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Impact of Well Recharging on Household Water Security: A Case Study on Integrated Water Management Programme in Kerala

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I. WATER SECURITY

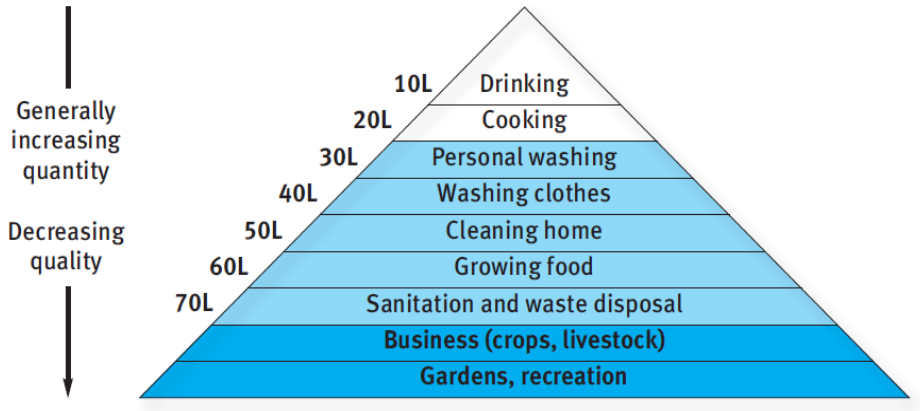
A number of individual securities must be needed to achieve human security: a good level of health and well-being, adequate and safe food, a secure and healthy environment, means to a secure livelihood, and protection and fulfilment of fundamental rights and liberties, among others (UNDP, 1994). Water is required for ensuring these securities to met. Many parts of the world face a water stress situation. The World Water Development Report 2015 says that around 748 million people do not have access to an improved source of drinking water. Access to safe water is a human right and entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses.

Water Aid defines water security as: 'Reliable access to water of sufficient quantity and quality for basic human needs, small-scale 'livelihoods and local ecosystem services, coupled with a well managed risk of water-related disasters.' Access to water means people can use water within a reasonable distance of their home, and without exclusion of race, tribe, religion, disability, gender or other cause. The quality of water should be such that there is no significant health risk arises from its use. It should be acceptable in appearance, taste and odour. To quantify water security, Asian Water Development Outlook 2016this vision was developed into a water security framework with five interdependent key dimensions including Household Water Security.

Providing all people with reliable, safe water and sanitation for achieving household water security is an essential foundation for the efforts to eradicate poverty and support economic development. It is important to improving access to water for the basic human needs like drinking, cooking, bathing, sanitation and hygiene of the poorest people. Household water security is an essential foundation for efforts to eradicate poverty and support economic development.

The World Health Organisation (WHO) defines optimal quantity for domestic use as 100 litres per person per day. Various studies show that the amount actually collected from improved water sources for domestic use tends to be below these standards. An outline of different quantities of water for different purposes is as illustrated in figure

Water Requirement for Different Purposes (Litre/ Person/ Day)



Source: water security framework, water aid(2012)

Since the need and demand for this valuable water resource has been increasing over years, the necessity of scientific management of water resources is more important nowadays. Concern over the global implications of water problems was voiced as far back as the United Nations conference on the human development in Stockholm in 1972. The UN-sponsored conference on water at Mar del Plata, Argentina, in 1977 was seminal in the formation of the new approach and in promoting the importance of water and water management to world governments. Rainwater harvesting is an alternative for supplying water in the face of increasing water scarcity and escalating water demand. It is the deliberate collection and storage of rainwater that runs off a natural or manmade catchment surface like rooftop, compounds, rocky surfaces, or hill slopes, or artificially prepared land surfaces. Water harvesting can be practiced in both urban and rural areas, by the rich and poor, and by industrialised and developing countries. There are two main systems of rainwater harvesting; storage for future use, artificial recharge to ground water.

Kerala has been showing decreasing availability of rain, lowering of surface and ground water and decreasing trend in per capita water availability. RWH is the most viable solutions for severe water problems, particularly in Kerala, the land of rain. It is important here to arrest and conserve as much rain as possible with suitable methods. Rain water harvesting is an effective process to utilize the natural gift. Kerala has an annual average rainfall of 3085 millimetres which is almost three times higher than the national average of 1194 mm. It is estimated that more than 90 per cent of the rainwater in Kerala is flowing into the sea within a day or two. Kerala has surplus water during the monsoon months but shortage of water during rest of the year. For the entire state, impounding the rainfall for 44 days would be enough to supply 250 lpcd to every person in Kerala for an entire year if it managed well.

State and local self government institutions are implementing a number of drinking water schemes to solve water scarcity, but many of the drinking water schemes does not serve the expected outcome. The KWA revealed that there are 32,568 drinking water schemes implemented in the state, and out of which 44.5% schemes don't serve the expected outcome. All these pointed towards the need for alternative as well as sustainable water management practices.

II. RAINWATER HARVESTING

Rain is a primary source of water. There are two main techniques of rainwater harvesting:

a) Storage of rainwater on surface for future use.

b) Recharge to groundwater.

III. IWMP

IWMP is a centrally sponsored scheme under the Ministry of Land Resources, Department of Rural Development, Government of India. In Kerala, the scheme is implemented through Department of Rural Development. The main objective of IWMP project is judicious utilization of every drop of rainwater received, for domestic consumption, agriculture, horticulture, livestock rearing etc thereby attaining self sufficiency in drinking water, increase in employment opportunities, increase the standard of living etc. There would be dedicated implementing agencies with multi-disciplinary professional teams at the national, state and district level for managing the watershed programmes.

At the state level there is the State Level Nodal Agency (SLNA) with Agricultural Production Commissioner as the chairperson. At the district level there is the Watershed Cell cum Data Centre (WCDC) which will oversee the implementation of watershed programmes in each district. At the project level there is the Project Implementing Agency (PIA). In the project implementation level, Block Panchayat is the PIA. At the watershed level there is the Watershed Committee (WC), constituted from Grama Sabha. The actual implementation of the scheme in the field is done by WC. The project aims to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table.

The study on RWHS and its impact is very important as it is related with water scarcity and the measures to overcome the scarcity. Unless efforts at augmenting the local water sources are made, sustainable water supply to rural households will remain a tough issue to handle. A study was conducted to assess the impact of IWMP in Ernakulam districts of Kerala. Total sample of 50 beneficiaries with IWMP well recharging were surveyed. The study assess the impact of well recharging on the quantity, quality, regularity, proximity, time taken to collect water, access over water, effort to collect water, practice of other RWH methods, water use efficiency, water security and quallity of life of beneficiary households.

Well recharging is the suiable method of rainwater harvesting in midland area. In kerala the density of well is highest in the country and can use the large number of wells for water harvesting. The IWMP programme improved the quantity and quality of water for the beneficiary households. It improed the proximity of water sources. It was highly difficult for the women to collect water before the implementation of well

recharging. Now they could save their time and effort to collect water, and it improved their health also. They manage water needs in the summer seasons and save money which they normally spend to purchase water from tankers. Prior to well recharging, households normally spend 500 to 2000 rupees monthly for purchasing water. The beneficiaries now show more interest in practicing other water harvesting measures also. There are some positive benefits to the neighbor families as their water levels of dugwells improved drastically.

IV. CONCLUSION

Water is currently considered as the most critical natural resource on the planet. It is available to humans from secondary sources like river, lakes, canals etc which is replenished through rain, the primary source of water. General consensus should be emerged among the public to rely more on the primary source of water RAIN. RWH is increasingly recognised as a relatively low-cost intervention which can be employed to ensure human right to water.

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