Relevance of Cultural Knowledge and Practices for Efficient Water Management in Today's Context

(Benchmark conditions in Ruhuna River basins in Sri Lanka)

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Introduction

This paper attempts to identify existing situation with regard to cultural knowledge, belief systems and practices related to water and analyzes their effect and impact on the behavior of water user communities with the view of strengthening of present day water resources management efforts through their application. Cultural values and practices are not static. However, changes in cultural values and belief systems are not accompanied by the transformations in the material conditions of a given society. They take their own momentum. Sri Lankan society has experienced a huge transformation from the days of ancient civilization up to the present era. There were hydraulic civilizations which fell due to malaria, invasions and political turmoil and ecological problems. Then there were colonial powers under which massive changes were introduced in the agrarian economy. Later the country had democratic rule under which many welfare economic policies were implemented. All these changes and policies had effects and impacts on the agrarian society and its cultural and belief systems. The relevance of cultural knowledge, wisdom and belief system for the management of water resources in today's context is the subject of this study.

People in different cultures conceptualize water in different ways. As People of Sri Lanka our conceptualization of water is influenced significantly by the fact that our ancient society was hydraulic and was deeply rooted in Buddhist ideology. Being an agrarian society, people in the past gave a very high importance to water as expressed in King Parakramabahu's statement "Do not let even a single drop of water that comes from rain go into the sea without being used." Though water was freely available from nature our ancestors contributed to water resources development and maintenance of system through the labor supply system known as "Rajakariya" (service for the king). In village tank systems lands under the command areas were allocated to those who contributed to the tank construction by providing labor. Our ancient customs and cultural practices show that stake of the community in water resources development and management was high. Fall of ancient civilizations, impact of colonialism and change experienced under democratic rule under which liberal welfare policies were introduced brought massive changes in the agrarian society and transformed it. Population increase and water resources development to meet the demands of the growing population and competition from different sectors have made water a much more scare resource than it was in the past. This situation has been aggravated by the fact that limited water resources are polluted due to discharge of urban and industrial waste in to natural water sources like rivers and streams. These processes and problems demand a different perception over water, i.e. not as something not requiring management, but something that should be managed for its sustainable use.

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Objectives

In the context explained above the main objective of this brief study is to document the bench mark situation of the cultural and social values and practices with regard to water resources management in three river basins in southern Sri Lanka known as Ruhuna. The information generated through this study can therefore be used as points of reference for measuring the changes that may take place in future in the areas of cultural and social values and practices of water resources management. The cultural and social values and practices existed; their present conditions and reasons for changes will be discussed in this brief paper.

The study has several specific objectives through which the main objective of the research would be achieved. They include:

- Identification of current social and cultural values and practices associated with water.
- Analyzing the relevance of these values and practices for water resources management in today's context
- Analyzing the likelihood changes of these cultural and social systems and reasons for such changes.
- Providing research based information to the water sector managers and policy makers on water related cultural values and practices for them to consider when formulating policies or introducing new water management practices.
- Providing benchmark conditions for future monitoring programs to measure the changes taken place overt time in cultural and social values and practices.

Methodology

The study adopts the following methodologies:

- Review of existing literature on water and its cultural values
- Interviewing key informants representing different water sectors and those involved in cultural and religious spheres

To cover significant and essential areas of water resources management in which cultural and social values play a key role some key indices were selected. They are shown in Table 1.

Table 1. Indices that can be used to assess the cultural and social values on water resources.

Resources	Indices (spects)- Conditions immediate past and present
Rain	• Rituals related to rain • Existing methods for rain water harvesting in the basin area • Existing methods for utilizing rain water for agriculture. • Methods for retaining soil moisture
Rivers, steams etc.	• Perception of communities on water qualities, protecting water qualities • Community actions to protect natural water courses
Agricultural water in both small and large tank systems	• Practices for equal distribution of water, rotations and other practices • Operations and maintenance practices.
Multiple use of water	• Community concerns of non-agricultural water users
Conservation of tank catchment and other environmental considerations in tank Eco-systems	• Methods and practices in chena etc
Domestic water	• Practices for creating equitable use and purification aspect
Water as scarce Natural resources	• Community attitudes towards water as scarce natural resources
Community responses to various rules and regulations on preserving water resources	• Information on community customs and other rules and also how communities adhere to the formal rules etc

Cultural conceptualization and functions of water

"Water is conceptualized differently in different cultures and sub cultures. Sinhala Buddhist culture which is the most prominent of Sri Lanken sub cultures conceptualizes water as one of the four elements of matter, (a:po), a gift of the Rain-god, an element charged with magic, a symbol of fertility" (J. B. Dissanayake 1992). As Sri Lanka culture was an agrarian one, rain that brings water was regarded as a god (Vassa Vala:haka dev:vo). The utmost importance given to water in Sri Lanka culture can be observed in its use in different cultural, religious and spiritual functions.

"Water has different cultural functions. They include purificatory functions which include physical, ritual, physio-ritual, spiritual and metaphysical purifications. Physical purification washes off physical dirt, ritual purification washes off ritual dirt, ritual pollution or while physio-ritual purification washes off both physical and ritual dirt. Spiritual purification involves washing off of sins and guilt of beings. Metaphysical purification washes off metaphysical dirt that obstructs the mind in attaining "Nirvana". Water has revitalizing functions and is used with special foods and medicine for preparing porridge and gruel etc. for heeling the sick. There are many other functions of water. It blesses things and beings and is a symbol of fertility and prosperity. In Sri Lanken culture it is used for transferring abstract things like ownership, responsibility and merit. It creates joy and pleasure and adds to the sense of beauty and tranquilizes the mind" (Prof. J. B. Dissanayake). These cultural conceptualizations indicate the great importance placed on water in Sri Lanka's traditional cultural system.

Current status of cultural and social values and practices of water resources management

This section discusses the water related cultural practices in Sri Lankan society and their changes overtime due to various socio economic factors that influenced transformations in agrarian society. The ideas presented in this paper are based on information collected from three main river basins, Walawe, Kirindi and Manik in the area known as Ruhuna.

Cultural and social values and practices on rain

As highlighted in the previous section water received high importance in our society. In the Dry zone areas of the country, rain that brings water was worshipped and rituals and communal ceremonies were held annually to obtain the blessings of the rain god and regional deities. The farmers and rituals specialist in many part of the Ruhunu basin told us that these ceremonies are not common in the Ruhunu areas at present. The members of young generations do not believe that gods can bring rain and are reluctant to have ritual performances. Unlike traditional communities in Anuradhapura Dry zone areas (North central province) the communities in most part of Ruhunu basin (Southern province) have migrated to the area in the recent past i.e. after renovating irrigation system like Ellegala by the British and establishment of settlement schemes like Udawalawe by the Sri Lanken Government. Therefore, they lack sense of community required for holding communal rituals like "Deva Danaya", communal alms giving on behalf of god. Such ceremonies are held during extreme drought periods by formal associations like farmer Organizations sometimes with the involvement of Government Agencies like Manaweli Authority.

As people in this agrarian economy experienced water scarcity problems on and often they tried to take maximum use of available water resources. Due to this reason agricultural practices in the Dry zone were based on the principle of maximum use of rain water for agriculture. For example in Maha seasons they started cleaning jungles for slash and burn cultivation in the months of July and Augusts and were ready for sowing and planting of crops with the onset of rain in October. Immediately after highland crop cultivation was over they started paddy cultivation activities in their small tanks. Through their experience they knew that delay in paddy cultivation activities would lead to water shortage problems and also to pest attacks. They adopted timely cultivation practices due to this reason. It should be noted however that villagers were solely dependent on agriculture related activities depending on resources available within the village. With the increase of population, both land and water were limited for further expansion of agriculture in the villages. There were no more forest left for slash and burn cultivation. It became extremely difficult for people to depend on agriculture alone due to land fragmentation, high cost of inputs and many other market factors that reduced their income from agriculture. This situation has led them to involve in a large number of livelihood activities in addition to agriculture. In their pursuit of additional sources of income for livelihood many of them have failed to take maximum use of rainfall and cultivate their paddy lands in time. Currently shifting cultivation is constrained due to inadequacy of unutilized forest areas that can be cleared for such cultivation. Therefore, this practice has significantly decreased at present. The land under irrigation tank systems is cultivated with the water stored and rainwater utilization for highland cultivation is shown fast decreasing trends. Under the water scarcity conditions people in areas like Tanamalwila tap water in Kirindi Oya using water pumps. It can be observed that there are a large number of farmers doing lift irrigation in unregulated manner creating water shortage problems for irrigation schemes like Lunugamwehera in downstream areas. Other than ridge construction to retain water in the farm after pumping of water from the river, there are no irrigation methods among these

farmers to save or use water efficiently. A farmer himself proposed that farmers should be allowed to tap water in the river only on certain number of days (three days is sufficient in his view) and allow water to flow into Lunugamwehera reservoir.

Water as scarce natural resources

The interviews held with members of the older generation in the communities living in three basin areas in Ruhuna show that they experience more droughts and inadequate rains at present than they did in the past. Most of them have experienced these changes after 1970s and explain them as resulting from deforestation, man-made interventions such as construction of reservoirs, demolishing of small tanks for construction of large reservoirs and other ecological changes. Many of them have started to feel that water is scarce. However, there are people who hold different views and believe water is not scare natural resources in the country. Due to this reason they are not convinced of the necessity of action by then government and other stakeholders to protect and preserve water resources to face emerging challenges of water scarcity and droughts.

Our observations and community responses on the conditions of natural resources in the basins indicate serious deterioration of water quality in the natural streams and rivers as well as tanks. For example water in Kirindi Oya is polluted due to being used by cattle owners for bathing big cattle herds and Urusita wewa in Udawalawe scheme is polluted due to waste water and waste matter from Sevanagala Sugar Factory. Even though water quality in the rivers in the Ruhunu basin have not been seriously polluted as those in highly industrialized and urbanized areas of the country pollution is apparent with color changes of water in the streams and solid matter in them. Majority of the general public is not concerned of water quality deterioration due to human interventions. Those who are concerned are worried over the lack of enthusiasm and joint action by the responsible government agencies to control the degradation of natural resources. Conservation of tank catchment and other environmental considerations in tank Eco-systems.

In the past the dry zone village communities were highly concerned over the protection of small tank eco-systems and did not use tank catchment and reservation for shifting cultivation, residential purposes or for other undesirable development activities. The communities were able to protect these resources mainly because they had enough arable lands for shifting cultivation. However, with the increase of people migrating to the areas for chena cultivation, clearing of jungle for irrigation settlement schemes and natural increase of population etc. made arable jungle a scarce resource. As a result members of these communities started encroaching on reserved areas like immediate catchment of tanks and other reservations for chena cultivation and settlement. They could do this without restrictions as village level institutions like Vel Vidane system which effectively controlled these types of undesirable development activities had been abolished by this time. It should also be noted that almost all the communities in most part of the Ruhunu basin is newly settled or migrated communities, hence lacked traditions and practices to preserve the natural resources or had no community institutions and interactions required for natural resources management efforts. There are ample evidences to the fact that communities in Anuradhapura Dry zone areas managed these resources effectively in the past and used them for other livelihood activities such as bee-honey collection, hunting and fire- wood collection. As a result of these human interventions in tank eco-systems, they have been seriously degraded. Due to soil erosion in catchments tanks beds have been silted reducing the water holding capacity of the tanks. Also, the command areas of these tanks too have expanded significantly through way of development of reservations etc. for agriculture. This has created problems for water sharing in these tank systems.

Since the communities living in Ruhunu basin areas are recent migrants the can not be observed using indigenous technologies for soil and water conservation. The interviews with the extension officers of the Department of Agriculture too bear evidence to the fact that communities do not adopt such technologies. This is mainly because these people have migrated to the area either form Matara district of the wet zone or intermediate zone area like Mulkirigala and Tangalle in Hambantota district, the technologies of which are not applicable to the most part of Ruhunu basin with very dry climatic conditions. However, people doing lift irrigation from rivers and agro-wells for cultivation of crops in highlands could be observed using ridges for storing water in the farm after pumping water. Most of the lands used for shifting cultivation are cultivated annually now. Soil erosion and soil deterioration can be observed in them. In some areas like Monaragala district through which Menik River and Kirindi Oya flow, attempts were reported to have been made in the past to introduce soil and water conservation practices through special projects like Integrated Rural Development project (IRDP). They have included bunding, bund stabilization, mulching and alley cropping etc. However, these technologies have been limited to the project periods and can not be observed large scale in the project areas. Attempts of the Department of Agriculture to introduce various soil and water conservation technologies and integrated pest management technologies are observed in some parts of the project areas while such technologies are not known in many areas of the basin. However, DOA lacks resources to implement these technologies on large scale in the basin areas. Awareness of the communities on soil and water conservation is observed in many areas in spite of the fact that they do not adopt such technologies. They are concerned about water conservation after their bad experience of a disastrous drought in year 1999/2001.

Agricultural water (both small and large tank systems)

There have been various kinds of community rituals in small tank systems in the past. They include "Mada Danaya" (ceremony held after land preparation), "Aluth Sahal Mangllaya" new rice ceremony) held after harvesting to obtain the blessing of gods. These ceremonies have been held through formal organizations as the people in the area are new communities comprising of migrant individuals or new settlers in newly established irrigation settlement schemes. Both small tanks and new irrigation systems have been constructed or renovated with the involvement of government. According to the members of old generation systems like Vel Vidane has worked well in small systems in the past and has not been successful in major irrigation systems. In small tank systems Vel Vidanes managed water efficiently and there were no crop failures in them due to this reason. Farmers in these systems maintained irrigation systems too under the guidance and supervision of Vel Vidanes. The operation many small tanks are done now by a turnout attendant appointed by the Department of Agrarian Development (DAD) with the consent of the members of the farming community. These irrigation attendants carry out work related to water distribution with the involvement of the leaders of Farmer Organizations (FOs) established in each system by the DAD. The success of water management efforts in these systems depend on the strength of the FOs and acceptance that the turnout attendant has in these communities. Pre-seasonal maintenance activities are handled by the FOs which have distributed maintenance responsibilities at different levels of the system among the farmers. Wide spread deviations from cultivation meeting decisions and free riding are not reported from these systems. Though the government involvement are there from time to time for rehabilitation and renovation of these tanks they are more or less self-managed at present. It is noteworthy that due to being new settlements many villages in Ruhunu basin lacks cultural practices and belief systems observed in the past in many Dry zone villages in the North Central Province (NCP). Even in Dry zone areas in NCP the continuity of cultural practices have been threatened at present due to massive changes in the agrarian economy.

Situation in the major irrigation colonization scheme too needs attention. Rehabilitation of abandoned major and medium irrigation systems started in British period and was accompanied by settlement projects and programs. These irrigation settlement schemes became the main development strategy in the country after independence. The settlers were provided with a large number of subsidies that developed a dependency syndrome in them. They began to perceive irrigation water as a resource that they should have free of charge. However, in contrary to this notion there is ample evidence that farmers contributed to water resources development and maintenance activities through "Rajakariya" and similar other practices in the ancient times. Design of these new irrigation systems required different kind of management interactions for managing water resources. New principles and organizations like farmer organizations had to be introduced in them for managing water resources. These newly formed irrigation communities lacked community solidarity and cohesiveness required for managing water and other resources, hence new organizational and cultural practices had to be introduced in them for irrigation system management. For example farmers in Kirindi Oya have Field Channels (FCs) with one cusec flow and two farmers are expected to irrigate their lands at a time. They are expected to do night irrigation too. For water sharing under the design it is required to have close communication and interaction among the FC groups. However, due to various socio economic conditions the FC groups are weak in many new settlement areas to adopt these water sharing practices. Similarly, new canal designs have been introduced in Left Bank area of Udawalawe through a rehabilitation project to utilize water efficiently. However, due to construction defects and farmers unfamiliarity with the design has created water shortage for many farmers in the system at present creating a chaos in the system. New crops like banana have been introduced in Udawalawe Right Bank system with the view of minimizing water use. However, farmers have not developed irrigation methods for banana, they do flood irrigation as they did when they were cultivating paddy. They consume same quantity of water that they used to consume previously for paddy cultivation. There are attempts in these major systems to manage water efficiently amidst various socio economic constraints. These systems are managed jointly by the government and the beneficiary farming communities. There are no especial cultural, historical and social practices to be included here.

It is interesting to note that there have been cascade systems like that in old Ellegala system comprising of five tanks in Kirindi Oya Irrigation and Settlement Project. However, with the construction of new systems and canal network to feed these systems, they too have become parts of Lunugamwehera main reservoir on which these tanks depend for water supply. The practices that had been there for management of these cascade systems have been redundant with the incorporation of them in to a larger irrigation system.

Cultural and social values and practices for equitable water sharing

Socio cultural practices in small tank systems in Sri Lanka were not limited to the maximum use of available water resources alone. In addition, they had been designed to guarantee equity over water and land resources. In a traditional village irrigation systems in NCP there are three irrigation tracts known as Ihala bage (upper part), Meda bage (middle part) and Pahala bage (lower part). Each farmer has been allocated with a land parcel in each of these tracts. In water short seasons they can cultivate the portion in upper part while in seasons in which water is abundance they can cultivate all the three portions in three tracts. The lands in the three tracts may differ in soil fertility etc. hence they have been given lands from all the three tracts to maintain equity in that respect too. However, due to land fragmentation and sale of lands etc. it

has become difficult to share land and water resources equitably in many small irrigation systems in the country.

Even though lay out of the irrigation command in small tank systems in Ruhunu basin do not have the same features of the tank commands in NCP to guarantee equity, practices such as "bethma" can be observed in them during water short cultivation seasons.

Domestic water

There were cultural practices related to domestic water and water supply in the past. In villages there were wells known as "Pinlida" (well providing water at no cost). These types of wells were constructed either in a community land or a private land for the supply of domestic water. In many villages, villagers can not have wells in each and every homestead due to quality and quantity related problems. "Pinlida" solved quality and quantity related problems faced by farmers over domestic water. They were maintained by the water users and there were norms developed for the use of water in these wells. They included restricted use of water in the well for drinking purposes alone. It is possible to introduce norms and practices attached to "Pinlinda" in O&M of tube wells and domestic wells too.

Sharing limited quantity of good quality water among fellow members of the community is the prevailing social norm and value among the communities in the basin. These norms are observed in areas like Matara from where new settlers in the basin have migrated. For example, the Government is currently implementing rural water supply projects in many locations in the basin area to provide domestic water to the communities. The common water sources available in the villages are proposed by communities to augment community water supply schemes. The operational and maintenance practices are also proposed in such a way to obtain community involvement and participation in them. These practices have become feasible due to long-term cultural practices and attitudes of the people in Sri Lanka with regard to sharing the common natural resources like water.

Historical practices for multiple use of water

Farmers under small tank systems are used to the multiple use of water even though paddy cultivation is the main livelihood activity undertaken by farmers in these systems. The sluices of the small tanks have been constructed in such way that farmers can not use the entire quantity available in the tank. Dead storage in the tank can be used for domestic purposes, livestock keeping and use of wild animals and the environment. Technical design of village tank systems bears evidence to the fact that our ancestors were well aware of the concept of multiple water use.

Water related other social and cultural practices

Water related ritual practices in the villages and major irrigation schemes are important for development of community cooperation and cohesiveness. In many irrigation schemes a festival called Aluth Sahal Mangallaya (new rice ceremony) is held after harvesting at present. Each farmer contributes to this ceremony by providing rice, provisions or money. All the participants of these ceremonies are provided with meals after making offerings to deities whom people believe to have power over nature to make their cultivation activities successful. Similar kind of festivals is held in village tank systems. These rituals can be used for increasing or creating the sense of community in a society in which community feelings are in decline.

Importance given to water is observed in Sinhala Hindu New Year practices too. On the New Year day housewives have their first transaction with the well in their homestead. She exchanges gifts with the well. She puts some salts and coins into the well and takes a pot full of water from the well. In today's context it is not possible for many women to have such an intimate relationship with the source of domestic water supply as they have water from a tube well of a pipe borne water supply scheme.

There are water-related rituals associated with fertility and prosperity. Water is used for purification functions in these ceremonies. Our discussion with the chief priest (Kapumahattaya) in Kataragama temple revealed that Nanumura festival is a water related ritual held for fertility and prosperity. Water in Menik River in Southern part of the country is used for this ritual as the temple is located in the downstream area of the river. Another ceremony held here is the water cutting ceremony commemorating the meetings between God Kataragama (a powerful deity in Sri Lanka) and King Dutugamunu, a hero king of Sri Lanka who brought the country under one banner by defeating invaders from India. These rituals are still held. However, chief priest is worried over two things. One major problem is that people are not meritorious. When people are not meritorious deities are not happy and ritual performances do not provide expected benefits. People need to be meritorious and do right things to satisfy gods. The other thing that makes him worry is water scarcity and water pollution in the river. Water in the river is polluted due to urban waste from Kataragama town and unclean for ritual purification. Water scarcity is due to decrease of rain-fall and development activities in upstream areas. In spite of these conditions he has to perform rituals for which he needs water, pure water for Nanumura and more water for water cutting ceremony. He overcomes his problems in a different way. He has constructed a tube well close to the river with the assistance of followers of God Kataragama to obtain pure water for rituals. If the river is dry at the time of water cutting ceremony, he gets people to dig a canal in the river and collects the remaining water in the river there to perform the water cutting ceremony.

Conclusions

Perception and understanding of rural masses about natural water, its scarcity and cost of water in development schemes

The empirical evidence and observations on water resources management in Sri Lanka indicates that some radical changes are required in the management of water resources in the country for its sustainability. It is understood that majority of the water users still have not yet fully realized the scarce nature of water resources. Various costs are involved in development of water resources for irrigation, domestic and other resources; hence it has an economic value. Our ancestors had well understood this and contributed to water resources development and maintenance of irrigation system through "Rajakariya" system. It is through mobilization of community labor that irrigation systems in ancient Sri Lanka were sustained. However, members of irrigation communities in the country at present fail to understand the difference between natural water resources such as water in rivers and streams and those in reservoirs and drinking water supply schemes. Their perception is that both types of water (water involving a cost and not involving a cost) should be available to them at no cost. These types of thinking are not derived from our cultural value systems but manifestations of a dependency syndrome developed at a later stage after a long period of colonial rule. People in the country need to be made aware of scarce nature of water and the cost involved in water resources development, distribution and maintenance and the way out ancestors valued water and contributed to water resources development and management. This is one major challenge for the policymakers of the country. Unless people in the country are not made to understand the scarce nature of water and cost involved in water

resources development and management, it would be difficult to implement programs for sustainable water resources management.

Attempt at enhancing favorable social and cultural values for improving water resources management

Measures to manage social inequity

Examples for equity in water distribution can be drawn from the small tank systems with technical design guaranteeing equity and practices such as bethma at times of water scarcity. The agencies such as Department of Agrarian Development, NGOs and CBOs working with farmers in these small irrigation systems should make efforts for further strengthening to maintain equity in these systems and replicate them in other small tanks where such practices are disappearing due to various socio economic and institutional constraints. These types of long term cultural practices not only bring economic benefit but also promote social harmony in irrigation communities. Practices like bethma is introduced in large irrigation systems like Mahaweli by the irrigation management agencies to implement agricultural programs under water scare conditions. But the practices are not adhered to in extremely water scarce irrigation systems. It is worth while to practice them in other water scarce irrigation systems too.

The purpose of "Pinlida" was shared use of limited quantity of good quality water available in the villages. The villagers who have no access to good quality water especially for drinking have access to "Pinlida". This indicates that there was a social norm built in the village community that all the people in the community should have equal access to good quality water available in the village. The norms and practices associated with Pinlida can be used for many domestic water supply schemes at village level.

Building social capital and social harmony through water related rituals

Water related rituals encourage community participations and tend to develop community cohesiveness and solidarity in heterogeneous communities like those observed in new irrigation settlement schemes. They strengthen community harmony in traditional villages where sense of community is in decline. Practices such as rituals are a source of inspiration for managers trying to promote community solidarity and cohesiveness.

References

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