Industrial Wastewater Management Workshop

Hosted by the U.S. Agency for International Development, U.S. Forest Service International Programs, Ethiopia Industrial Parks Development Corporation and ECOPSIS

Content

a) Existing legal and regulatory framework for waste management
b) Specific legal and regulatory framework for industrial waste management
c) Specific legal and regulatory framework for industrial sectors
d) Cost structures of wastewater treatment and financial capacity of operators in Ethiopia

Part A

Existing legal and regulatory framework for wastewater management

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1.Constitution

- The constitution stipulates that citizens have the right for safe and clean environment and government responsibility to provide it.
- The right of the people to a clean and healthy environment is clearly stipulated in Article 44 of the Constitution of the Federal Democratic Republic of Ethiopia.
- Article 92 states that the Government shall endeavor to ensure that all Ethiopians live in a clean and healthy environment.

2. Policy Framework

- There is no separate wastewater management policy
- The different aspects of wastewater management are addressed in the environment policy, water resource policy, health policy, urban development policy
- The sector policies reflect the sectoral priorities like public health, environment or urban development but not from waste management point of view

2. Policy Framework

Each Ministry has its own focus, in line with its policy mandate

No clear big picture

No co-ordination

No integration

3. Environment Policy

- Adopt the "polluter pays" principle
- Establish safe limits for the location of sanitary landfill sites in the vicinity of wells, bore holes and dams, and issue regulations to enforce them
- Develop guidelines for waste disposal, public and industrial hygiene and techniques
- Country-wide strategy and guidelines on the management of wastes and hazardous biological organisms;

4. Water Resource Policy

- Integration of water and sanitation
- Define and implement acceptable minimum sanitation facilities
- Collaborative and co-operative framework for the development of sanitation systems through definition of the responsibilities of stakeholders
- Participation-driven and responsive principles without compromising social equity

5. Health Policy

- Policy emphasize preventive activities to control communicable diseases, epidemics, diseases related to poor living conditions
- Developing safe disposal of human, household, agricultural, and industrial wastes, and encouragement of recycling.
- Strengthening health education
- Emphasizes responsibility for self-care in health and assurance of safe environment;

6. Urban Development Policy

- The policy states the need for infrastructure development with focus and priority being water supply.
- With regard to sanitation it states that towns should promote clean environment and should work in collaboration with private sector and the community.
- Importance on integrating waste management with urban infrastructure

7. Public Health Proclamation

- Waste shall be managed in a manner which does not affect the health of the society
- Specifies that solid and liquid waste disposal should be handled without contaminating the environment .
- Management of wastes generated from hospitals should be handled with special care
- Any person constructing buildings for public services has the obligation to get the necessary permit from and get registered by appropriate health authority

8. Integrated Urban Sanitation Strategy

- Different levels of wastewater and sludge services
- The principle of equity in providing sanitation service to all (geography, socio-economy, gender..)
- Consideration of the environment in sanitation development
- Promoting the private sector in service provision within a contracting, supply chain and delegated management framework

8. Integrated Urban Sanitation Strategy

- Maximum community involvement
- Urban waste management should be developed to ensure sustainability of services
- Financing of urban sanitation in cost recovery principle, considering gradual move to cost recovery to ensure service to urban poor
- Promoting institutional and stakeholders coordination, harmonization and integration of efforts

9. References of Strategies and Proclamations

Strategies

a) Integrated Urban Infrastructure Development Strategy
b) National Hygiene and Sanitation Strategy (NH&SS)
c) National Protocol for Hygiene and "On-Site" Sanitation (Protocol)
d) Conservation Strategy of Ethiopia
e) Water Sector Strategy

Proclamations

a) Public Health Proclamation (No. 200/2000)
b) Solid waste management proclamation (No. 513/2007)
c) Environmental Pollution Control Proclamation (No. 300/2002)
d) Food, Medicine and Health care administration proclamation (No. 661/2009)

10. Summary of Policy Statements

- Right of citizens to a clean environment
- Responsibility of the government to provide it
- Polluter pays principle
- Cost recovery principle
- Waste reduction principle
- Sustainability principle

10. Summary of Policy Statements

- Public health consideration
- Environmental consideration
- Equity consideration
- Public private partnership
- Institutional coordination
- Water and Sanitation integration

11. Institutions

Strong institutional framework is necessary to optimize the benefits of investment in wastewater and sludge development:

- Institutions ensure effective facility development
- It is institutions that operate facilities
- Institutions accountable to regulatory requirements
- Institutions enforce policies and regulations

11. Institutions

Number of institutions involved in sanitation increased in the last 10 years:

- Ministry of Culture & Tourism (MoCT),
- Medicine & Health Care Administration & Control Authority (FMHACA)
- Ministry of Finance and Economic Cooperation:
- Ministry of Industry:

11. Institutions

Institutions at town level essential to wastewater and sludge development:

- Wastewater master planning
- Integrating industrial wastewater with municipal
- Integration with urban development
- Regulatory and permit requirement

12. Overall Framework

Part B

Existing legal and regulatory framework for industrial wastewater management

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1. Background

- There is no specific industrial waste management policy
- The environmental policy provides the broad strategic principles for industrial waste management
- Regulation 159/2008 : Regulation to Provide for the prevention of industrial pollution provides with regulatory instrument on industrial waste management

1. Environment Policy

- Principle of minimizing and preventing discharges and wastes and efficient recycling of materials
- Maintain an up-to-date register of toxic, hazardous and radioactive substances,

2. Environment Policy

- The adoption of environmentally sound practices industrial and mining operations
- Enforce the provision of information on the methods and technologies for the treatment and disposal of wastes;
- Establish effective system of control, distribution, utilization and disposal of hazardous outputs

3. Regulation to provide for the prevention of industrial pollution

- Factories should minimize pollutants from the industry in accordance to standards set by environment agencies
- Factories should ensure that pollutants do not affect environment
- The authority of environmental agencies to cancel licenses if pollution limits are not kept;

3. Regulation to provide for the prevention of industrial pollution

- Factories should have their own environmental safety monitoring systems
- Obligation of factories to report about pollutants of the industrial process

3. Proclamation for industrial pollution prevention (159/2008)

- Defines hazardous wastes that need special treatment to make them less harmful
- Pretreatment requirement for hazardous elements
- Treatment facility permit with regulatory and environmental bodies.
- Follow optimum standards in disposing of effluents and other wastes

4. Regulation to set standards for effluent

- It identify industry sectors
- It sets standards for effluent from different industrial sectors
- It outlines responsible organs for enforcing the standards
- Schedules outline effluent limits in to ground, surface and public treatment facilities

5. Integrated Urban Sanitation and Hygiene Strategy- 2018

- Consideration of economic effects on industries in regulating waste to avid negative economic effect
- Addressing industrial waste management regulation through negotiated agreements with individual industries and staged mitigation, applying the polluter pays principle, backed by clear threat of penalty through legal enforcement institutions

6. EIA Requirements

- Industrial projects subject to EIA
- Identifying environmental impacts
- Developing mitigation measures
- Developing environmental management plans
- Reporting requirement on mitigation measures

7. Summary

- There is no specific industrial waste management regulation
- Environment sector focusing on industrial waste
- Many of the environment regulations included industrial waste management principles and directions
- Project specific environmental considerations in place
- Focus of the regulations about industrial waste's impacts on municipal treatment facilities

8. Gaps

- There are no capacities to enforce industrial effluent standards
- No town level waste management directives
- Most towns have no wastewater master plans
- No town has wastewater treatment facility to address industrial wastewater and sludge
- There is no industrial wastewater management plan guideline

Part C

legal and regulatory framework for specific industrial sector wastewater management

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1. General

- There is no regulation on wastewater for specific industry sectors
- There is a regulation on electronic waste management
- It focuses on solid wastes
- It is based on the overall principles

2. E-waste regulation's scope

- Producers
- Transporters
- Collection centers,
- Refurbishesrs,
- Dismantlers,
- Recyclers

3. Lessons

- It provides set of rules for the specific industry
- It provides more details and specifics
- It is to enforce

Part D

Costing and Financial Capacity of Operators
In wastewater management

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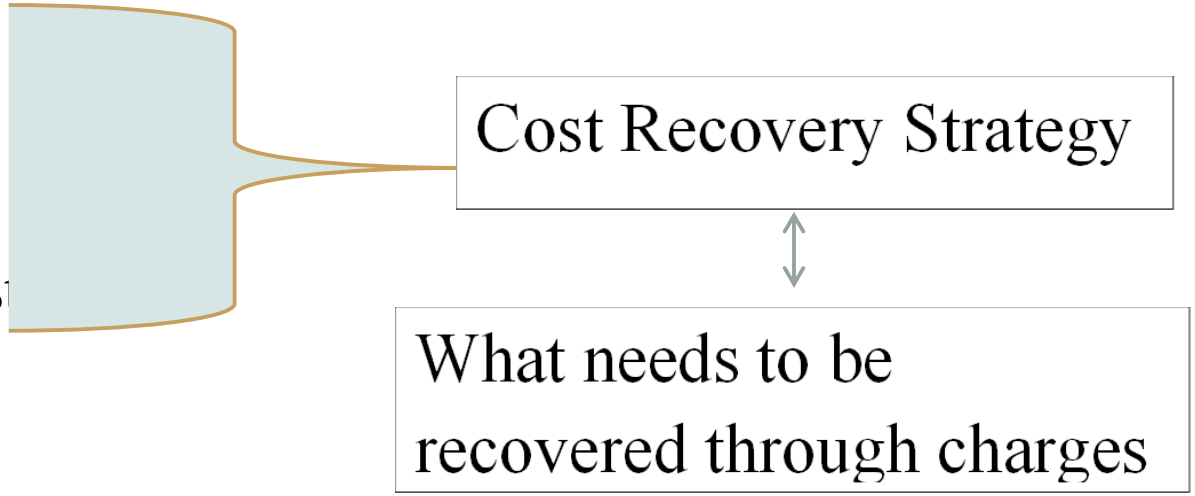
1. Policy Framework

- Polluter pays principle
- Cost recovery principle (Full cost or partial cost recovery?)
- Appropriate and affordable tariffs and charges,
- Effective collection and utilization of funds
- Operators/owners decide charge systems

2. Broader classification of costs

Operational Costs
Maintenance Costs
Replacement Costs
Capital investment cost



3. Cost computation methods

- Through unit cost system
- Historical data
- Percentage of capital investment cost
- Data from other operators

4. Cost Factors

- Water Quality
- Flow rates
- Target purity
- Construction materials
- Volume of water

5. Charge Systems

Volumetric based charge (per m3) ⟷ Discharge meter

Fixed Charges

Capital based charges

Output based charges

Commercial information

Chemical consideration charges

6. Municipal WW unit costs (Examples)

- Operation and maintenance cost recovery (Birr 3.53 per m3)
- Operation and maintenance and depreciation cost recovery (Birr 6.72 per m3)
- Operation and maintenance, depreciation and financial cost of investment of 2.5% per annum (Birr 9.23)

7. Municipal DWWS unit costs (Examples)

- Operation and maintenance cost around 3.5-5 Birr/m3
- Investment cost (5-7Birr per m3)
- Replacement cost(Birr 2-3 Birr per m3)

7. Financial Capacity (AA)

- Current charge free with city subsidy
- Financial plan in place to reach cost recovery over 10 year
    - Utility's operational capacity
    - Connection rates
    - Infrastructure issues (Power supply stability)
    - Macro economic development

8. Lessons for Industries

- WWT operations are very challenging depending on selected technology
- WWT are very expensive and affect financial standing of industries
- Developing financial plan is essential to address economic impact on industries
- Possibility of integration with town WWT systems can be considered

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