

## FEATURE

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VINCENT LOKA / WITH MICHELLE FALCONE

# The Road to Sustainable Water Access

**W**ater is the essence of life – without it, we cannot function to our fullest design. It makes up 60% of the adult body, and the average person can only survive three days without it. However, despite water's unparalleled significance, over two billion people on the planet do not have access to it<sup>1</sup>.

Urban and rural communities across the regions of Africa, Asia and South America face a variety of water and sanitation insecurities that impede their lives daily. Rapid urbanisation in cities has led to developments of slum neighbourhoods that cannot facilitate the infrastructure required for piped water or improved sanitation. In the countryside, villages are often located great distances from treated water, which creates a setting where they may be charged extortionate prices by private water distributors. If a family cannot afford treated water, they may have no choice but to use nearby ponds, rivers and lakes to meet their water needs. Most rivers in Africa, Asia and Latin America are more polluted today than they were in the 1990s<sup>2</sup>, as many of these fresh water sources also serve as bathing spots, toilets or community sewage deposits. Sanitation facilities are unsafely managed for over four billion people worldwide, causing 25% of our global population to drink from a faecally contaminated water source.

<sup>1</sup> <https://www.who.int/news-room/detail/12-07-2017-2-1-billion-people-lack-safe-drinking-water-at-home-more-than-twice-as-many-lack-safe-sanitation>

<sup>2</sup> <https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf>



**Chhnok Tru Village, Cambodia**

Around four million people in Cambodia lack access to safe water, while two million lack access to proper sanitation.

Diseases such as cholera, giardia, and chronic diarrhoea are easily prevented with access to safe drinking water, yet hundreds of thousands of children die every year because of them. Developing nations take the brunt of these consequences, as those living in high-income countries account for a small percentage of cases of water-borne illnesses, which almost never result in death. Recurrent water-borne diseases cripple a community's ability to develop, as parents cannot earn a livelihood and children cannot attend school when they fall ill. To put it simply, without access to clean drinking water, many are forced into or remain in poverty.

This growing issue is further exacerbated as climate change alters the landscape of the planet, and wide-scale catastrophes become more frequent occurrences. Natural disasters affect 130 million people in developing countries each year, and villages that previously had access to safe, clean water are having that access taken away. Communities gravely affected by population displacement or infrastructure damage struggle to recover from the huge societal costs in time, finances and health, continuing the cycle of poverty without opportunity for improvement.



**Irrawaddy River, Bagan, Myanmar**

The levels of poisonous chemicals such as cyanide and arsenic in river water are increasing. As millions of people depend on the river water for household use, its contamination can cause serious health problems.

But the world does not have to carry on like this. And water poverty can be eradicated.

Education is a crucial factor in battling the water crisis, but not all families have the capabilities to execute their knowledge properly. It may seem difficult to understand, but the water-insecure face choices that many of us have never had to make: a decision between home or heat, safety or sickness. Households might have the physical equipment to boil water but require their firewood for food or warmth; or, they simply cannot risk setting their flammable tarpaulin living quarters alight. To create a setting where these difficult decisions don't have to be made, where humans are given the basic rights to survival, the proper tools must be available to enable individuals to thrive. And in 2014, my co-founders and I took it upon ourselves to build them.

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To construct these solutions, my friends and I started Wateroam after we designed a water filtration system for a competition through our university. We deployed this first prototype in two countries and received positive feedback from the villagers who used it. As young and ambitious men, this motivated us to find a more sustainable method of replicating the solution so it could be deployed on a wider scale. Serving populations outside of Singapore, we faced geographical, cultural and habitual challenges that we could not overcome on our own. We discovered early on that to develop an efficient and sustainable infrastructure designed to meet their water needs, we had to connect with our end-users. After all, what was the point of building something nobody was going to use?

In 2015, our early partnership with World Vision allowed us to frequently visit Orang Asli villages in East Malaysia. The interaction enabled us to learn about their traditions and daily routines, while obtaining feedback about how our prototype could better fit into their lives. Gradually, we were able to understand what their needs were and how we could improve.

**Wateroam is a Singapore-based water innovative social enterprise that works to improve the life, living and livelihood of every individual globally through clean water access.**

Co-founded in 2014 by David Pong, Vincent Loka and Lim Chong Tee who met as undergraduates at the National University of Singapore, Wateroam carries out its mission by building a water filtration system, called *Fieldtrate Lite*, to help rural communities with no access to clean water. Over the years, through stringent tests and research, Wateroam has also produced new iterations of award-winning, patented water filtration systems – the ROAMfilter™ Plus and ROAMfilter™ Ultra. Both are designed for maximum filtration speed and quality, catered specifically for the needs of rural and disaster-hit areas.

To date, Wateroam has partnered with multiple organizations across countries to provide clean water to local communities and for disaster relief. This includes World Vision in Malaysia, New Life Foundation in Cambodia, Red Cross in Myanmar and several more. As of 2019, Wateroam has reached 83,000 people across 33 countries. Wateroam strongly believes that by empowering individuals to lead healthy lives, they can achieve their dreams and ambitions without the distractions of physical ailments. As such, Wateroam is committed to constantly working to eradicate global water poverty.



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### Mataram, Lombok, Indonesia

On 29 July 2018, the first of a series of destructive earthquakes struck the province of Lombok, where thousands have been left homeless and in desperate need of clean water, food, medicine and shelter.



to rebuild. They simply did not have all the tools to do so. This inspirational disposition is recognisable in many populations we have worked with, including those who had lost their homes to the floods in both Myanmar and Laos that same year.

These unpredictable events remind us that we must endeavour to create reliable systems that can improve the condition of populations immediately while also strengthening communities, so that they can be more resilient when faced with unexpected challenges in the future. While there has been progress towards sustainable development, the world is not on track to achieve the sixth Sustainable Development Goal (SDG) to ensure availability of water and sanitation for all by 2030.

With the understanding that access to potable water is integral to more than just health, we began conceptualising ways in which our simple filter could make a greater impact. Treated water enables families to improve their lives, and

## Understanding the requirements of these villagers guided us towards a solution that was simple, affordable, portable and manual.

It took us 15 prototype iterations and more than two years of technical and user testing before we were able to create our current community level solution. We had made initial assumptions about the types of products that would work best for rural conditions, but those ended up being either too complex, too slow, or not sufficiently portable. Understanding the requirements of these villagers guided us towards a solution that was simple, affordable, portable and manual.

We could not have created the Wateroam that exists today without their valuable input, and the insight we gained during this period has since enabled us to respond to communities within different settings and contexts. This has proven to be crucial with the increasing frequency of natural disasters, and we take pride in our rapid deployment abilities that can provide clean water instantly to those who require it most.

In 2018, multiple catastrophes struck the Southeast Asian region in a matter of months. The devastation caused by Lombok's two high magnitude earthquakes and subsequent tsunami warning left more than 400,000 people displaced. Infrastructure such as roads and piped water supplies were severely damaged, leaving communities cut off from access to aid. This resulted in victims being deprived of basic supplies, such as food, water and sanitation facilities at a time when they needed it most.

In response, a member of Wateroam went to Lombok to work with our partners to create both temporary and longer-term solutions for the water supply. As populations were scattered across the island, our ROAMfilter Plus travelled widely to filter water in multiple locations each day. Over 2,000 vulnerable individuals were provided access to clean water, which meant that even though they had lost their homes and, for some, their loved ones, at least they did not need to worry about losing their health as well.

As my colleague shared his experience with me, I was reminded of the power and responsibility we have as a global community to make a difference. He said what struck him most was the resilience of the people, and that the villages he visited were filled with individuals who wanted to pick up their lives and help their communities

**“I am now able to have revenue for my family and access to clean water without any concern. It also enables my community to access clean water at an affordable price so we all can save our money for a better standard of living, instead of wasting it on medicines for when we get diarrhoea.”**

Villager, Sok Kun





Improvements in the quality of drinking water mean significant improvements in health and quality of life.

## Until everyone has regular access to clean water, our world cannot flourish in the way Nature intended.

embedded in society, the entire community is uplifted. The micro-entrepreneurs and their children are no longer missing work and school because of having to collect water from distant sources, or because they've fallen ill from water-borne diseases; and they are no longer spending their money on expensive water or medication to treat diarrhoea. Instead, they are healthy and thriving, reinvesting their income and time in themselves and their community.

we recognised that there was room to deploy our filters in a more impactful way. In 2019, Wateroam partnered with a local foundation in Cambodia to roll out a micro-entrepreneurship model that places community development at its core. The project was designed to be replicable in a way that can create revenue opportunities where jobs may be limited, while also providing clean and affordable water to an entire community.

Our pilot project launched in Trapang Vihear where we installed a filtration solution and the equipment to initiate the micro-entrepreneurship scheme. 40 children and their families were provided instant access to clean water, but our goal was to generate a more empowered community. Our partner, the New Life Foundation, went on to train locals in the production, packaging, distribution and sale of this clean water. Through this effort, 50 more households have since been able to purchase clean drinking water for their homes, and the intention is that the distribution will expand to include sales to non-governmental organisations. By creating an infrastructure that can be

This project is an exciting and innovative way to bring about positive change on a community level, changing old patterns of water distribution that have hindered development, and undoubtedly the world requires more projects like these to build longevity and opportunities for growth. This programme has allowed us to make a difference in a way we never anticipated, and I feel thankful that Wateroam has been able to help communities feel empowered.

As the climate continues to unfairly hinder the development of already underserved communities, we, whether as social enterprises, charities, governments or individuals, must continue to engage with our communities to ensure we address their needs and provide them with the necessary tools to improve their lives. We must continue to be innovative to create clean water solutions that are dynamic, adaptable and sustainable in both rural and urban settings; the importance of accessible and affordable water cannot be underestimated. Until everyone has regular access to clean water, our world cannot flourish in the way Nature intended. ∞

### PERSPECTIVE

**KHEE SHIHUI** is @tabaogirl on Instagram. She uses social media to encourage herself and people around her to live more carefully and lightly on this one world that we have.

KHEE SHIHUI

## THERE IS NO PLAN(ET) B

**T**alking about climate change can be abstract and hard to relate to. News about how we are deforesting at unsustainable rates, different plants and animal species becoming extinct or low-lying island countries disappearing under rising sea levels is shocking, depressing and perhaps not news we want to confront. However, climate scientists report that our world has only 12 years left to press for sweeping and revolutionary changes to global economies that will limit global warming and keep negative environmental impact at moderate levels.

How do we even begin to solve a global crisis so complex and overwhelming?

If more people understood the connection between climate change and our behaviour as consumers, they might discover why they love this one world that we have and how they could take responsibility to protect it. My theory of change is that when more eco-conscious consumers and citizens vote using dollars and actions, we are signalling to corporations and governments that change in business and legislative practices need to happen urgently.

Food is our national obsession in Singapore. As with all things important in Singapore, I decided to start with food.