

Household Water Use Per Capita

United Nations Statistics Division

UNSD/UNECE Joint Meeting on Environmental Indicators
Geneva, 31 Aug. – 2 Sep., 2009



One of the most problematic indicator from
the point of view of:

- Relevance
- Definition
- Methodology

Confusing purpose, issues, coverage



Outline

1. Indicator overview and related indicators
2. Data items required
3. Estimating household own-use abstractions
4. International data sources
5. Results from the UNSD/UNEP Questionnaire on Environment Statistics



Indicator overview

- Brief definition:

“The quantity of water used to cover household and related utility needs of the population (including enterprise employees), calculated per capita.”

- Problem:

What does this mean? Water used by households PLUS water used NOT FOR PRODUCTION PURPOSES in all industries (drinking, sanitation, washing, cooking etc for employees?)



- Purpose of indicator:

“The indicator provides a measure of the pressure on the environment in terms of water abstraction from different water sources”

- Problem:

Water abstraction versus water use

Pressure can be assessed only when related to total water resources, total water use etc

It does not measure the pressure on different sources

Water use by employees: should it belong to household use or to the use by different industries?



■ Issue:

- 1) “Adequate quantities of water for meeting basic human needs are a prerequisite for life, health and development”

Problem: what is “basic human needs” and “adequate quantity”?

- 2) “The indicator is one of the major ones defining the level of development of water economy services and the degree of water accessibility to cover all household needs of the population.”

Problem: does the indicator refer to water supplied by the water supply industry only? Does it refer to water supplied to households only? What about self supply that is part of household water use?

Contradiction between purpose, issue 1 and issue 2

What is a positive development, if the value of the indicator grows or decreases?

From the point of view of issues 1 and 2 growth is good?

From the point of view of purpose decrease is good?



- Other indicators needed for the interpretation:

Population/households supplied by the water supply industry

Population with access to safe water

Total water use per capita

Total renewable freshwater resources per capita



Data items required

- “Household water use per capita can be determined based on the measured volume supplied mainly through the public water supply systems”
- “Use of water by the population not supplied by public water supply systems needs to be calculated”

Problem: does it include self supply or not?



- “Households’ water use per capita is calculated by dividing total water consumption in the community by the respective number of inhabitants”

Problem:

“community” includes employees in industries?

What population number should be used as denominator?

If it covers only supply by water supply industry, the denominator should be the population supplied

Tourists?



- “The indicator is based on data submitted by associations, enterprises and organizations supplying households with water and by local administration bodies”

Problem: self supply?



Estimation of household abstraction for own use

■ Need to know:

- ◆ *Population not connected to water supply network*
- ◆ *Water use coefficients*



Estimation of household abstraction for own use (2)

- Ideally use measurements from sample of reporting units, e.g. metered households or monitoring study/survey
- If household measurements are not available, use regional or national coefficients (calculated per person or household)
- Be aware of:
 - ◆ *Comparability of sampled and estimated households/population:* volumes of water use by households connected to water supply industry and own abstraction households may not be 1:1 (own-abstraction households generally use less water).
 - ◆ *Volume of water use can be dependant on a range of other factors:* e.g. economic development, climate, population density, urban v. rural, ...
 - ◆ *Units, definitions, and classifications:* Data items often come from a variety of sources



- Can be collected or extrapolated from: population and housing censuses, household surveys and special water use studies
- Survey example: UNICEF's Multiple Indicator Cluster Survey (MICS) includes 2 questions designed to collect household information on freshwater resources:
 - ◆ *WS1 - What is the main source of drinking water for members of your household?*
 - ◆ *WS2 - What is the main source of water used by your household for other purposes such as cooking and hand washing?*
- MICS3 Countries included: Albania, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, The former Yugoslav Republic of Macedonia, Montenegro, Serbia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and Mongolia (14)
 - ◆ see: http://www.childinfo.org/mics3_surveys.html



International Data Sources

- UNSD/UNEP Questionnaire on Environment Statistics
- OECD/EUROSTAT State of the Environment Questionnaire (OECD countries)
- FAO/AQUASTAT (*domestic and municipal use*)
- UNICEF (MICS)
- MDG Indicators



UNSD/UNEP Questionnaire 2008 on Environment Statistics

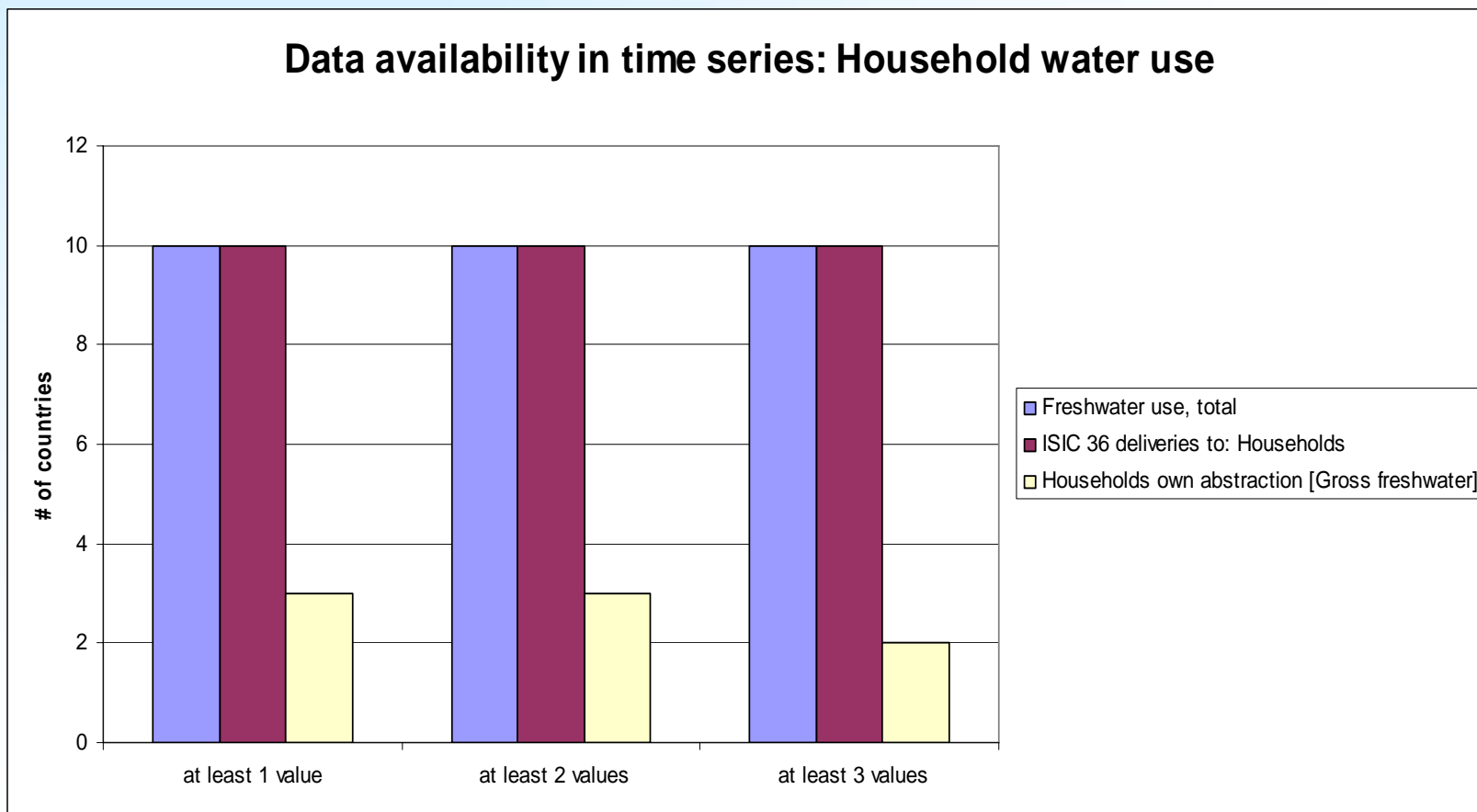
- Received water questionnaire data from 12 of 19 countries (63%)
 - ◆ Global response rate was approx. 50% for both questionnaires
- 4 respondents indicated that the requested water data was unavailable
- 6 water questionnaires were submitted by NSOs, 4 from Ministries or water authorities, and 2 jointly by both
- In most cases household water use apparently does not include own abstractions



- Relevant data items in the UNSD/UNEP questionnaire:
- Net freshwater supplied by the water supply industry (ISIC 36) to households
- Population served by the water supply industry
- Self-abstraction of freshwater by households
- Freshwater use, total, by households



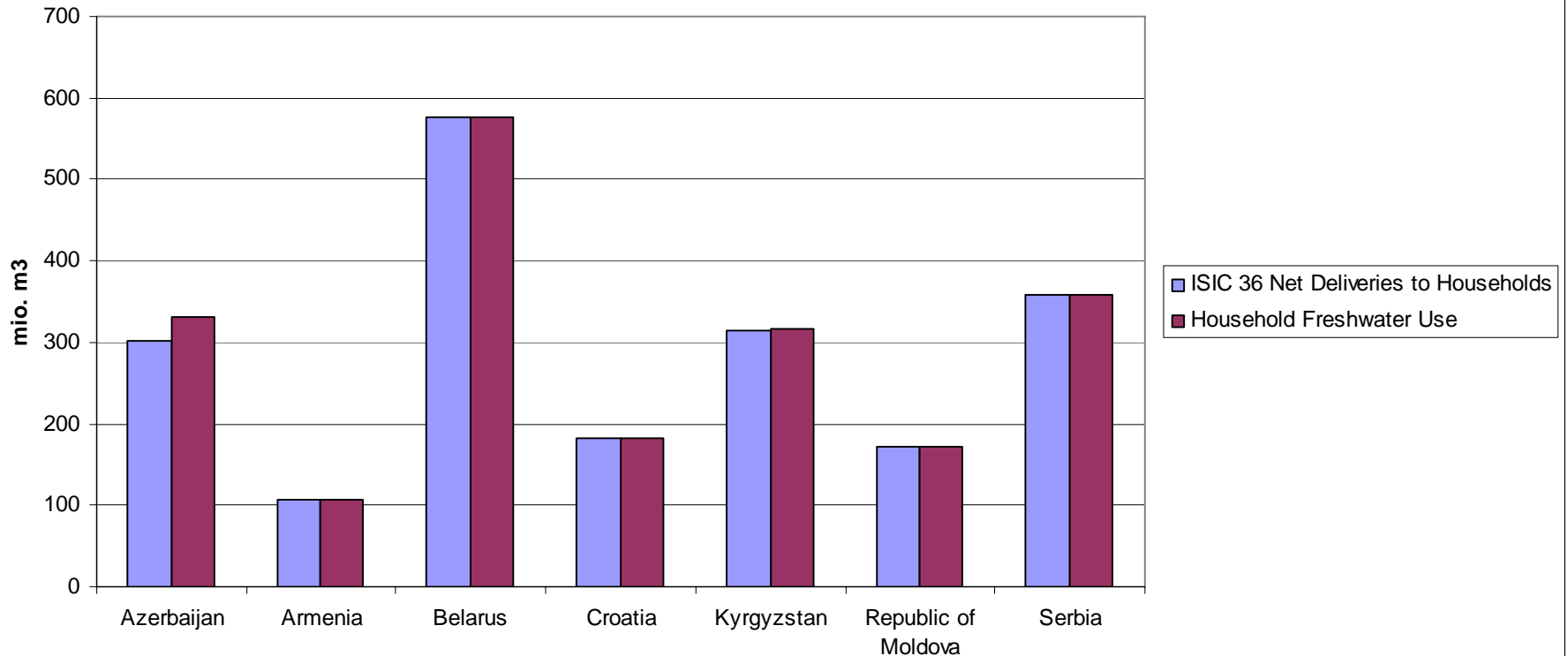
Household Water Use Data Availability





Household Water Use and ISIC 36 Deliveries

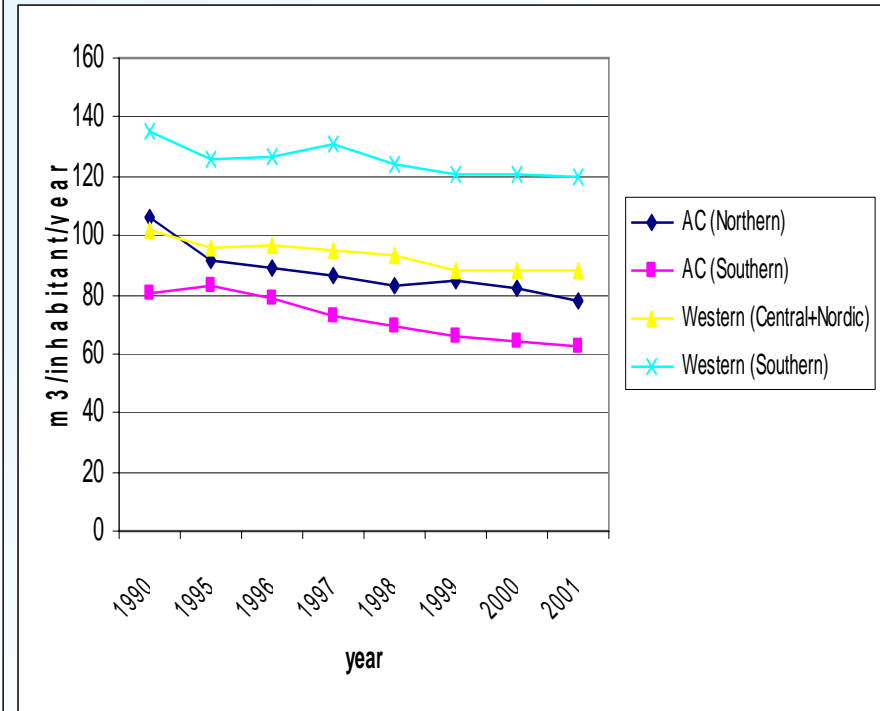
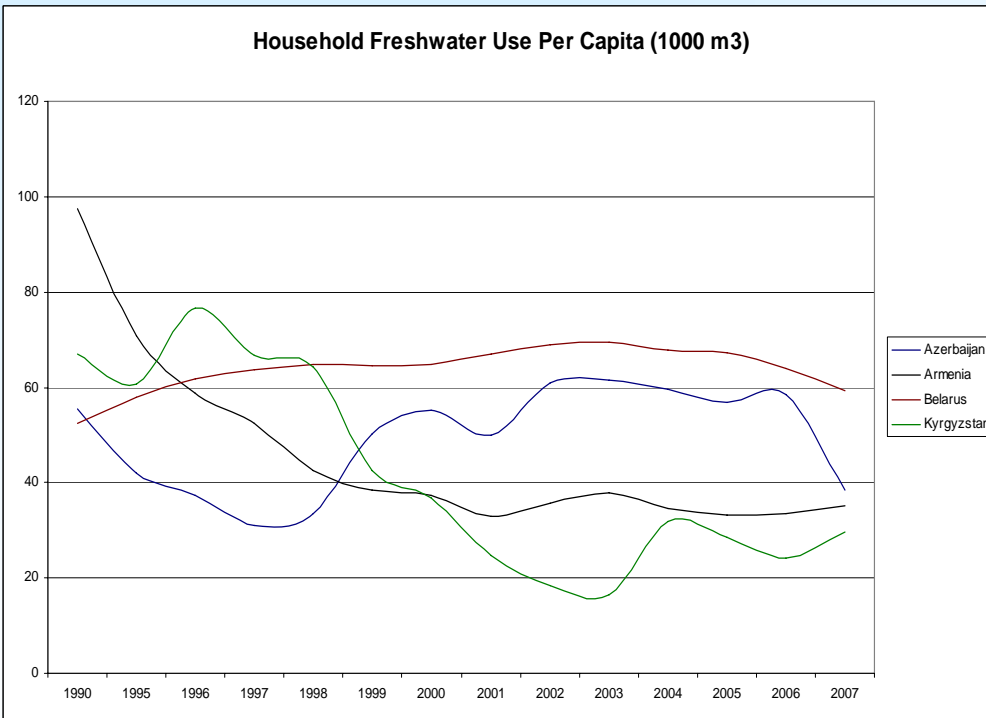
Household Freshwater use and ISIC 36 deliveries





Household Water Use Per Capita

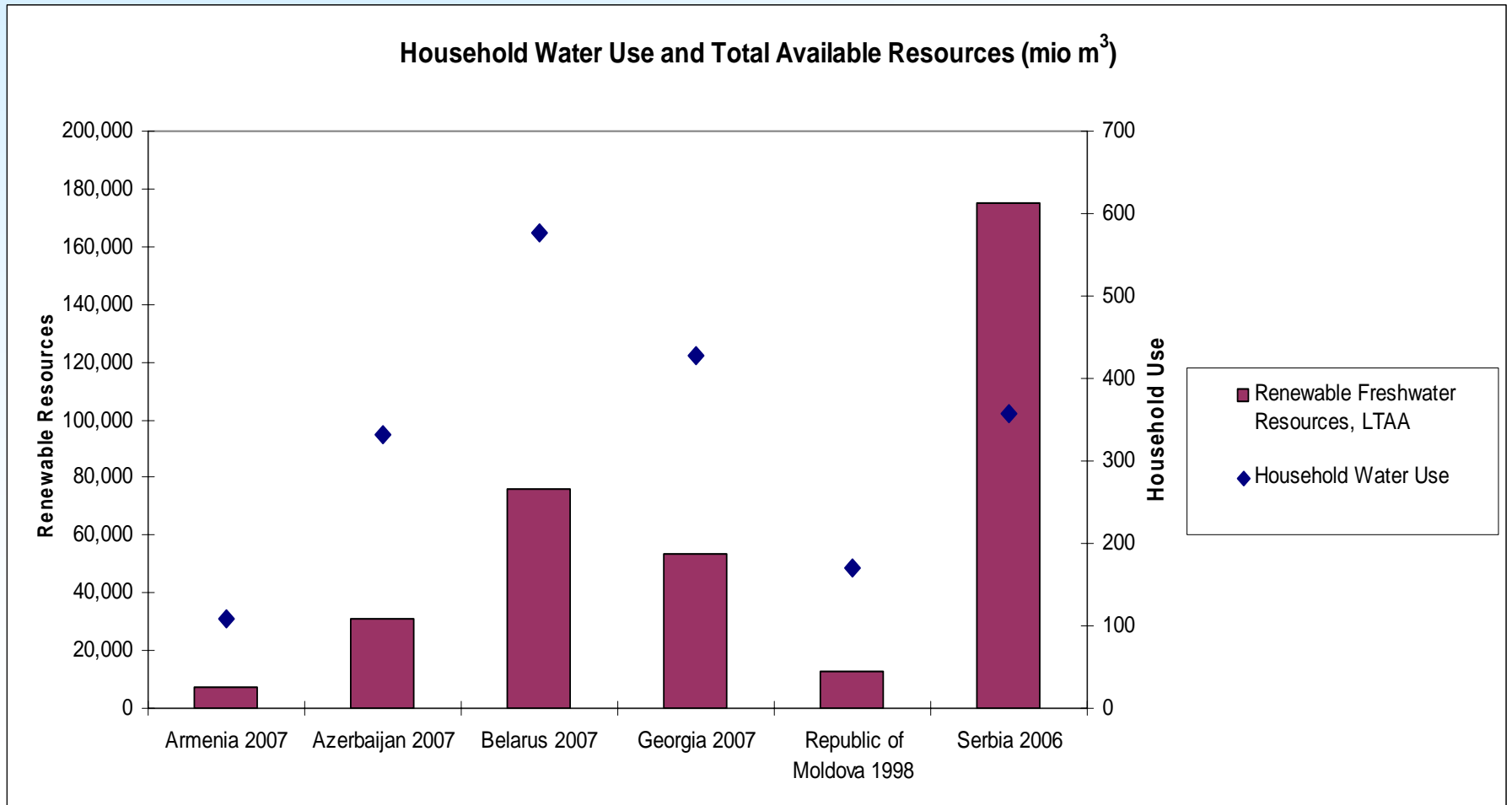
EEA: "Urban Use"



Notes: Household use generally does not include own abstractions (deliveries from ISIC 36 only)
 Per capita use calculated using data from UN Population Division

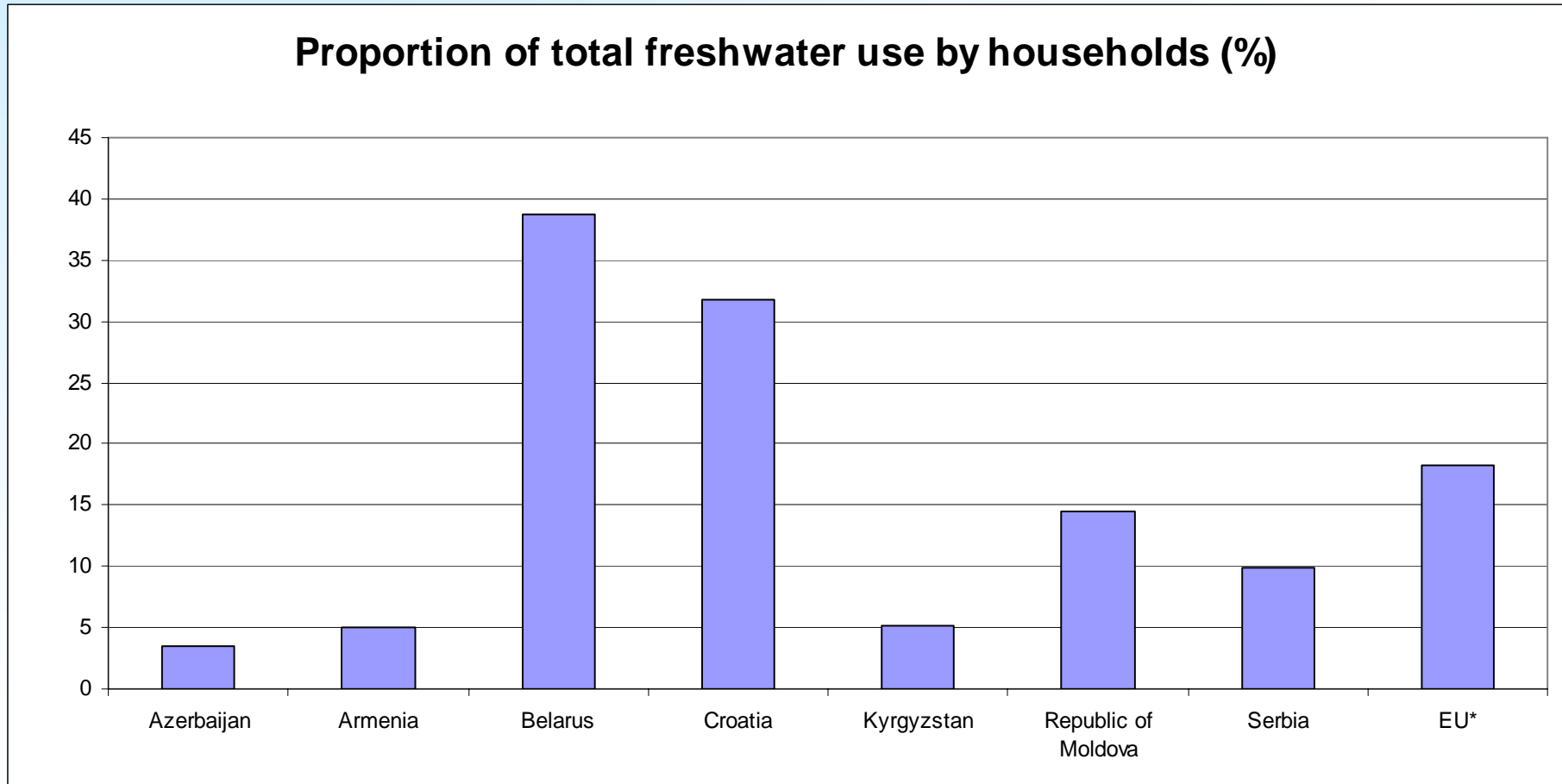


Household Freshwater Use and Renewable Resources Available





Household and Total Freshwater Use



*EU data taken from EEA (www.eea.europa.eu/themes/water/indicators), refers to “urban use”



■ Summary:

The indicator needs a full review and clarification as to purpose, relevance, concepts, definitions and methodology

Might be considered for replacement?