





Relevance

- Six years research area of Bogotá with small enterprises implications for cities tackling the issues of environmental pollution on river systems and of sustainability of marginalized industries.
- This action research has proven the impact that can be realized when conflicts can be resolved for the benefit of all parties involved.
- Need to focus on the prevention concept (only 5% of authorities' budgets deal technical solutions not conventional waste water treatment plants)
- Need to design and implement solutions for the marginalized enterprises (offering 81% employment and 99,4% of total enterprises)

	
OUTPUTS	
Field	Output
Theory and Methodology	<ul style="list-style-type: none"> •An innovative approach on Conflict Resolution for MSEs integrating fields and inspiring policies • Consensus building before implementation
Technical field of CP	<ul style="list-style-type: none"> •12 tanneries reducing 71% on Chromium, 72% on Sulfur, 48% on BOD₅, and 75% on TSS on the liquid discharges to the river and saving 70% on water use •Demos on CP / composting on de-hairing •Monitoring tool for tanneries •Innovation on control processes

	
Paradigm shift	
CP: voluntary and additional	PREVENTION : the spinal cord to policies
Environmental recovery is idealistic in developing countries	Technical solutions can be adapted to the contexts
Participation is feared- Conflict feared-	Work is not done anymore AT, FOR but WITH communities- Conflict: opportunity
Technical solutions are handled only by experts	Everybody can be an expert in his own problems
Sectoral planning, focus on results and at short term basis	Focus on processes, coordination, cross sectoral planning, long term basis
MSEs excluded from opportunities – Private bodies not receiving public support	MSEs real opportunities for development: INNOVATION in policies and processes



Improving Urban Water Quality for Livelihoods Enhancement in the Odaw-Korle River Catchment of Accra, Ghana

Background and Objectives

The research sought to understand the interrelationship between water for livelihoods, and attitudes to water and the environment, which constrain the use of surface water for various purposes in the urban context.

Methodology and Research Activities

- Ten selected communities reflecting different urban contexts - peri-urban; high income; middle income; and low income categories
- Focus group discussions; 443 households questionnaire; interviews
- Water samples from five locations analyzed




Findings

- **Varied access to water across communities:** less than 30% of households in peri-urban communities had tap water supply but this was over 70% for high income communities. Middle and low income communities were in between.
- **Contribution to household income:** 43% of households engaged in water-dependent occupations but less than 10% of households derived 90% of income from such use. About 17% derived at least 50% of their income from water.
- **Varied attitudes to pollution across income classes:** Environmental pollution was low in peri-urban and high income areas but high in middle and low income communities.

Recommendations

- Improve access to water in the worst served areas ie peri-urban, middle and low income communities, and support water dependent livelihoods
- Change in attitudes towards water and environmental pollution, is possible through organized efforts within communities.
- A user friendly approach to regulation and fee payment by Accra Metropolitan Assembly (AMA) will help poor households comply, and avoid widespread pollution by solid waste.

Ernest Mensah Abraham^{1,2}, Adrienne Martin², Alistair Sutherland²,
Olufunke Coffie¹ and Liqa Raschid-Sally²

¹ International Water Management Institute; ² University of Greenwich

For further information, contact Ernest Mensah Abraham, PMB CT 112 Cantonments, Accra, e.abraham@iwmi.org or ermentensah@yahoo.com

Improving on-farm ponds for wastewater treatment in Accra, Ghana

Demo Site Description: A vegetable farming site of 500 farmers using polluted water of varying quality. Individual ponds and networks of interconnected ponds are a common feature (Fig 1). Pond systems are managed by two or more farmers depending on their size. This project upgrades an existing 5-pond network for enhanced risk control. Farmers participated in construction and maintenance. The design doubled the water volume and reduced "short-circuiting" (rapid flow), increasing the overall water retention time from one to two days.

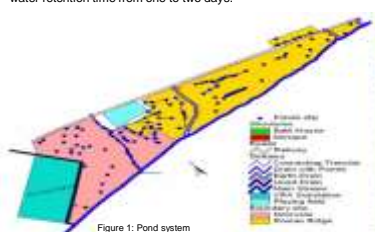




Figure 1: Pond system

The Demo site in Accra, Ghana, drawing water via pumps from polluted streams and wastewater drains



Technology Description: Trenches were slightly widened and ponds were deepened and their shape regularized. Steps were built to facilitate entry into ponds and avoid sediment re-suspension. Simple baffles were placed to increase the water retention time (see figure 2)

Required inputs: Mostly labor for construction (two man-days) and USD 50 per farmer for construction materials.

Pathogen removal

The systems enhance local pathogen removal from 10-100 to 100-1000 by at least 2 log units from the first to the last pond. Individual ponds showed a removal of 1-1.5 log units over two days. Helminth eggs were not frequently found in the source water (up to two eggs/litre) but when present, dropped below one egg/litre in the first pond.

TIP: the retention trenches account for a quite stable permanent improvement and a barrier (raising the height of the inflow pipe above the diversion weir) stopped the continuous inflow of pathogen-rich water from the main stream during the watering period, preventing re-contamination.

Adoption and out-scaling potential:

Whilst this case does not illustrate a perfect solution, it shows that farmer initiatives can contribute to pathogen reduction and also offer opportunities for improvements through participatory research. Important site criteria were sufficient tenure security, space, and an adequate slope to allow flow by gravity for interconnected systems. Given the load of two 15 l watering cans to carry each time, farmers cooperate if modifications can reduce transport time. The system is not suitable in flood-prone areas.

For more information, contact: Olufunke Coffie (o.coffie@cgiar.org)

Interconnected pond with baffles

Urine in Urban Agriculture in Accra, Ghana

Assumption

Urine if properly harvested and managed, can replace fertiliser as nitrogen source and improve environmental sanitation in cities.

Constraints

Societal perception and logistic requirement.

To pilot test the potential for using urine for crop production in Accra Metropolitan Area and provide recommendations for scaling up its

perception vs willingness to buy
demand vs supply

Findings

- positive perception and willingness to use by farmers
- 50% of marketers are willing to buy
- urine grown crops compared favourably with crops grown with fertilizer
- 77% of marketers are not willing to buy at higher price
- for profitable business, the user fee has to increase by 50%
- scaling up will require a different supply chain



Linking urban and peri urban Accra: alternative supply chain for urine Accra-Nsawam-Dumpong (Source: Martinez, 2009)



SAFISANA LTD

Contacts: Dr Olufunke Cofie

Tel. +233 21 784753-4

Email: O.COFIE@CGIAR.ORG

Outputs

Guidelines
Training manual
MSc theses