

# REALITY FACTS OF GLOBAL WATER CRISIS & CREATIVE TECHNOLOGIES FOR CLEAN WATER

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**Abstract** - Water is one of the basic needs for every living creature in this world. About 1.8 million people die due to diarrheal diseases like cholera. Drinking water crisis increased now a day and many innovative measures and government initiatives are taken to solve the issues. But still the need is not fully completed. Hence this paper highlighted the importance of clean water, the innovative technology the Researchers are involved to reduce water crisis and indicated the reality facts of India if there is no water.

**Key words:** Population growth, industrialization, rapid urbanization, water scarcity.

## 1. INTRODUCTION

Two thirds of the earth's surface covered by water that is 71 % and water is the most important primary element for all living beings to Live on Earth .Apart from Living beings water is used for many other purposes. The report released by Niti Aayog in the year 2018 said that in India the demand for water will be more or twice the available supply before 2030.this can lead to six percent loss in the Indian country GDP and millions of people will be affected due to this water Scarcity. There is the decline in the ground water for about 45%.Wells provide 61.6% of water for irrigation, and canals provides for 24.5%

## GROUND WATER

Indian ground water accounts for 63% of all irrigation water and over 80% of rural and urban domestic water supplies. India is the Third largest exporter of groundwater. In India the two crops Namely Rice and wheat requires large Amount of water ie one kg of wheat requires an average 1,654 litres of water; **rice requires an average 2,800 litres of water.** India uses about 230 cubic kilometres of **groundwater** per year. India is said to be the largest user of ground water .85% of drinking water supply depends on ground water in India. But now there is a decline in the levels of ground water.

## INNOVATIVE TECHNOLOGIES

It is a paper which purifies the drinking water. This paper was invented with an aim to prevent water borne disease .This book was developed by Theresa Dankovich Post Doc researcher in Carnegie Mellon University in Pittsburg, in the US.. The researcher tested the artificially contaminated water in the lab and also in the countries like Bangladesh, Ghana and South Africa. The Main feature

about this Paper is that it is made up of silver- and copper-nano particle and hence 99.9 percent purity can be achieved. But the real fact is that the product is still under testing for other microorganisms namely viruses and this is waiting for Scientific and commercial Approvals Image Source: <https://www.graphicnews.com/en/pages/33380/SCIENCE-Book-that-can-save-lives>

## WATER SEER

The **Water Seer** device which can be planted into the ground for about six or more feet, then soil can be packed around its metal neck. There is a vertical wind turbine on the top of the Water Seer which makes the internal fan Blades to spin .this is done to draw Air into the subterranean chamber The device is being tested by the National Peace Corps Association and this was developed by VICI labs situated in US. This device can collect it can collect 37 litres of water a day out of thin air



Image source:

<https://www.indiatoday.in/fyi/story/innovation-wind-powered-device-produce-37-litres-clean-drinking-water-every-day-346292-2016-10-13>

## GRAPHENE FILTERS

Graphene is a two dimensional mesh of carbon atoms arranged in the form of a honeycomb lattice. The main feature of this mesh is it can filter out even the tiniest impurities in water. This was invented in the year 2004 at Manchester University. The research is still in the process



Image Source: <https://www.graphene-info.com/graphene-water-treatment>

**WATER FILTER STRAW**

Life Straw is a water filter which can convert the contaminated water into a clean Drinking water .This Innovative product was developed by a Swiss based company known as Vestergaard. The product was mainly developed for the people without access to clean and safe drinking water especially in the developing countries. More than 65 countries use this product .Many awards and appreciations was given to this product



Imagesource :<http://www.ascreations.in/lifestraw/about-lifestraw/>

**SOLAR WATER PUMPS**



**Image source:**

<https://www.climatetechwiki.org/technology/jiqweb-swp>

A solar water pump system is an electrical pump in which the electricity is provided Photovoltaic (PV) panels. This type of pumping systems consist of solar panel array that powers an electric motor, which in turn powers a bore .through this pumping system the ground water can be pumped from the ground or stream into a storage tank ,which gives a gravity feed, Hence the energy storage is not needed for these systems

**SE200 COMMUNITY CHLORINE MAKER**

Contaminated drinking water is a major problem throughout the world and the SE200 was developed to allow people to easily purify water with salt and a 12-volt battery. Through the process of electrolysis, the mixture of salt, water, and electricity produces chlorine that kills harmful bacteria in the water. It was designed to be so easy to use that even a school-age child can do it. Mountain Safety Research and PATH invented this device .



Image Source : <https://gearjunkie.com/msr-se200-community-chlorine-maker-guatemala-clean-water>

**FOG HARVESTING**

For harvesting is a Technology allows drawing water directly from moisture in the air even in the driest locations where fog and winds are common. The technology is advantageous as it provides clean water and in many cases, it meets the WHO standards for irrigation without any harmful environmental impact.

According to United Nations Environment Programme or UNEP the capital investment for fog harvesting is found to be low in comparison with other conventional sources of water supply. Based on the size, location the quality of fog catchers may vary. For a small system it costs around Rs 5000 to Rs 12,000 each.



Image source:

<https://www.indiawaterportal.org/articles/clearing-fog-water-conservation>

This technology is used in various countries like Chile, Peru and Ecuador, Atlantic Coast Of Southern Africa (Angola, Namibia), South Africa, Cape Verde, China, East Yemen, Oman, Mexico, Kenya And Sri Lanka. The Earliest Experiment at Fog Harvesting Was Initiated by IDRC (international development research agency) in the early 90s. Fog harvesting technology has already been used in some part of India such as Gujarat and Uttarakhand and Nepal. Through this technology in India, 12.5 billion litres of water can be effectively collected through fog capturing in net screens

#### REALITY FACTS OF WATER CRISIS IN INDIA

There is no basic water access for about 844 million people around the world

According to a report by the Niti Aayog- about 40% of India might have no drinking water by 2030.

Twenty-one Indian cities—including Old Delhi, Bengaluru, Chennai, and Hyderabad—will run out of groundwater by 2020

21% of country's diseases are water related

Over 329, 000 children under five die due to diarrhoea in India in 2015

Across India as a whole, it is estimated that women spend 150 million work days every year fetching and carrying, equivalent to a national loss of income of INR 10 billion/ 160 million USD

India has just 4% of the world's fresh water.

Gujarat was the highest performer on water resource management.

The lowest performers were Jharkhand and Meghalaya.

12 lakh people across 11 districts in Bihar are affected due to high Arsenic content in water

In India 84% of rural households don't have access to piped water.

#### CONCLUSION

Industrialization, growth in population and urbanisation, the usage and increasing needs of irrigation, increase in domestic usage have pushed up demand for **water**. Hence The government should focus on keeping a check on the groundwater being extracted. Should implement plans to optimize and maximize rainwater harvesting. Responsible citizens are the greatest asset any nation can have. Hence the solution cannot be done within over night It take some time with responsible citizens and proper government initiatives.

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