

# STAKEHOLDER PREFERENCES ON 'ECOLOGICAL SANITATION' APPROACH AS A SEWAGE DISPOSING METHOD IN URBAN AREAS; A CASE OF HABARADOOWA, SRI LANKA

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## ABSTRACT

Sanitation is one of the most considered global health and environmental problems which have given high priority in developing countries due to the rapid population growth and poor sanitary conditions. In response, new sanitation technologies following different concepts have been introduced to overcome the inefficiencies and other limitations of conventional sanitation systems. Though such new technologies are blessed by engineering advancements and backed by sound technical feasibility assessments yet the social acceptability to these practices are not adequately studied. In this context, this research attempted to study the factors influence on stakeholder preference on 'ecological sanitation' – an emerging sanitation approach which recently introduced to Sri Lanka- with referring to a selected case study at Habardoowa, Sri Lanka. Results of the study revealed key factors which need to be considered in introducing, popularizing and adapting these new practices to people to competently overcome the challenges to conquer the poor sanitary conditions.

**Key words** – Ecological sanitation, Stakeholder preferences, Sustainable urban development, Sewage disposal methods

## 1. INTRODUCTION

Today, half the approximately seven billion people in the world are living in urban areas. In 2020, it has estimated that 4.2 billion will be in urban areas, and in 2050 two-third of the world's nine billion people will be urban dwellers (*UNFPA, 2011*). In Sri Lankan context, although the current population is approximately 20 million, with 1.1 % population growth rate per annum; urban population is expected to grow from 4 million to 6.5 million by 2030, at which time 30% of the population is expected to be living in urban centers (*Horan B.A. and Pinnawala S., 2009*).

With this rapid urbanization the goal of 'sustainable development' play a vital role as creating multiple benefits to the community while reducing the negative externalities of the economic growth on society and living environment.

In the process of striking the balance among economic, social and environmental sustainability, most of the times economic pillar is taken into the consideration while ignoring the social and environmental pillars; Sanitation is one of such ignored aspect leading to health and environmental problems which must give high priority and attention (*Horan B.A. and Pinnawala S., 2009*). Poor sanitary conditions are one of the most apparent issues among developing countries.

About 2.6 billion people – half the developing world – lack even a simple 'improved' latrine; 1.6 million people die every year from diarrheal diseases attributable to lack of access to safe drinking water and basic sanitation and 90% of these are children under 5, mostly in developing countries (*WHO, 2013*)

In Sri Lanka, it is a function of local authorities to collect and dispose sewage in environmental friendly manner; especially in urban areas as stipulated by the law. But, in Sri Lanka, as in many other developing countries; lack of adequate space, inadequate financial resources, insufficient safe water, difficult soil conditions and limited institutional capabilities (*Esrey S.A. et al, 1998*) triggers the problem of poor sanitation. As cities expand and populations increase, the situation will grow worse and a safe, affordable and socially acceptable sanitation system is an essential need of Sri Lanka at present.

In response, there are number of programs undertaken to ensure access to safe sanitation especially under the Millennium Development Goals and related projects. Developed countries backed by engineering advancements have introduced alternative technologies, practices to overcome the challenges of poor sanitation status in developing countries.

Authors of this paper are agreed upon the decision that alternative sanitation technologies, concepts have to be recognized to overcome the inefficiencies and limitations in conventional sanitation systems. Yet many such technologies are poorly supported with assessments on social acceptance to such new practices and thereby some were ended as failures.

Community acceptance is very important as to sustain any new sanitary practices (Avvannavar S. and Mani M; 2007) but that seems to be highly ignored in practice while less addressed in recent research studies in Sri Lanka. In such situation, the main objective of this research is to explore the factors influence on stakeholder preference on ecological sanitation which needs to be considered in introducing, popularizing and adapting this less aware concept among people specially as a solution for sewage disposing problem in urban areas, with referring to a case study at Habaradoowa Sri Lanka.

## 2. METHODOLOGY

The research was built on the empirical evidences obtained from a selected case study where ecological sanitation has introduced. Empirical evidences were obtained from direct observations and interviews of different types as key informant interviews, questionnaire based interviews and in-depth interviews with users and non users of 'Ecosan toilets' - this is a type of toilet developed under the concept of ecological sanitation - and other stakeholders. Findings were analyzed using simple descriptive statistical techniques and inferences were used in the discussion which follows qualitative methods in reasoning.

Habaradoowa –the selected case study is a peri-urban area which is located in Galle district of Southern Sri Lanka. This was recognized as a sound case study having most of the essential features which demand for an alternative sanitation approach to conventional methods due to the constrained geological setting as rocky surfaces, water logged soil surfaces, high ground water table, and frequent inundations to minor floods. Further, this area consists of two community groups who were introduced with 'Eco scan' toilets and who were not introduced with that.

The representative sample of community groups was comprised of twenty households including hundred family members who are practicing ecological sanitation concept, and five households including twenty family members who are not practicing the Eco-san toilets.

It has to be emphasized, that the identification of key stakeholders varies according to user perceptions, positions of local governments, NGOs and INGOs active in the area. In addition to the above mentioned community groups, Public health officers, Local authority officers, Technical officers Non - governmental organizations who have being engaging in implementing and monitoring the eco-san projects in the case study area have identified as the key stakeholders.

## 3. RESULTS

Findings of the study revealed that; community perceives, eco-san systems as more complex than conventional sanitation systems.

Factors influenced on stakeholder preferences for Eco san approach can be discussed under following three aspects;

Technique and design factors – in terms of feasibility in technique and design, users were more preferable to have an advanced technique to collect the sewage rather than locating the waste chambers under the platform. This was the main modification that users suggested the most during the survey. Key factors which cause to community's lack of acceptance to the technique and design of Eco san toilets are ; odder spreads and mosquito breeding during rainy season; Difficulties face by children, differently able people, elderly people in entering and using the toilet; and the height of the toilet as it is incompatible to the astrological believes.

Figure 1 shows the physical design of eco-san toilet



**Figure 1: eco-san toilet (left) and the collecting chamber (right)**

Economic factors – in constructing the toilet, no costs incurred to users (except labour) as INGOs have funded the project. Up to now there is no any considerable repairs have occurred for users except painting. The users were satisfied that they can get the composted fertilizers from the sewage without

spending money. Some of the users have already started to use fertilizers in vegetables, flowers in home garden. They said that this can be done island wide and use in farmlands.

Figure 2 shows using eco-san fertilizers to gardening purposes in Habaradoowa



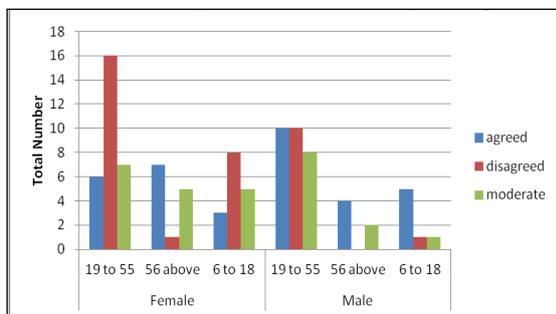
**Figure 2: Home gardening using processed eco-san fertilizers**

Environmental factors– The users were proud of them as they contribute to protect the environment, even at small scale through converting excreta into useful manure. And after decomposing the human waste as fertilizer it does not contain poisonous matters. This is also an important point when we consider the threats for the environments as well as human health from artificial fertilizers.

Though most of the users have adapted after the introducing the concept, yet the levels of acceptance are varied among different gender, age, education levels, occupation groups.

Most of the females in the age category from 19 to 55 years and 6 to 18 years have disagreed to the concept.

**Chart 1: Male - female wise acceptance of the eco-san approach by age categories**



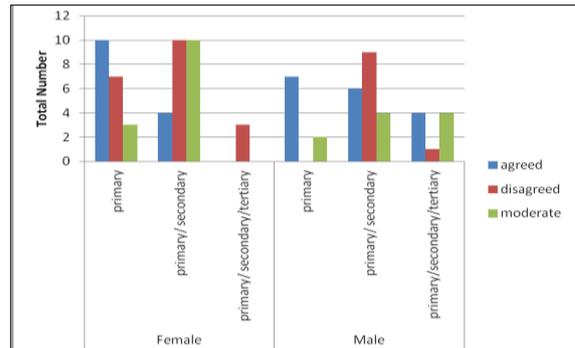
Source: Author constructed using field data

Out of the people who did not prefer to accept the eco-san concept majority are employed and educated females. The reasons behind their

response include, faecophobia continuum<sup>1</sup>, time constrains, reputational mind setting as they [i.e. females] deal more with housing sanitary matters than males.

In the case of males, they do not have any strong opposition ideas to the concept except whose education level is above higher secondary.

**Chart 2: Male female wise acceptance of eco-san by level of education**



Source: Author constructed using field data

Through the bi-variant comparison between education level and acceptance of eco san approach, it was identified that when education level increases the acceptance of eco-san concept has decreased.

The interesting finding is that, from the community who accepted the concept the majority consist of elderly population. Further, many have accepted the concept, due to the word 'eco' which is environmentally sound even without proper understanding about the entire concept.

Through this research, it was identified some main obstacle determined the community preference of eco-san toilets; such as (a) less awareness regarding the concept (b) Cultural factors, ethics and believes (Faecophobia continuum) (c) Lack of user willingness to change (d) Lack of technical knowhow (e) Community perception as public sanitation as a mandate of local government.

Findings of the study challenge two common notions in the sphere of 'green concept'; are the youth and educated groups are more oriented towards the concept. In contrast;

1. Most of the elderly people ( 56 years above ) like to adapt to the eco-san concept

<sup>1</sup> Faecophobia is a personal or cultural response to the fact that human feces are malodorous and potentially dangerous. Mostly this comes with the culture of different societies. Specially in Asian context it is hard to change the mind setting towards the cleaning of human excreta

2. When the education level and reputation level increasing, the willingness to adopt the eco-san concept is decreasing

Ideas and beliefs of elderly population at many of the times were considered as social barriers in introducing new technologies and usually educated people believed to be understand the importance and present need to adopt new technologies. But in this case, both points were contradicting to the generic status also the mind settings of people regarding the human excreta.

Although some families have already being adapted to the eco-san toilets they also pointed out that further improvements, technology and also the awareness have to be introduced to continue the concept successfully.

#### 4. CONCLUSION

This paper aimed at exploring the factors influencing stakeholder preference on ecological sanitation which needs to be considered in introducing and popularizing Ecological sanitation in Sri Lankan situation with reference to a case study at Habaradoowa. Findings of the study reveal that, there are number of factors affecting the acceptance of Eco-san as an alternative to the conventional toilets. Therefore it can be recommended that, the measures to customize planning and design process to incorporate stakeholder preferences are often required at all levels to successfully implement this concept. Because community; as the user that contributed to the success or failure of an action, have to accept and adapt to the system and then only it can be promoted in the society as a sanitation solution which gives benefits in different aspects.

Before initiating the eco-san concept, opinions of individuals were must be considered to obtain proper understanding on how the eco-san system should design. As initial step the information and knowledge regarding the concept has to be given to the society with the deliverable benefits.

Therefore, the successful future of ecological sanitation lies in seeing its potential and investing further in its research, development and infrastructure. Ecological sanitation is a broad concept and there are adequate provisions to explore traditional ecological sanitation approaches in Asian countries; learn from them; develop them to fit into to the latest technical know-how and re-introduce as combined solutions of modern technology and traditional practices which are more known to local community and thereby highly accepted.

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