Volume 4 Issue 2 October 2016 ISSN: 2321 – 788X

FINANCING FOR RAIN WATER HARVESTING IN KERALA

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Abstract

Compared to other Indian States, Kerala is considered as a heaven of water, having 3070 MM Average Annual Water Fall, presence of around 44 rivers, various lagoons, lakes, ponds etc. Regardless, Kerala is facing seasonal and spatial drinking water scarcity owing to its inclined geography, unequal distribution of rainfall and poor water management strategies. Around 70.0 per cent of Kerala's total rainfall is the June to September time and 20.0 per cent in October – November period. In addition, districts sharing open boarder with Tamil Nadu are receiving comparatively lesser rainfall than other districts. There is also significant variation in rainfalls in hilly areas, middle land and coastal areas. Lower degree of ground water conversion is happening as the rain water flows out to the sea with 2-3 hours after a rain. It is observed, such a way Kerala is losing 60.0 per cent of water received from annual rainfall. There are some rain water harvesting initiatives from Government of Kerala, still it is evident that, people are not coming forward to spend money in water preservation infrastructure mainly due to the lack of institutional financial support. Financial institutions including banks are also not interested to lend money for the same as they feel it as a no return investment. Unlike other states, micro financing institutions are not actively involved in water credit in Kerala. Relevant lending policies especially in the form of rural credit from banks, non banking finance companies including micro financing institutions to support the village based water preservation initiatives especially for rain water preservation, storage and distribution are need of the hour. SME Loan products for rain water based industries at rural level including Drinking Water Bottling Plants, Carbonated Water Bottling Plants, Ice Plants etc, promoted by rural communities especially Women Self Help Groups, can be ensured and which will fund the rain water harvesting infrastructure including water treatment facilities, storage tanks, and even distribution vehicles. This paper specifically seeks a conceptualized solution to bridge the financing gap in rain water harvesting in Kerala, by linking the same with a community based rural livelihood alternative.

Key Words: *Rain Water Harvesting, Financing, Water Based Rural Industries.*

Introduction

Water is the synonym of the life. It is a phenomenon having no fixed form, colour, taste and smell but the powers to create, sustain and destruct. It is omnipresent. It can dissolve all matters. Rigveda says "Water is the base of all pleasure, it is the ambrosia and medicine ". Bible says "Water has been created before light and life". Koran says "Allah has created all the lively matters from water. In ancient Bharat, water is considered as one of 'pancha bhootha' – the five basic factors of universe. Sarma.K.N says water is an important inevitable factor in most of Indian social and religious rituals.

It was also considered as king's dharma'(duty), to preserve the water in large ponds to avail for agriculture in drought time and to punish those, not involved in water preservation or found polluting the water. Around 95% of water in the earth is trapped in rocks like Sedimentary Rocks. Only 5% of water is found independent, and out of which 96.54% is with the sea.

Table no.1 Global Water Distribution

Source	Per Centage of Fresh Water	Per Centage of Salt Water
Oceans, seas etc.	-	95.54
Ice-bergs, Permasrost etc.	68.6	1.74
Ground Water – Fresh	30.1	0.76
Ground Water – Saline	-	0.93
Water in sand	0.05	0.001
Ice with land	0.086	0.022
Water in lakes – Fresh	0.026	0.007
Water in lakes – Saline	-	0.007
Rivers	0.006	0.0002
Atmosphere	0.04	0.001
Biosphere	3.003	0.0001
Other sources		0.0008
Note: Figures not rounded, last digits omitted.		

It is unable to use the major part of ground water due to the reasons including its deep positioning and salinity. Still around 0.02% of total water, which includes a part of ground water, water containing in rivers and lakes, is found in pure form. The available fresh water constitutes 14 times of water required for the whole mankind. Despite of the renewal by rainfall, still there is 7 times availability of required annual demand. Even in this scenario, still the world is facing water shortage owing to the flow of rain water to saline water sources especially sea. Insufficient rain water preservation efforts from humans play the villain here.

Uneven Global Water Availability

There is also location wise inequality in water availability existing globally. Despite of Global Annual Rainfall of 113 cm, 78% of total rainfall is in sea. Only 22% of rainfall is at land.

Table No.2 Global Water Availability

CONTINENT	POPULATION (%)	WATER AVAILABILITY (%)
Africa	8.6	15.0
Asia	60.4	36.0
Australia	0.5	4.0
Europe	8.0	11.2
North America	5.1	15.0
South America	8.6	26.0

Asia having 60% of the global population only gets 36% of the water available at the same time North America having 5% of global population gets much higher, 15% of the water available.

Background of the Study

The scope of the study is restricted to the State of Kerala and focuses on the questions, whether there is an imbalance or unequal rain water distribution in terms of seasonal and spatial differences, if so, can it be manageable with better water management efforts more specifically with Rain Harvesting System. In addition, the study looks into the concept of establishing community enabled rain water based rural industries / livelihood initiatives by ensuring SME loans from financial institutions for the same.

Rain Availability in Kerala

The monsoon wind which is behind the main rainfall source in India is blowing in two times in a year, in June - September from South-West and in October from North-East. Among the Indian states, Kerala is always considered as a heaven of water, having 3070 MM Average Annual Water Fall, presence of around 44 rivers, various lagoons, lakes, ponds etc. The positioning of Western Ghats ensures a good orographic rainfall in the state which is much higher compared to other Indian States. Around 70.0 per cent of Kerala's total rainfall is the June to September time and 20.0 per cent in October – November period. Regardless, Kerala is facing seasonal and spatial drinking water scarcity owing to its inclined geography, unequal distribution of rainfall and poor water management strategies.

Table No.3 Distrcit wise Rainfall in Kerala

Sl.No.	District	Average Annual Rainfall (in mm)
1	Kasargode	3792
2	Kannur	3633
3	Kozhikode	3877
4	Wayanad	3610
5	Malappuram	3406
6	Palakad	2350
7	Thrissur	3317
8	Ernakulam	3215
9	Idukki	3312
10	Kottayam	3139
11	Alappuzha	3006
12	Pathanamthitta	3312
13	Kollam	2705
14	Thiruvanathapuram	2412

Districts like Palakad and Trivandrum, sharing open boarder with Tamil Nadu are receiving comparatively lesser rainfall than other districts.

Table no.4 Locational Rainfall Distribution in Kerala

Geography	Annual Rainfall (mm)		
	South	North	Average
Coastal Region	900	3500	2910
Midland Region	1400	4000	3070
Hilly Region	2500	5000	3200
Average	1800	3800	3070

There is also significant variation in rainfalls in hilly areas, middle land and coastal areas. Lower degree of ground water conversion is happening as the rain water flows out to the sea with 2-3 hours after a rain. It is observed, such a way Kerala is losing 60.0 per cent of water received from annual rainfall.

Table No.5 Seasonal Rainfall Distribution in Kerala

Period	Annual Rainfall (%)		
	South	North	Average
January – February	02	0.5	01
March – May	11	5.5	13
June - September	54	85	70
October – December	33	09	16

Almost 70% of the total rainfall is on the South-West monsoon time and rest of the months, rain availability reduced to 30% of total rainfall. In reference to the Table No.5, it is also visible the variation in rainfall received in South-Kerala and North Kerala.

Rain Water Harvesting in Kerala

Rain Water Harvesting denotes preservation of rain water for future requirements. Government of Kerala has identified the peculiar scenario existing, that around 60% of total rainfall ie. 7200 Crore Cubic Meter out of 12000 Crore Cubic Meter is draining to the sea. On the basis of the concept 'catch the water where it falls', some rain water harvesting programmes, both in state level and micro level has been implemented.

Kerala Government's programmes including "Jalanidhi" and "Mazhapolima" have created much awareness about the rain water harvesting among the public. Amendment in Building Rules has insisted the roof top harvesting arrangements on new buildings. In addition, Kerala State Water Policy 2008, was prepared for a sustainable water management.

Even though, Kerala is yet to reach the desired results in water management activities, mainly in rain water harvesting. Considering the successful history of various

social and welfare programmes especially literacy mission, the efforts of the state not up to the mark.

Roof Top Rain Water Harvesting

Roof Top Rain Water Harvesting deals with the collection of rain water in tanks made either made with bricks or fero cement, through the downtake pipes attached with rooftop. This is the most convenient and implementable method for Kerala's conditions. It is calculated 1,82,500 Litre water required annually for a family consisting 5 members in India. Normally, a storage tank with a quantity of 10,000 – 15,000 Litres is required for Kerala household considering the availability of rain in almost 8 months and average annual rainfall of 300 cms. But it is possible, to store more water with a much bigger storage facility, by a consolidated effort to cater the multiple requirement of water, both internal and external.

Concept – Implementation and Financing of Community Scale Rain Water Rural Industries / Livelihood Initiatives

As per the National Water Policy 2012 there should be the efforts to preserve the water considering it as public good. In addition, social justice should be ensured in its distribution and usage. Priority should be on household consumption among other requirements of water. The water available over and excess of basic requirement should be considered as a commercial commodity. Same time, Kerala State Water Policy 2008 backs the sustainable management, planning and consumption of water resources involving the people through decentralized democratic institutions.

Considering the views of both National Water Policy 2012 and Kerala State Water Policy, the rain water needs to be preserved on community scale basis and the excess water after community consumption can be shared among the required, with a nominal price covering preservation, storage, distribution and financial costs. Such distribution of water over above own consumption can be extended to sanitation, agriculture, and small scale industries.

At present, the financing on rain water harvesting at Kerala mainly through government and banks. It is observed, such credit flow is not sufficient to enhance the coverage of beneficiaries. Both involvements of more lending institutions and availability of more loans products are need of the hour. Since, financial institutions usually fund against the income generating activities, linking of rain water preservation efforts with small scale / rural industries can ensure more credit on water and eventually more takers of the act.

Better infrastructure for rain water harvesting can be done including storage tanks having higher capacity, plumbing, more roof top coverage, treatment facilities, packaging / bottling machines, distribution vehicles, quality assurance facilities and other value addition arrangements, if the same is implemented in a community scale.

The existing bottle neck of lack of people's interest to invest in rain water infrastructure will be cleared, once they feel they can have a livelihood with the water, they preserved and they will have the financial support for the same too.

Conclusion

- There is an unequal distribution of rainfall in Kerala seasonally which leads to fresh water loss in June to September period and water shortage in remaining months.
- Rain Water Harvesting needs to be promoted to curb the seasonal and location wise water availability imbalances.
- Loan products from banks and other financial institutions to fund rain harvesting initiatives especially on infrastructure, need to be ensured by promoting rain water based rural industries / livelihood initiatives among rural communities including women self help groups.
- Further, in the same model, studies on possibilities of financing of community based desalination plants and related industries at Coastal Kerala can be done.

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