



# Women entrepreneurs catalyzing change in wastewater treatment sector in Morocco

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Salma Bougarrani's entrepreneurship journey is nothing short of inspirational. Driven by the relentless pursuit of innovation, scientific curiosity and commitment to sustainability, Bougarrani has taken it as her mission to improve the lives of people through her company [Green WATECH](#) – one of the top African start-ups in cleantech and sanitation as the national winner of the 2018 GCIP Morocco.

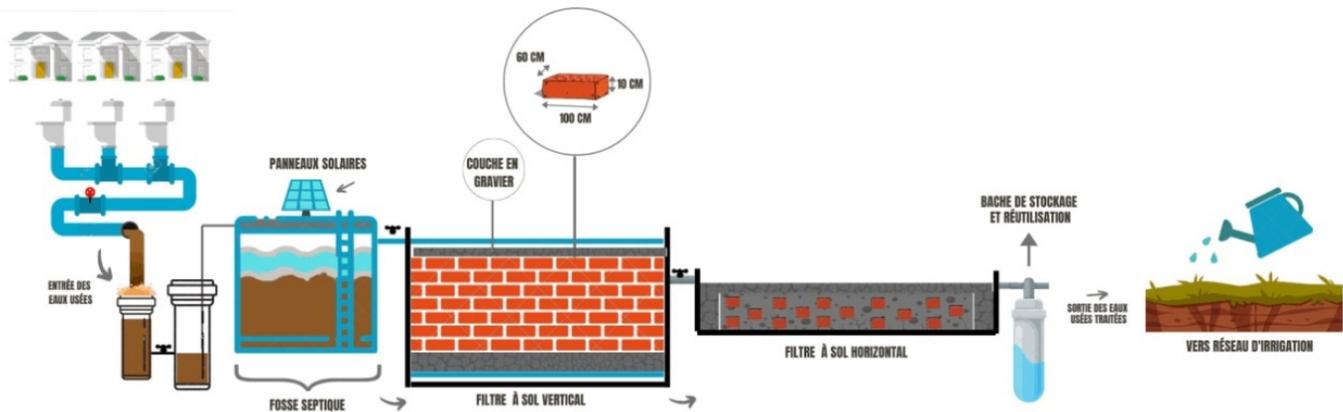
Access to safe water and sanitation is one of the most basic human needs for well-being and health. Yet nowadays around 2.6 billion people worldwide lack access to sanitation services, mostly in rural areas.

In Morocco, access to liquid sanitation has improved significantly over the past two decades at national the level – from 96.5% in 2016 to 96.9% in 2018. In urban areas, the rate of connection to the public liquid sanitation network was more than 76% by the end of 2019, and efforts are underway to achieve full connection by 2030.

However, in rural areas, connection to the sewerage network remains very low due to the nature of the relief and the dispersion of dwellings. This situation makes the use of septic tanks very widespread with a proportion of more than 75%. Considering the vulnerability of water resources due to climate change, there is therefore a need to find alternative solutions combining wastewater treatment technologies and water efficiency contributing to improved sanitation access and food security.

Seeing the untapped potential for innovation and improvement, in 2018 Bougarrani co-founded Green WATECH with a vision to provide an innovative and affordable wastewater treatment solution to the rural communities in Morocco.

Green WATECH technology offers a low-cost, ecological and efficient solution for reusing domestic wastewater – a filtering system providing wastewater treatment for households and decentralized communities without sewers for subsequent use in agriculture. This innovation is economically feasible and environmentally sustainable – the filters use gravity for operation and do not require an additional energy supply.



Green WATECH technology developed by Salma Bougarrani – a system of filters that treats domestic wastewater and provides water resources for agriculture for irrigation (schematic explanation).

Source: <https://www.greenwatech.com/>

Green WATECH uses a Soil-based Filter (SBF) system – a mix of low-cost and readily available materials such as soil, gravel and sawdust – to treat decentralized domestic wastewater and turn it into a valuable resource for irrigation and industrial use.

Green WATECH's SBF filtration system has several advantages, including low investment and operational costs, high hydraulic capacity, simple maintenance, minimum sludge production, no frequent clogging, no additional energy requirement for operation, independence from seasonal and temperature fluctuations and more than a 20-year lifespan.



Salma Bougarrani and her colleagues at the construction site of Green WATECH Waste water treatment plant in Igri village - High Atlas Mountains - Morocco. © Salma Bougarrani

Despite the high-impact potential of Green WATECH, Bougarrani initially faced challenges in getting her company off the ground. Bougarrani had a strong academic and scientific background, including a PhD in Environment and Water Treatment, however, she also needed entrepreneurship skills to develop the business model, install a first prototype and approach potential clients and investors. For a newly established cleantech start-up, these are all major challenges, as clients and investors tend to be more skeptical and risk-averse when it comes to clean technology innovations.

That was when Bougarrani discovered the [Global Cleantech Innovation Programme \(GCIP\)](#) – a UNIDO-led and GEF-funded initiative to accelerate the development and deployment of cleantech solutions in emerging markets and developing economies.

It was two years since the launch of GCIP Morocco at COP22 in 2016 in Marrakesh, so the word had spread that GCIP directly supported cleantech start-ups and SMEs

through business training, mentorship, networking and access to funding.

Bougarrani was determined for Green WATECH to succeed, so she decided to apply for the GCIP Morocco 2018 cycle to learn new skills, get mentorship support and funding to develop the solution and present it to the Ministry of Environment of Morocco.

Through GCIP, Bougarrani received invaluable mentorship and guidance, met like-minded peer innovators as well as accessed the network of investors and industry experts. The personalized recommendations from her mentor during GCIP were especially beneficial for her and her business.

“We are very proud of our contribution to the development of Green WATECH. This is in line with Morocco’s strategic [priorities] such as the generalization of wastewater treatment in rural areas, the provision to municipalities of treatment technologies adapted to their needs and the promotion of non-conventional water reuse to tackle the hydric stress faced by Morocco,” said Seloua Amaziane, Head of the Partnership Division, Department of Environment of Morocco. “This project has great potential for growth not only in Morocco but also in other countries with similar conditions regarding wastewater treatment”.

The GCIP experience allowed Bougarrani to refine her business strategy and gain the confidence she needed to take her company to the next level – further upscaling and investment support. Now, Green WATECH is benefitting thousands of people around Morocco, including rural communities, villages, decentralized institutes (hotels and schools) and agricultural farms.

“GCIP helped us improve our wastewater solution and produce the first prototype for the potential clients,” says Bougarrani. “Additionally, we developed a business plan and a pitch deck to approach more incubators and accelerators in the cleantech area”. Bougarrani invited potential clients to demonstrate the technology and the

quality of the treated wastewater. In the majority of cases, she was able to convert those potential clients into customers.



Salma Bougarrani, the other GCIP national winners and UNIDO HQ colleagues at the GCIP Global Forum and Awards Ceremony, 2019, Vienna.

Committed to supporting new cohorts of cleantech innovators, UNIDO has relaunched GCIP since 2022, expanding to an even larger network of partner countries, including Cambodia, Egypt, the Gambia, Indonesia, Kazakhstan, Lesotho, Mongolia, Morocco, Namibia, Nigeria, Pakistan, Republic of Moldova, Senegal, Sierra Leone, South Africa, Türkiye, Ukraine, Uruguay and Viet Nam.

Bougarrani's advice to the other cleantech entrepreneurs applying to GCIP in Morocco and other countries in the coming years is to take as much as possible from this opportunity: "I would totally recommend GCIP to the other cleantech entrepreneurs, taking full advantage of the provided training and the networking [opportunities] - these are key to success for green entrepreneurs."

Salma Bougarrani's success is a testament to the power of innovation, entrepreneurship and commitment to sustainable development. Not only is Bougarrani a successful cleantech entrepreneur making a significant impact on people's lives and the environment – she is also a scientist, a social inclusion advocate and an inspiring role model for young women pursuing careers in STEM.

If you want to get in touch with Salma Bougarrani for potential collaboration or partnership, reach out to her on [LinkedIn](#).

Follow GCIP on [LinkedIn](#), [Twitter](#) and [Instagram](#).

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