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Conceptualisation of MUS from the health economic perspective

Guy Hutton, PhD

Introduction

- Domestic and non-domestic uses require different quality and quantity of water
- Water quality required for domestic uses
  - Drinking, cooking, food prep, HW - HIGH
  - Showering & other kitchen uses – MEDIUM-HIGH
  - House cleaning - MEDIUM
- Water quality required for agricultural uses
  - Animal watering – MEDIUM
  - Irrigation – LOW-MEDIUM

Health issues with D+ and I+

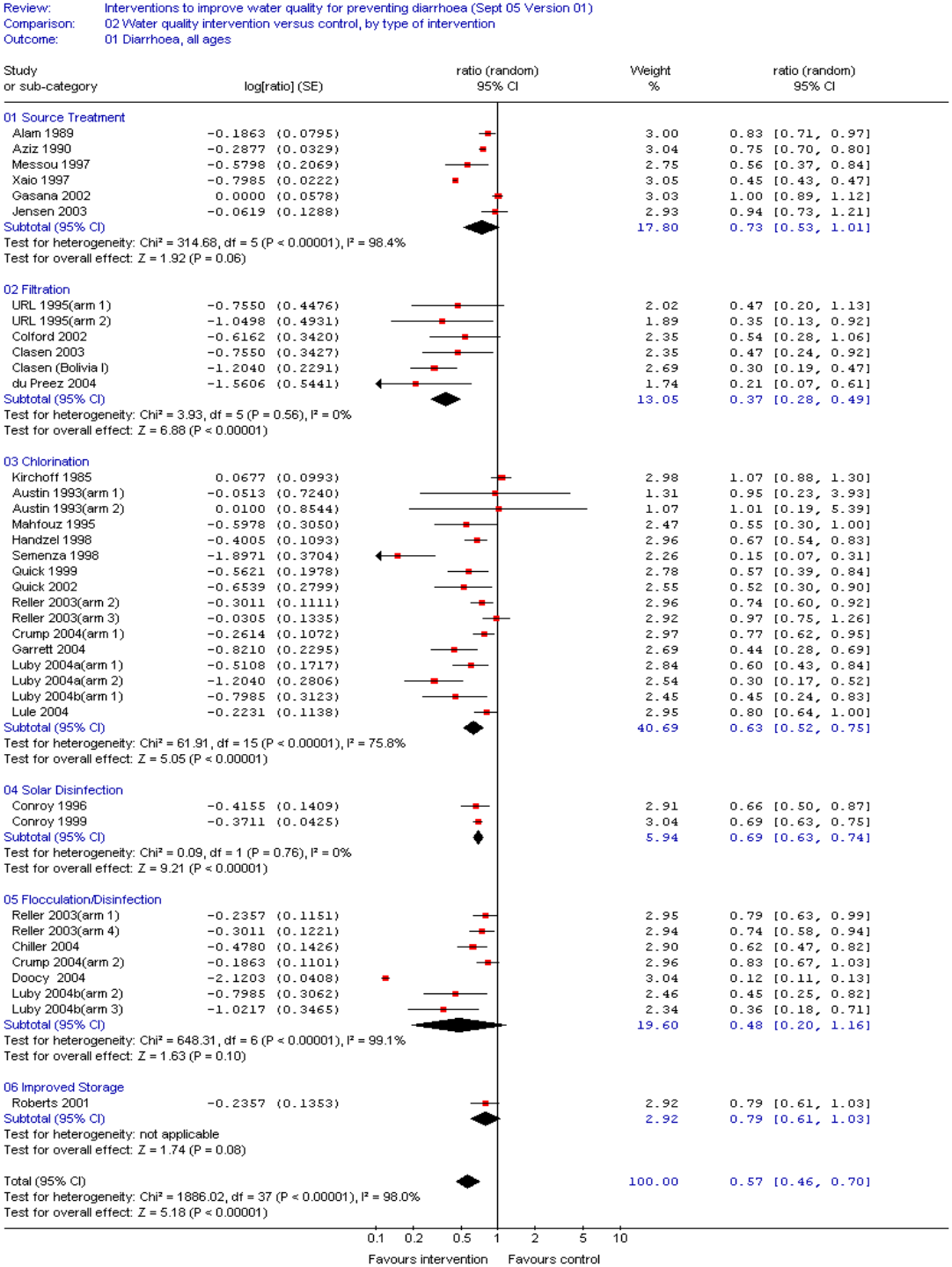
- Domestic+
  - Starting point: already improved DW source
  - Need to increase quantity for irrigation
    - New water sources may need to be tapped, due to low yielding sources (shallow well, rainwater harvesting)
  - Safeguarding (and improving) health
    - *Either* do not treat water off-site, and introduce point-of-use (POU) treatment at household level
    - *Or* separate systems from source, different quality
    - *Or* provide high quality water for all purposes

Health issues with D+ and I+

- Irrigation+
  - Does I+ presuppose no existing improved DW source?
    - If none – opportunities for low cost gains
    - If some – marginal gains may be limited
  - Assume none, and I+ has to deliver water to HH
    - *Either* off-site treatment of all water (e.g. Well treatment)
    - *Or* off-site treatment HH water only (separation)
    - *Or* introduce POU treatment at household level

Major water quality issues

- Will D+ or I+ lead to separate or combined water supply systems
  - Comparative costs
  - Minimim water quality for each use
- How reliable and cost-effective is POU treatment?



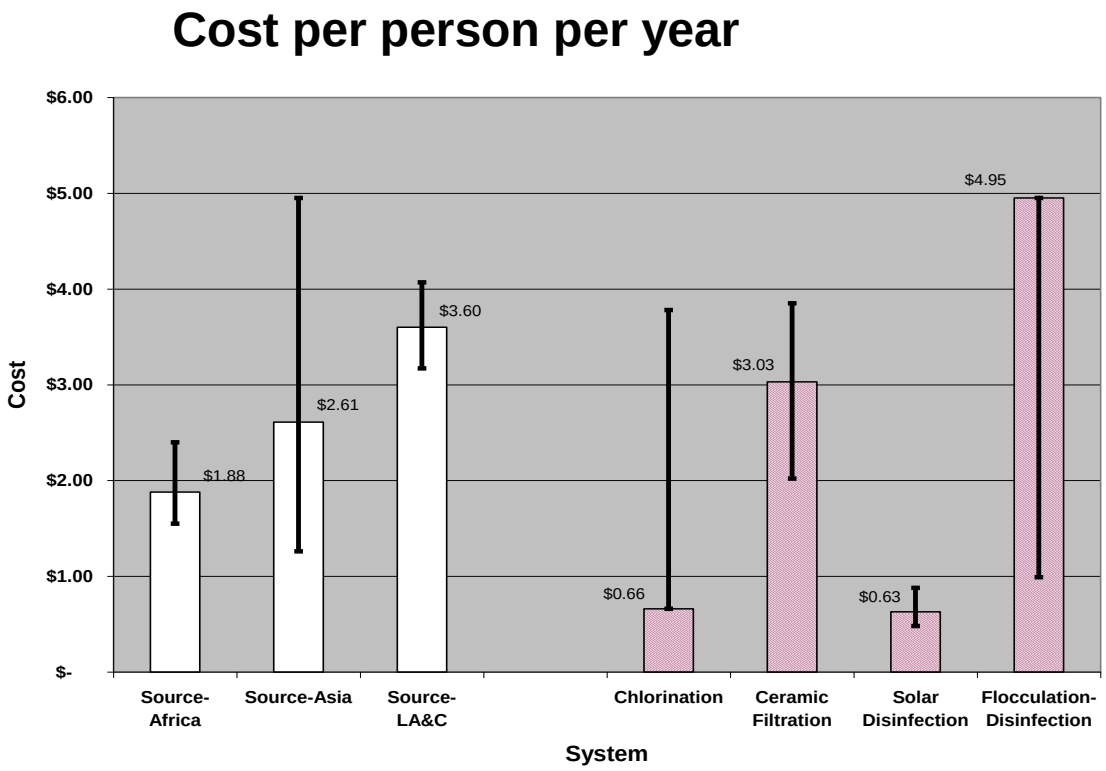
POU treatment - efficacy

Intervention type (no. of trials)	Estimate of effect (random effects model)
Source (6)	0.73
Household (32)	0.53
Filtration (6)	0.37
Chlorination (16)	0.63
Solar Disinfection (2)	0.69
Flocculation/Disinf* (6)	0.69

Claeson, Haller, Walker, Bartam & Cairncross, 2007

Product	Unit Cost	Volume of Water Treated	$/10,000L of Water Treated	First Year Cost[1]	Three Year Cost[1]
WaterGuard™ (PSI brand of sodium hypochlorite[1]	$0.45	1,000	$4.50	$4.10	$12.32
Gravity filter with two 24 cm Katadyn® candles[3]	$25.0	100,000L	$2.50	$25.00	$25.00
Gravity filter with two 15cm Stefani® candles[4]	$15.0	20,000L	$7.50	$15.00	$30.00
Sodis Solar Disinfection[5]	$0.40	730L	$5.48	$0.80	$2.40
Procter & Gamble PUR® Sachet[6]	$0.10	10L	$100.00	$91.25	$273.75

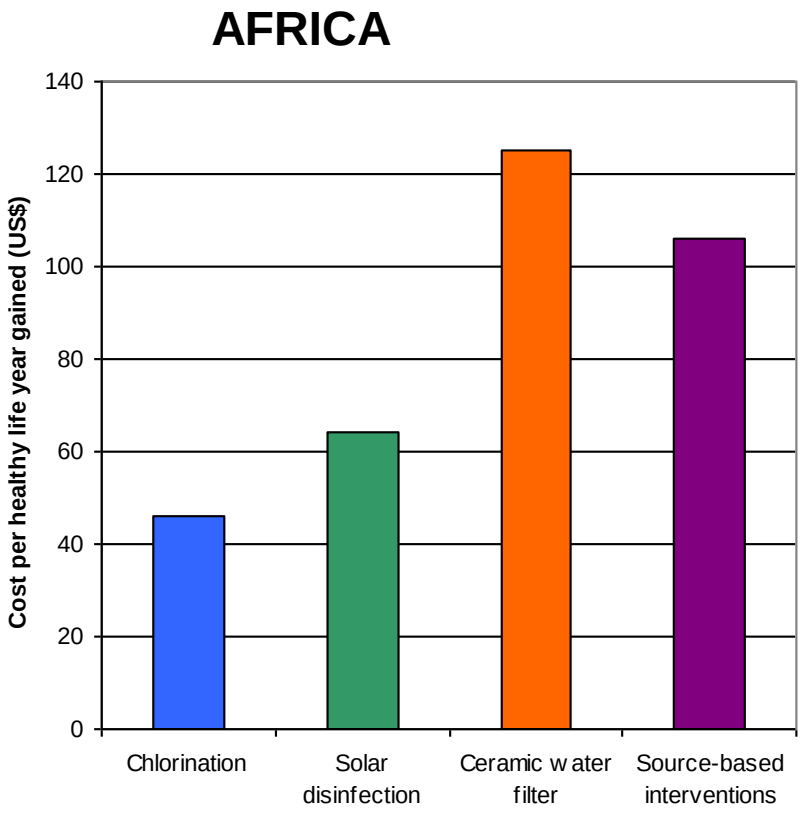
POU treatment - cost

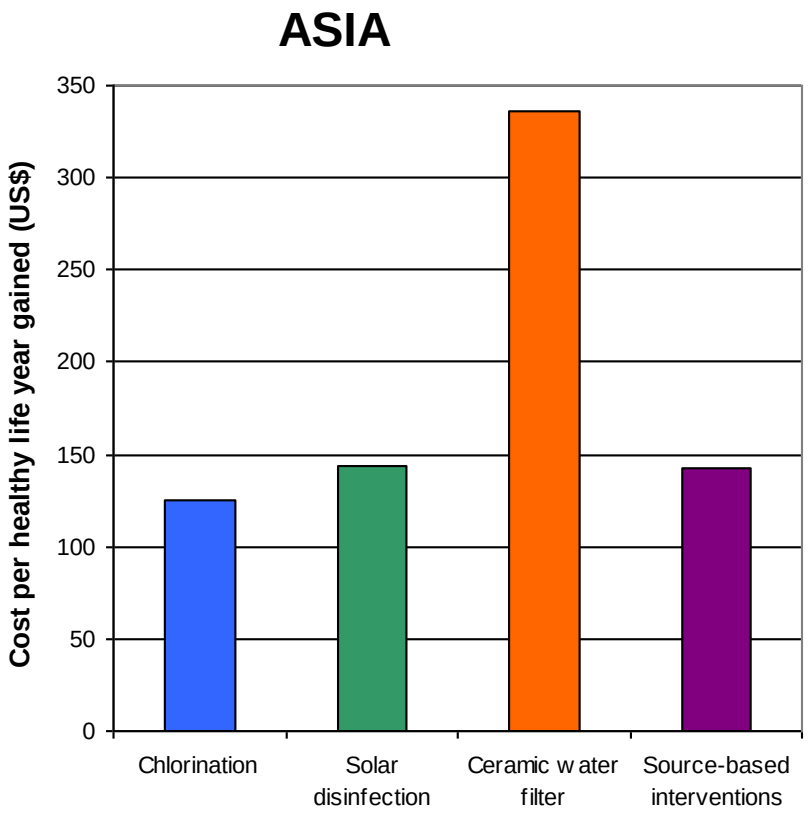


Claeson, Haller, Walker, Bartam & Cairncross, 2007

POU treatment - cost-effectiveness

Cost per healthy life-year gained





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POU treatment - other issues

Selection of optimal POU treatment method depends on various factors, e.g.

- Water quantity required per day
- Uses of treated water – only DW or other?
- Water quality differences
- Maintenance required, its cost, and reliability
- Cash flow: higher investment or higher recurrent costs?

Other issues: nutritional benefits

- Food security is one of **the** issues of this and the following centuries – encourage self-production
- What proven impacts does MUS have on nutrition?
- In D+, what are cost-effective ways to achieve nutritional gains?

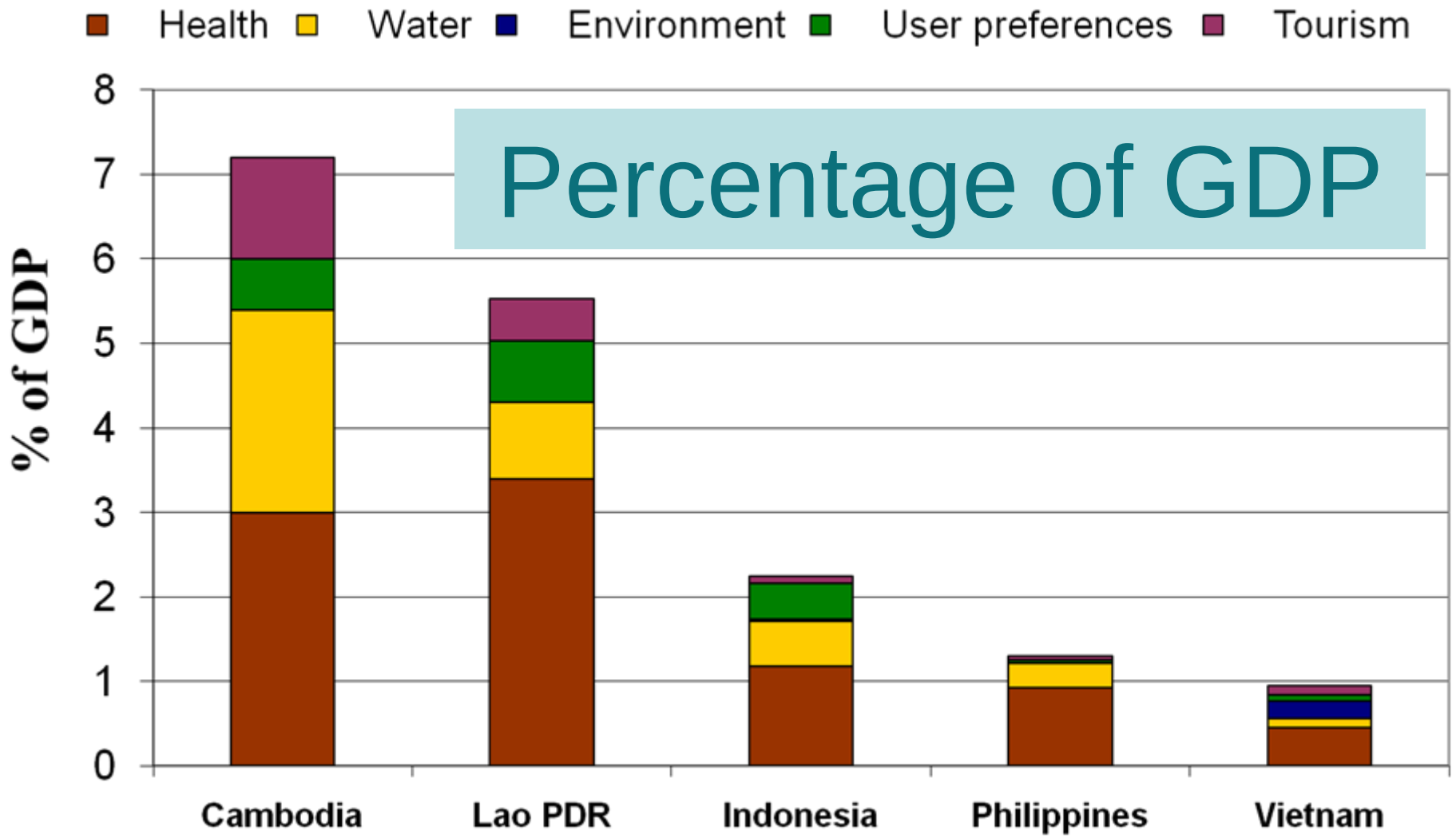
Other issues: water rationing

- Especially in D+, there are significantly greater demands on water resources
- Even in water rich countries there are (seasonal) shortages; in water scarce countries, it is almost permanent
- How to ration water supplies: Differential pricing? Metering? Community mechanisms?
- Other mechanisms to protect the poor?

Other issues: sanitation

- More than twice the number of households without improved DW source do not have improved sanitation (around 2.5 billion)
- There are major health, environmental and economic impacts of poor sanitation

Poor sanitation has major and diverse impacts

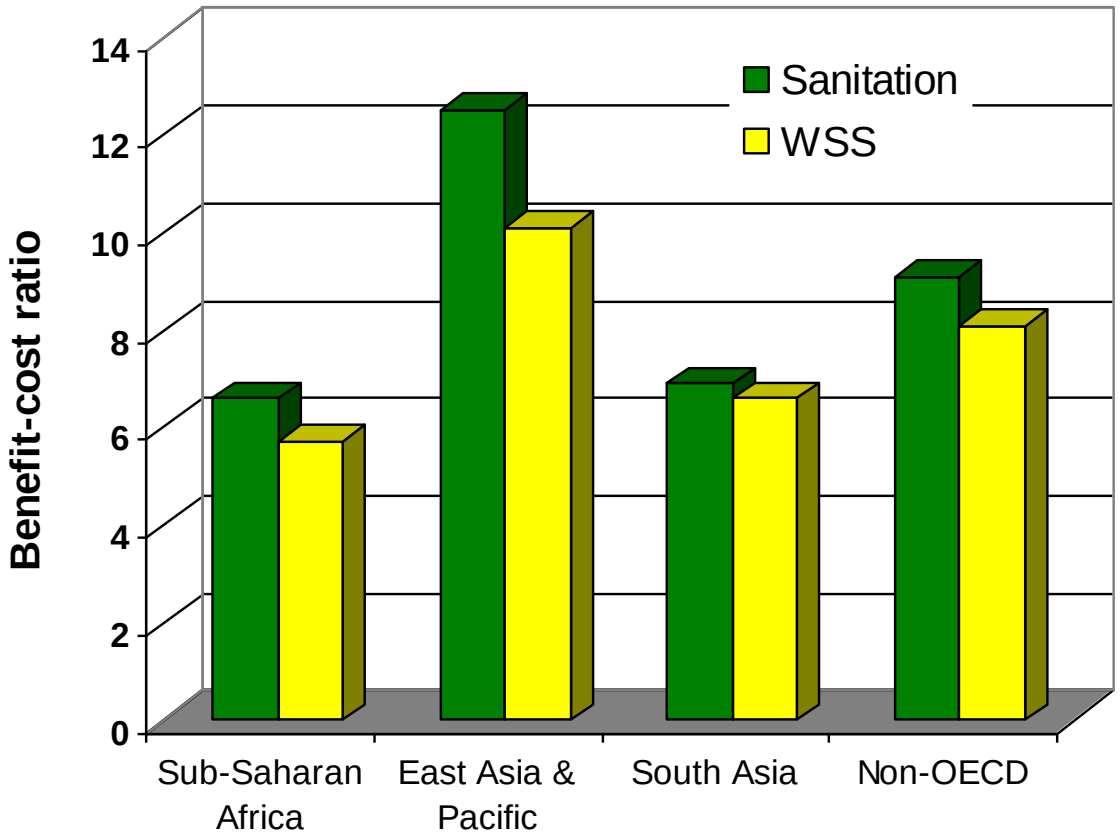


Source: Economic impacts of sanitation in Southeast Asia. WSP/World Bank. 2008.

Other issues: sanitation

- More than twice the number of households without improved DW source do not have improved sanitation (around 2.5 billion)
- There are major health, environmental and economic impacts of poor sanitation
- Poor sanitation threatens the usability of scarce water resources
- It is highly cost-beneficial to invest in sanitation

Sanitation is a good buy !



Including value of health (diarrhea) and access time gains only – the **return on investment is at least 6 times**

Source: Global cost-benefit analysis of countries off-track to meet WSS MDGs. WHO. 2004.

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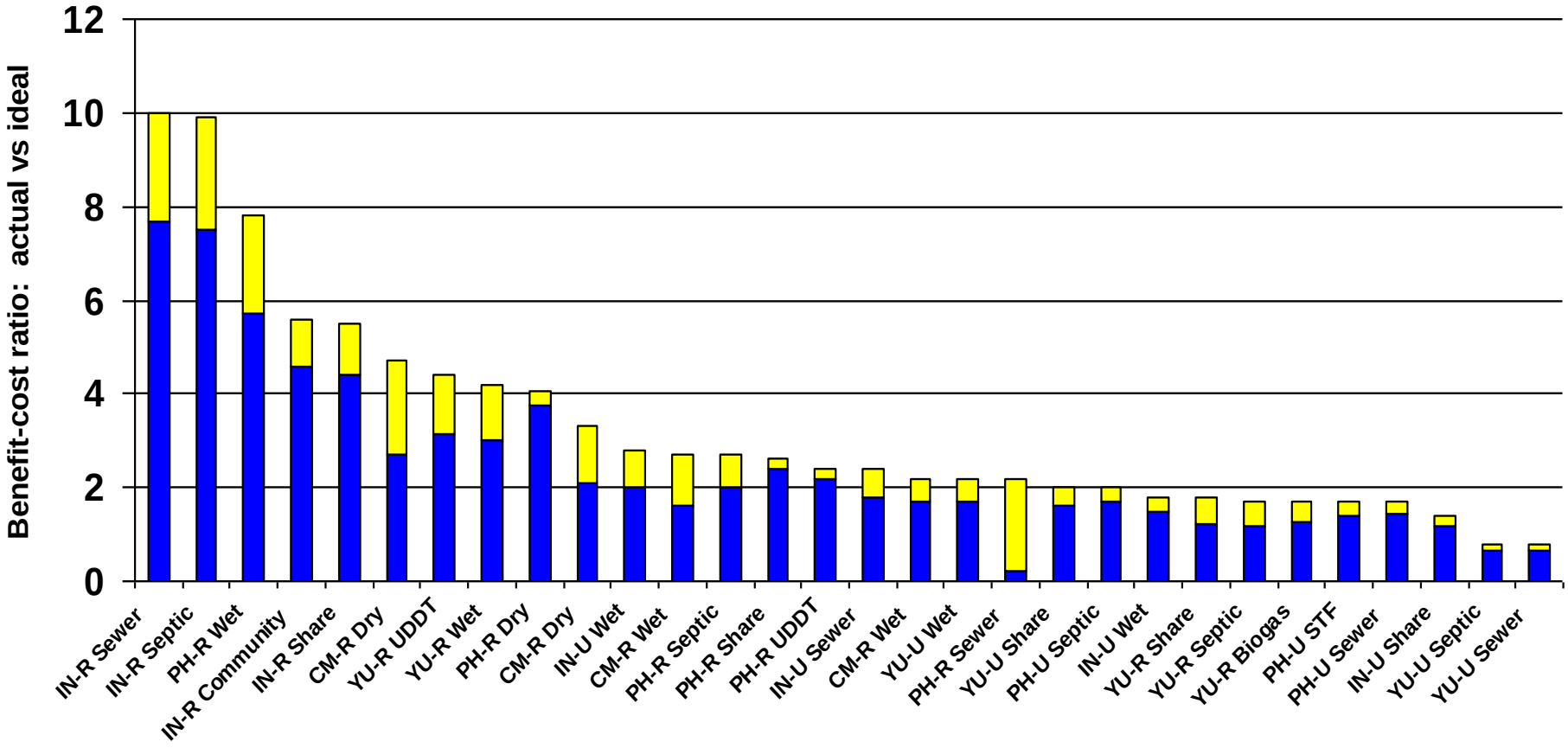
- Poor sanitation threatens the usability of scarce water resources
- It is highly cost-beneficial to invest in sanitation
- Can MUS+ include low cost sanitation interventions, without ‘breaking the back’ of the MUS intervention?

Other issues: program effectiveness

- CBA usually takes intervention impact from efficacy trials or model projects
- In practice, these impacts are not achieved due to program delivery inefficiency or non-uptake by the population
- Actual cost-benefit can be from 10% to 90% lower than the projected efficiency

Sanitation programs as implemented in Southeast Asia have lower actual benefit-cost ratios than under ideal conditions



Source:Draft results. Economic assessment of sanitation in Southeast Asia. WSP/World Bank. 2010.

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Thank You !