



What should the Unserved get: 'Improved' WatSan or 'Adequate' WatSan?

Duncan Mara

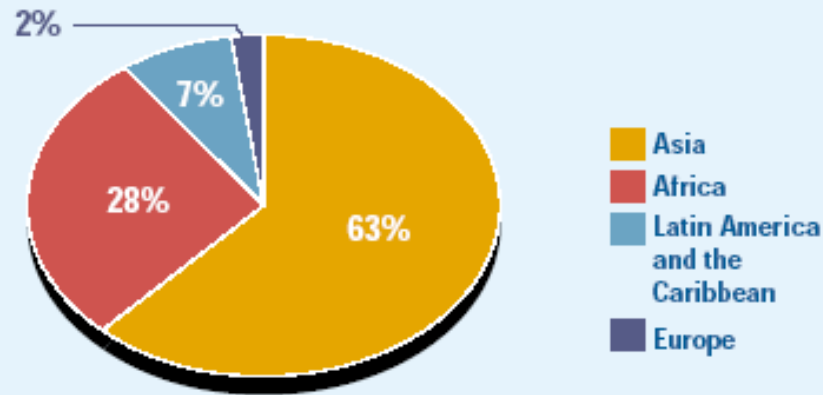


Global Water Supply and
Sanitation Assessment
2000 Report



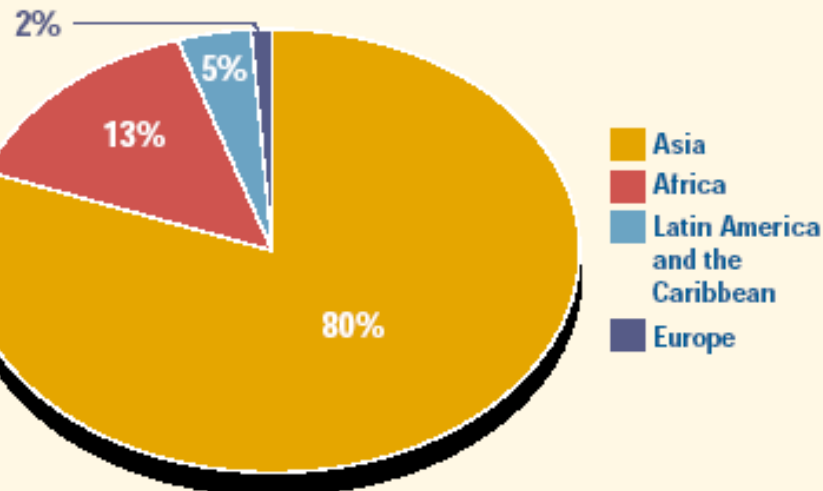
*State of
water supply
& sanitation
in developing
countries
in 2000*

Figure 2.1 Distribution of the global population not served with improved water supply, by region



Total unserved: 1.1 billion

Figure 2.2 Distribution of the global population not served with improved sanitation, by region

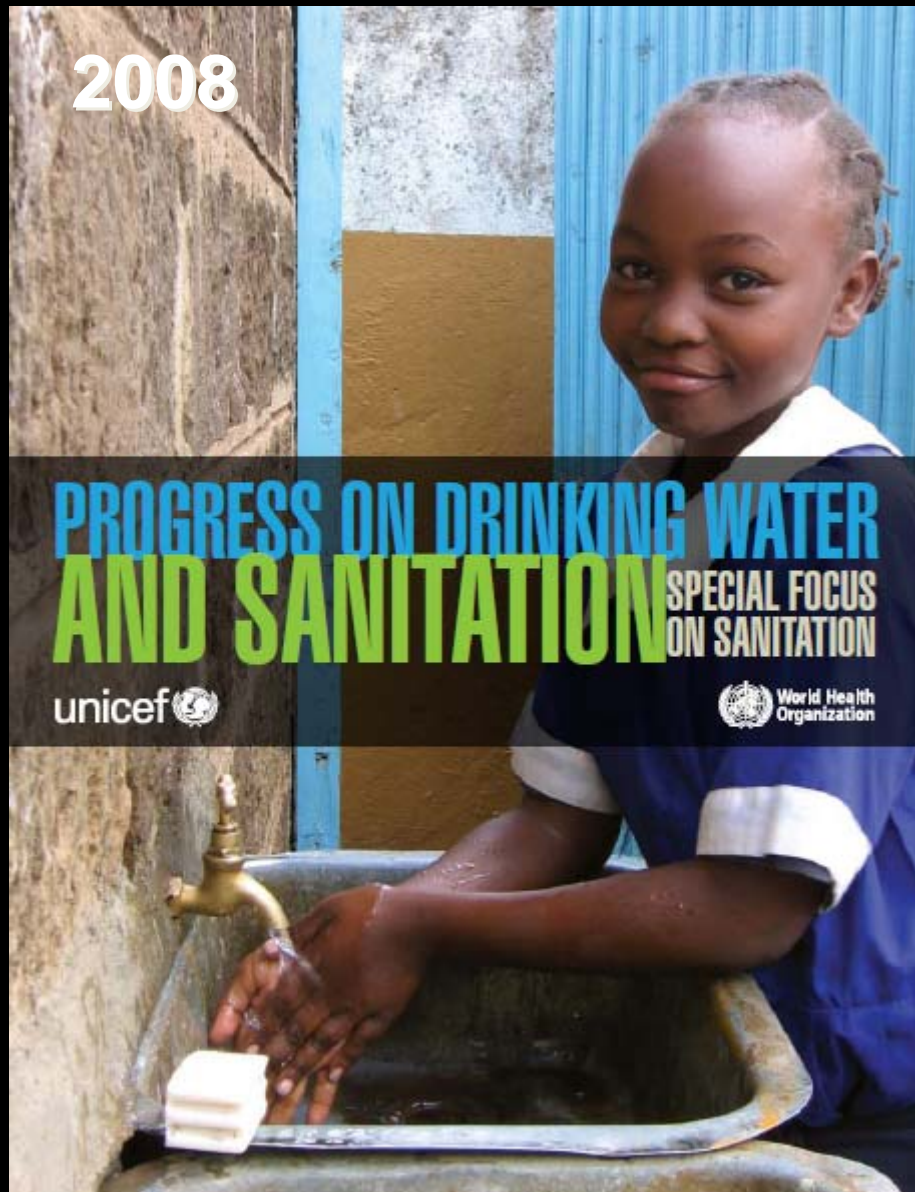


Total unserved: 2.4 billion

The Stark Facts: Global Water Supply and Sanitation Deficiencies in 2000

Source: WHO/UNICEF (2000)

2008



In 2006:

World population:
6.6 billions

Pop. without
improved water
supplies:
~0.9 billion (14%)

Pop. without
improved sanitation:
~2.5 billions (38%)



**Pop. with NO sanitation (“open defecators”):
~1.2 billions (18%)**

In 2006:

**World population:
6.6 billions**

Pop. without improved water supplies:

~0.9 billion (14%)

**Pop. without improved sanitation:
~2.5 billions (38%)**

Water- & excreta-related diseases

- **Responsible for approx. 5% of all deaths (almost all of these in developing countries) – second only to malnutrition**
- **Includes approx. 1.5 million children under the age of 5 who die each year from diarrhoeal disease**
- **Early childhood diarrhoea and intestinal worm diseases lead to (a) low height and weight for age, and (b) impaired cognition in later childhood**

MILLENNIUM DEVELOPMENT GOALS



Water & Sanitation Targets:
by end 2015 **halve** the proportion of
people without 'improved' WatSan
(taking 1990 as base year)

JMP: 'improved' and 'not improved' water supplies

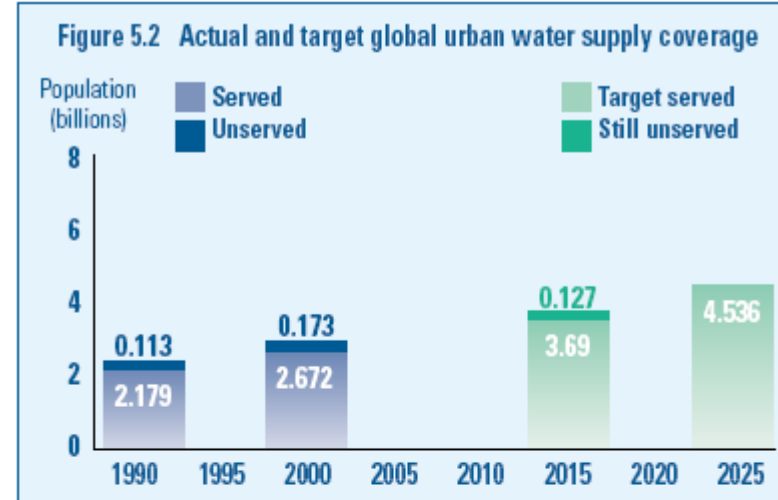
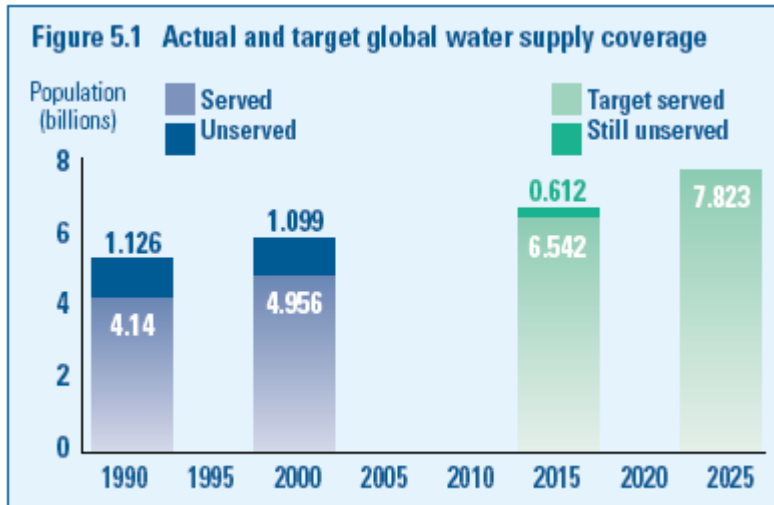
Improved:

- household connection
- public standpipe
- borehole
- protected dug well
- protected spring
- rainwater collection

Not improved:

- surface water
- unprotected well
- unprotected spring
- vendor-provided water
- bottled water
- tanker-truck water

Water Supply, 1990–2025

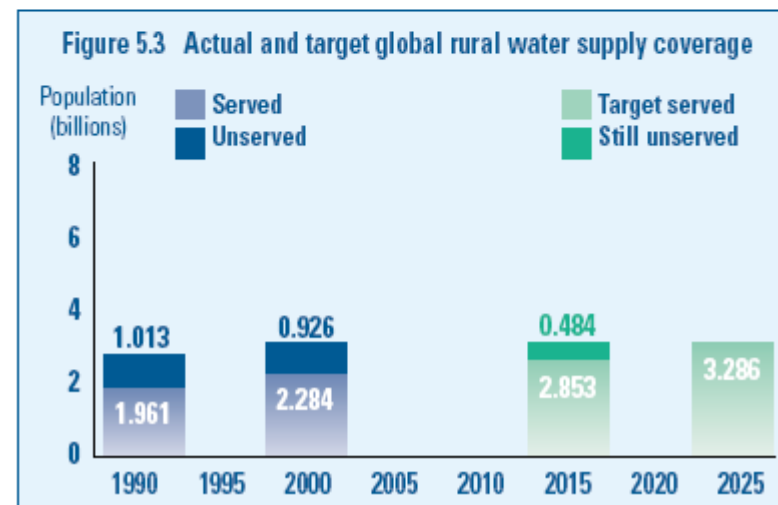


MDG (2001–2015):

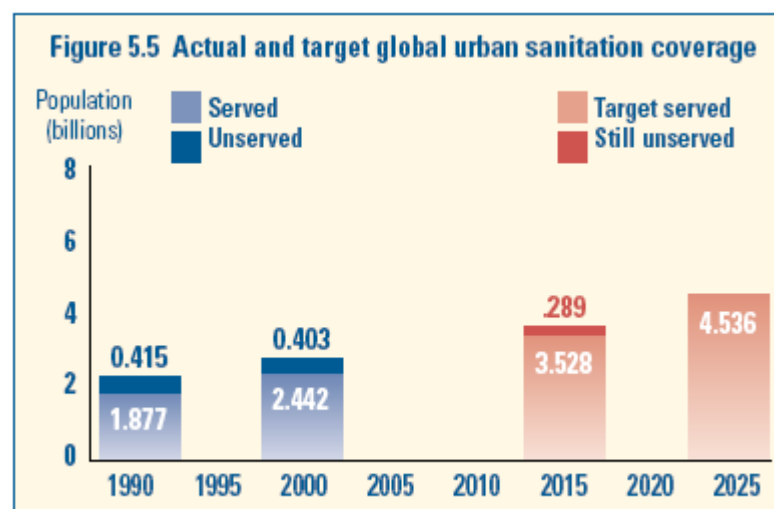
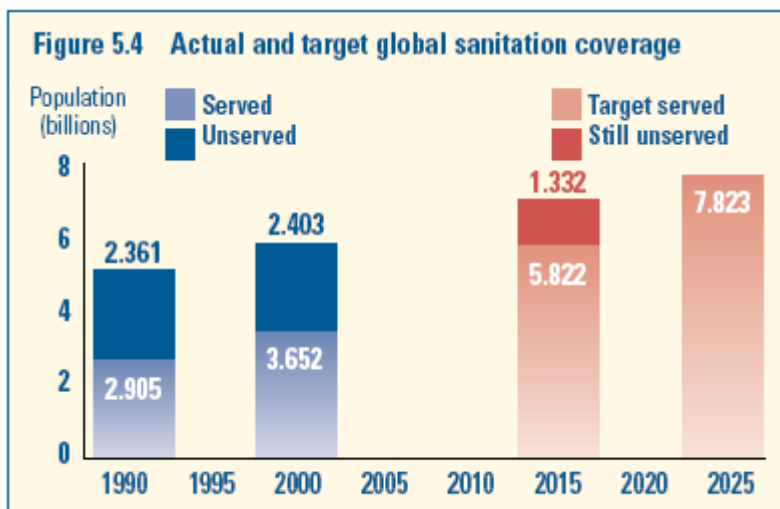
1.6 billions

**Water for All
(2001–2025):**

2.9 billions



Sanitation, 1990–2025

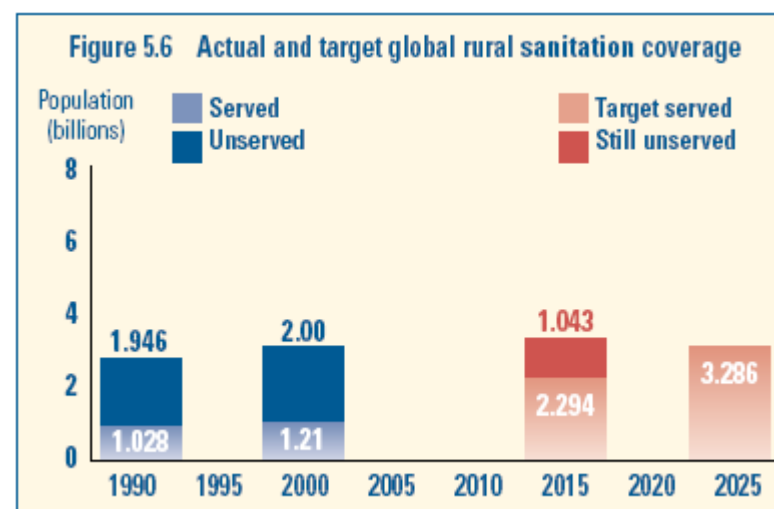


MDG (2001–2015):

2.2 billions

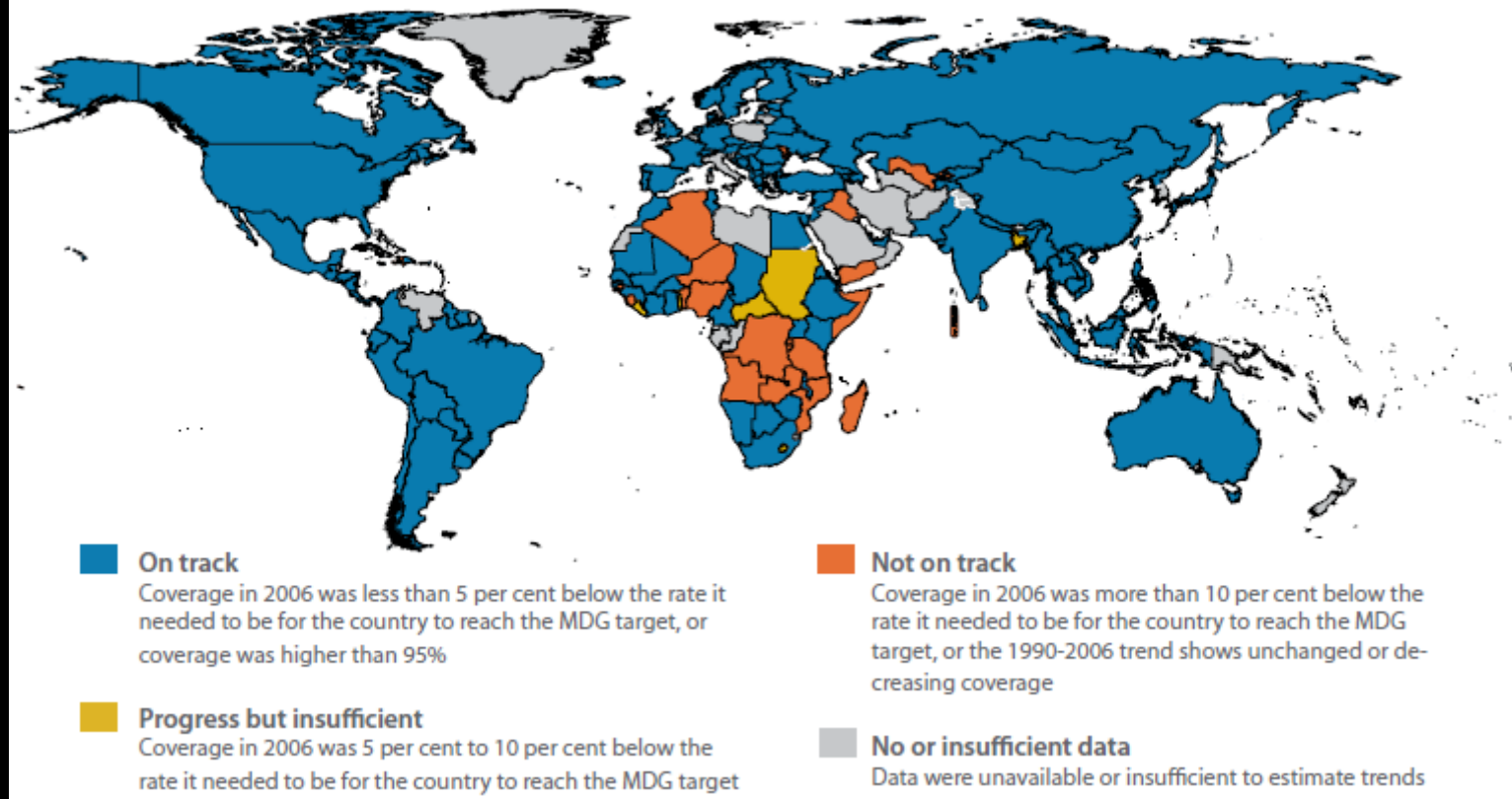
**Sanitation for All
(2001–2025):**

4.2 billions



Achieve Water MDG?

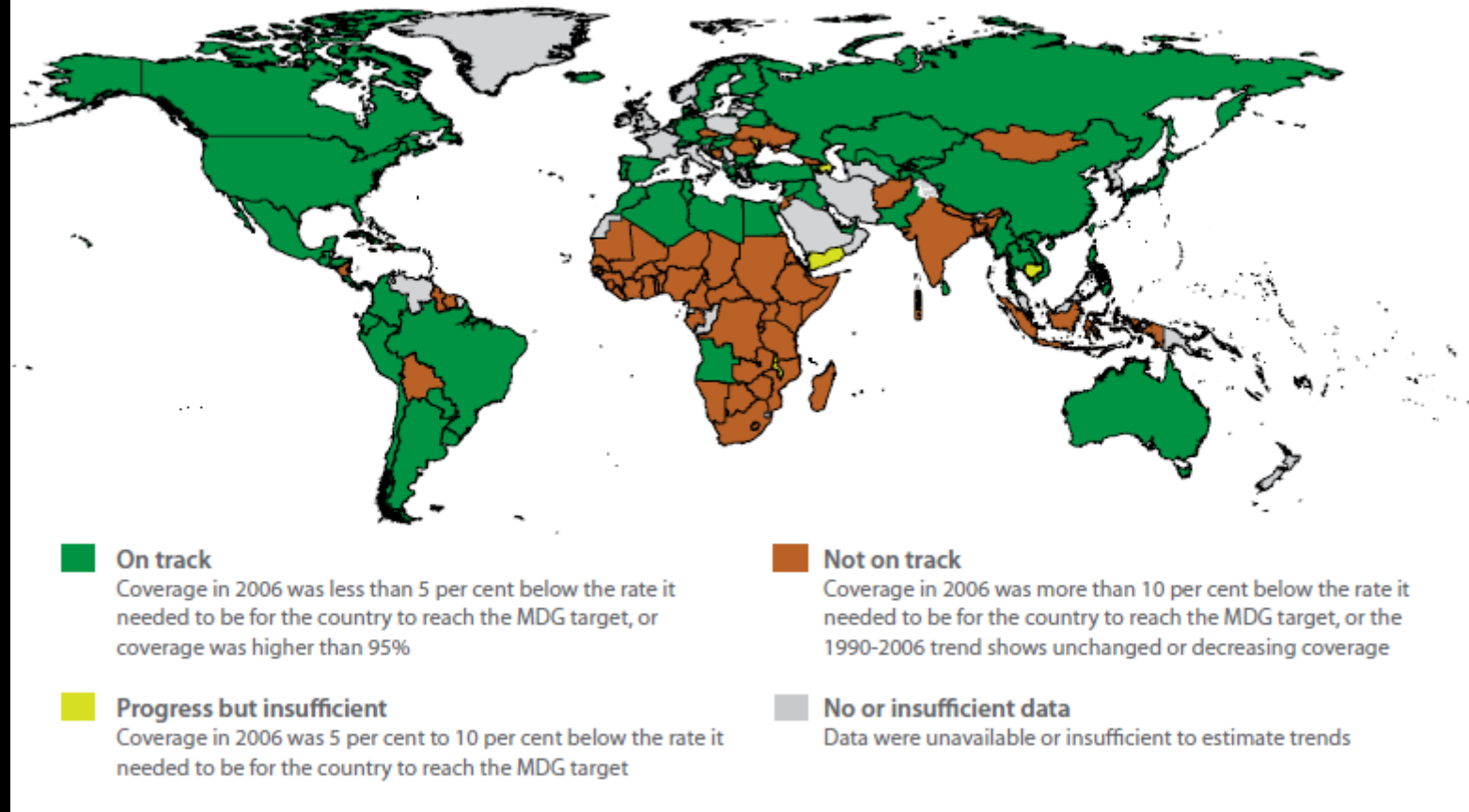
Trends indicate that most countries are on track to meet the MDG drinking water target, except in sub-Saharan Africa



Source: WHO/UNICEF JMP, 2008

Achieve Sanitation MDG?

Most countries that are not on track to meet the MDG sanitation target are in sub-Saharan Africa and in Southern Asia



Source: WHO/UNICEF JMP, 2008

Economic benefits resulting from meeting the MDG sanitation target and achieving universal sanitation coverage

Population benefitted and economic benefit	Meeting the MDG sanitation target	Achieving universal sanitation coverage
Population receiving improved sanitation (millions)	564	2,226
Diarrhoeal disease cases averted (millions per year)	190	673
Diarrhoeal disease deaths averted (thousands per year)	180	592
Health system costs saved (\$ millions per year)	552	1,659
Patient non-medical costs saved (\$ millions per year)	57	203
Value of lost working days avoided (\$ millions per year)	1,056	4,010
Value of lives saved (\$ millions per year)	1,718	7,294
Value of convenience time savings (\$ millions per year)	31,320	149,923

Benefit/Cost Ratios

Region	B-C ratio of achieving MDG sanitation target	B-C ratio of achieving MDG water supply target	B-C ratio of achieving universal sanitation coverage	B-C ratio of achieving universal water supply coverage
Sub-Saharan Africa	6.6	2.8	6.5	3.9
Arab States	5.3	6.1	12.7	5.9
East Asia & Pacific	12.5	6.9	13.8	6.6
South Asia	6.9	3.5	6.8	4.9
Latin America & Caribbean	37.8	8.1	39.2	17.2
Eastern Europe & CIS	27.9	8.3	29.9	8.9
Average for all non-OECD countries	9.1	4.4	11.2	5.8

B-C ratios for sanitation all higher than those for water

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Underestimates, because:

- **Only diarrhoeal disease considered (there are many other WERDs)**
- **No account taken of avoidance of impaired cognition (so adult workforce more productive)**

Even so, the B-C ratios are high

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and especially for sanitation

**Water supply improvements and
especially sanitation
improvements are extremely
good investments!**

**The real question is:
Can countries afford not to
invest?**

**But invest in what:
'Improved' or 'Adequate'
WatSan?**

'ADEQUATE' WATSAN

- **Adequate water supply:** “a supply of water that is safe, sufficient, regular, convenient, and available at an affordable price”
- **Adequate sanitation:** “access to sanitation that is convenient for all household members, affordable, and that eliminates contact with human excreta and other wastewater in the home and neighbourhood”.

UN-Habitat, 2003

The UN-HABITAT Lake Victoria Water and Sanitation Initiative



‘Adequate’ vs. ‘Improved’ Water Supplies

Case study:

Five secondary urban centres in Western Kenya

Total Population of Selected Secondary Urban Centres, Kenya, 2006

Town	Total Population
Migori Municipality	56,700
Kisii Municipality	88,400
Homa Bay Municipality	59,528
Siaya Municipality	49,343
Bondo Township	36,229

Estimated from the Kenya Population and Housing Census, 1999

Access to improved water supplies in 2006

Percent

100

80

60

40

20

0

**JMP
definition**

70

71

76

68

52

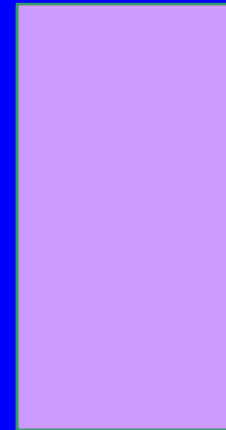
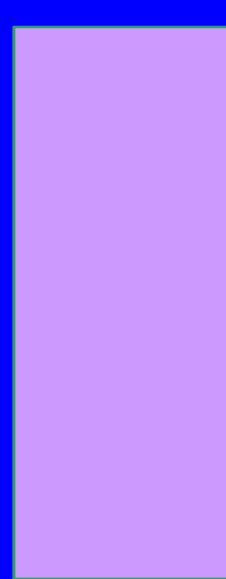
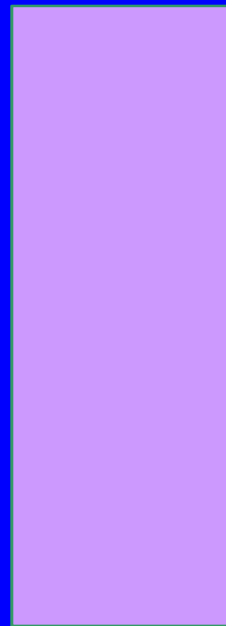
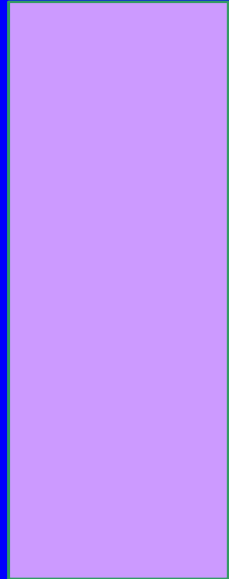
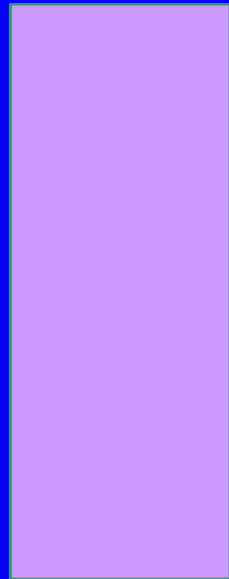
Migori

Kisii

Homa Bay

Siaya

Bondo



JMP: 'improved' water supplies

Improved:

- household connection
- public standpipe
- borehole
- protected dug well
- protected spring
- rainwater collection

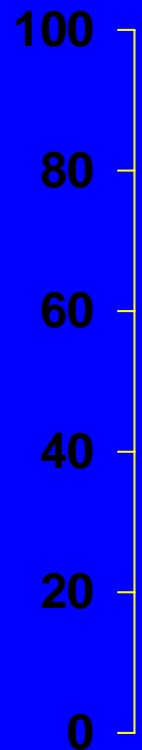
***No consideration
of quality,
quantity, cost or
burden of
collection***

But for 'adequate' water supplies

- **Quantity:** not less than 20 litres per person per day
- **Cost:** not more than 10% of household income
- **Burden of collection:** not more than 1 hour per day

Access to 'improved water'

Percent



Migori

Kisii

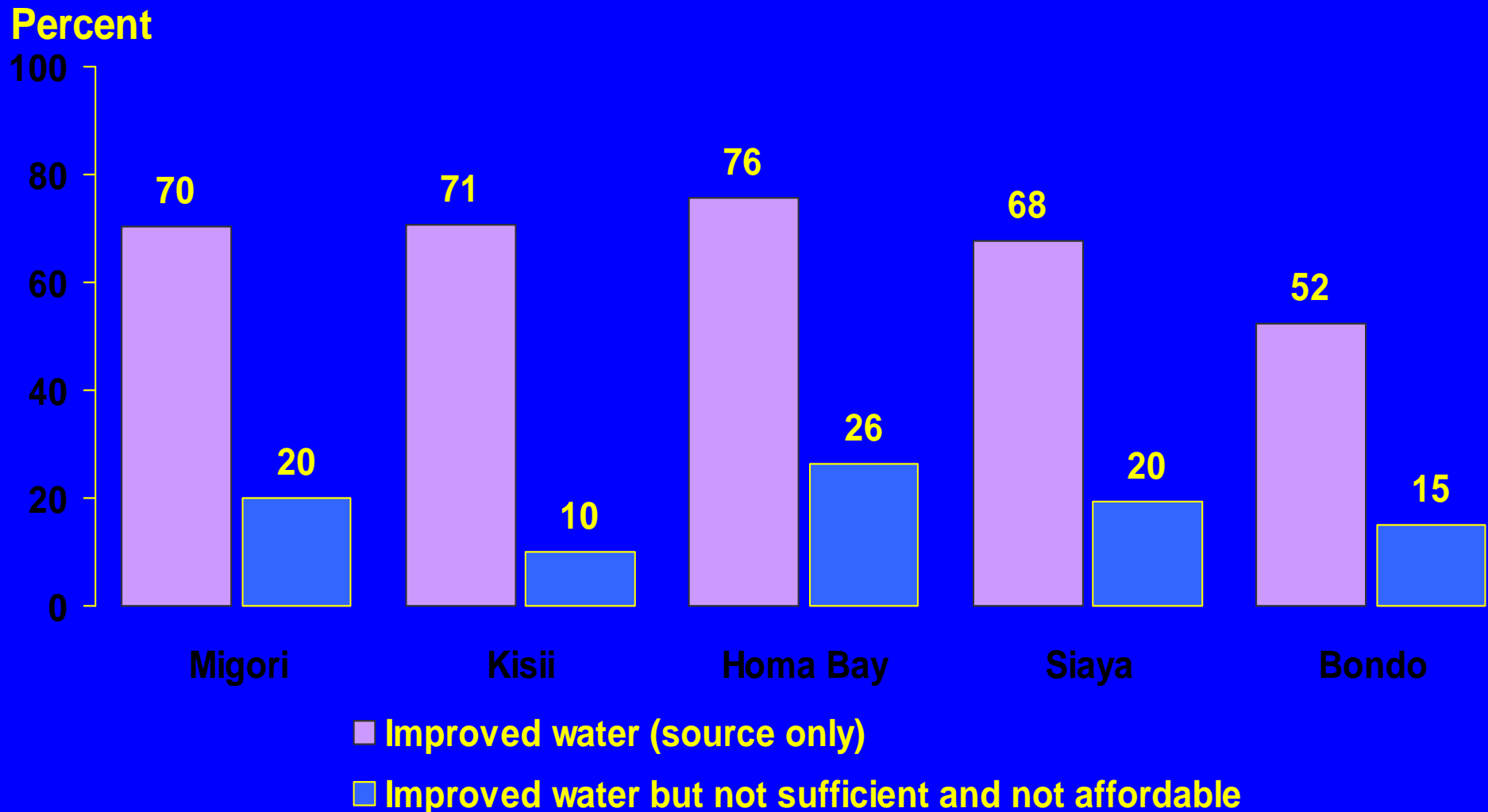
Homa Bay

Siaya

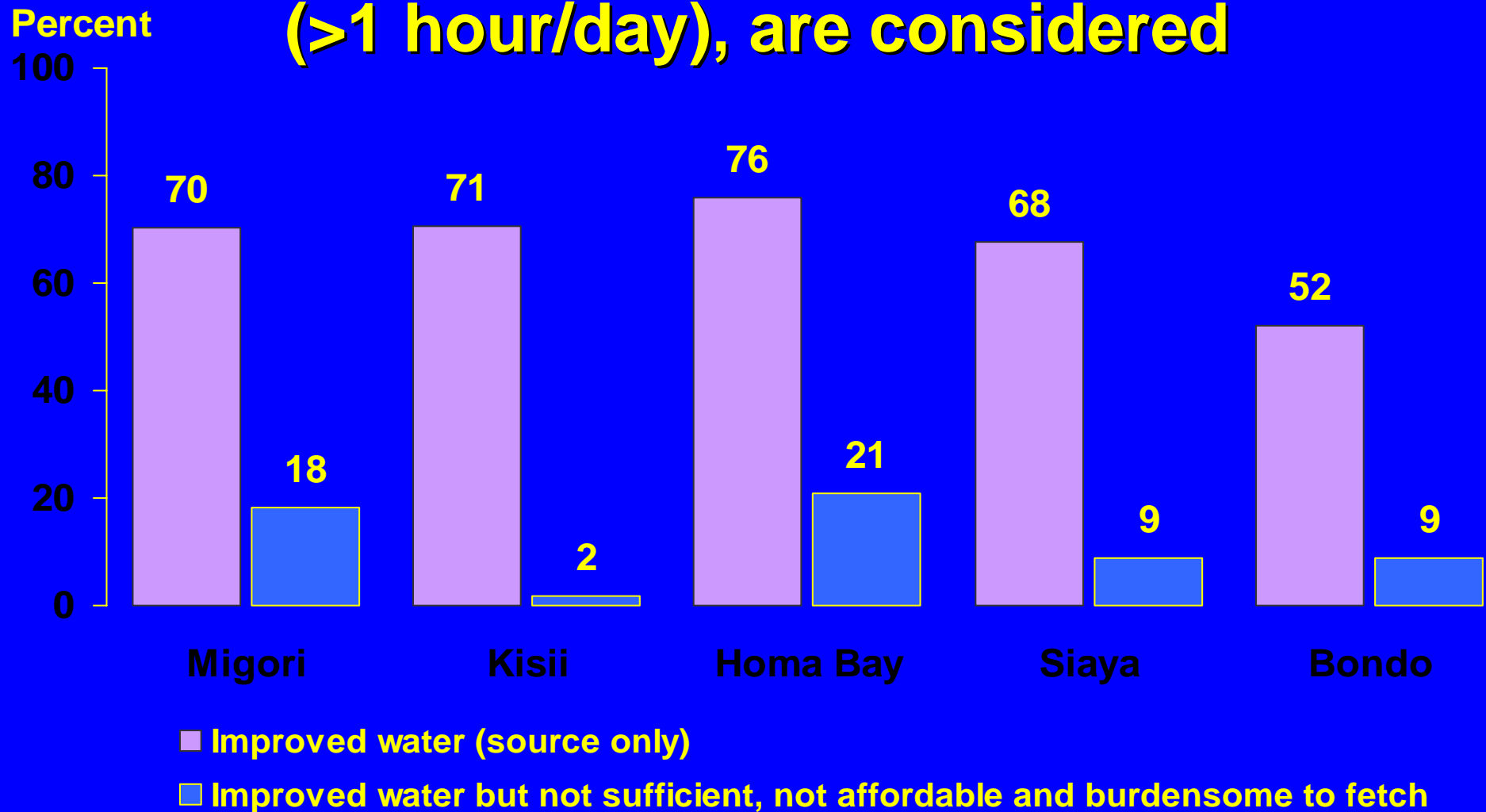
Bondo

■ Improved water (source only)

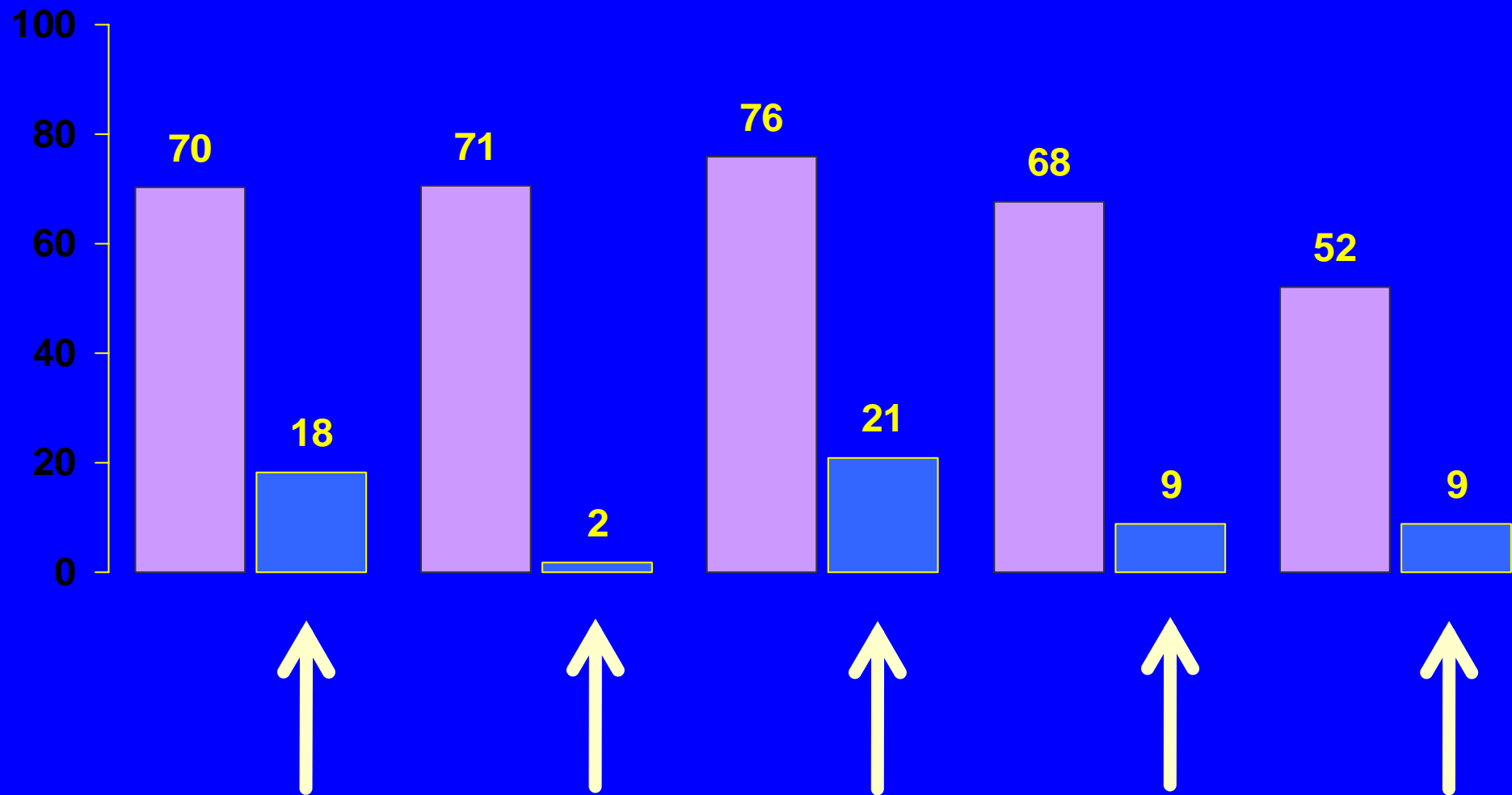
Access to 'improved' water decreases dramatically when quantity (<20 lcd) and cost (>10% of income) are considered



Access to 'improved' water decreases much further when quantity (<20 lcd), cost (>10% of income), and the burden of fetching water (>1 hour/day), are considered



Percent



Access to 'adequate' water

For 'adequate' water supplies

- **Quantity:** not less than **20** litres per person per day
or 30?
- **Cost:** not more than **10%** of household income
or 5%?
- **Burden of collection:** not more than **1 hour** per day
or 30 minutes?

QUALITY?

'ADEQUATE' WATSAN

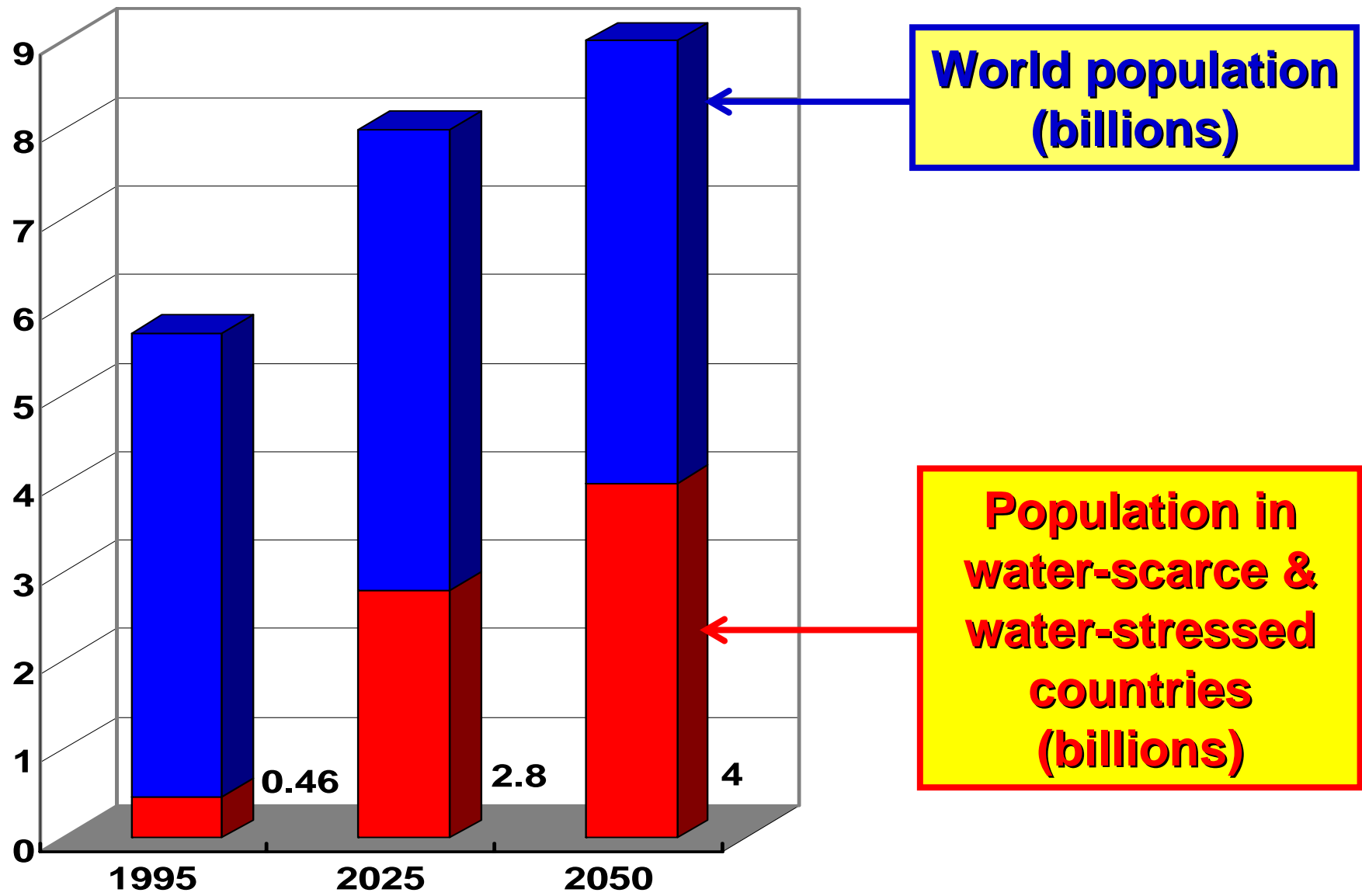
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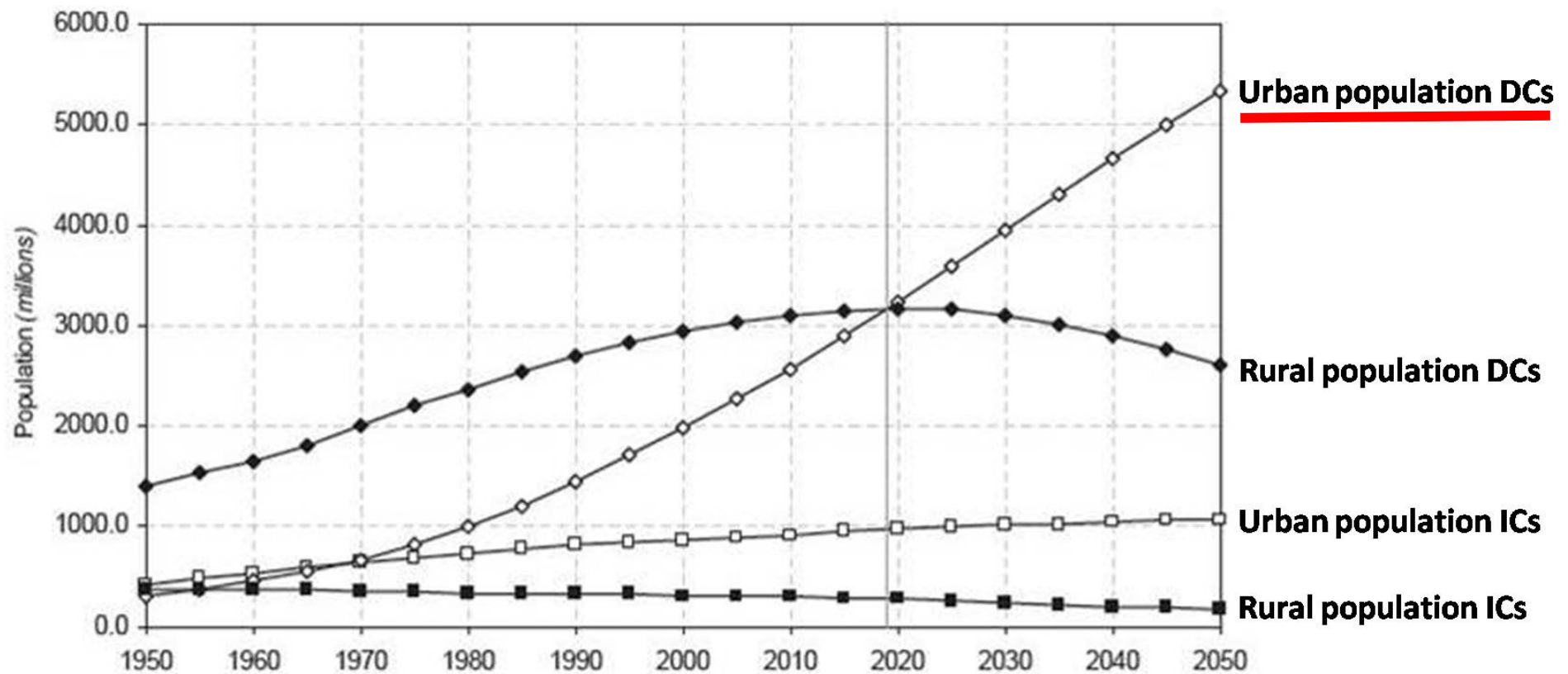
Therefore
'Improved'
is a long way from
'Adequate'



**Our Future World
is a water-short
world and an
urban world**

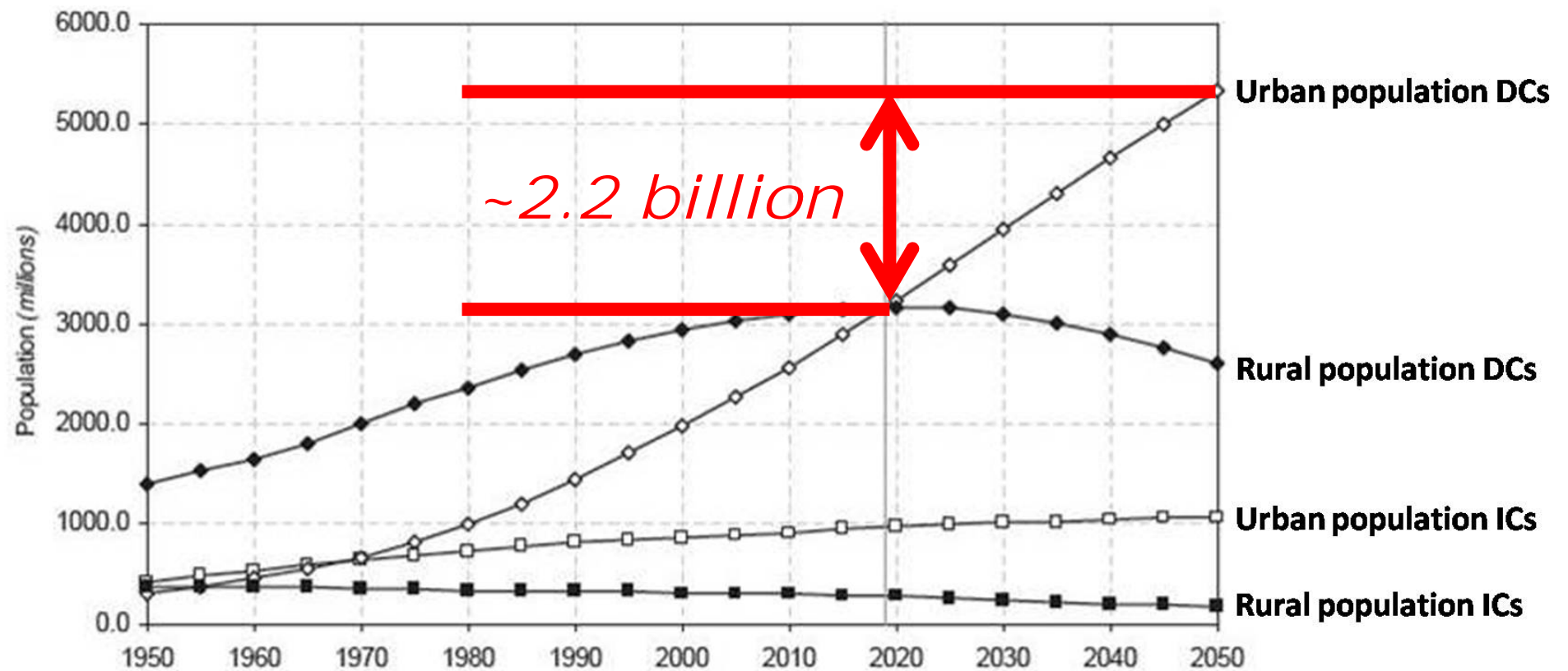


The World is becoming a poor, urban developing-country world



Source: *World Urbanization Prospects: The 2007 Revision*

All these additional people in urban areas in DCs will need adequate water supplies and sanitation



Source: *World Urbanization Prospects: The 2007 Revision*

The Engineering Solutions for these new poor urban areas

- Piped water supplies
- Simplified sewerage
- Low-cost combined sewerage
- Community-managed sanitation centres
- **HUGE need for effective knowledge transfer to the local level**