





Delivering **Sanitation** and **Water** in Informal Settlement

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Global Sanitation and Water Challenges :

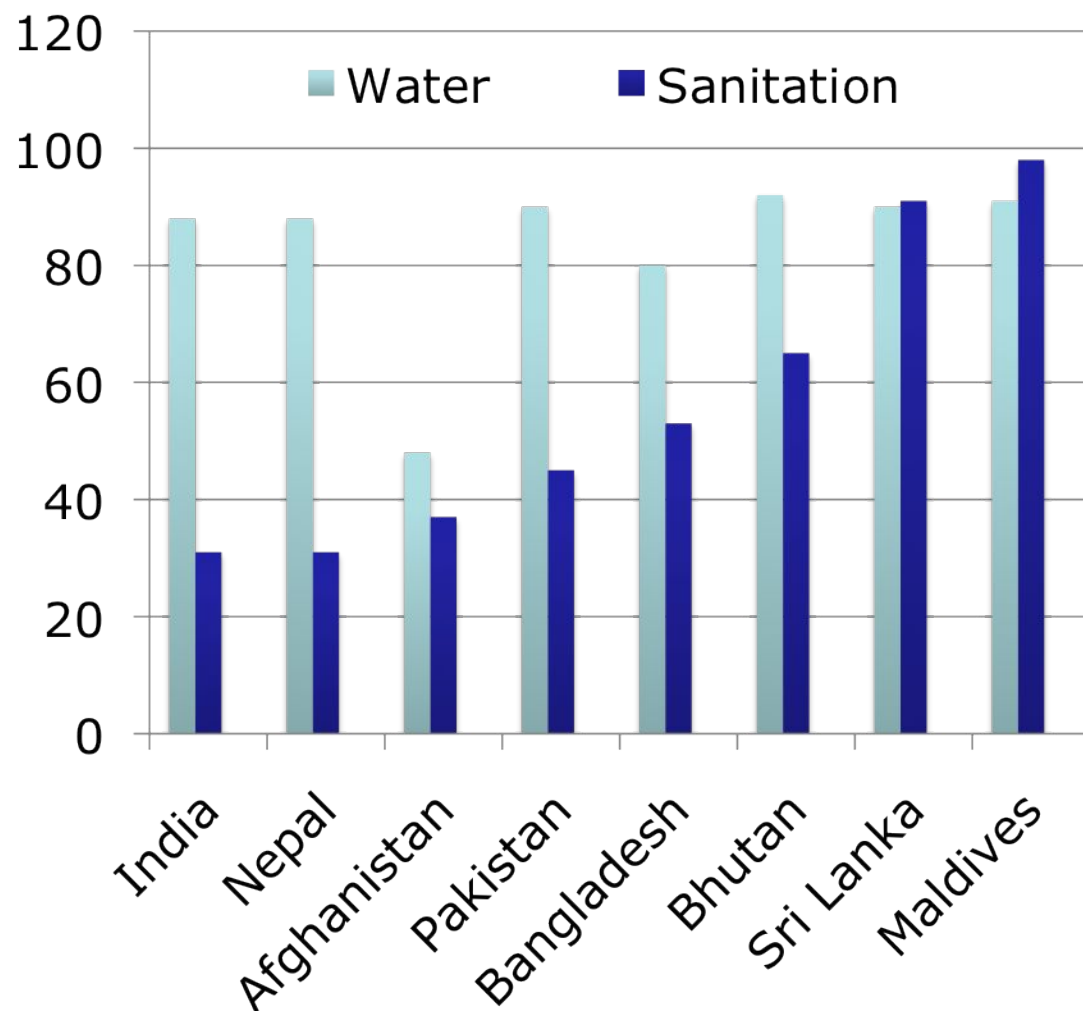
Summary of High Level Meeting of Sanitation and Water for All

23rd April 2010

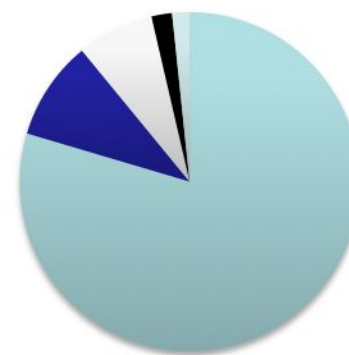
- Progress is slow towards the MDGs and increasing service access
 - 2.5 billion (1027 billion in SA) people lacks access to basic sanitation – MDG can be achieved only in 2049; 0.9 billion (211 million in SA) lack access to clean drinking water
- Sanitation Requires a particular focus
 - Most off track compare to all other MDG targets; Link with child & maternal health, hunger and education, poverty reduction
- The Impact of neglecting investment in sanitation and water has been under estimated
- Investment in sanitation and water make good economic and social sense.
 - The annual economic benefits by achieving universal access to sanitation and water – economic returns \$171 billion; Economic returns of over 5 times on investment.

- List served population are not receiving support for sanitation and water
- Three Key Barriers to achieving universal access to sanitation & water :
 - Insufficient Political Prioritization
 - Lack of Evidence Based Decision Making Process
 - Lack of Capacity to develop and implement national plans and strategies

Sanitation & Water Coverage in South Asia



1.027 billion people not using improved sanitation



India
Bangladesh
Afghanistan
Pakistan
Nepal

Right to Water and Sanitation: Basis for UN-HABITAT's Work

The Habitat Agenda

"More people than ever are living in absolute poverty and without adequate shelter. Inadequate shelter and homelessness are growing plights in many countries, threatening standards of health, security and even life itself. Everyone has the right to an adequate standard of living for themselves and their families, including food, clothing, housing, **water and sanitation**, and to the continuous improvement of living conditions ". (Article 11 of preamble)



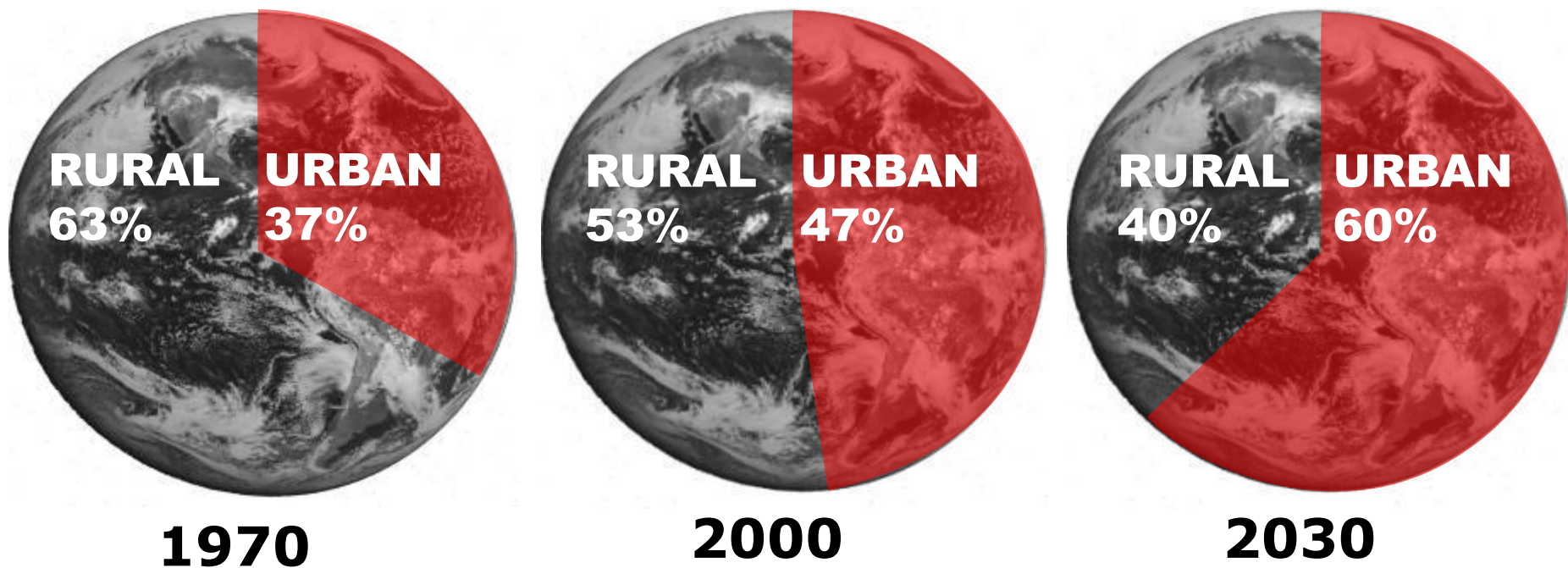
What is the Right to Water and Sanitation?

- **Sufficient and Safe water:** An adequate quantity of safe water supply must be available for personal and domestic uses. WHO suggests a minimum of 20 liters/day/person and source of water should be in between 100 to 1000 meters or 5 to 30 minutes collection time. Similarly Water should be free from contamination that affect public health
- **Accessible water and sanitation:** Water and sanitation services and facilities must be within safe physical reach, in or near the house, school, work place or health facility, in a secure location and address the needs of different groups, in particular threats to the physical security of women. Sanitation should protect public health and not to damage ecosystems.
- **Affordable water and sanitation:** Water and sanitation must be affordable, without reducing the individuals or household's capacity to acquire other essential goods and services.
- **Water availability, allocation and sustainability:** The allocation of water resources must give priority to essential personal and domestic uses. Water sources must be protected against degradation and pollution to ensure safe water for present and future generations

— General Comment No. 15 : The Right to Water

– UN Sub Commission on the Promotion and Protection of HR

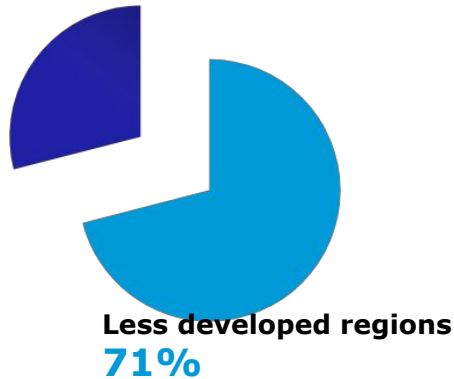
Urbanization is another challenge



Urbanization in the world

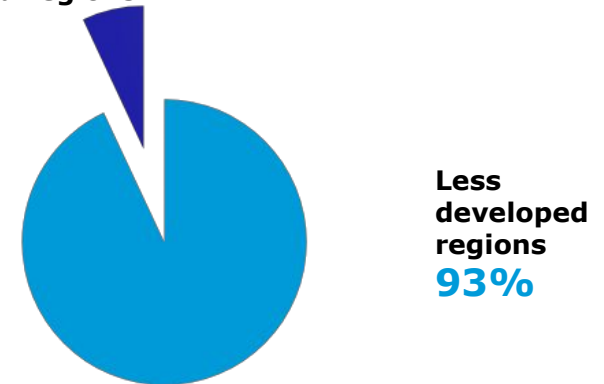
URBAN POPULATION BY REGION (2005)

More developed
regions
29%



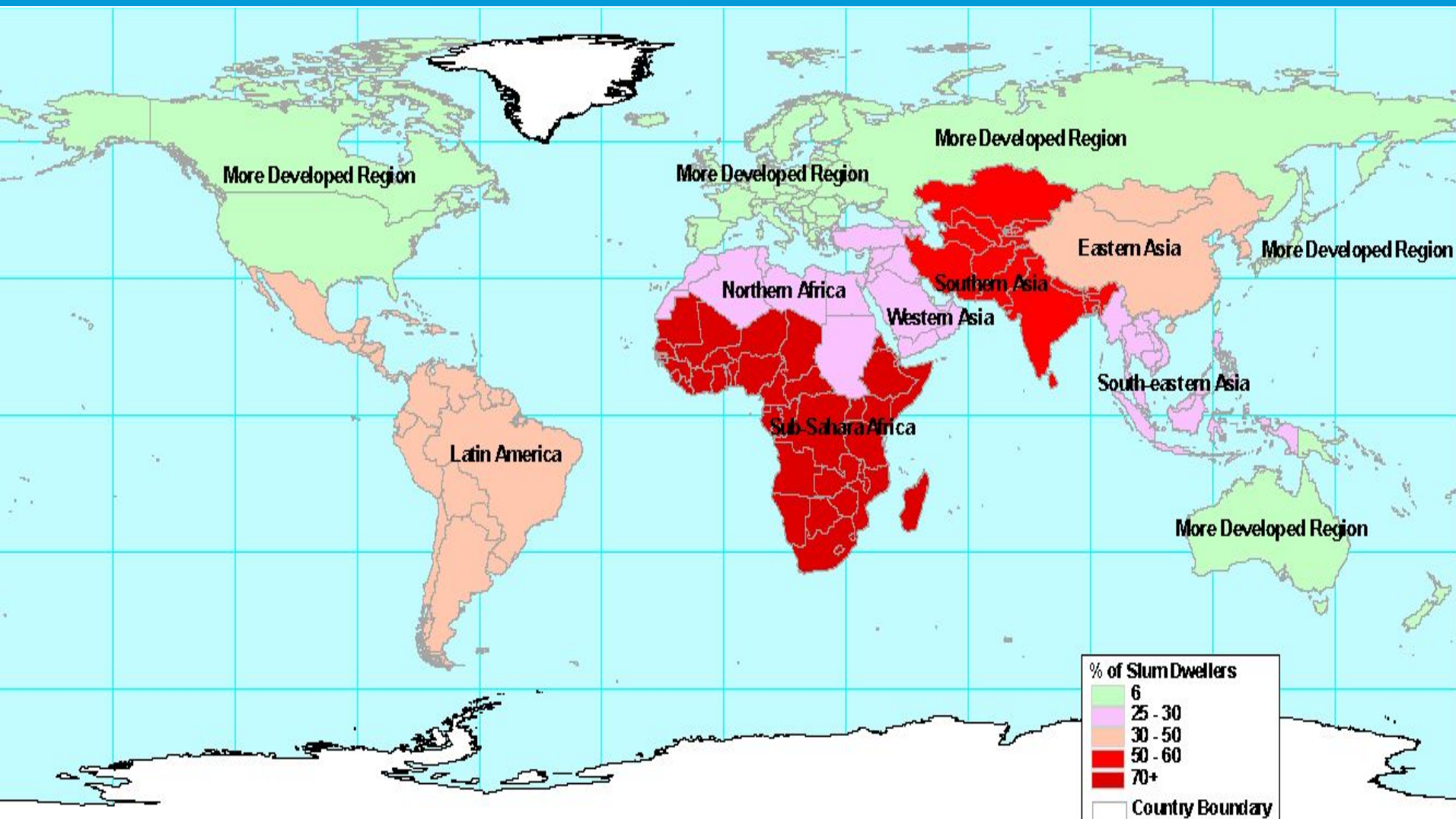
PERCENTAGE GROWTH OF URBAN POPULATION
BY REGION (2005-2020)

More developed regions
7%

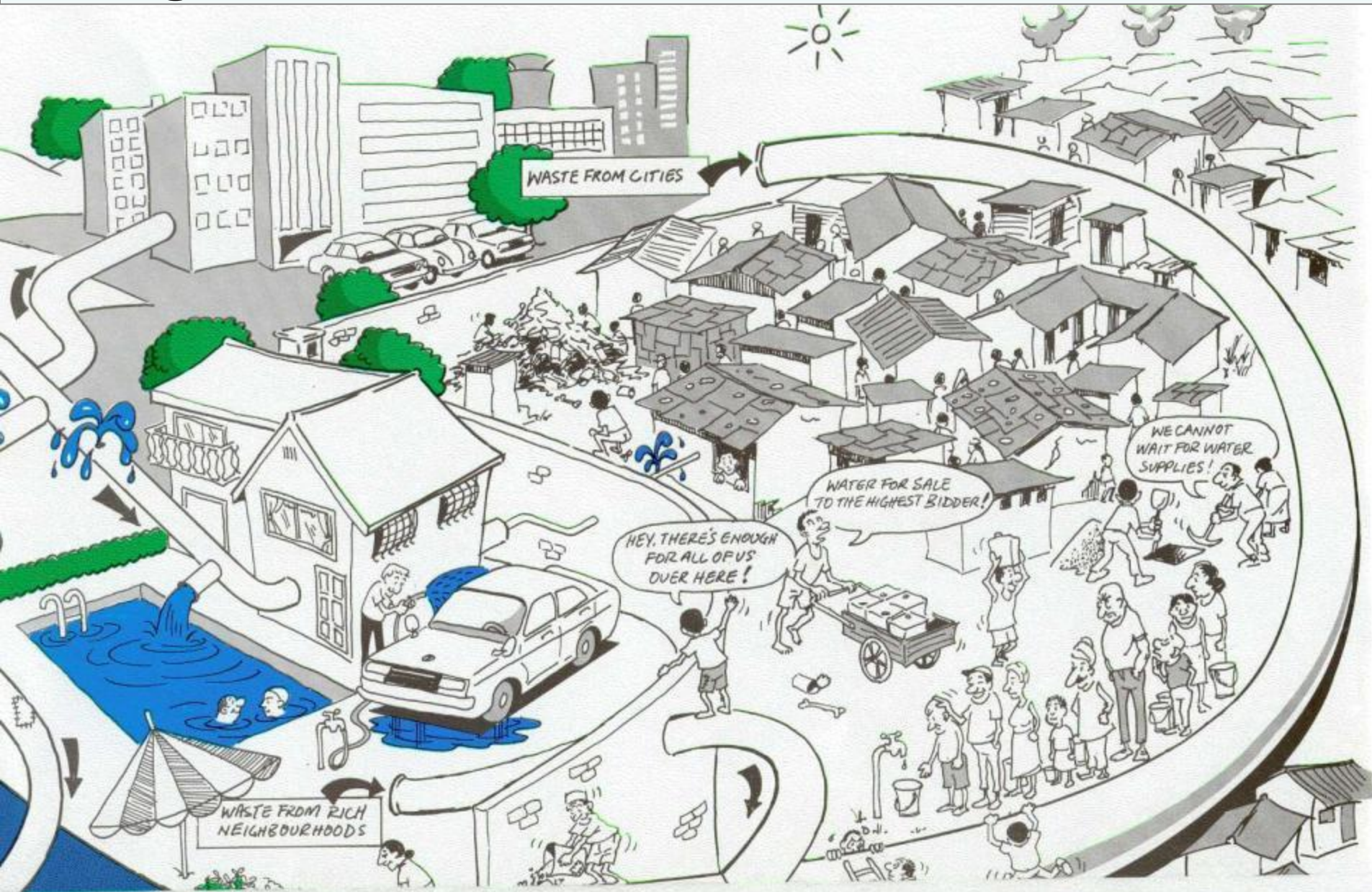


- Today, one in two people on the planet is an urban dweller
- Urbanization is happening mostly in developing countries (**93%**)
- Cities are growing because of:
 - natural increase in urban population (**50%**)
 - reclassification of rural areas as urban areas (**25%**)
 - rural-to-urban migration (**25%**)

Proportion of slum dwellers around the world

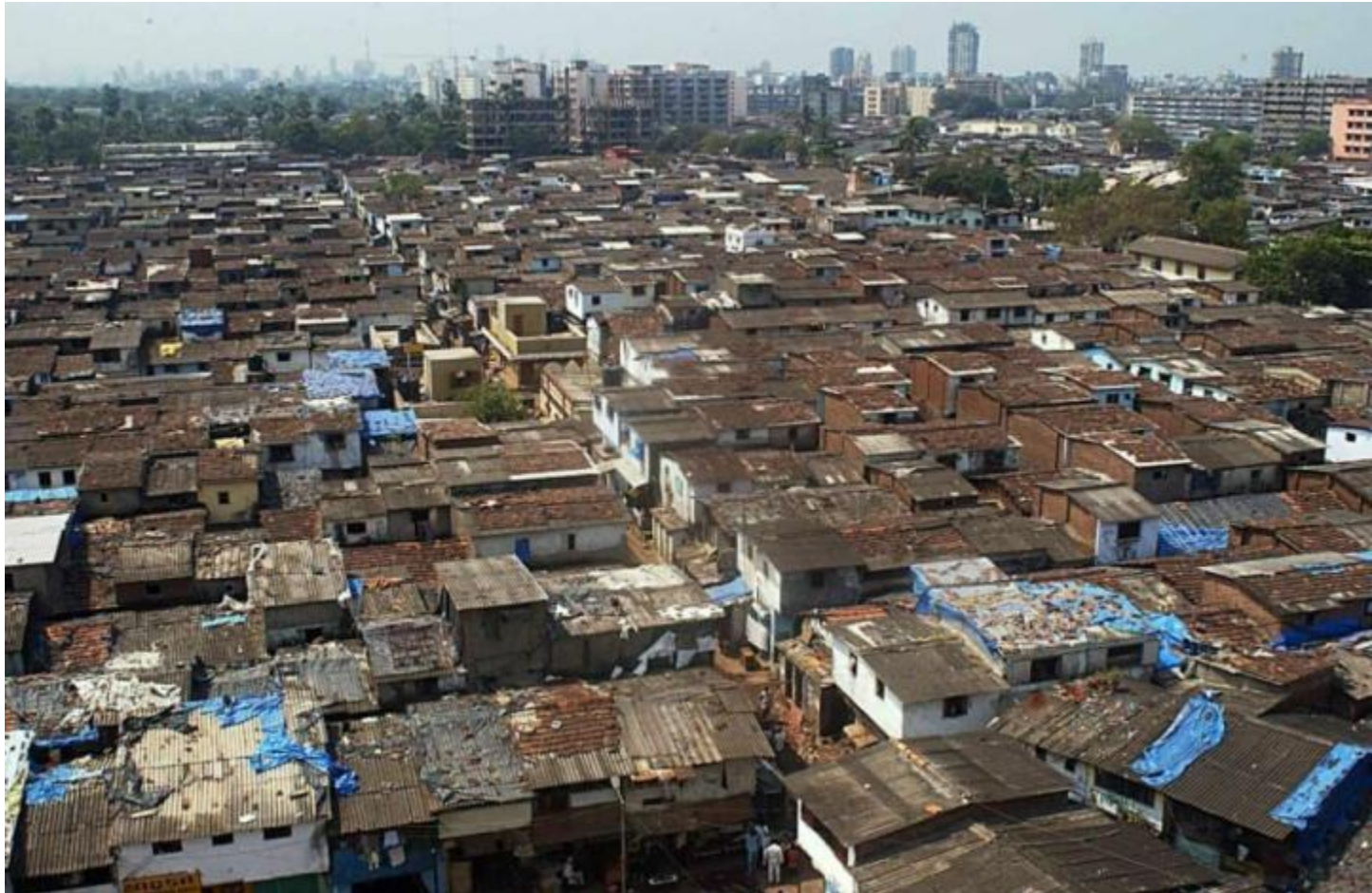


Urban Stress: Growing Inequity & Water Management Problems

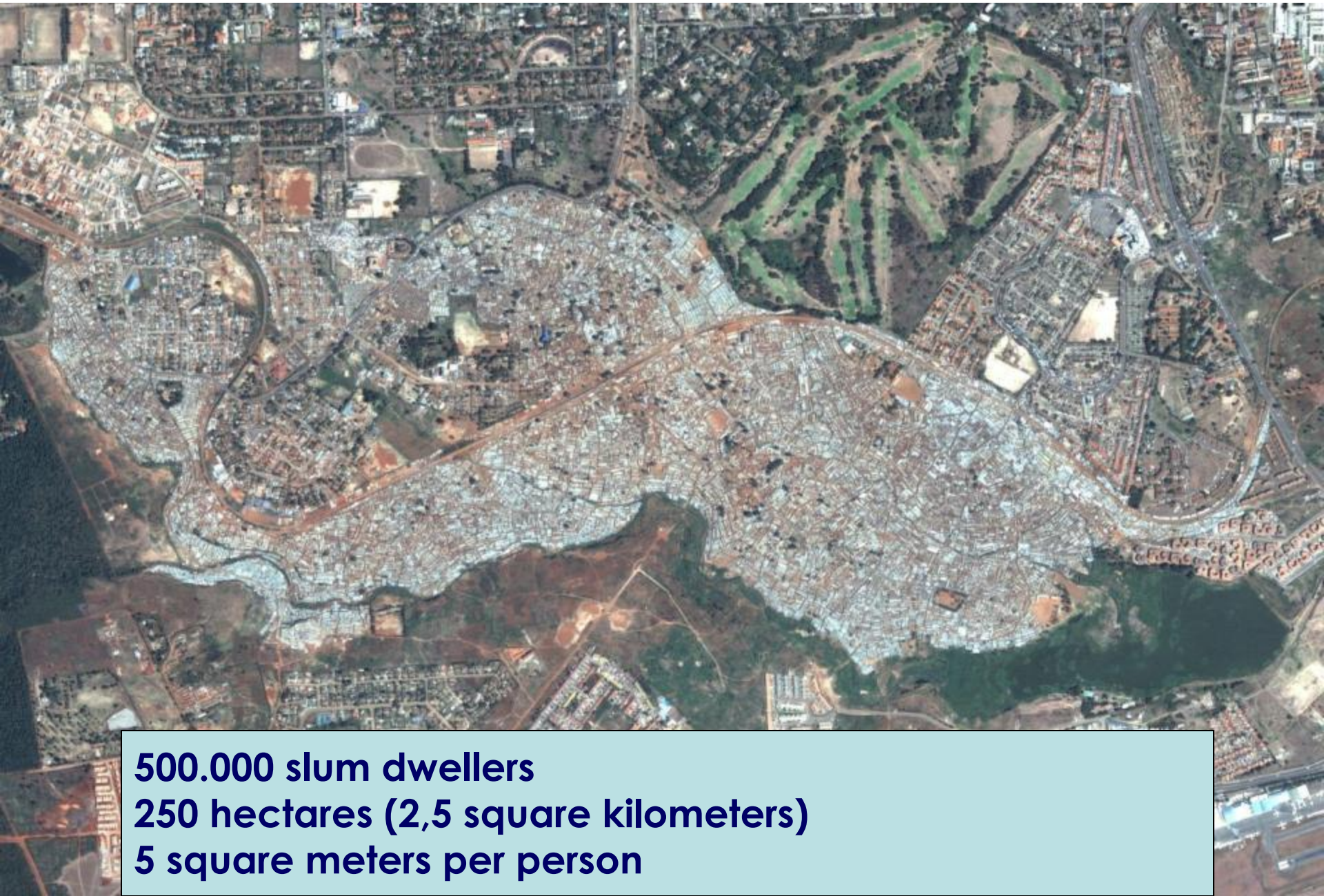


Dharavi, Mumbai, India, 1 million people

60% of population living on 6% of space



Urbanization of Poverty: Kibera, Nairobi



500.000 slum dwellers
250 hectares (2,5 square kilometers)
5 square meters per person



Informal settlement in Islamabad



Sanitation The Forgotten Child !!!



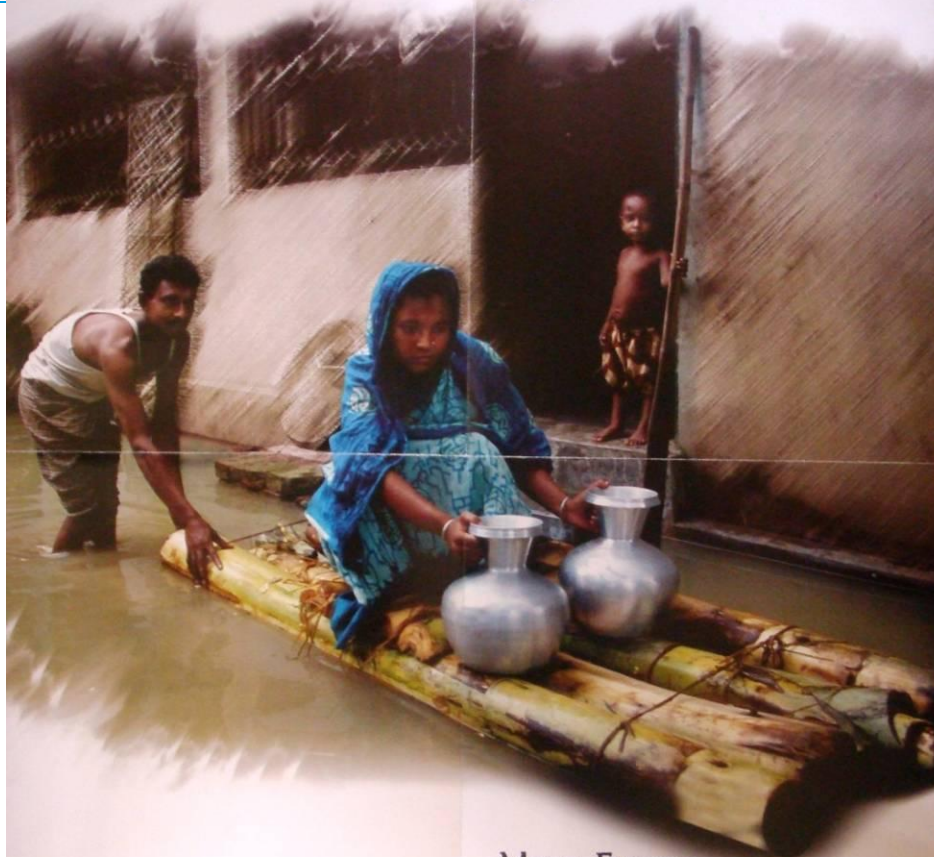
Urban disparities : example Rio de Janeiro



No space to bring water line in and sewer out



How is CLIMATE CHANGE
affecting your HEALTH?



MORE FLOODS
CONTAMINATED WATER
RISE IN CHOLERA AND DIARRHOEA

Photo credit: © Shehzad Noorani/Still Pictures

[www.searo.who.int/World Health Day 2008](http://www.searo.who.int/WorldHealthDay2008)
E-mail: sde@searo.who.int

 **World Health
Organization**
Regional Office for South-East Asia



Water Distribution in Cochabamba



Water Distribution in Poor Settlement in Karachi



Water Scarcity in Kathmandu



Rainwater Harvesting in Water Stressed Settlement



Established Water Infrastructure Never Used



How to make these children Healthy ?

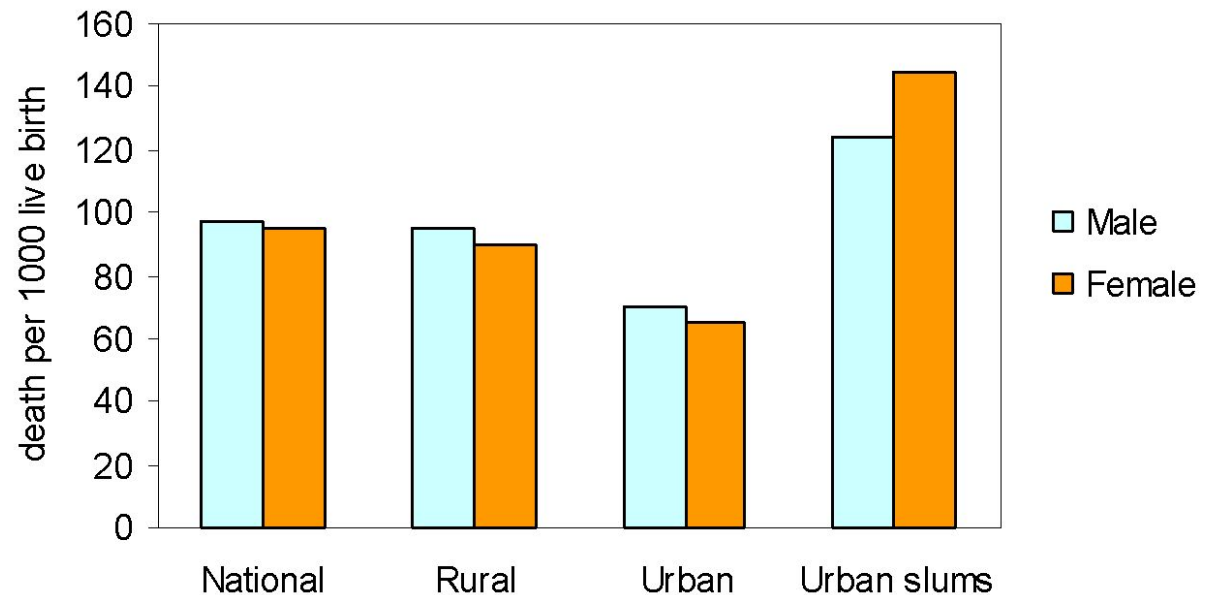


The urban poor are especially vulnerable



Bangladesh:

Twice as many infant deaths per 1,000 live births in urban slums than in urban areas as a whole



Urban statistics rarely show the whole picture!

Water and Diseases



94% of Diarrhea caused by poor Water Sanitation & Hygiene



How to Aware about Hygiene ?



Photo :
Som K
Shresth

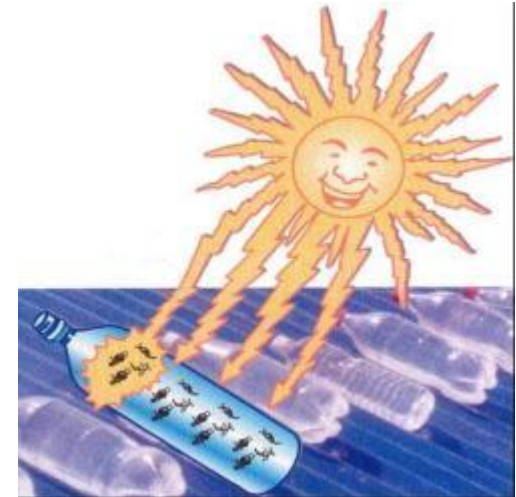


Are the Technologies not Available ??

Do we really need sophisticated laboratory ?



How many vulnerable people know about these PoU options ?



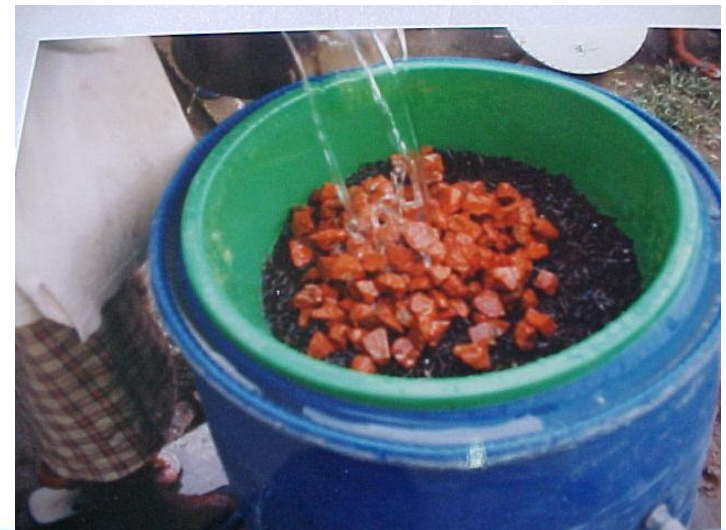
Why people are not using it though it is zero cost option ?



How to bring these product in the market so that poor can afford it ?



School children and community can have safe drinking water



Rainwater still not considered as Primary Source of Water



Per Capita cost of Water Supply Can Be Significantly Reduced With This Kind of Supply System



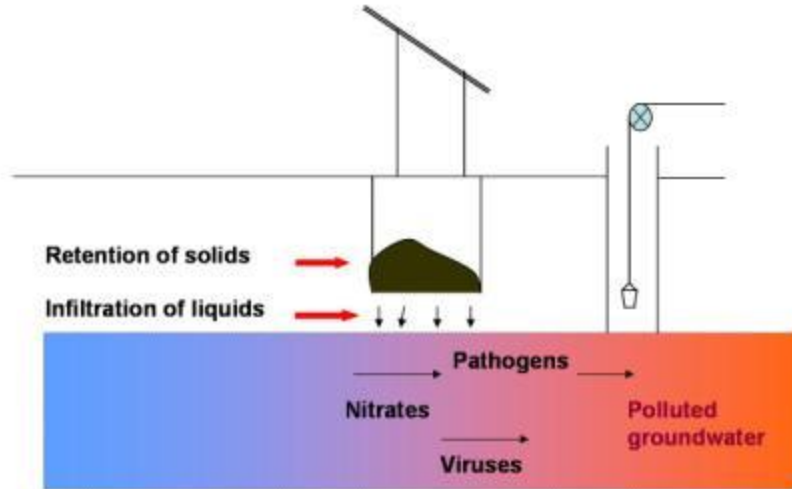
Community Managed Water Bottling Scheme







Common Type of Sanitation : Always risk of groundwater contamination



Establishment of Settlement for Landless Communities affected by Flood



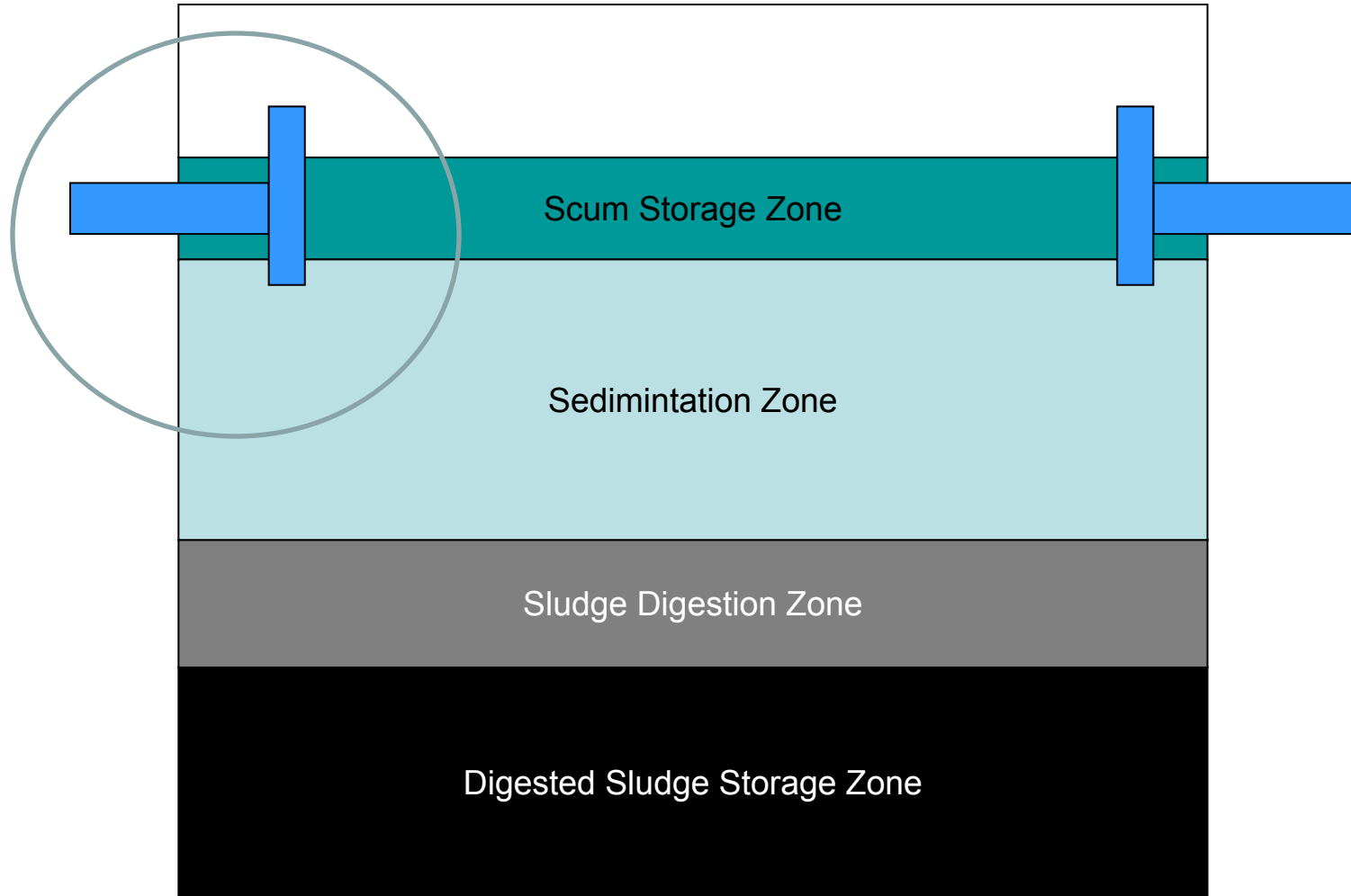
Toilet in Emergency



Cardboard Box Toilet for Emergency



Septic Tank Design not usually done properly



Removal of Sludge is not a Priority

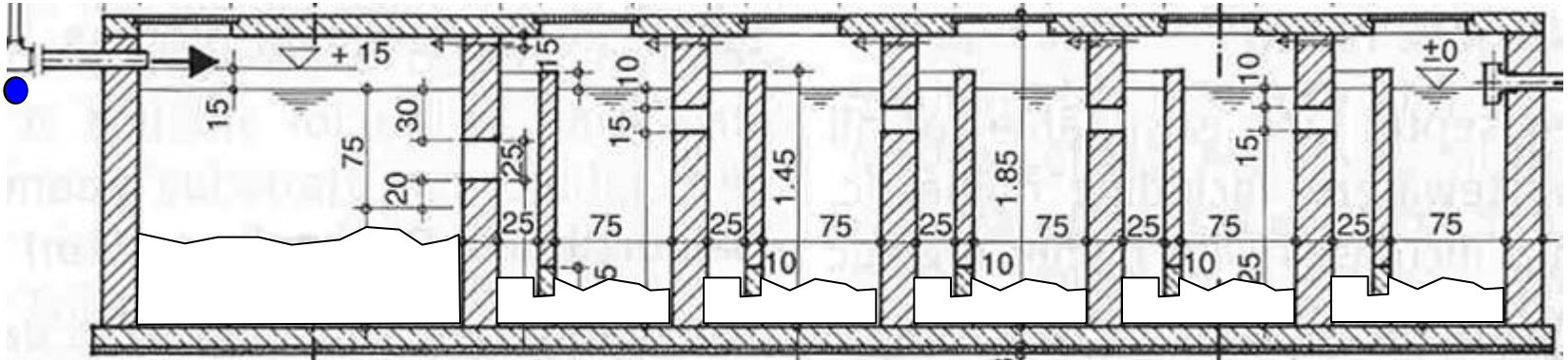


**1 truck of latrine sludge
carelessly dumped
= 5,000 people shitting in the
open!**

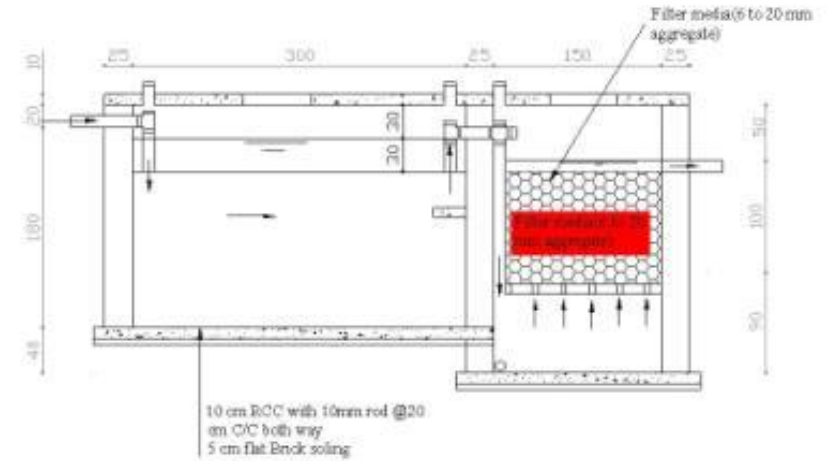


Improved Septic Tanks

Anaerobic baffled reactor (baffled septic tank)



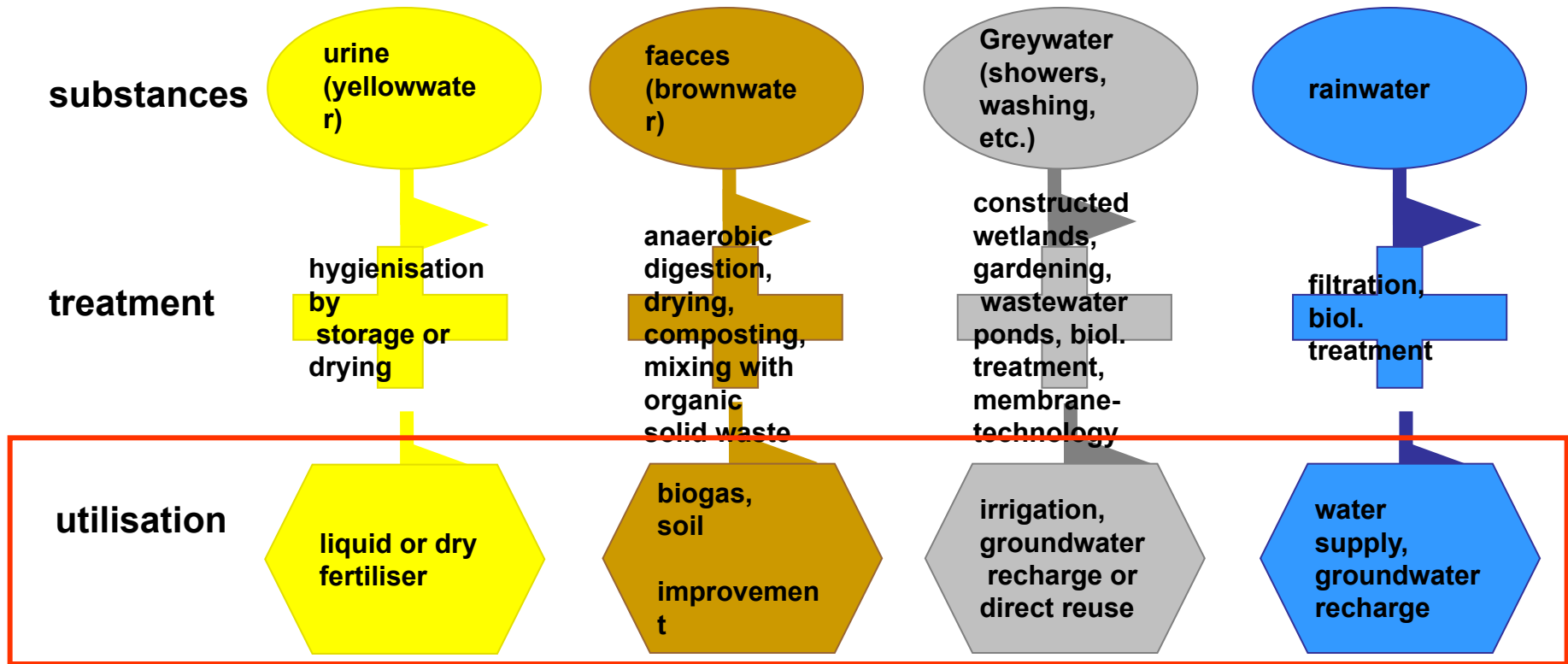
- Improved septic tank
 - 2 to 3 chambers in series (up to 5)
 - Intensive contact between resident sludge and fresh influent
 - Treatment efficiency: 65 to 90% COD removal
 - HRT = 2-3 days
-
- + simple, high treatment efficiency, hardly any blockages
 - + high removal efficiencies, also for suspended and dissolved solids
 - construction and maintenance more complicated than conventional septic tank



Why Don't We Try with Small Borehole System



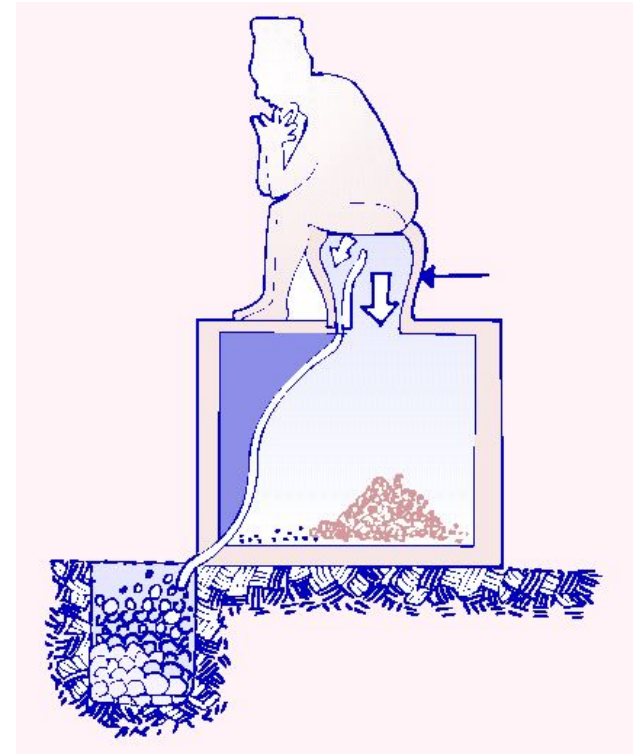
Turning waste into resources



Source: (1)

Don't Mix Concept

- Human urine and faeces
- Human excreta and water
- Black water and greywater
- Household waste and industrial waste
- Wastewater and rainwater



Urine Diversion Dry Toilet



Public Toilet and Urine Utilization



Household Bio gas system for sanitation improvement and energy



Municipal loan USD 140 @ 3% interest (payback in monthly 24 installments and 3% interest will be returned for timely payback) GoN subsidy USD 150 Community contribution USD 50

Housing colony for squatter communities with Rainwater Harvesting and wastewater treatment system



Complete Recycling of Waste is Possible





Grey Water Can be managed at informal settlement



Community Managed Wastewater Treatment Plant with Biogas Digester





VF Constructed Wetland

HF Constructed Wetland

ABR

SDB

13 6 2007

Environmental Sanitation



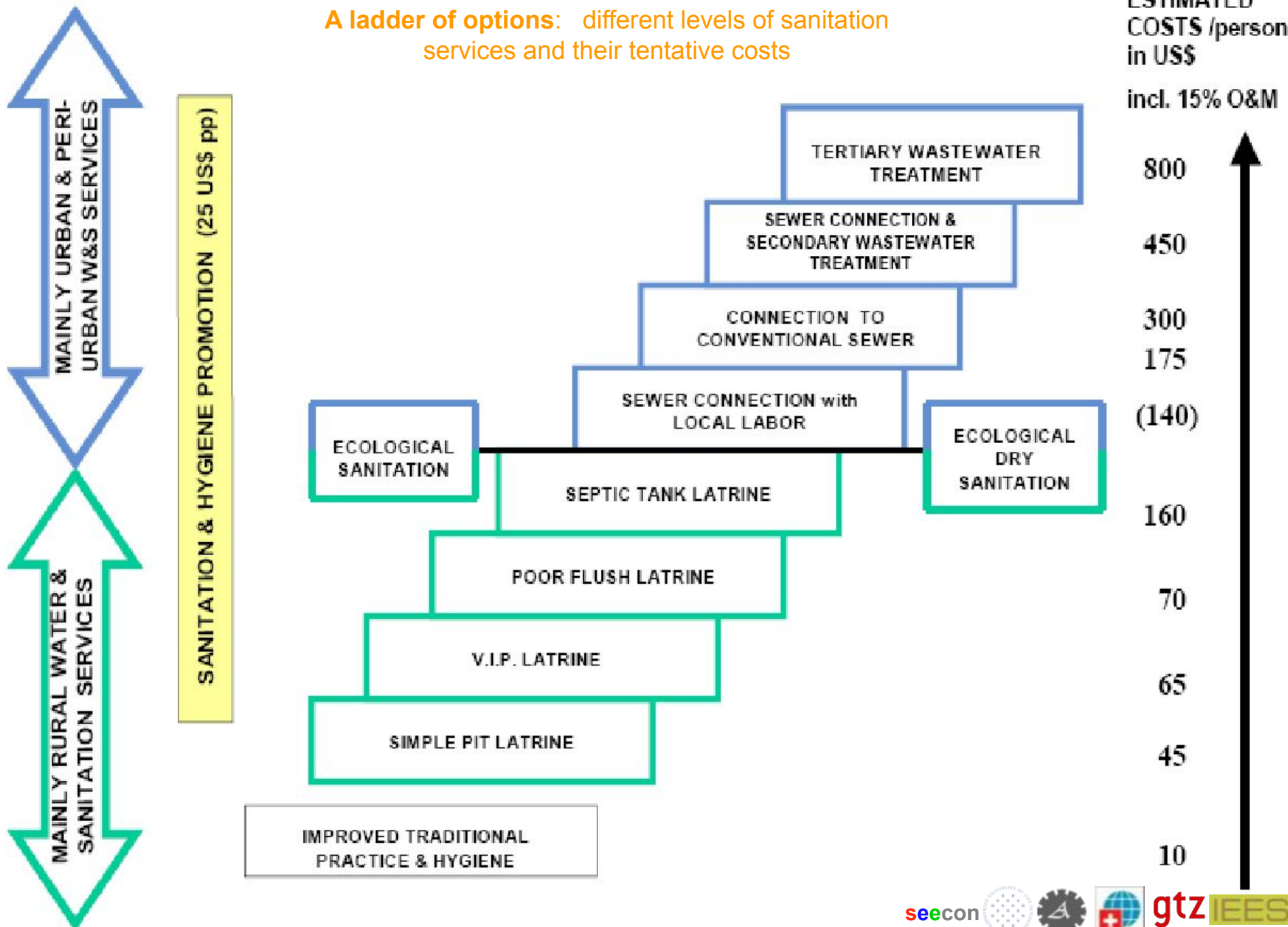
Private Sector Involvement for Mobile Toilet



A ladder of options: different levels of sanitation services and their tentative costs

ESTIMATED
COSTS /person
in US\$

incl. 15% O&M



Conclusion

- Adequate information and practical experiences are available but not yet applied for targeted communities
- Intervention and technology should be site specific
- Sufficient time for preparation and make them aware
 - Guided decision making process, Community participation and empowerment of poor
- Better financing mechanism linked with livelihood
- Advocacy and lobbying for recognition of their settlement
- Technicians and Academician should have better orientation on social science
- Gender Issues should be well considered



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