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With a doctorate in media and more than 26–years of professional experience, Tariq Siddiqui has been working in water sector for long and advising several leading water companies in India. As Chief Strategist at TS Advisory Services, he has been developing, evaluating, and defining marketing and communication strategies for different industries.

## SOLAR POWERED WATER TREATMENT: ENSURING SAFE WATER

Across the world, 2.0 billion people are suffering due to not having access to safe drinking water and 3.6 billion people, nearly half the world's population do not have access to safely managed sanitation. World Bank has reported that African Nations the least access of clean water to their population which has also declined substantially the last two decades.

The share of rural population in having access to safe and adequate drinking water within premises in India has increased to 61.52% in 2022 from merely 35.76% in 2016, especially owing to the successful implementation of Jal Jeevan Mission scheme.

With the climate change and energy volatility surging, the only way of providing clean drinking water is by operating the filtration system by adopting sustainable energy management like solar power. In African and large parts of middle eastern countries, the electricity is not accessible to large populace and is becoming the main reason for people forced to drink unclean and contaminated water leading to health issues and premature deaths. Globally, 3.4 million people die from waterborne diseases every year. Water–related illnesses include waterborne diseases that are caused by pathogens such

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as viruses, bacteria, and protozoa and in India one person every four hours on average have died of these diseases.

### Disease from Drinking Contaminated Water

The research studies reveal that every year:

- There are 1.7 billion cases of diarrhoea among children younger than 5 years.
- An estimated 446,000 children younger than 5 years die from diarrhoea, mostly

fever and an estimated 129,000 typhoid fever deaths.

- Worldwide, hundreds of millions of people are infected by parasitic worms found in contaminated soil due to dirty water being disposed of without concern.
- Worldwide, millions of people suffer from neglected tropical diseases (NTDs), many of which are water or hygiene related, such as Guinea worm disease, Buruli ulcer, trachoma, and schistosomiasis.

Solar powered water purification system is indigenously developed by Aquality Water Solutions Pvt. Ltd. with an aim to provide safe drinking water to security forces deployed in remote areas.



in low and middle income countries. This amounts to 9% of the 5.8 million deaths of children younger than 5.

- There are 3 million cases of cholera and an estimated 95,000 cholera deaths.
- There are 11 million cases of typhoid

These diseases are most often found in places with unsafe drinking water, poor sanitation, and insufficient hygiene practices.

- An estimated 41 million people suffer from active trachoma and nearly 10



million people are visually impaired or irreversibly blind as a result of trachoma.

### Access to Clean Water

The percentage of people using drinking water from an improved source that is accessible and free from contamination varies from country to country. Nearly 2.6 billion people globally have gained access to clean drinking water in the last 25 years. It is estimated that only 71% of the world population has access to safe drinking water. This means 29% of the world does not have clean water access. A look at the following table will provide the grim situation especially in African countries as they have least percentage of their population having access to safe water.

Country Name	%Population having access to safe water
China	76.0%
India	61.52%
Gambia	44.72%
Pakistan	35.84%
Zimbabwe	29.54%
Afghanistan	27.59%
Togo	19.56%
Democratic Republic of Congo	18.99%
Nepal	17.58%
Uganda	16.65%
Ethiopia	12.58%
Rwanda	12.10%
Central African Republic	6.18%
Chad	5.59%

Almost all these countries discharge billions of litres of untreated sewage every day to the their water bodies making the remaining surface water and even ground water sources further polluted. Rapid increase in economic activities, inadequate infrastructure for wastewater treatment

and pollution abatement and weak environmental governance has resulted in rapid deterioration of the quality of the water.

### Solar Powered Water Treatment System

Clean drinking water is essential for large rural and tribal population as well as armed forces out in the field and posted in wilderness. However, the transportation, delivery and sourcing of water is a huge challenge in such a condition with great logistical burden. Even the natural sources of clean water are difficult to find, especially in austere environments, where rivers, wells and lakes often contain harmful contaminants that are difficult to remove without proper water purification. In India, our security forces are positioned in remote locations, deep forests and completely inhabitable territories making the provision of safe drinking water more challenging.

Aquality Water Solutions Pvt. Ltd. has been leading the initiative to make clean drinking water available to our security forces and other establishments globally including human habitats in India, and African and Middle Eastern Countries. **The pioneering solution of Solar Powered Water Filtration System was conceived by Mr. Naser Azeez along with Mr. B. M. Balakrishna way back in 2015 when they demonstrated the prototype system to Ministry of Water & Sanitation.**

The new development of solar powered water filter has high speed water filtration unit that can purify water from practically any source, such as hand pumps, swamps, wells, floods, rivers, and even waste water. The technology being used applies innovative high purification techniques to make water absolutely clean leaving containments behind, resulting in producing high grade water suitable for drinking at any place without the requirements of conventional electric supply. These water treatment unit needs electricity as conventional units but the best part is that it generates its own electricity for the purpose and is ideally suited for areas with non-existent or erratic and unreliable power supply.

The purification device is also compact, at around the size of a big box, has low power requirements and has no removable parts that need to be maintained or replaced, such as carbon filters or reverse osmosis membranes. The best part of the system is it can recycle the used water as well for using it in toilet flush in all Swacch Bharat Mission toilets that has been constructed but not being used properly due to lack of water. Each unit has been designed as plug and function units for easy deployment at any remote site with minimal time for making it functional. The system can easily be transported to long distances by all transportation modes making it the best possible water purification system to be installed at any place in India and globally.

These systems can be used as a source of power generation as well when the water filtration is not in use and surplus electricity can be utilise for other purposes including lighting of establishments where it is being installed. During rainy or no sunny days, the system can be connected with grid electricity to function.

The technology will not only reduce the logistical challenges of



transporting bottled water, it will also reduce the risk of waterborne disease affecting mission success and ensure constant clean water supply to all far flung places wherever our security forces are deployed or even at villages where availability of clean water is a challenge due to electricity.

The solar-powered water treatment technology will help our defense services including Military, Navy, Air Force and paramilitary forces like Border Security Force (BSF), Central Reserve Police Force (CRPF), Central Industrial Security Force (CISF), Indo-Tibetan Border Police (ITBP) and even State Police Forces posted in forest and hilly areas. The portability of the system helps it in easy to install and easy to operate and maintain which will be a great advantage to the forces, by:

- enabling personnel to access clean, safe water out in the field, regardless of water source quality
- improving force resilience by reducing the logistical burden of transporting and relying on water tankers or bottled water convoys
- enabling scalable water production, with one water purification unit able to create between 500 to 20,000 liters of clean water per day as per the requirement
- promoting sustainability, by reducing the demand for electricity and bottled water
- reducing the carbon footprint associated with electricity use, and sourcing, transporting, and disposing of bottled water and traditional water purification filters
- a portable, modular and scalable water purification unit for safe drinking water at the point of use for humanitarian missions
- it can be mounted on a vehicle to provide clean drinking water to different locations everyday basis without any difficulty

AQUALITY Water Solutions have a team of passionate professionals to serve the customers beyond their expectation to provide the best possible water quality from the source of raw water and wastewater

treatment solutions. The leadership team and field engineers have exceptional skills in project management after delivering multiple key projects of water treatment in addition to having deep technical skills to execute and deliver any project on time meeting its objectives.

AQUALITY Water Solutions work with their client as a trusted partner to add value to their business by reducing operational costs and improving efficiency by meeting their clean water demands. It has worked with clients in multiple industries and municipalities across the country.

