

### THIRD INTERNATIONAL CONFERENCE ON ECOLOGICAL SANITATION

<b>Title</b>	<b>Perceptions and Acceptability of Urine-Diverting Toilets in a Low-Income Urban Community in Ghana</b>
<b>Keywords</b>	Perceptions, Sanitation, Urban residents, Urine-Diverting Toilets, Stakeholders.
<b>Author(s)</b>	Tsiagbey, Michael <sup>1</sup> , Danso George <sup>2</sup> , Leslie Anang <sup>2</sup> , Eric Sarpong <sup>3</sup>
<b>Address</b>	1. Council for Scientific and Industrial Research (CSIR), P. O. Box M32, Accra, Ghana. 2. International Water Management Institute (IWMI), Accra, Ghana 3. Food Research Institute, CSIR, P. O. Box M20, Accra, Ghana
<b>Telephone</b>	1. +233-21-777652, 2. +233-21-784753 3. +233-21-777330
<b>Fax</b>	1. +233-21-777170 2. +233-21-784753, 3. +233-21-777647
<b>Mobile</b>	1.+233-24-467-0748 2.+233-24-463-8104 & +233-20-815-5177 3.+233-24-476-1514
<b>E-mail</b>	1. <a href="mailto:m.tsiagbey@lycos.com">m.tsiagbey@lycos.com</a> 2. <a href="mailto:g.danso@cjar.org">g.danso@cjar.org</a> & <a href="mailto:lesanang@yahoo.com">lesanang@yahoo.com</a> 3. <a href="mailto:Kenyzgh@yahoo.com">Kenyzgh@yahoo.com</a>
<b>Short CV for Introduction Purposes ( 100 words max)</b>	Mike Tsiagbey, the principal author of the paper is the Head of Environment Section under the Environment & Health Sector of the Council for Scientific and Industrial Research-Ghana. He is a Senior Research Scientist keen on joining hands with other experts for sustainable environmental sanitation especially in the low-income and poor communities. Mike's expertise span varied fields including environment (EIAs, water and sanitation studies), irrigation extension, integrated rural development, education, training & communication. His colleague co-authors are equally concerned and are involved in researches to improve the livelihoods of the poor.

Photograph attached ( jpg)



## Introduction

The rapid development and urbanization of the metropolitan areas in Ghana in recent years have accelerated problems of overcrowding, inadequate water supply and waste disposal services and a general deterioration of environmental quality (Nana-Amankwaah et. al., 1995). Urban growth in Ghana is characterised by unplanned settlements where municipal authorities are unable to accompany the development with adequate services in form of piped water supply, sewerage, drainage and collection of garbage. Cost recovery from waste collection is below 10% as households are poor. Effective waste collection and sewage treatment require continuous cash flow, which contradicts reality. In consequence, especially low-income households rely on some kind of drop-and-store sanitation technology to deal with their needs. Although drop-and-store technologies can prevent pollution in some places, in urban areas they are not feasible because of lack of space for digging deep pits, difficult soil and groundwater conditions, destabilization of foundations of nearby houses, and odours. Waterways and water-bodies invariably have become conduits for the disposal of sullage and solid waste thereby putting the fragile aquatic and terrestrial ecosystems under severe pressure (Amuzu, 1976, Biney, 1984).

Many projects for improving sanitation involve a degree of planning that considers the local situation leading to the selection of suitable types of sanitation options. The initial demand for provision or improvement of sanitation in a particular area may come from the local people themselves or from a small group of active leaders in the community (Franceys et al., 1992). Alternatively, the initial demand may come from health officials, a government department, the organization responsible for water and sanitation, a bilateral aid agency, national or international voluntary organizations.

Virtually every environmental sanitation issue is at base, a value-conflict. People's self-concepts or perceptions are central to the things that they believe in and value. The quality of understanding of any person determines his perceptions on environmental issues and hence sanitation. Perceptions have an extensive influence on values of people. Therefore perceptions and values of individuals about the environment account for the behaviour and actions of people towards environmental sanitation.

The purpose of the pilot study was to assess the perceptions of residents concerning the acceptance of urine diverting toilets in low-income urban areas in Ghana where sanitation is a major problem. The study is being carried out as one of the strategies towards promoting and popularizing ecological sanitation systems as preferred environmental sanitation solutions in peri (-urban) areas of Ghana. The study also supports the 2003 recommendation of the 2<sup>nd</sup> International Symposium on *ecosan*, in Lubeck, Germany to raise awareness and

create demand for ecosan systems.

## **Objectives of the Study**

The study tried to stimulate understanding of, and appreciation for ecosystem approaches that links sanitation, agriculture, nutrition and health and to create awareness on environmental sanitation using the urine-diverting toilets in the urban areas. The paper presents initial results on residents' perceptions on environmental sanitation issues and urine-diverting toilets.

## **Methodology**

The pilot study was carried out in Nima, a mostly low-income suburb of Accra known for its high percentage of immigrants from Northern Ghana. Average household size is about 4.6, the population density is >350 persons/ha.

The study used both quantitative and qualitative data collected from 60 households. The data were collected through individual interviews using semi-structured questionnaires and focus group discussions. The analysed data was used to make informed decision on the perceptions of the community residents of urine-diverting toilet systems and benefits of their use to agricultural production and health issues. Key informants were also interviewed to seek their views and appreciation of urine-diverting ecosan system interventions.

## **Results and Discussions**

### **A. Socio-economic background**

Out of the 60 households interviewed, the data showed that 48% of the households are in the low class households, 35% in the middle class and 17% in the high class households. Most of the households interviewed are Muslim (71%), 26% Christians and only 3% being traditional believers. The survey covered all age groups and diverse educational backgrounds ranging from no formal to tertiary level.

### **B. Current Sanitation Facility and Problems**

The study revealed that the low-income group does not have toilet facility at home and have to use the public toilet (KVIP) or free-range. The middle-income households (35%) mainly use pan latrines located in their homes. The households of the high-income category (17%) have WC and septic tanks installed. The crowdedness in the study area sets a limit on the kind of sanitation facilities installed. The maintenance of toilets in the middle- and high-income households is mainly the responsibility of women and girls (70% of respondents). In rare cases, especially in unmarried homes, men take up the responsibility of cleaning the toilets. All the households have indoor water taps, which is not common in several suburbs of Accra. However, the indoor taps as well as the few public standpipes in the community often fall dry. Access to water in the community is therefore largely through vendors.

The qualitative survey revealed various forms of environmental pollution/sanitation issues in the community, such as unplanned settlement, poor sanitation, stream/river and drain pollution, and lack or inadequate toilet facilities. The analysis shows that the environmental pollution in the study area is mainly due to indiscriminate disposal of waste (solid & liquid), defecation, improper refuse management, stray animals, and unauthorized washing of cars. Facilities for the evacuation of solid waste are grossly inadequate. As a result, human wastes are disposed of in the inadequate drains in the area. Characteristically the area is grossly unplanned and is one of the biggest squatter areas in the Accra Metropolis, hosting in addition one of Accra's main markets.

### C. Awareness and Perception of households

The study created awareness of the community residents on what environmental sanitation means. Also, views of the residents were gathered and collated on the use of urine-diverting toilets and the need to protect the environment via community awareness programs with focus on ecosan approaches. The analysis shows that most of the residents perceive the causes of the various forms of pollution in their community as inadequate toilets, lack of education on hygienic practices, extreme poverty, limited water supply to the community, the high population density in the area and poor planning of drainage systems. Most (73%) of the households perceive the current sanitation facility to be bad (Table 1).

**Table 1: Household perception of current sanitation facilities**

Criteria	All		High income		Middle income		Low income	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Bad	44	73	0	0	16	76	28	97
Good	10	17	4	40	5	24	1	3
Very good	6	10	6	60	0	0	0	0
Total	60	100	10	100	21	100	29	100

Source: Survey, 2005.

Major reasons accounted for this trend are: 1) smell, 2) heat generated resulting in diseases especially for women, 3) long queues 4), and no privacy. Danso et al. (2004) reported similar reasons in Kumasi. The data showed that nearly all low-income households complained about their sanitation facility (Table 1). Majority of low and middle income households are prepared to pay for improved sanitation facility if they are made available to them.

Eighty percent confirmed that they are not aware of urine diverting toilets. Like in the Kumasi survey, our discussions with the households showed that most of them are interested and willing to use urine-diverting toilet one day, provided it would meet their needs. These results have to be seen in relation to the fact that low-income households would be interested in any (own) toilet than no toilet. In order of priority and based on multiple responses, low and middle-income households indicated the following reasons why they would be willing to use urine-diverting toilets (Table 2).

**Table 2: Reasons for accepting urine-diverting toilets**

No	Reasons	Ranking (%)
1	Convenient	44
2	Affordable (use of public toilets is not free)	44
3	Hygiene	41
4	Source of manure/lucrative	23
5	Easy to use and maintain	18
6	Safe	9
7	Privacy	9
8	Better than current facility	9
9	Portable and mobile	7

Source; Survey data, 2005

High-income households perceived urine-diverting toilets to be unhygienic due to the fact they do not need to use water to clean and maintain the facility. In addition, they believe it is inconvenience in usage. In spite of all these diverse reasons, all households perceive the ecosan principles of closing the loop as useful in term of reducing environmental pollution and creating sustainable environment. Moreover, the study showed that respondents perceive the reuse of urine and faecal matter as positive towards achieving urban household food security and that they would support the implementation and its sustenance. How this

would look in practice was not discussed. Options for urban agriculture are very low in the densely populated suburb.

#### ***D. People and the Environment***

Information on residents understanding of sustainability of the environment revealed that the majority of the people think that the environment needs to sustain them rather than they the humans need to sustain the environment. However, a small percentage of the people are of the opinion that both the humans and the environment need to support each other. The study also found out that the attitudes/habits of community residents in the urban area do not support the sustenance of the environment. On the issue of who should be responsible for sanitation improvement in the study area, the study showed mix views. Out of the 60 respondents, 56% indicates that the city authority (i.e. Accra Metropolitan Authority) should be responsible, 30% are of the view that all people should be responsible for better sanitation, 10% government officials (Member of parliament of that constituency) while 4% indicates sanitation officers and opinion leaders. These roles are given based on recognition by the residents that there is the urgent need to improve the current sanitation situation in the area.

#### **Conclusion**

Most of the people perceived urine-diverting toilets as an interesting system and agreed with the survey team that such toilets might be economically efficient in terms of water use and cost to the city authorities in disposing/dissludging human excreta and liquid waste. The paper concludes that, the use of the urine-diverting systems has in principle a potential to influence the attitudes and habits of the community residents with regard to sustenance of the environment. However, the majority of the people would welcome any improvement and only comparative test of different systems can show which ones might be socio-economically, culturally and institutionally sustainable in view of the needs of the communities.

The study concludes that most of the community residents (80%) are not aware of the urine-diverting toilets. There is a need to carry out an extensive education on ecosan concepts and benefits in the use of urine-diverting toilets. The organisation of a national workshop on ecosan concepts and strategies will support the popularization of urine-diverting toilets in identified communities in the country. The introduction of eco-toilets should be preceded by pilot projects, which can also be used for demonstrations during ecosan educational programmes.

The indiscriminate disposal of waste poses a major threat to environmental health of the country. The country needs to embark on a massive campaign and drive to improve sanitation facilities and enforce sanitation byelaws. The re-introduction of sanitary inspectors will definitely support a change of attitude and the drive towards sustainable environmental sanitation in the country.

#### **References**

- Amuzu, A. T. (1976) A Survey of the Water Quality of the Korle Lagoon, Technical Report, Water Resources Research Institute (CSIR), Accra, Ghana.
- Biney, C. A. (1984) Preliminary Physico-chemical Studies of Inshore Waters in the Greater Accra Region in Ghana. IAB Report, 15pp
- Danso, G., Drechsel, P., and Gyiele, L (2004). Urban Household Perceptions of Urine-Excreta and solid waste source Separation in Urban Areas of Ghana. In: C. Werner et al. (eds): Closing the Loop - Proceedings of the 2<sup>nd</sup> International Symposium on

Ecological Sanitation. Ecosan, 7-11 April 2003, Lübeck, Germany –GTZ Publication, ISBN 3-00-012791-7, 2004 Eschborn, Germany

Franceys, R., Pickford, J. and Reed, R. (1992). A guide to the Development of On-site Sanitation. WHO publication 1992, printed by Macmillan/Clays England

Nana-Amankwaah, E., Bosque-Hamilton, E. K. and Amuzu, A. T. (1995) Impact of Development and Urbanization on Urban River Water Quality-The Nima Creek Example

Oben-Nyarko, K (1987) Urban Runoff Model for Cities in Ghana. A Review of Literature and Data Collection Water Resources Research Institute Publication, 1987.