Characteristics of urban slums

- **Location**: low-lying ground; steep hillsides; proximity to landfill and refuse tips, sources of toxic and hazardous waste
- **Poor housing**: overcrowding; construction; poor ventilation; dirt floors; cold and dampness.
- **Settlement layout**: overcrowding; poor access
- **Lack of access to basic infrastructure and services**: water supply, sanitation, solid waste, drainage

Environmental health problems

- **Physical and safety hazards**: site-related hazards (landslide, flooding); home related hazards (e.g. household accidents)
- **Microbiological pathogens**: direct contact, contaminated water/food, parasitic worms, insect vectors (flies and mosquitoes).
- **Chemical agents**: toxic/hazardous wastes conveyed by polluted water or airborne transmission
Why slum upgrading?

Targeted interventions in slum areas needed for poverty alleviation:

- Slums are highly concentrated areas of poverty which merit special attention
- Social dynamics and physical nature of slums requires specially designed interventions

Traditional response

- Traditional response focuses on investments to extend coverage and improve the quality of public infrastructure and services
- Empirical evidence and participatory evaluation suggests that upgrading leads to positive health outcomes

Poverty alleviation outcomes

- Reduced expenditure on medicines and health care
- Reduced loss of days due to illness and increased work productivity
- Greater school attendance and increased cognitive development

However, these same evaluations indicate that the health benefits may not always be as significant as anticipated.

Aims

1. Review environmental health issues in urban slums and assess how these are incorporated into slum upgrading projects
2. Identify examples of good practice and gaps related to the design and implementation of environmental infrastructure and services for urban slums
3. Propose policy recommendations and operational guidelines to improve environmental health outcomes of slum upgrading projects

Scope

Main focus on environmental health risks related to microbial pathogens
Secondary focus on physical hazards and health concerns related to chemicals

Methodology

- Desktop review of the relevant literature and project documentation
- Informal interviews with task team leaders.
Causal linkages influencing health risks and disease transmission

Water and Environment

Types of intervention in selected 40 slum upgrading / urban development project

Public
- Water supply: 82%
- Sanitation services: 79%
- Stormwater drainage: 72%
- Roads and paving: 77%
- Solid waste: 64%
- Electricity supply: 36%

Private
- On-site sanitation facilities: 23%
- Improved housing: 26%
- Ventilation and improved stoves: 8%

Hygiene behavior
- General health and hygiene awareness: 38%
- Sanitation related: 28%
- Household cleanliness and waste management: 23%
**Water and Environment**

### Types and levels of intervention

- **Public domain**
  - Area-based slum upgrading
  - Interventions at the neighborhood level
  - Community mobilization
  - Household-based interventions

- **Private domain**
  - City level
  - Neighborhood
  - Household
  - Individual

- **City-wide interventions**
  - Interventions at the city level
  - Interventions targeted towards individual

**Types of interventions**

- Cholera or rotavirus immunization
- Diarrheal disease – breast feeding promotion
- Diarrheal disease: hand pump, standpost or home connection
- Construction and promotion of sanitation infrastructure where facilities are limited
- Hygiene promotion

**Cost – effectiveness ratio (US$ per DALY averted)**

**Interventions at the city level**
- Installation of large-scale infrastructure and waste management systems

**Interventions at the neighborhood level**
- Communal infrastructure small-scale private sector service providers
- Neighborhood waste collection schemes and local environmental management

**Interventions at the household level**
- Improved housing, on-site sanitation, improved stoves and associated behavioral changes.
Environmental health risks in the private domain

Many transmission routes of disease are in the home and immediate area:

- On-site sanitation
- Water storage
- Indoor air pollution
- Dirt floors

*These interventions for improved environmental health in the private domain can be achieved at low cost but can be complex to implement within confines of traditional slum upgrading projects*

- Initiatives should be led by individual households
- Strong focus on hygiene behavior changes and use of facilities
- Innovative financing – subsidies used selectively for building materials / sanitation components / stoves and provide technical support

Framework for improved environmental health outcomes in slum upgrading

![Diagram showing infrastructure, hygiene promotion, and service delivery components.](Image)
Policy recommendations

Targeted investments on an area basis are required to improve the quality of the living environment in slums BUT these investments may be compromised by lack of:

a) Effective and self-financing management arrangements for sustainable operation

*Greater consideration of the institutional framework for post project operation as well as that for project implementation.*

- Effective systems for collection and off-site disposal and treatment of wastes generated by slums

*Complimentary investments in city-wide services for off-site waste management*

Household level interventions to tackle disease transmission in the private domain

*Due to the heterogeneity of slums and the ‘urban pocketing’ concept these may be best achieved when tackled on a non-area basis*

Improved hygiene behavior to ensure that health outcomes associated with hardware are maximized.

*Greater consideration of the role of women and children in sustainable improved hygiene behavior changes.*
Social dimension of environmental health and poverty alleviation

- Non-environmental health and livelihood concerns may be of greater priority
- Perceptions of health outcomes are as important as quantifiable health outcomes
- Special emphasis on the poorest and marginalized groups for equitable health outcomes
- Focus on women and children as key proponents of improved health and hygiene behavior

Future activities and ongoing work

- This study aimed to identify key issues related to environmental health in slums to provide the basis for discussion – particularly between those working in the environment and urban sectors of the World Bank.

- A report on which this presentation is based is currently in being reviewed. This report will be revised and then made available for wider circulation. Please contact myself directly or Anjali Acharya (ENV) or Balakrishna Menon (FEU)