

**Behind the Numbers:
Three Calculations that Impact
WaterPartners' Work**

1) Water and Sanitation Access

- World Health Organization and UNICEF have a Joint Monitoring Program that defines and measures levels of service
- Most recent data from 2004
- Water access defined as *availability of at least 20 liters/person/day from an **improved** source within 1 km of user's dwelling.*
- Sanitation access defined as household access to improved sources.

Water and Sanitation Access

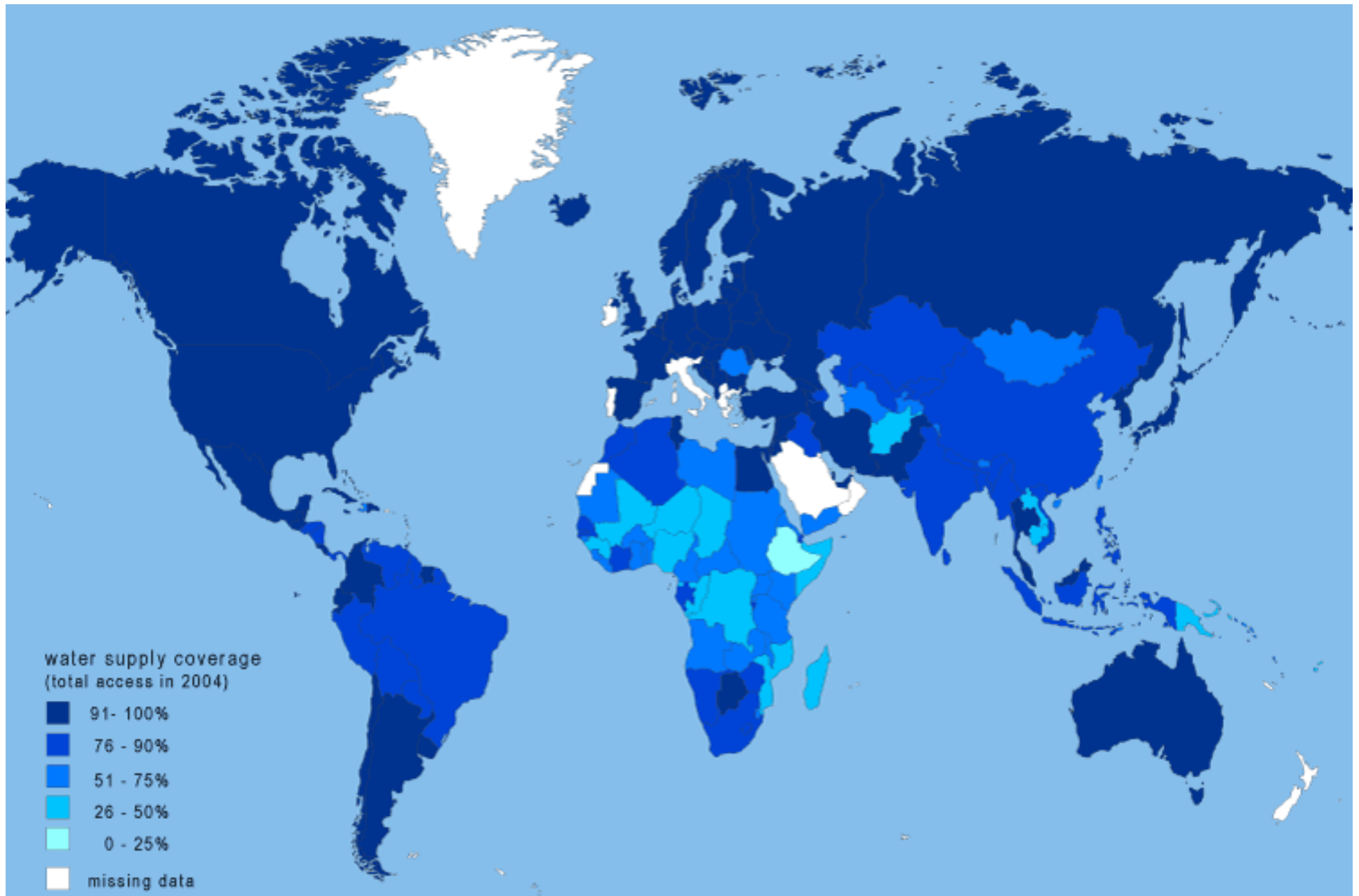
Water

Improved	Not Improved
Household Connection	Bottled water
Public Standpipe	Tanker truck water
Borehole	Vendor water
Protected Dug Well	Unprotected Well
Protected Spring	Unprotected Spring
Rainwater Collection	River

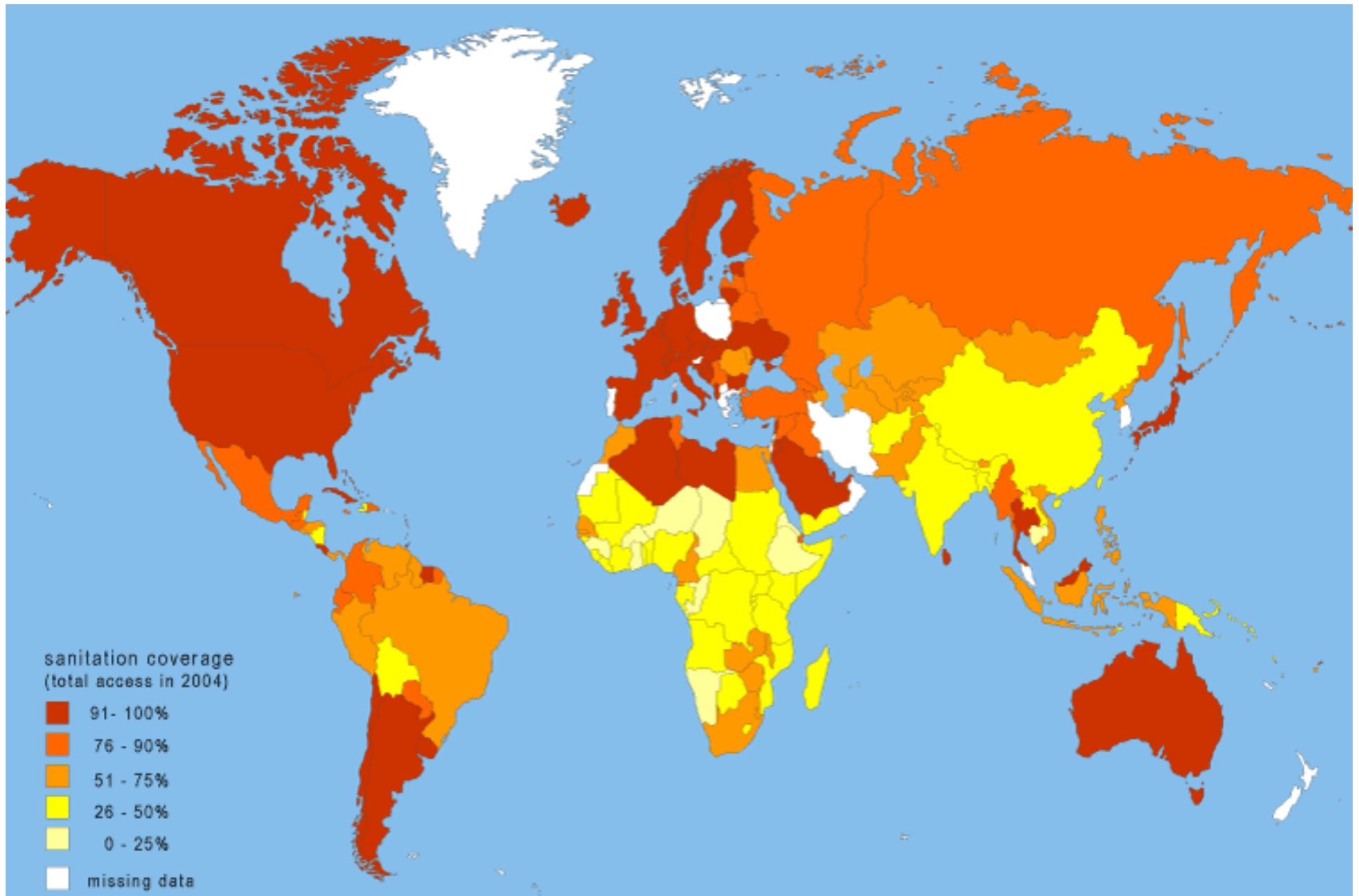
Sanitation

Improved	Not Improved
Public sewer	Public/shared latrine
Simple pit latrine	Open pit latrine
Pour-flush latrine	Bucket latrine
Septic systems	"Flying toilets"
Ventilated improved pit latrine	Open defecation
Private excreta disposal systems	

Percent Access to Improved Water Sources (2004)



Percent Access to Improved Sanitation (2004)



Water and Sanitation Access: Data Collection and Analysis

- Data collected from two sources
 - Assessment questionnaires sent to WHO country representatives and completed with UNICEF local staff and national agencies
 - Household surveys from different sources
 - Demographic Health Surveys
 - UNICEF Multiple Indicator Cluster Surveys
 - World Health Surveys
 - National censuses
 - Stratified samples cover several thousand urban and rural households in each country
- Results contained in 2006 *JMP Report*, which United Nations uses to track progress on meeting Goal 7 of Millennium Development Goals.
 - *Halving proportion of people without sustainable access to safe drinking water and basic sanitation by 2015.*

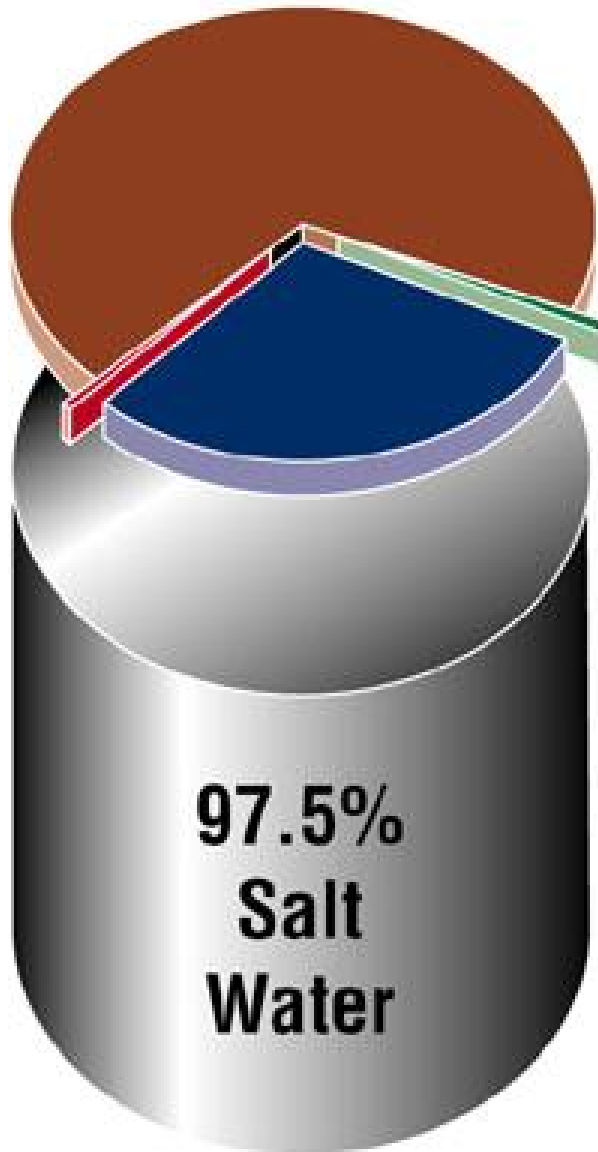
Definitions and Limitations

- Definitions
 - No measure of a “safe” water source
 - Assumes water is safe from “improved” sources and not “unimproved” ones. This is not always the case. For example
 - Public standposts which are defined as improved may provide contaminated water.
 - Bottled water and water from vendors may be safe, but it is often not a reliable source to meet minimum needs.
 - No measure of a “sustainable” water or sanitation source
 - Source must be functioning at time of survey, but no guarantee in future
 - Community latrines not considered improved sanitation sources
 - Hygiene issues not considered in identifying improved sanitation
- Data Quality
 - Water access measurements not easy to come by
 - Consumption per day
 - Distance to nearest improved source
 - Data compiled from different sources, so JMP team members must use their own judgments

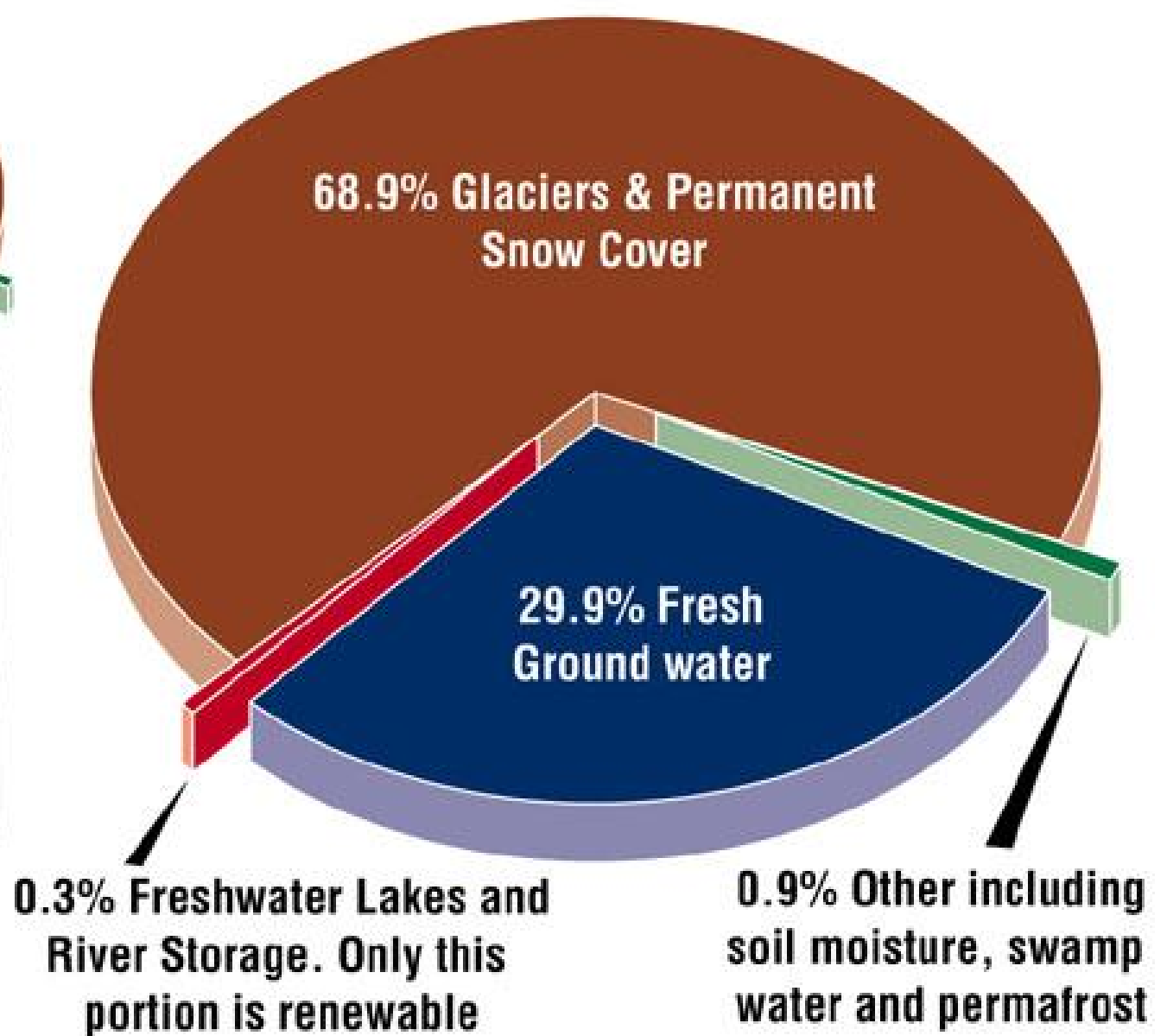
2) Serving People with Safe Water

- Given what we know about the 1.1 billion people who do not have access to improved water sources, what percentage of those individuals could receive adequate, safe water without treatment or additional processing?
- Potential freshwater sources
 - Glaciers and permanent snow cover
 - Groundwater taken from wells and springs
 - Freshwater lakes and river storage
 - Rainwater catchment
 - Other

TOTAL GLOBAL (Water)



2.5% OF TOTAL GLOBAL (Freshwater)



Source: UNESCO

Serving People with Safe Water

- Saltwater – domestic use requires expensive desalinization methods
- Freshwater
 - Glaciers/Snowmelt – rarely found permanently in areas without access to potable water sources
 - Freshwater lakes/rivers (surface water) – potential for pollution from variety of sources
 - Other – doubtful to yield clean water
 - Leaves groundwater as main available source (also rainwater catchment with man-made infrastructure)

Freshwater Data

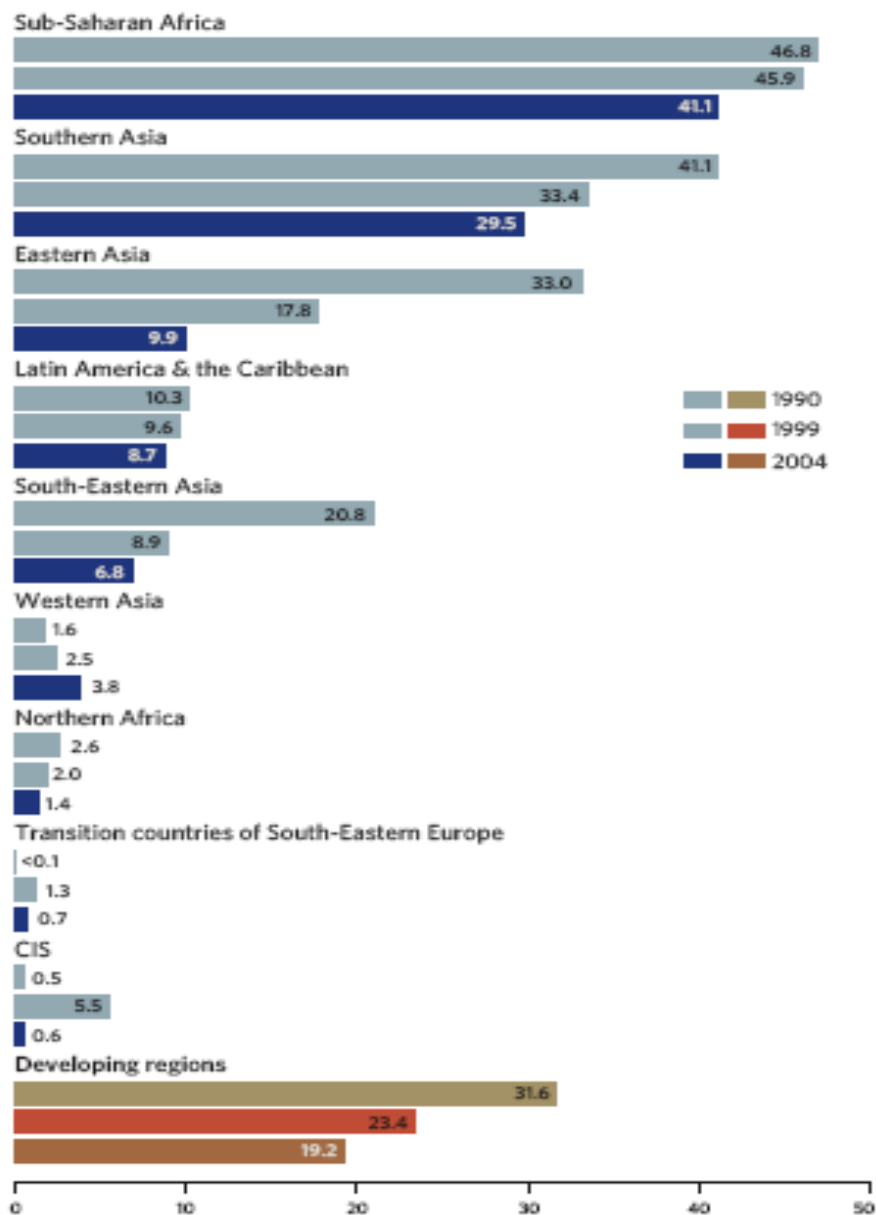
- Primary database for characterizing freshwater volumes by country is AQUASTAT, maintained by the Food & Agriculture Organization (FAO)
- Most recent data from 2005
- FAO measures
 - TARWAR: Total Actual Renewable Water Resources
 - PCA: National Per Capita Availability Equivalent
- These measures used in evaluating relative water stress among countries
 - Generally, countries below 1,700 cubic meters per capita per year considered as water stress areas.

3) Measuring Poverty – the \$1 and \$2 per day standards

- The first target of Goal 1 of the UN Millennium Development Goals is to *halve the proportion of people whose income is less than \$1 per day*.
 - Income standard considered “extreme poverty” (hardcore poor)
 - A \$2 standard also used to describe those living in “standard” poverty
 - These are “absolute” income-based poverty standards.
 - Relative poverty exists in all countries
- Worldwide, 980 million people (19% of pop.) live on less than \$1 per day (2004)

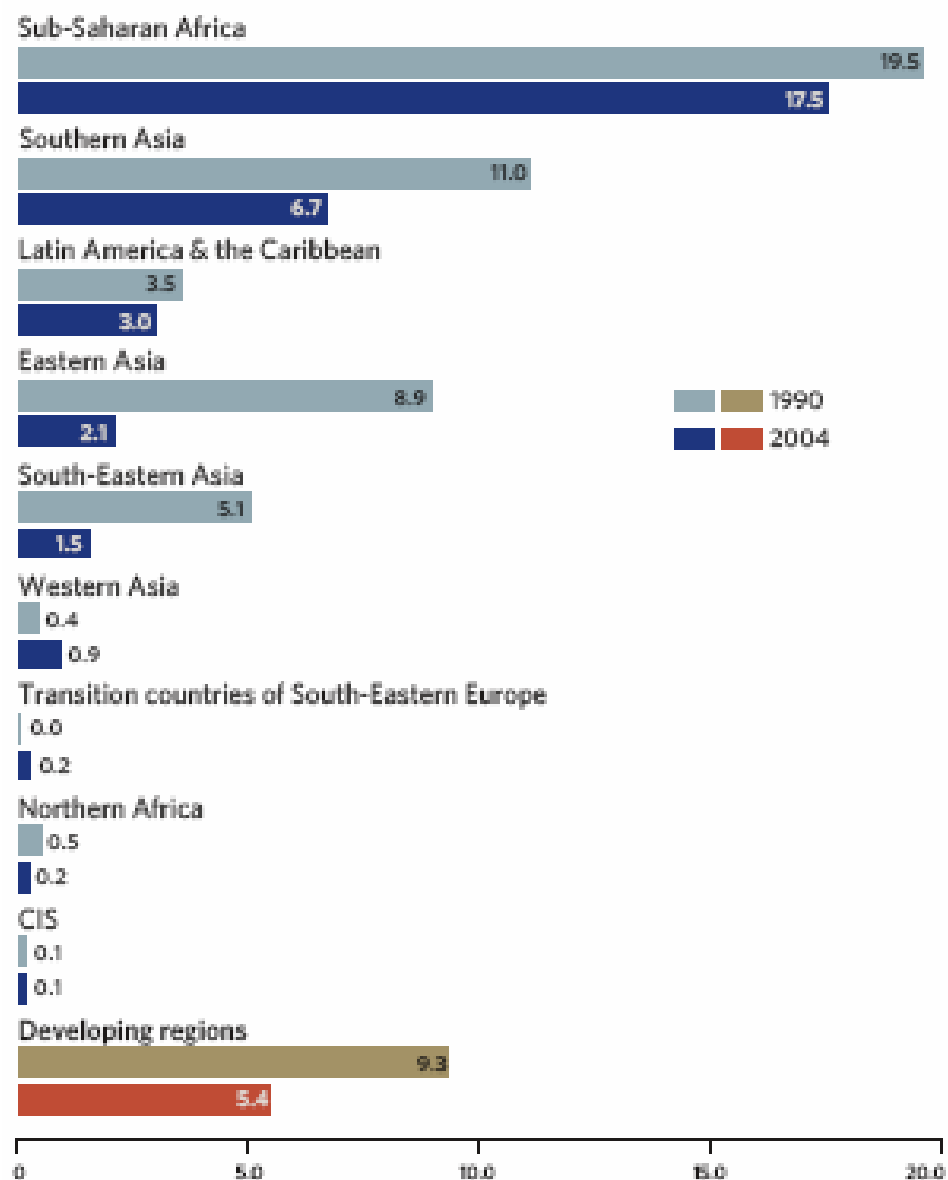
Extreme poverty is beginning to fall in sub-Saharan Africa

Proportion of people living on less than \$1 a day, 1990, 1999 and 2004 (Percentage)



The poorest are getting a little less poor in most regions

Poverty gap ratio, 1990 and 2004 (Percentage)



Defining Poverty Standards

- Poverty lines based on consumption levels typical of poverty lines in low-income countries.
- Since 2000, set at \$1.08 a day.
- Measured in terms of “Purchasing Power Parity” (PPP) according to 1993 standards
 - Accounts for purchasing power differences across countries and income groups
 - Data obtained from over 500 household surveys from 100 developing countries (93% of population of less-developed countries represented)
- In 2008, new relative cost of living estimates will be based on 2005 prices. Poverty standards may be revised as a result.

Calculating \$1 per day Measures

- Three pieces of data needed
 - Country PPP exchange rate (1993)
 - Source: <http://iresearch.worldbank.org/PovCalNet/jsp/index.jsp>
 - Country Consumer Price Index (1993)
 - Country CPI (current month)
- Formula: $PPP = PPP('93) * (CPI/CPI('93)$
- Example – Bangladesh
 - PPP = 12.70 taka/USD*(145.3/67.925) = 27.17 taka/USD
 - Then, multiply by \$1.08 poverty line.
 - Thus, \$1/day poverty line = 29.34 taka per day locally
- Above measure is an aggregate consumption measure, but World Bank attempts to use poverty-based PPPs
 - Aggregate measures include developed & developing nations
 - Poverty PPPs use household consumption expenditures of poor as basis, not expenditures of all classes in a country.
 - Must have nationally representative HH expenditure surveys (about 1/2 of countries do so far)

Interpreting \$1 per day Measures

- Extreme poverty defined as the proportion of the population earning \$1.08 or less per day per capita, translated into PPP terms.
- PPPs are useful in making income and cost of living comparisons across countries.
- This does not mean that households at the poverty line earn US \$5.40/day, or US \$1,971/year, in their countries.
- Rather, it means that a household's purchasing power at the poverty line within their local country is equal to US \$1,971 earned annually by a household in the U.S.
- **In other words, an international dollar in a given country has the same purchasing power as a dollar in the U.S.**

Extreme Poverty Rates and Gross National Income per Capita in WaterPartners' Countries

COUNTRY	% Population Living Under \$1/Capita (PPP terms)	Gross National Income per Capita (2006, Atlas Method)	Gross National Income per Capita (2006, PPP Method)
India	34.3%	US \$820	\$3,800 (PPP)
Bangladesh	41.3%	US \$480	\$2,340 (PPP)
Kenya	22.8%	US \$580	\$1,300 (PPP)
Ethiopia	23%	US \$180	\$1,190 (PPP)
Honduras	14.9%	US \$1,200	\$3,540 (PPP)

Translating Measures Into “Ability to Pay” for Watsan Services

- The World Bank estimates that households may be able to spend 3-5% of their monthly income on water and sanitation services.
- Despite these World Bank estimates, people who live in extreme poverty may often find it difficult to pay the capital cost of accessing new water and sanitation sources.
- However, some households in less extreme poverty conditions are likely to be able to afford paying for acquiring these services if they can finance the costs over time.
- WaterPartners’ WaterCredit Initiative reaches out to people who can afford these services.

Questions?

Email info@water.org