Finance Options Session 3 :Costs and Sources of Finance

Module 4 Session 2

Introduction

This session looks at two aspects of financing wastewater management schemes:

- Costs – Types of costs
- Sources of funding – how to fund different elements of system.

Different types of Costs

Need to consider *all* costs associated with a sustainable *service*. There are two basic types of costs for the introduction of *sustainable* infrastructure.

- Capital Costs – the costs to build a facility or systems. This is a one off initial investment.

- Recurrent Costs – the costs of operating and maintaining the system, technical, human resources, institutional. The ongoing costs of keeping a system going.

Capital Costs

- The Capital Cost (CC) or Fixed Cost (FC) refers to initial cost incurred in installing a facility. The usual components of the capital cost are land, building, machinery, laboratory equipment.

Recurrent Costs

- Operation and Maintenance cost (O & M) or Variable Cost (VC) includes labor, materials (chemicals, vehicle, fuel, spare parts, office supplies, overhead, rental cost, electricity).

- Vary from place to place e.g. cost of operating and maintaining a sewer is likely to be much higher in flat areas with poor solid waste collection than in an area with good gradient and solid waste services.

- Can be estimated through modelling O and M procedures in a range of representative areas and recording costs.

Comparative Costs

- Beyond dense urban areas the average household cost of conventional sewerage may range from US$ 300 – 1000 or US$ 0.35 -) 0.50 per cubic Metre.
- Too expensive for many households on incomes of US$ 1 or less per day.
- Through non conventional systems it may be possible to cut costs by at least one-half.

Cost Estimation

- Breakdown of components in the form of a standard bill of quantities.

- Costs for activities can then be estimated from
  - Market rates for completed items including labour and contractors profit
  - Building up estimate of cost from quantities of materials and labour and application of standard rates. In many countries standard schedules of rates are available (Tayler, K et al 2003)

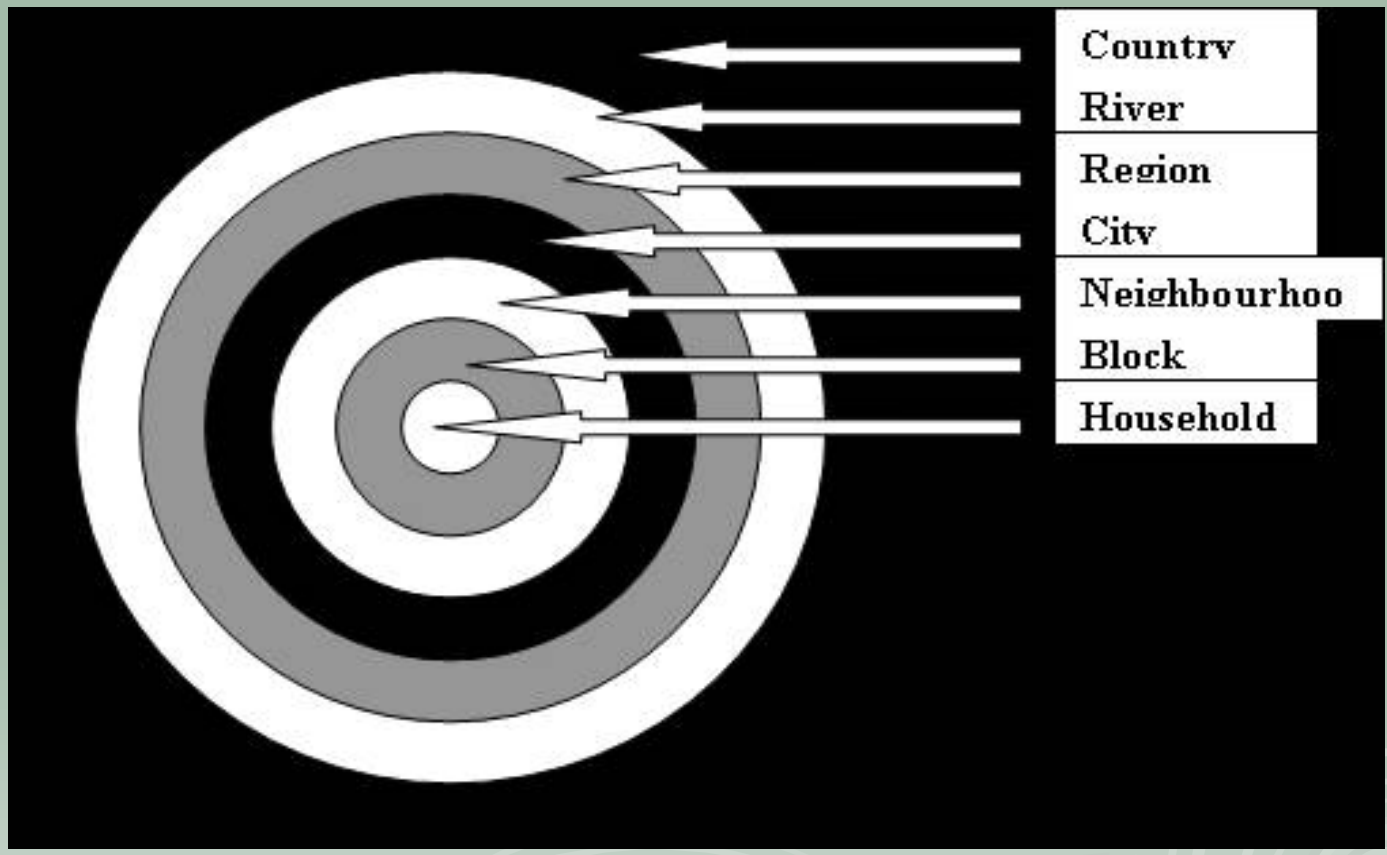
Types of O and M costs for Different Technologies (Tayler, K et al, 2003)

Household Systems (pit latrines, septic Tanks)	Sewers	Sewered Interceptor Tank Systems
➢ Pit emptying (assume 40 litres of sludge p.p. / p.a.) ➢ Repair access covers ➢ Replacement of vent-pipe screens	➢ Pumping costs ➢ O and M at treatment facility ➢ Rehabilitation and repair of manhole covers and sewer pipes ➢ Cleaning and desilting – often high cost in low income areas	Tank emptying and treatment Rehabilitation and repair – less than for conventional sewers as fewer access points.

Assigning costs of Wastewater Management I (adapted from Serageldin,1994)

- Costs should be assigned to levels in hierarchy according to the benefits accruing. Thus finance of sanitation, sewerage, wastewater treatment.
  - Households pay the cost in providing on-site facilities
  - Block residents pay cost collecting wastes from individual homes to block boundary
  - Neighbourhood residents pay from collection from blocks and movement to boundary or neighbourhood treatment
  - City Residents pay additional transport or treatment costs
  - River Basin stakeholders assess the value of different levels of water quality and decide which value they want to pay for.
  - The Nation in order to achieve better public health or environmental benefits may decide to pay collectively for meeting higher treatment standards

Assigning costs of Wastewater Management II



Sources of Funding (Adapted from IRC Factsheet Financing and Cost Recovery)

National Authorities External Support Agencies Regional and local authorities	Subsidies, loans, grants, salary payments, institutional costs
Private Sector	Loans, financing
NGOs/CBOs	Grants, soft loans, donations of materials, salary payments, institutional costs.
Communities/users	Taxes, tariffs, contributions in kind

Conventional Public Finance

- Traditional approach to financing sanitation and wastewater is supply driven
  - Subsidy programmes for household and public toilets eg ILCS in India
  - Grants/loans for sewerage networks and construction of treatment facilities.
- Global finance with this approach
  - USD 17 billion for sanitation and USD 70 billion for wastewater treatment. Annual finance gap estimated between USD 16 – 56 billion.

Shift in Financing Arrangement

- To sanitation promotion and leveraging resources
  - Sanitation promotion – generating demand specific to local situation
  - Leveraging household and community resources
  - Mechanism such as full or partial cost sharing, user fees and sanitation related taxes or surcharges.

Innovative Financing Schemes

- In Orangi, an informal urban settlement Karachi, a hierarchy for financing sewerage services was developed.
  - Households pay the costs of ‘on-lot’ services – latrines and septic tanks
  - Primary sewers paid for by ‘lane’ households.
  - Contiguous lanes pool resources for neighbourhood sewers.
  - City pays for trunk sewers.

Leveraging

- Using public resources to bring in more household, community and private resources.
  - Household or community resources –
  - Market based resources – Private investment and domestic borrowing
  - Government and NGOs

Importance of Access to Credit

Access to Credit allows investment in wastewater. Credit instruments include:-

- Municipal Development Funds
- Community micro-financing arrangements
- Household Loans

Raising Taxes

- Effluent Tax – Tax on industries or firms discharging wastewater proportional to volume water consumption.
- Advantages
  - Encourages waste reduction
  - Provides a source of revenue of wastewater treatment investment.
- In China, application of industrial effluent tax has been main source of industrial wastewater management improvements.