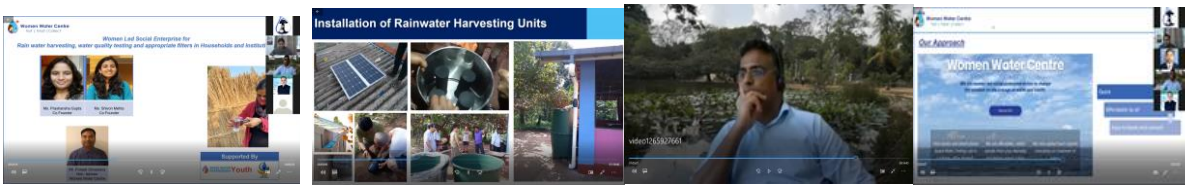

“Is rainwater safe for drinking? Lessons learned and best practices on water quality testing of rainwater”

The SARNET webinar 8 on the theme “Is rainwater safe for drinking? Lessons learned and best practices on water quality testing of rainwater” concluded on the 27th of January 2022 joined by speakers from Sri Lanka and India. Development practitioners, activists, researchers, and enthusiasts from the South Asia region representing the WASH sector from South Asia region attended the webinar.

This webinar was moderated by Mr. Zaheer Gardezi a Civil Engineer and a development professional from Pakistan. Dr. S.K Weragoda, Managing Director of the National Water Supply Services and Drainage Board, Sri Lanka, and the team led by Mr. Puneet Srivastav from WASH Solutions and Ms. Prashansha Gupta and Ms. Shivon Mehta from Women Water Centre, Lucknow, India presented the general perceptions, the daily drinking water demand, concerns stemming from lack of awareness and accessibility to water quality testing of harvested rainwater and innovative approaches to address the situation.

Opening the webinar Mr. Gardezi shared about his experiences related to biological, physical and chemical testing on the water quality of rooftop harvesting at the National University of Science and Technology, Islamabad in Pakistan. Convincing policymakers despite northern area of earthquake affected region in Pakistan having the largest-ever rooftop water harvesting and addressing the negative perceptions of the general public about the quality of rainwater for drinking purposes were among the key challenges encountered by Mr. Gardezi who was campaigning on rainwater harvesting.

The negative perceptions among the general public regarding using harvested rainwater for drinking stem from issues related to maintenance, unpleasant taste, an odor in the water, etc. “In Sri Lanka in urban areas water demand is 140 liters per day per person while in the rural areas, it is 10 liters per person per day. A 2.2 million cubic meters of water per day is supplied to 50% of the total population in the country by the National Water Supply Services and Drainage Board” stated Dr S.K Weragoda. The importance of exploring and utilizing rainwater harvesting as Sri Lanka is one of the worst affected countries by Climate change was emphasized by Dr Weragoda. In 2018 Sri Lanka has been ranked as the 2nd most affected country by climate change and in 2019 the country was ranked as the 06th. Dr. S.K Weragoda presented the features of the Sponge City approach used to collect, store and test the water quality of harvested rainwater.

Water quality testing often involves a high cost and is a time-consuming laboratory process stated Mr. Puneet Srivastav from WASH Solutions, India presenting the observations that led to the establishment of the Women Water Quality Centre initiative. The labs being out of reach of the common people had led to a low level of awareness and corresponding action in urban and rural communities. It results into one size fits all approach into water filtration. Market driven high-cost technologies makes safe water inaccessible

to large population at the bottom of the pyramid and results in high water foot prints and leads to unsustainable water management practices. Women Water Centers uses an entrepreneurship approach for quality testing coupled with increasing financial independence of women. The first women water Centre has been established in Lucknow in Uttar Pradesh. It is a start-up by Swiss Water partnership and WASH Solutions. It is the first sensor and smartphone-based water quality testing Centre. This Centre conducts water quality testing, treat (drinking and water treatment), and providing end to end services for collecting rainwater. The services are provided at the household and institutional level. More information on the webinar is available on SARNET social media platforms.

Webinar 8

Is rainwater safe for drinking?

The moderator is presently the coordinator

Formerly he was the Director-General for local government and Rural Development for the government of Pakistan

More than 40,000 units were established in the earthquake affected areas in the northern Pakistan.

The first and foremost question that I received from the common man and even the educated people is rainwater quality good for drinking? As everyone first and foremost thinking towards drinking no matter the large quantities that we use for agriculture or domestic usage. As humans the perception of water is whether it can be used for drinking. The largest ever project of roof top water harvesting impleented in northern areas of earthquake affectted Pakistan. It took me 6 years to convince the top management about the suitability of rainwater for drinking.

How we can minimise this impression that it is good for drinking. The drinking requirement is 5 to 10% of the daily demand.

Mr Gardezi shared his experiences about biological, physical and chemical testing on the water quality of rooftop harvesting at the National University of Science and Technology, Islamabad in Pakistan. The PH value remained within the range of 6.5. Turbidity was controlled through the introduction of a first flush diverter. The hardness and alkalinity were in the range of the WHO guidelines. The only concern was the biological contamination that had happened due to bird droppings. He also shared a similar experience with university students which assessed the quality of rainwater in two types of tanks. The first type was Polyethylene tanks used 3 to 4 months before the research and the second type was from the cement water tank which was cleaned after a year. It was found that all the results were within the parameters of WHO. Construction of buildings in the hilly areas of Kashmir and northern part of Pakistan rainwater harvesting systems was implemented. At the end of the tank, a small innovation was done. A close sand filtration was added to which a little charcoal was added to replace the odor.

Dr S.K Weragoda the Director of the China Sri Lanka joint research and demonstration centre for water technology. Water is required to maintain life. Water helps to regualte body temperature, digestion, relieves fatigure,improves the immune system etc

When the body weight in Kgs is divided by 39 with other factors the minimum individual water requirement can be obtained. Medical experts say that if you urinate 1 mililitre per hour/minute you have enough water in the body.

The water requirement 75% irrigation, 20% industry and 10 % for domesticn consumption.

2015 access to safe drinking water is a basic human right of all living beings in the world Am having doubts whether everyone is having this right.

The water requirement in the Sri lankan context is 140 litres per day per person in the urban areas, and 10 litres per person perday in rural areas.

The drinking and cooking requirement per eperson assuming you have groudn water for other requirements.

Sri Lanka is producing 2.2Cmillion cubic Metres of water per day for 50% of the total population and hoping to get another equal amount for almost 75% of the population in 2025. The target is to provide pipe borne water through the main institute of the country National Water Supply and Drainage Board. The balance amount is the question whether we have the expected quantitiy. The only option then is rainwater for an island . Sri Lanka is one of the worst affected countries by Climate change. In 2018 Sri Lanka has been ranked as the 2nd most affected country by climate change and in 2019 the country was ranked as the 06th. In the country pipe borne water is supplied to a 47.%. National Water Supply and Drainage Board is responsible for 80% of the water supply. Still we are relying on ground water and the percentage of the population relying on rain water for drinking is less than 01%. There are 50,000 household rainwater harvesting tanks. During water survyes I have come across people who use over 30 years. A finding from a ground level survey revealed that there had been certain challenges for promoting rainwater harvesting for drinking for example the Ferro cement tanks. People found that there were difficulties related to mosquito breeding, and medical professionals were demdnding to remove the guttere etc. In addition to this people were concerned about the water quality and wehter we had adequate material dissoled in water. Colifoam and E coli was having high percentage which was exceeding the drinking water requirment.The PH value in this water was very relatively low.

The key concerns of rainwater harvesting got maintenance issues, unpleasant taste, insufficient water ,some odour after keeping for a long time and people do not feel comfortable using this water.

We have initiated a project on rainwater collecting systems the focus was on quality and quantity. In troducing a cover the gutters to prevent the debris coming in and a solar panel to support a small pump to take water from the storage tank to the domestic filter kept in the dining roomwith a tap that can be opened and get water. The filter had a special cartilage from USA . This particular filter can remove certain pathogens using lock 6 removal system(sand filteration and chlorination together lock 6 can be used). In addition to the water quality in this sponge city concept done in many other countries Europe and Maldives can have underground storage on toip can be filled with sand and soil and the space can be used even vehicle parking.

Water quality was improved by using food grade calcium and advance testing facility was made available

Problems and challenges

Water quality testing often involves a high cost and is a time consuming laboratory process stated . Water quality services according to SDGs there are 2 elements how do we assure water is safe and services approach.

The labs are out of reach of the common people there is a low level of awareness and therfore the corresponding action in urban and rural communities. It results into one size fits all approach into water filteration.

In urban areas with increasing groundwater and surface water pollution we aref inding reverse osmosis based filters as a very common feature. And many times they are adopted for areas where there is no such need.

Driven by market driven high cost technologies which makes safe water unacessible to large population at the bottom of the pyramid and results in high water foot prints and leads to unsustainable water management practices. how our actions to be more responsible and cliamte resilience in water management.

Taking a clue from the health sector like popularsing the health check ups.

Lack of end to end services designing,installation and monitoring of water quality of roof top rainwater harvesting. This results in poor uptake of rainwater harvesting. Use of crude methods of rainwater harvesting and recharge of ground water. Peple are not aware of the benefits accruing from the rainwater harvesting that results in poor valuation of harvested rainwater and water quality. This results in low demand for roof top rainwater harvesting in urban areas though there is huge demand as we have not been able to establish the cost benefit analysis.

We have used mineral water,bottled water and packaged which we use at some point of time. More the water fit for drinking more the price. The water quality determines the value for the water.

Both in urban and rural areas and globally women are the water managers. An entreprenruship approach is used

Women water centers uses an entreprenurship approach for quality testing coupled with incresing financial independence of women

The first women water centre has

Test,treat(drinking and water treatment) and collect(rainwater harvesting systems)

It is a start up by Swiss Water partnership and WASH Solutions aim is to change the mindset regarding the water quality and how they manage at household level.

First sensor and smar phone based water quality testing centre has been established in Lucknow in Uttarpradesh.

The services are provide at household and instituional level.

Women led enterprises aims to change the mindset

Deliver report on line within 3 days,qucik,easy to book and consult.

Any body can book online, there is real time testing, water quality testing samples are collected homes,designiong rainwater harvesting and monitoring them over a period of time. Third designing the waster treatment system and the

Women will be trained on testing