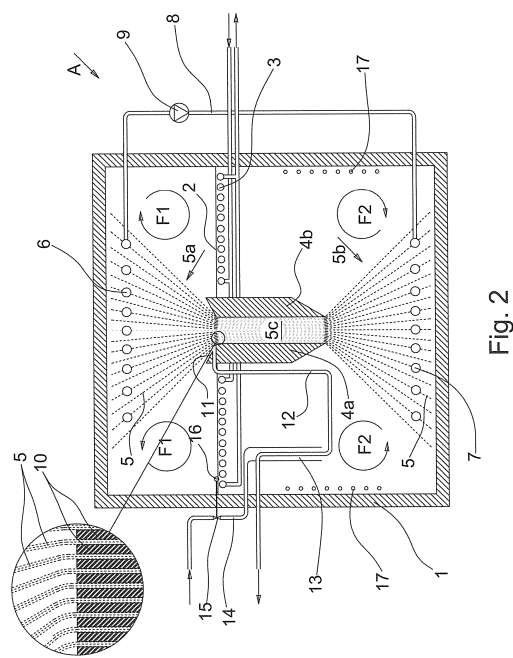


Fig. 2

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(54) Title (EN): METHOD FOR THE CONTINUOUS  
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IMPLEMENTATION OF SAID METHOD

(54) Title (FR): PROCÉDÉ POUR LA  
DÉSALINISATION CONTINUE ET DISPOSITIF POUR  
LA MISE EN ŒUVRE DUDIT PROCÉDÉ

(57) Abstract:

(EN): This invention refers to a method and a device for desalinating sea water, brackish water or from industrial processes. The device is suitable to use renewable energy sources such as solar or geothermal energy. The device is of the type that includes a tank (1) for the containment of the water to desalinate, in which there are heating means fitted to cause the evaporation of said water to desalinate, cooling means fitted to favour the subsequent condensation of the steam and means fitted to the collection of the condensed water and it is characterized in that: said tank (1), fitted to contain said water to desalinate, is filled up to a certain level (2); said heating means, for evaporating said water include a first heat exchanger (3), immersed in the water to desalinate and positioned nearby said level (2); said cooling means (5a), fitted to cause the condensation of the steam, are in heat exchange connection with the heating means (5b), immersed in said water to desalinate, said heat exchange simultaneously causing: a) the reduction of the temperature of said means (5a), therefore the suitable

conditions for the condensation of the steam; b) the increase in temperature, into the depths, of said water to desalinate.

(FR): La présente invention concerne un procédé et un dispositif de désalinisation d'eau de mer, d'eau saumâtre ou provenant de processus industriels. Le dispositif est approprié pour l'utilisation de sources d'énergie renouvelable, telles que l'énergie solaire ou géothermique. Le dispositif est du type comprenant un réservoir (1) pour le confinement de l'eau à dessaler, dans lequel se trouvent un moyen de chauffage conçu pour provoquer l'évaporation de ladite eau à dessaler, un moyen de refroidissement conçu pour favoriser la condensation ultérieure de la vapeur et un moyen conçu pour collecter l'eau condensée, et est caractérisé en ce que : ledit réservoir (1), conçu pour contenir ladite eau à dessaler, est rempli jusqu'à un certain niveau (2); ledit moyen de chauffage, conçu pour provoquer l'évaporation de ladite

eau à dessaler, comprend un premier échangeur de chaleur (3) immergé dans l'eau à dessaler et positionné à proximité dudit niveau (2); ledit moyen de refroidissement (5a), conçu pour provoquer la condensation de la vapeur, est en liaison d'échange thermique avec le moyen de chauffage (5b) immergé dans ladite eau à dessaler, ledit échange de chaleur provoquant simultanément : a) la baisse de la température dudit moyen (5a), et par conséquent les conditions appropriées pour la condensation de la vapeur; b) l'augmentation de la température, dans les profondeurs, de ladite eau à dessaler.

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#### Declarations:

Declaration made as applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate

Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv)) for the purposes of the designation of the United States of America





