Wastewater and Faecal Sludge Management - From Technology to Action: Case Studies of Cameroon, Senegal, Ghana and Ivory Coast

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Background and Nature of Issue

- High production of wastewater & faecal sludge
- Inefficient treatment plant
- Discharge on the water bodies and open canals.
- Open nutrient loop.
Various Approaches

Centralized Approach

- High cost to build, operate and maintain.
- Developing countries lack both the funding and technical expertise.

Decentralized Approach

- Reliable & cost effective
- Simple and flexible
- Efficient
- Promising in developing countries.

FSM3
Vertical-Flow Constructed Wetlands

- Root and rhizome network
- Bottom slope 1%
- Perforated pipe
- Watertight liner
- Sand
- Small gravel
- Medium gravel
- Large gravel
- Effluent outlet
- Cleansing port
- Emergent plants
CW as an Ecological Approach for WW & FS Treatment in Tropical Climates

- Promising technology and alternative
- Fascinating alternative for developing countries
- How to operate without any financial means?
- Need of the financial and socio-economic sustainability:
  - Business-oriented sanitation processing
  - Nutrient and resource recovery

- Marketable by-products:
  - Plants/forage
  - Compost
  - Fertilizer
  - Water

- Financial means
Weakness in Current Approach!

- Only experimental or pilot plants carried out
- Few local experts available
- Weakness of the local research capacity & infrastructure
- Lack of adequate educational and training programmes
- Infrastructure planning not linked to business opportunities
Challenges in Sanitation for developing Countries

• Cultural barriers and perceptions
• Political will
• Lack of knowledge on economics of waste management & reuse
• Absence of regulations and legal frameworks
• Absence of techniques

• Cases studied Kumasi & Accra (Ghana), Dakar (Senegal), Abidjan (Ivory Coast), Douala & Yaounde (Cameroon)
  ✓ Capitalize on some sustainable aspects.
What does this Presentation stand for?

- Answers to the specific questions:
  - What is the real added value?
  - How to fill in the gaps between treatment option & institutional issues?
  - What are the main favoured?
  - How to increase their replicability, scalability and impact?
  - What are the weaknesses of such models?
  - What type of training do the agents need?
  - What are the factors influencing this network formation?
Overall & specific objectives

Overall objective:

Evaluate the effectiveness and sustainability of the option of wastewater and FS treatment in Cameroon, Senegal, Ghana and Ivory Coast

Specific objectives:

1) evaluate the operational & technical aspects;
2) assess the viability & sustainability;
3) understand & characterise the relevant business models;
4) raise awareness & knowledge.
Research Methods

1) Evaluate the operational and technical aspects
   ✓ Via scientific investigations

2) Assess the viability and sustainability
   ✓ Ecological/environmental and the socio-economic analyses
   ✓ Cross-disciplinary study

3) Understand and characterize the business models
   ✓ Analyze and integrate quantitative and qualitative data

4) Raise awareness and knowledge
   ✓ Build, train, and strengthen the capacity of the professional staff

5) Evaluate the ecological & socio-economic aspects
What do we expect?

• Business models of such sanitation system;
• Impact of sanitation tools on the enhancement of food security & business opportunities;
• Ethical aspect on by-product users;
• Economic, financial, institutional, and customer analyses;
• Building and functioning lines with limitations and opportunities;
• Socio-economic, environmental, technical & health issues on the resource recovery of the treatment plants;
• Value chains of the production and marketing channels for by-products;
• Replicability, scalability schemes of such enterprise;
• Scientific reports and articles for peer-reviewed journals.
THANK YOU
FOR YOUR
KIND ATTENTION !!