

COMMUNITY PARTICIPATION IN WASTEWATER TREATMENT AND REUSE

April 22, 2016

Authored by

Dr. Josephine Anthony

Assistant Professor, Centre for Equity and Justice for Children and Families School of Social Work, TISS Mumbai

Prof. Surinder Jaswal

Deputy Director, TISS, Mumbai

Dr. Shalila Raj

Research Associate, SARASWATI Project, TISS, Mumbai



Research Problem

This paper argues that within the context of water crisis, community's engagement enables optimal utilisation of treated wastewater.

Case Illustration

Perception and Experience of

1] School students and villagers
- Village community

2] Students of a University
- Student community

3] Visitors of Public Places
- Tourists/Visitors community

*Ongoing study (SARASWATI
-FP7 Project)*

Research Methodology

Case study - primarily qualitative, purposive

Tools

In-depth Interview, Group Discussions & Questionnaire

No of Participants

Qualitative – 75, Quantitative - 44

Analysis

Thematic Analysis

Triangulation of Qualitative and Quantitative data

Field work period

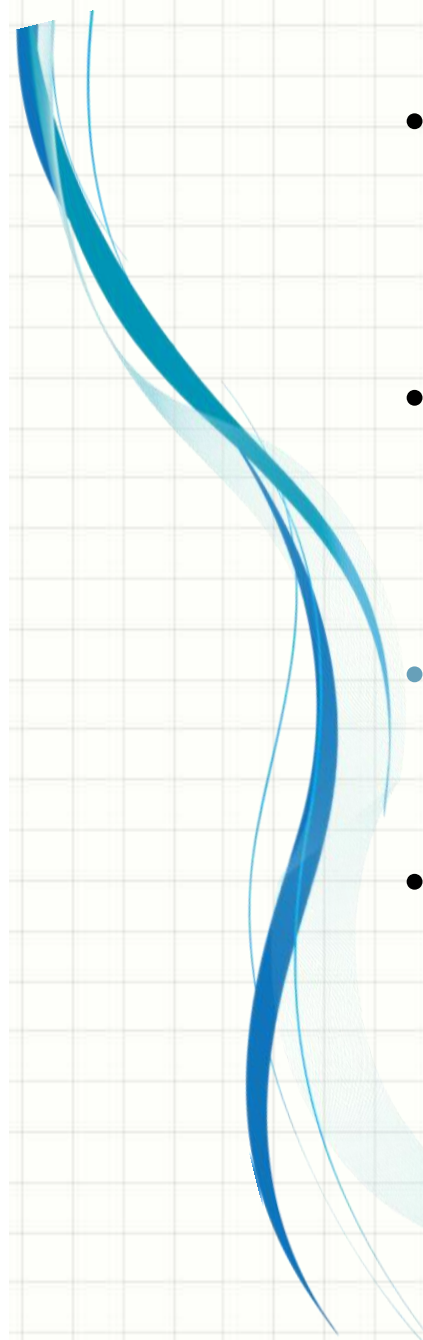
June 2014 – March 2016.



Community Participation

22-04-2016

TISS

- 
- Wastewater recycling and reuse:
 - a sustainable solution to the increasing water crisis
 - environment protection from water pollution
 - Reclamation of wastewater for reuse:
invariably expansive and expensive,
requires regular maintenance and constant care
 - Community is a collective form of a group of people
who come together with a common goal.
 - CP helps in
 - understanding the **significance and process**
involved in wastewater treatment by the users,
 - active **participation in maintaining** the plant
 - **effective reuse** of treated wastewater(Parkinson and Tayler 2003; ECODIT 2005)



- Levels of Participation

- 1) Control
- 2) Information sharing
- 3) Consultation
- 4) Agreement
- 5) Decision Making
- 6) Risk Sharing
- 7) Partnership
- 8) Self-Control



Findings of the study

Case Study 1: Village Community

Village Background

Rural village in Maharashtra

Main occupation is agriculture

Donated land for school and hostel

Students

Attending schools from 5th standard to 12th standard

Tribal community

Stay in hostel for tribal girls

Wastewater treatment plant

As part of hostel to avoid pollution from discharge of wastewater to river

Technology - DEWATS, established in 2006

Managed by an NGO

Reuse

22-04-2016 Agriculture and gardening

Level of Villagers' participation with WWTP

- **Villagers contact with the hostel:**
 - Hostel is located in the village,
 - villagers are invited for celebrations,
 - Visits to the plant,
 - Provided water lines to the hostel
 - Share the harvest for the students
- **Wastewater treatment and reuse:**
 - Awareness: treatment and reuse
 - Acceptance: willingness to use treated wastewater in farming
 - Benefits in terms of
 - Utility in agriculture
 - Cost effectiveness in substituting fertilizer
 - Protection of river and wells from contamination due to direct wastewater discharge
 - Understands the value of water and wastewater treatment
 - Concern on pollution of river due to the absence of appropriate wastewater disposal system

Outcomes of Participation

- **Decision making:** NGO and hostel management, generally; community (leaders) are consulted as land is provided by them.
- **Community engagement:** visit the plant, collect vegetables grown in the farm, high demand for the manure (sludge), regular contact with the hostel management.
- **Cost-effective:** with training, operation and management is taken care by the users. Optimal utilisation of treated wastewater and sludge makes it more cost-effective
- Have developed interest to initiate new projects for the community, engage in operation and maintenance of the plant, if local government could invest in capital.
- Satisfied with the technology and quality of treated wastewater for agriculture.
- Look at treated wastewater as the most viable solution to their farming needs.

Case Study 2:

(University) Students community

Background of the students

Post Graduate and doctoral students in
Engineering/Humanities and Social Sciences

Stays in hostels that utilise treated wastewater for flushing

Organizational background

Education and Research institute in Tamil Nadu
Technology development

Wastewater treatment plant

Technology: Aeration and Filtration process
Established in 2004

Reuse

Flushing in hostels
Gardening

Level and Outcomes of participation

- **Students contact with treated wastewater**
 - Only for reuse
- **Wastewater treatment and reuse:**
 - Awareness: treatment and reuse
 - Acceptance: willingness to use treated wastewater for flushing
 - Benefits in terms of
 - Scarcity of water in Tamil Nadu
 - Understands the value of water and wastewater treatment
 - Concern
 - Quality of treated wastewater - Dissatisfied with colour of treated waste water
- **Attitude and perception**
 - More favourable among graduate and post graduate students than doctoral students
- **Community engagement**
 - Students expressed the need for more dialogue between students and WWTP management

Case Study 3:

Visitors (of a tourist location)

- **Location:**
 - Hill city
- **Background of respondents:**
 - Tourist
- **Organizational background**
 - City management services
- **Wastewater treatment plant**
 - Technology: Extended Aeration with Activated Sludge Process
 - Established in 2008
- **Reuse**
 - No reuse for tourists
- **Quantitative data**
 - Awareness, acceptance, and experience
 - No of respondents : 44

Level and Outcomes of participation – (Information and Awareness)

- **Awareness on recycling wastewater:** 88.6% of respondents are aware of recycling wastewater.
- **Awareness of WWTP in Tourist location:** 68.2% of the respondents are not aware of the WWTP at the tourist location.
- **Acceptance:** 88.6% reported that wastewater treatment can be replicated in other places as well.
- **Experience:** 59.1 % have previous experience of using treated wastewater and 40.9% do not have any reuse experience.
- Respondents feedback (after filling the questionnaire)
 - Positive
 - Need of the hour
 - Good effort

Level of Community Participation (as per Choguill's ladder of CP)

- **Case Study 1: Empowerment**
 - Community is informed, aware, accepted, and ready for replication
- **Case Study 2: Informing**
 - Already established
 - No involvement from planning to installation
 - Reuse without consultation
- **Case study 3: Informing**
 - Already established
 - No involvement from planning to installation
 - No reuse

Limitations

- Data:
 - Diversity in community
- Residential locations
 - Unable to access residential complexes where treated wastewater is used
 - Context of water availability for cheaper rates
 - need of a wastewater treatment plant

Conclusion

- Community participation in wastewater treatment
 - dynamics of the level of participation of the community.
 - level of outcome of the treatment plant in terms of its management, quality and utilisation of treated wastewater.
 - determinants of community participation varies.
 - Involvement is influenced by the resource availability and allocation.

References:

- Parkinson, J and Tayler, K. 2003. Decentralized wastewater management in peri-urban areas in low-income countries, *Environment and Urbanization* 15(1): 75-90
- ECODIT. 2005. The Small Communities Project—Task 1: Institutional, Legal And Policy Review, Wastewater Treatment Facilities for Small Communities in Jordan, United States Agency for International Development and the Water Authority of Jordan
- Choguill, GM. 1996. A Ladder of Community Participation for Underdeveloped Countries, *HABITAT INTL.* 20(3): 431-444,