



## CUSTOMER PREFERENCE INDEX AND ITS APPLICABILITY IN URBAN WATER CONSERVATION: AN EMPIRICAL STUDY

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### **Abstract**

Kerala one of the smallest states of India, though blessed with so many rivers and water bodies experiences severe water shortages during summer months. Due to rapid urbanization, increased economic activity, population explosion, changes in land use pattern and higher standards of living, the gap between the demand for and supply of water in the state has been widening. Protection of the existing water bodies and other sources of water can contribute much in reducing this gap. But water conservation and water harvesting are not strictly practiced. Unfortunately these are the most neglected parts of state's water policy. The agencies for water conservation are interested in water use but not keen in conservation. Only if the people are aware of the need for conservation and only if they conserve water there can be an ultimate solution. The present paper examines the awareness of urban water consumers about water conservation, practice of the methods by the people and finds out the most preferred method of conservation in the urban areas of Kollam District in Kerala.

**Key Words:** *Water Conservation, Preference Index, Building Rules, Water Harvesting.*

### **Introduction**

Kerala experiences both South West Monsoon and North East Monsoon but there is large spatial and temporal variation in the rainfall system and the abundance of water resources in one season leads to shortage in next season. To meet this demand, augmentation of existing water resources by development of additional sources of water or conservation of the existing resources through impounding more water in the existing water bodies and its conjunctive use is required. An integrated water management system is essential to ensure sufficient water in the entire system. Rain water harvesting and ground water recharge must be effectively implemented to reduce the consumption of potable water and sustainability of ground water resources. (Economic Review 2012). In the state of Kerala, water conservation is the most neglected part of water resources development, even though it is the most vital link in water management. The Kerala Water Authority and Irrigation department are yet to understand the importance of water conservation. The same is the case with the government wings of Ground Water Department and Soil Conservation. These are the main agencies associated with water management. The Centre for Water Resources and Management (CWRDM), a premier research organization dealing with water is also not keen in water conservation. All the above organizations are but interested in water utilization. Kerala is very poor in water literacy and this plays a major role in water resources management (T T N Bhattathiripad, 2003). Sasthamkotta lake meets the drinking water needs of half million people of the Kollam district and also provides fishing resources. An investigation by the Centre for Earth Science Studies (CESS) had revealed that the lake was losing its water level at an alarming rate of 1 cm per day (R. Krishnakumar, 2010). The fall in water level of the lake is indeed a matter of serious concern as the district water supply schemes entirely depend on the availability of water from this fresh water lake. The conservation measures and water literacy programmes adopted for sustaining water for the future generations are inadequate (V T Sheeba, 2009). The present study examines the awareness of urban consumers about water conservation measures and



examines whether they are practicing these methods in their homestead and locality. It also finds out the most preferred method of water conservation of urban water consumers.

**Objectives of the Study**

1. To examine the awareness of urban consumers about traditional and other water conservation measures
2. To examine the extent of practice of these methods in the homestead and locality.
3. To find out the most preferred method of water conservation of urban water consumers.

**Methodology**

The present study is conducted among the urban water consumers in Kollam District. Out of the total population of 41937 domestic connections a sample of 600 beneficiaries were selected for analyzing awareness of urban consumers about water conservation measures and to examine whether they are practicing these methods in their homestead and locality. Almost 1.5 % connections rounding nearest 100 were selected randomly from total connections. Thus the total sample size becomes 600. Then number of samples from each corporation/municipality was fixed with probability proportional to sample size. That is proportional to the total connections in each corporation/municipality. Percentage analysis is done for examining awareness about water conservation and a preference index is constructed for finding out the most preferred method of conservation practiced by the people .The major source of primary data is the interview of 600 heads of households selected from the beneficiaries under the 3 urban water supply schemes in Kollam district. The secondary data is collected from the various publications of National Institute of Urban Affairs, National institute of Public Finance and Policy, National Council of Applied Economic Research, Census of India, Planning Commission and various journals and websites.

**1.1 Awareness about the Traditional Methods of Water Conservation**

Water conservation measures include traditional methods of conservation like homestead water management, rain water harvesting, making kayyalas/bandhs , making pits etc. These can be practiced for conserving water. Urban water consumers were asked about the awareness of the water conservation measures. An awareness about water conservation measures is collected and presented in table 1.1

**Table 1.1-Awareness about the Traditional Methods of Water Conservation**

Response	Corporation (n=431)		Municipality (n=169)		Total (n=600)	
	Count	Percent	Count	Percent	Count	Percent
Homestead water management	395	91.6	168	99.4	563	93.8
Rain water harvesting	416	96.5	168	99.4	584	97.3
Kayyalas/Bandhs	388	90.0	168	99.4	556	92.7
Making pits	409	94.9	168	99.4	577	96.2

Analysis of the data in table 1.1 reveals that in Corporation area 91.6 percent of respondents are aware of homestead water management, 96.5 percent are aware of rain water harvesting, 90 percent are aware of making kayyalas/bandhs and 94.9 percent are aware of making pits .In the municipality area 99.4 percent of respondents are aware of homestead water management, 99.4 percent are aware of rain water



harvesting,99.4 percent are aware of making kayyalas/bandhs and 99.4 percent are aware of making pits .Out of the total respondents 93.8 percent of respondents are aware of homestead water management,97.3percent are aware of rain water harvesting,92.7 percent are aware of making kayyalas/bandhs and 96.2 percent are aware of making pits. It is notable that the people in municipal area have more awareness regarding the various water conservation measures.

**1.2 Response about Practice of the Methods in the Homestead**

Mere awareness about water conservation can contribute nothing towards water conservation. Practicing the measures in and around a locality and the state is important for sustaining water bodies for present and future use. Hence data regarding whether it is practiced in the homestead or not is collected. It is presented in table 1.2.

**Table 1.2-Response about Practice of the Methods in the Homestead**

Response	Corporation		Municipality		Total	
	Count	Percent	Count	Percent	Count	Percent
Yes	18	4.2	17	10.1	35	5.8
No	413	95.8	152	89.9	565	94.2
Total	431	100	169	100	600	100

The analysis of data in table 1.2 reveals that out of the total respondents only 5.8 percent of respondents practice these methods in their homestead and surroundings. Awareness among respondents about the methods is high but these are not practiced by the respondents. Proper education and training to practice these methods can improve the water conservation of urban areas and also help to recharge the ground water table which is now a threat to Kollam where the ground water level is falling at an alarming rate.

**1.3 Preference Index for the Different Methods Used for Water Conservation**

A preference index about different water conservation methods is calculated based on the preferences of respondents towards different water conservation measures. The different methods considered include homestead water management, rain water harvesting, making kayyalas/bandhs conserving ponds and lakes and making pits in the homestead. The preference index is presented in table 1.3

**Table 1.3-Preference Index for the Different Methods Used for Water Conservation**

Methods	Corporation		Municipality		Total	
	Index	Rank	Index	Rank	Index	Rank
Homestead Water Management	3.16	3	3.06	3	3.13	3
Rain water harvesting	1.87	1	1.73	1	1.83	1
Kayyalas / bandhs	3.83	5	4.04	5	3.89	5
Ponds and tanks conservation	2.81	2	2.87	2	2.83	2
Making pits	3.73	4	3.55	4	3.68	4



The preference index is calculated by averaging the ranks given to each of the methods. A low index indicates high preference. Out of the five methods considered rain water harvesting has the lowest index as majority gave the highest rank for rain water harvesting. The conservation of ponds and lakes got the second preference. The least preferred method of water conservation by the respondents is making kayyalas or bandhs in the homestead. This method is least preferred because of the practical difficulty of the method to be followed in the study area especially in Kollam Corporation.

The present study comes to the conclusion that majority of the respondents are aware of the problems connected with the availability and sources of water in Kerala and Kollam in particular and feel the need for conserving water for the future as well as the present generation. There are not any programmes for rejuvenation of ponds or tanks etc in their locality and the role played by government or local authority is the least or negligible in creating water conservation awareness and adopting measures for conservation. Majority of respondents supports voluntary restrictions on the part of the people to reduce water use and wastage and thus to conserve water in Kollam. The demand for water in the urban areas of Kollam is increasing as a result of urbanization and population growth and for meeting this increased demand water should be recycled and reused and desalination of water though it is very costly is advisable in coastal areas of Kollam Corporation. Rain water harvesting should be practiced and that even though it is mandatory for new buildings it should be made compulsory for old buildings also. Using of water efficient household equipment including taps with sensors should be used in houses and other buildings. Water efficient equipments should be provided by the government to the people on a subsidized rate. Government can with the help of voluntary organizations adopt measures for erecting rain water harvesting structures in dwellings. Proper measures should be taken to conserve the natural bodies including Sasthamkotta Lake. Proper metering of water and rational tariff would reduce water demand and encourage conservation. Proper awareness about water conservation practices and municipality building rules should be created among the respondents.

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