



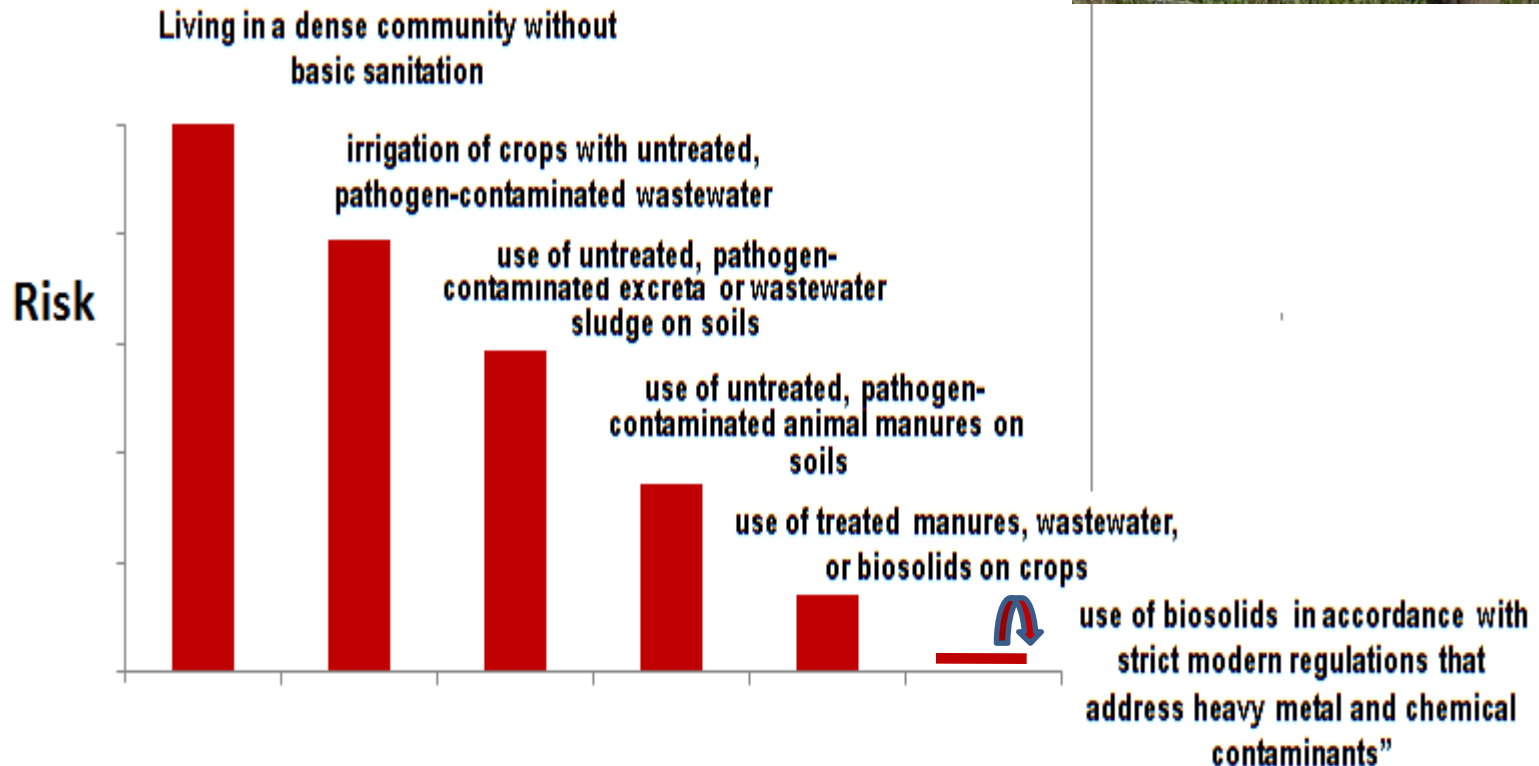
Sustainability Societal Challenge  
Theme - The Challenge of Sustainable  
Water Futures Workshop  
14th July 2011

Is it possible to universalize the access to  
~~water and~~ **sanitation** services in poor  
countries?

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# SITUATION



*LeBlanc et al., 2008*

# Some remarks about developing countries.....

- Are a wide variety of countries under different conditions
- Some “general” characteristics are
  - Many are located in arid or semiarid regions, sanitation is hence linked to the lack of water
  - Rely on agricultural for livelihoods
  - Agriculture is an important share of the GNP, and hence water competition among rich and poor people is important
  - Those in humid areas, sanitation is linked to the lack of water, sewers and treatment



**Kibera Kenya**



**Baghdad, Iraq**

# IWRM (internationally)

- “a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.” Global Water Partnership



Operationally, involve :

- ✓ applying knowledge from various disciplines
- ✓ insights from diverse stakeholders (decision makers, sectors, users)
- ✓ Equitable and sustainable solutions
- ✓ Social and economic needs
- ✓ Protection of ecosystems and future generations water rights.
- ✓ Flexible process
- ✓ Technical limitation + social interests

The IWRM Planning Cycle







# IWRM in developing countries



- All the previously mentioned  
+
  - food security,
  - job opportunities,
  - increases in exportation,
  - soil erosion control.
  - Efficient use of water (less use, reuse and recycle (water + nutrients+?))



How far should we go for “Iwrm”?

**IS COMPLEX TECHNOLOGY  
NEEDED?**

# Importance of technology on sanitation

- 10% in episodes of diarrhea reduced by using simple technologies -
- In Egypt and Peru access to flush toilets reduced by 57-59% the risk of infant death



Luanda, Angola

**DO WE NEED TO ADDRESS FIRST  
URBAN, RURAL OR SLUMS NEEDS ?**



# URBAN-RURAL

- One of the deepest disparities

## URBAN

- Urban sanitation coverage is twice rural coverage.
- Is of 50% but this figure do not includes treatment which is at the most 15%
  - 10% of wastewater worldwide .....*is treated* (80-90% in developing countries)



## RURAL AREAS

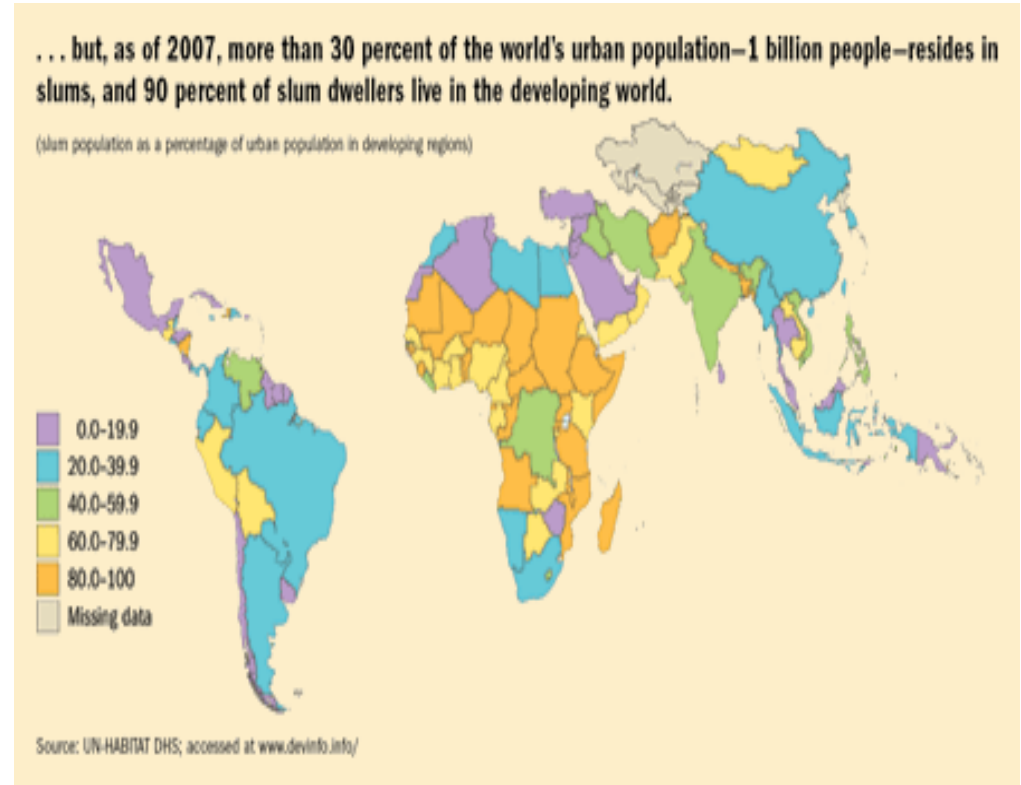
- Linked to the lack of water service
- The main issue is feces disposal
- Services are more costly.



Addis Ababa, Ethiopia

# Urban areas

- A growing population, notably in urban areas and, within them, in slums
- Lack of sanitation, particularly in vulnerable groups
  - Vulnerability refers to lack of sanitation, climate change, economic voracity.....
- The link poverty + lack of sanitation



World urban growth rate: 1.78 %

**Slum growth rate** : 2.37 % in developing countries

**Slum growth rate**: 2.22 % in developed countries

# Slums

- Are a challenge as this are densely populated areas in difficult conditions



**No. 4: Port au Prince, Haiti**







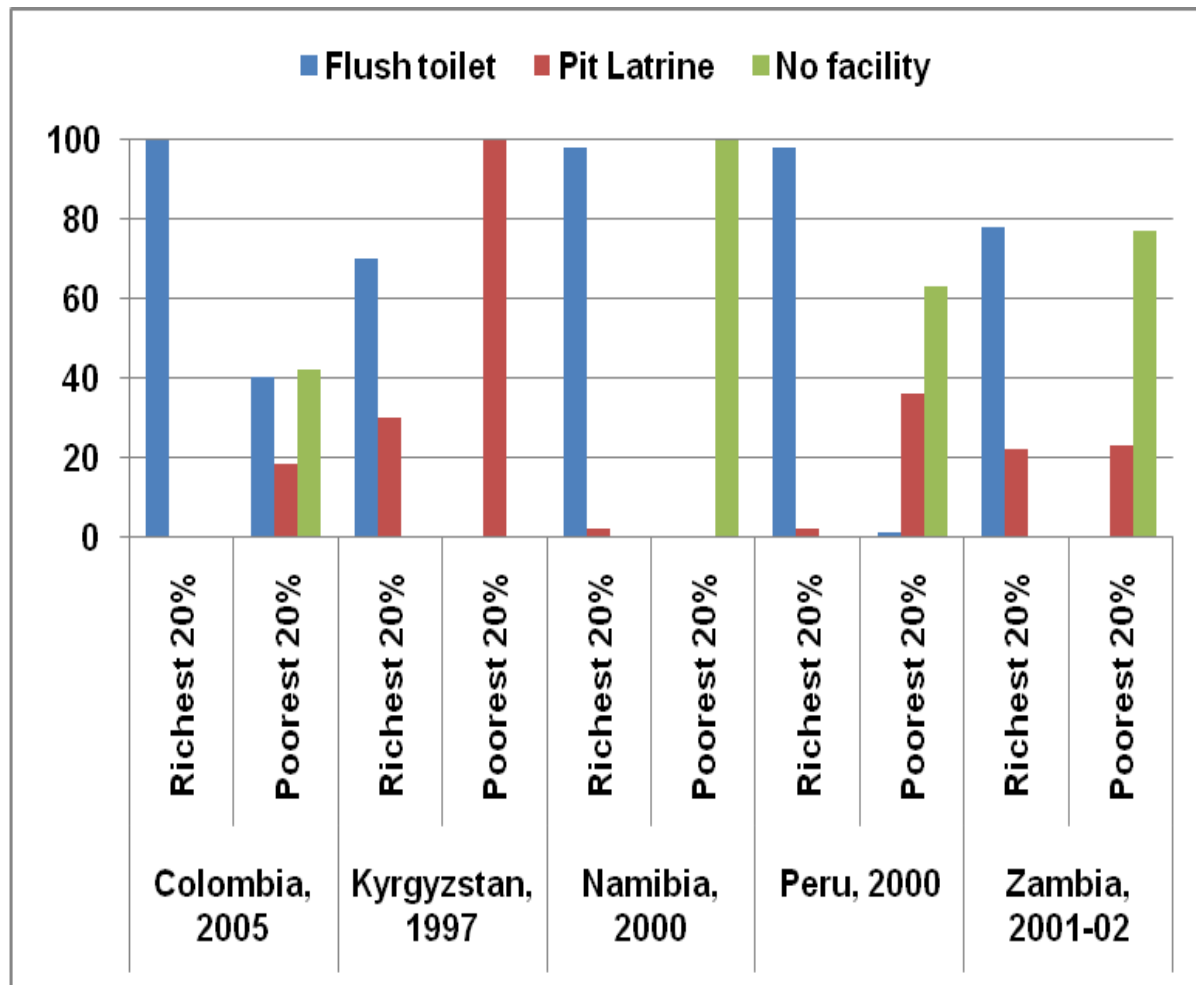
# Different Sanitation Services

Group differences.

Indigenous and non-indigenous

Minorities (castes and women )

Social classes.



Not only on coverage but as well on the technology used



# Middle-income regions

- Have increased access to services (water service)
- People have been exposed to conventional sanitation options and therefore demand the same quality of service

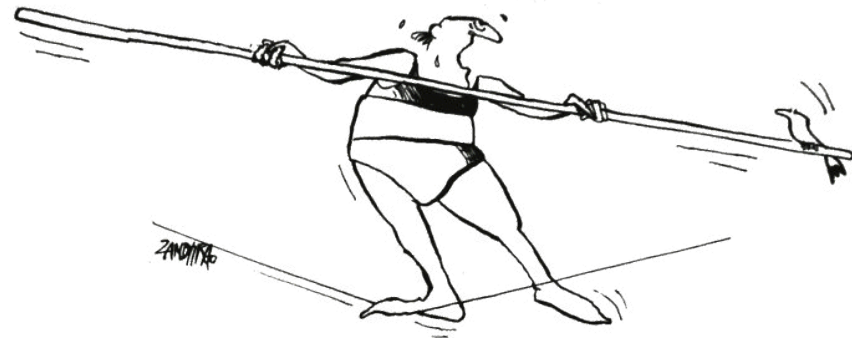
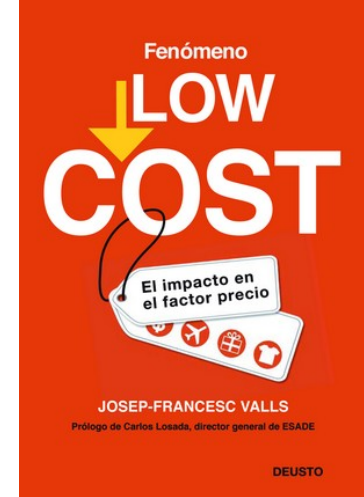


Is there need to have different  
technology for sanitation in  
developing countries?

*Are we solving the same  
problems?*

# Technology for Sanitation

- ✓ Treatment with High Efficiency + Low cost
- ✓ **Robust** treatment methods that, under the precarious conditions of low income regions, are capable of producing reliable results
- ✓ Combine treatment options + other intervention methods





# Issues to Address

- the proper management of sludge and excreta, two byproducts often not considered as part of sanitation targets



India, 2007. A group of scavengers, including a 14-year-old boy, fully engaged with their every day usual work of cleaning the human excreta from the septic tank of public toilets. Photo: Senthil Kumaran/Trikaya Photo

# Developed vs developing countries

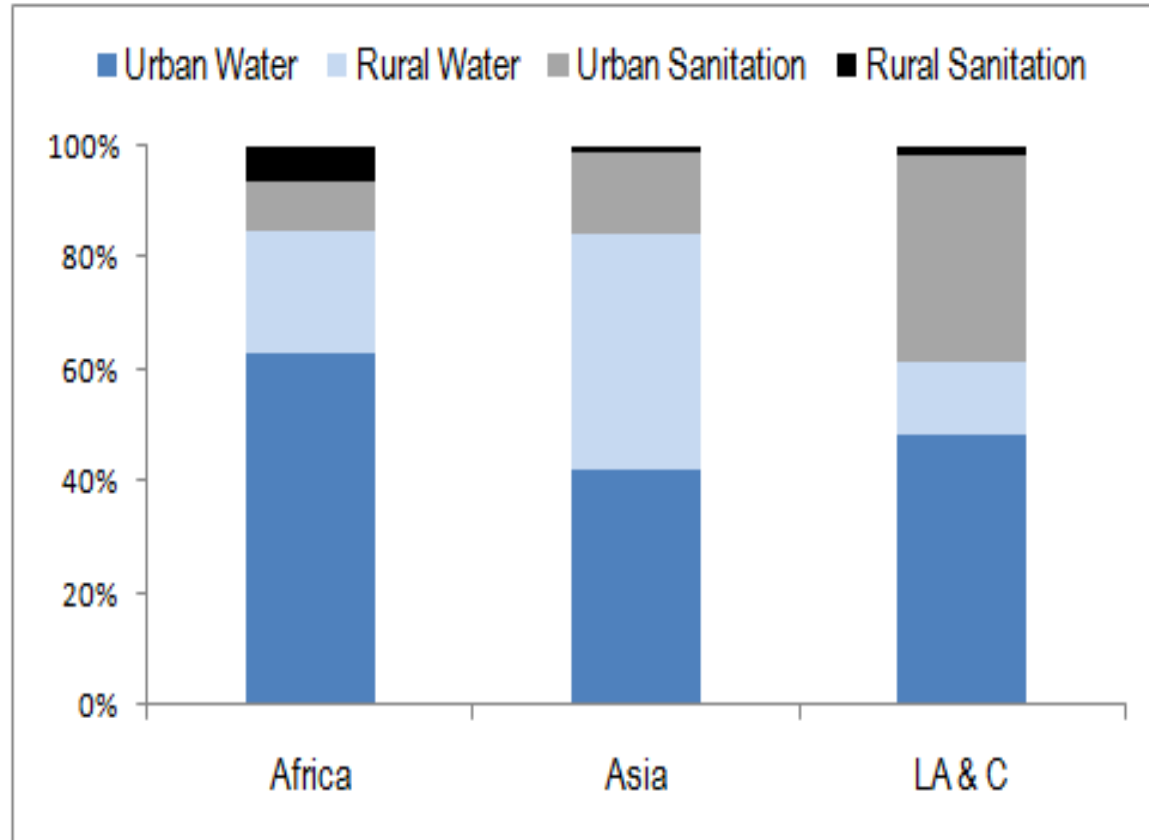
- Through experience, research, and technological innovations have progressively improved their sanitation services.
- In a context where other needs have been fulfilled
- Are the sanitation problems that have faced been the same?



**IS IT AN ECONOMIC PROBLEM?  
IF SO, WHICH TYPE?**

# Investments from 1990-2000

- Orientated to
  - water supply
  - Cities
- ¼ for sanitation and mostly in sewerage (part of) cities



WHO/UNICEF, 2000



# Sanitation Costs

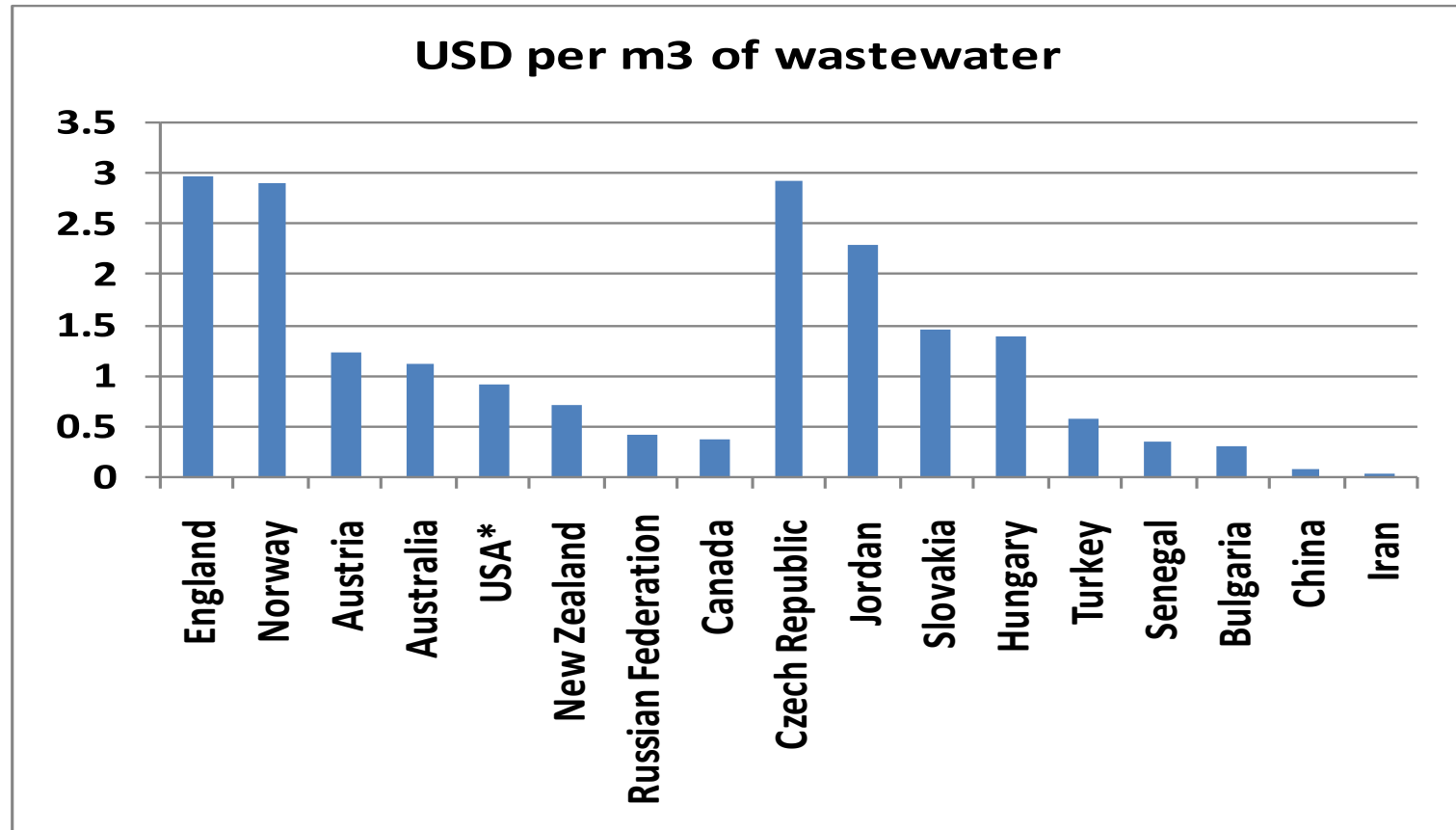
- To meet the water MDG for sanitation (reducing by half)
  - A total of \$101 billion, representing an annual average investment of \$6.7 billion
  - \$68 billion for the water supply
  - \$33 billion (mean figures but values ranging \$24 - \$42 billion) for sanitation
- Each year
  - Europe and the United States spend \$17 billion on pet food
  - Europe spends \$11 billion on ice cream

## Cost-benefit analysis WHO (2004)

- 1 USD = 3-34 USD economic return, depending on the region and the type of technologies used.

# Analysis of costs calculation

- No reference costs, as exist (?) in developed countries.

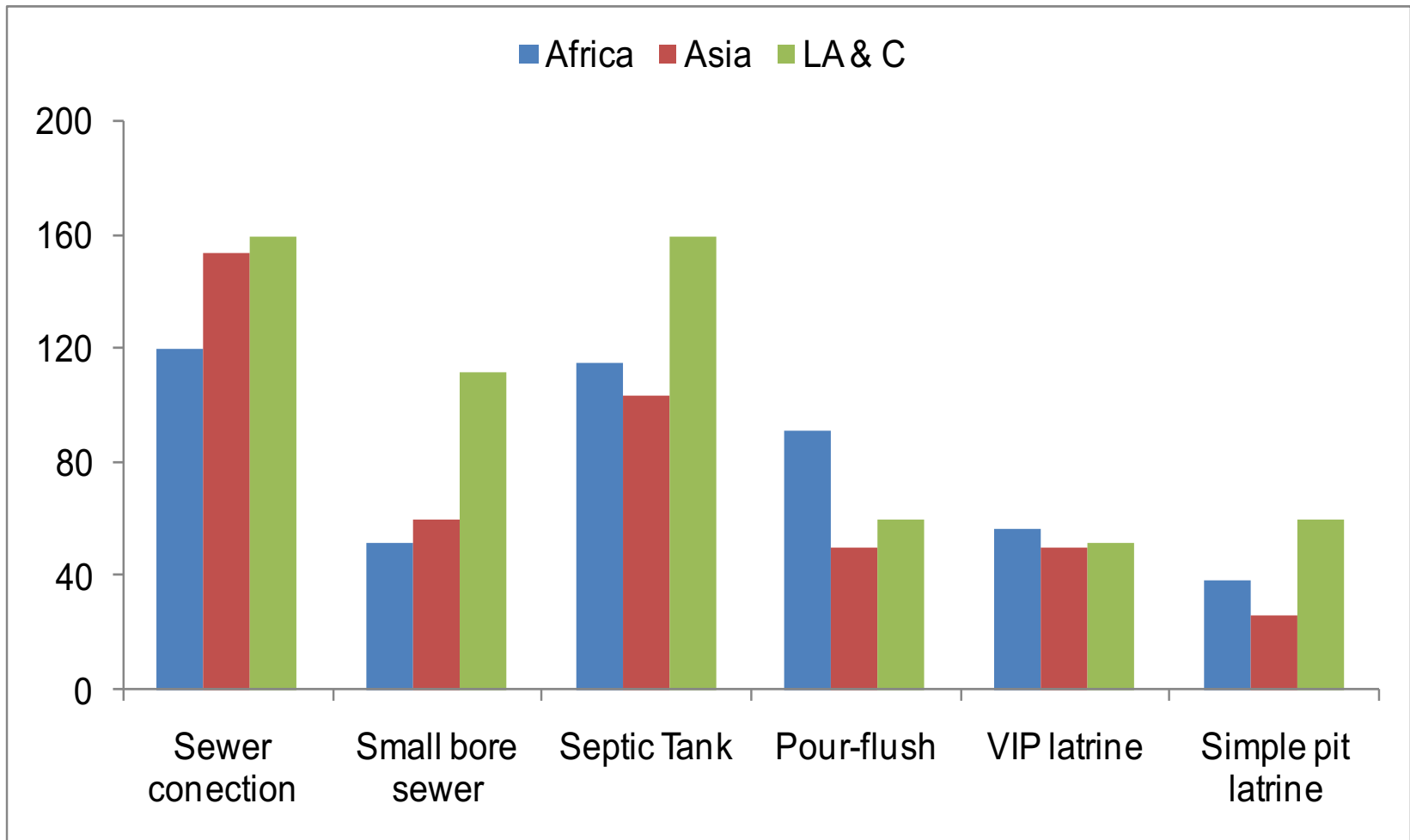


Countries with high sanitation coverage

Countries with low sanitation coverage

- As result
  - bids costs are established using international data (?)

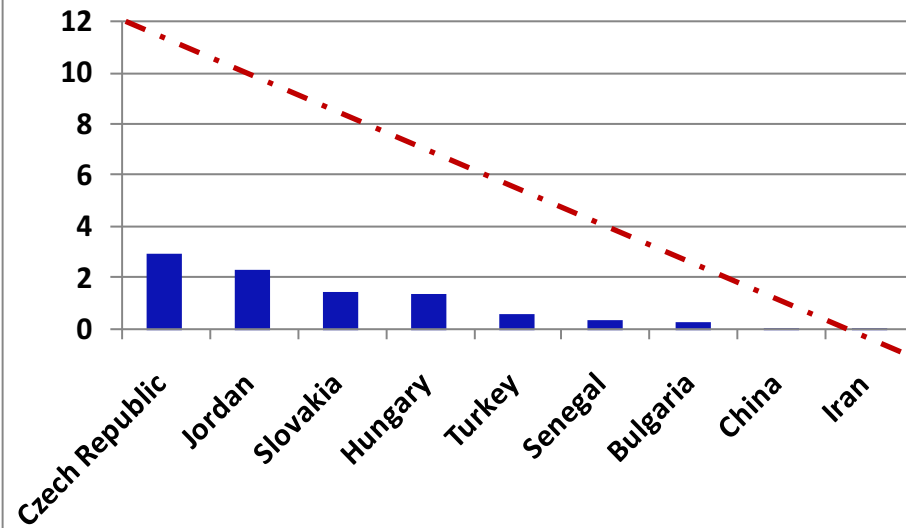
## Mean construction costs (1990-2000)



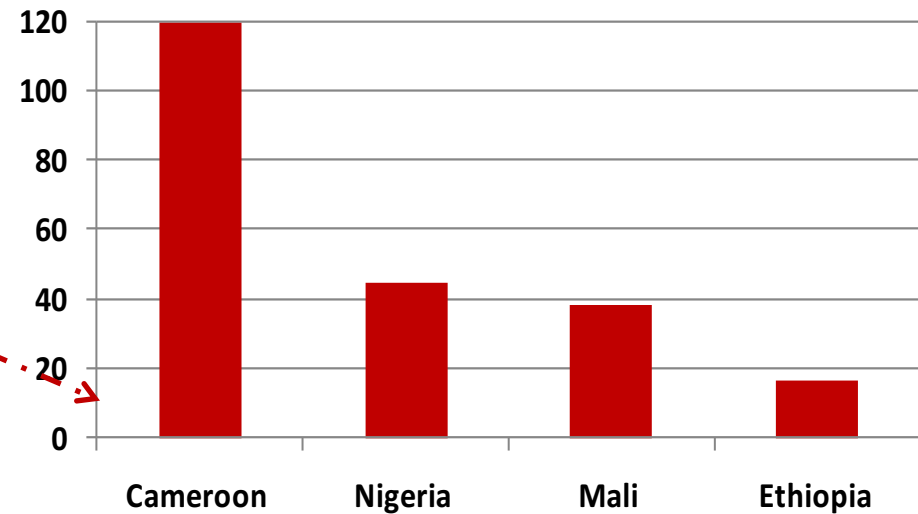
differences not only for facilities but  
also for fuel and electricity costs



USD per m3 of wastewater



USD per truckload to empty latrines



cost of emptying on-site sanitation systems is not negligible (not considered frequently)

# SUMMARY

- IWRM, how far?
- Technology complex/simple, robust/low cost?
- Do we need to address urban, rural or SLUMS needs first?
- Are we solving the same problems?....if so technology should be the same
- Is it an economic problem?  
If so, which type?

# References

- Jiménez Cisneros B. (2011) Safe sanitation in Low Economic Development Areas, Treatise MS 82. In: Peter Wilderer (ed.) Treatise on Water, Science, vol. 4, pp. 147–201 Oxford: Academic Press.