**Additional Sources of Drinking Water - Requests for Revisions to the DHS Model Questionnaires for DHS-8 (2018-2023)**

# **Section I. Information about the requesting party**

**1. Is this request being submitted on behalf of a group? If so, please provide the name of the group and the participating parties.**

The modifications proposed below were developed with input from representatives of 17 organizations involved in the sector and express the views of individuals involved in the discussions. In alphabetical order, the organizations involved are:

1. Bill & Melinda Gates Foundation, Water, Sanitation and Hygiene Strategy
2. Catholic Relief Services (CRS)
3. Centre of Excellence in Water and Sanitation Mzuzu University (Malawi)
4. Global Communities
5. The Hunger Project
6. Mortenson Center in Global Engineering, University of Colorado Boulder
7. Save the Children
8. UNICEF WASH Programme Division
9. USAID Bureau for Global Health Environmental Health Team
10. USAID Bureau for Economic Growth, Education and Environment Office of Water
11. WaterAid
12. Waterborne Disease Prevention Branch, Div. of Foodborne,Waterborne, and Env. Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC
13. Water For People
14. The Water Institute at the University of North Carolina (UNC)
15. Water Supply and Sanitation Collaborative Council (WSSCC)
16. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP)
17. Women Deliver

# **Section II. Indicator definition and rationale**

**2. Please define the indicator or indicators you are requesting The DHS Program to incorporate. *Multiple indicators derived from a single set of questions should be included in the same submission.* (Response required)**

Indicator: Proportion of the population using more than one drinking water source.

**3. What is the rationale for measuring this indicator (each of these indicators) in DHS surveys? (Response required)**

There is significant evidence that households use multiple sources of water for drinking and domestic uses. Surveys which ask only about the primary source of drinking water do not capture the fact that from day-to-day and season-to-season, households may collect drinking water from other sources. If these sources are unimproved and/or fecally contaminated, health benefits can be quickly negated[[1]](#footnote-1). For this reason, the proportion of population using more than one drinking water source is required to assess the expected health, livelihood and economic benefits due to drinking water supply. National governments will use this indicator to assess the reliability of existing water services and allocate resources towards improvements. Additionally, health ministries can use this information to craft health behavior change campaigns to ensure that people prioritize the safest water source available to them, and to use these exclusively to ensure health benefits aren’t negated by intermittent contaminated water consumption. The 2014 Cambodia DHS collected this indicator due to a specific priority at the country level, however it is hardly unique in this respect. The table below shows the proportion of the population using more than one drinking source is significant in a diverse set of countries studied by PMA2020[[2]](#footnote-2).



# **Section III. Proposed additions/revisions to the questionnaires or biomarkers**

**4. Please describe the requested addition or revision.**

***If the requested change is the addition of new questions to the DHS questionnaires or modules, complete questions 4.1 and 4.1.1. If the requested change is a revision to existing questions, complete question 4.2. If the change relates to anthropometry or a biomarker, please complete question 4.3.***

**4.1. For additions: If you have developed a question or set of questions to measure the indicator(s), please provide them in the space below or in a separate file attached with your submission.**

**4.1.1 If requesting multiple questions, please specify the relative priority of each new question.**

|  |
| --- |
| **XW1. Use of multiple water sources** |
| Do members of your household regularly use any other sources for drinking? *Select all that apply*   | Piped water... Piped into dwelling.............................. 11... Piped into compound, yard or plot...... 12... Piped to neighbour............................. 13... Public tap / standpipe......................... 14Borehole or tubewell............................... 21Dug well... Protected well..................................... 31... Unprotected well................................. 32Water from spring... Protected spring................................. 41... Unprotected spring............................. 42Rainwater collection................................ 51Tanker-truck........................................... 61Cart with small tank / drum...................... 62Water kiosk............................................ 72Packaged water Bottled water....................................... 81 Sachet water....................................... 82Surface water (river, stream, dam, lake,... pond, canal, irrigation channel)............ 91Other (specify) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 96None …………………………….97 |

Note: Follows 101. Used to determine the population using more than one drinking water source and whether alternative sources are improved or unimproved.

**4.2. For revisions to existing questions: Please specify the DHS-7 question number, the proposed revision to the question, and the rationale.**

|  |  |  |  |
| --- | --- | --- | --- |
| **DHS-7 question number** | **DHS-7 question text** | **Proposed new question** | **Rationale** |
| N/A |  |  |  |

**4.3. For anthropometry and biomarkers: Please describe the measurement procedures or specimen collection procedures, point-of-care or laboratory testing procedures (as relevant), and any recommendations for return of results.**

NA

**5. Can any related questions be deleted from the questionnaire to make room for the proposed new content? If so please specify which questions using the DHS-7 question numbers.**

None

**6. What are the implications of these requested changes on measurement of trends using DHS data?**

This question is framed to follow question 101 in order to avoid affecting response to this long standing question. Therefore it will not have any effect on trends using DHS data.

# **Section IV. Indicator calculation**

**7. Indicate how to calculate the indicator(s). Include detailed definitions of the numerator and denominator of each individual indicator. If you have developed a tabulation plan for the indicator(s), please attach a file including the suggested table(s) with your submission.**

The proportion of the population using more than one drinking water source can be disaggregated between improved and unimproved sources.

**8. Is the indicator useful when measured at the national level, or is it useful only when disaggregated to specific subnational areas, such as endemicity zones or project intervention regions?**

*For each indicator, select one of the three options by clicking in the appropriate box.*

|  |  |  |  |
| --- | --- | --- | --- |
| Indicator | Useful only for subnational endemicity zones or project intervention regions. A single estimate at the national level is not meaningful. | Useful at both national and subnational regions, as sample size allows. | Useful only at the national level. Subnational estimates are not needed. |
| Proportion of the population with access to a basic drinking water service. | ☐ | ☐ | ☐ |
| proportion of the population using more than one drinking water source | ☐ | ☐ | ☐ |

# **Section V. Prior testing of the proposed question(s)**

**9. Have the proposed questions undergone any formal validation; i.e., have the questions been tested against a “gold standard” to assess their accuracy? If yes, please describe how well or poorly the questions performed and/or provide a publication or report of the validation exercise (or a link).**

Performance Monitoring and Accountability 2020 (PMA2020) has collected national level representative data using the same question showing that in many countries, over 20% of the population uses multiple sources. This is consistent with other sub-national investigations which show that many unreliable water services are not able to provide water when needed[[3]](#footnote-3). This was identified as a particular concern in Cambodia DHS 2014 when it was acknowledged that the source of drinking water can vary between the dry and rainy season[[4]](#footnote-4). Here, over 30% of the rural population used multiple sources over the course of the year. Other studies have demonstrated the need to account for multiple sources of drinking water by examining household survey data (which includes this measure of multiple sources) and hourly data from sensors on handpumps[[5]](#footnote-5). Additionally the proposed question has been validated by the Joint Monitoring Program’s Strategic Advisory Group (SAG) as part of their “Core and Expanded Questions for Household Surveys” (in-preparation for publication).

**10. Have the questions undergone any other kind of testing; e.g., cognitive testing, pilot testing. If so, please describe the results of the testing and/or provide a publication or report of the findings (or a link).**

Questions about other sources of drinking water have been a part of household surveys for many years, however only recently adopted by a population level survey (PMA2020). Due to the similarity with the existing question about the household’s “main source of drinking water” it is not expected to encounter issues.

# **Section VI. Other considerations**

**11. Please provide information relevant to the kinds of questions below, and/or anything else you wish to share with us about this indicator (these indicators).**

* **Describe how the data for this indicator are being used (or will be used).**
	+ **Are the data produced by this indicator actionable?**
	+ **Who will use the data?**
	+ **What kinds of decisions will be made using these data?**
* **For what kinds of countries would the indicator(s) be most useful?**
* **Does the DHS survey offer any particular advantage over other available data sources for measuring this indicator? If so, what?**

Those studies which have collected data for this indicator have noted that it alludes to what may be a blind spot in the sector, saying “failure to understand and account for actual water use behaviour may results in adverse public health outcomes and maladapted WASH policy and interventions.” ([Thompson et al.](https://www.sciencedirect.com/science/article/pii/S0048969718333011?via%3Dihub), 2019). Others say, “We propose that failure to consider multiple sources undermines the design and effectiveness of global water monitoring, data interpretation, implementation, policy, and research.” ([Elliot et al.](https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1002/2017WR021047), 2017). The data has been used extensively where collected, including in Cambodia, where the 2014 DHS collected this data at the request of stakeholders. National governments will use this indicator to assess the reliability of existing water services and allocate resources towards improvements. Additionally, health ministries can use this information to craft health behavior change campaigns to ensure that people prioritize the safest water source available to them, and to use these exclusively to ensure health benefits aren’t negated by intermittent contaminated water consumption.

All countries with access to varied water sources (improved, unimproved and even piped water) would benefit from collecting data on secondary drinking water sources. All population-based surveys are susceptible to systematic seasonal bias related to drinking water supply since household surveys mainly take place during the dry season. This data will be used to account for this bias since households will report secondary sources which might be used in the wet season. The DHS offers an unparalleled opportunity for countries to have an improved understanding of drinking water supply in sub-national regions, urban/rural and within different wealth quintiles.

1. Hunter, Paul R., Denis Zmirou-Navier, and Philippe Hartemann. "Estimating the impact on health of poor reliability of drinking water interventions in developing countries." Science of the total environment 407.8 (2009): 2621-2624 [↑](#footnote-ref-1)
2. Performance Monitoring & Accountability 2020. John’s Hopkins University. Data extracted 23 January 2019: <https://www.pma2020.org/wash-indicators-brief> [↑](#footnote-ref-2)
3. Elliott, M. et al. Multiple household water sources and their use in remote communities with evidence from Pacific Island countries. Water Resour. Res. 53, 9106–9117 (2017). [↑](#footnote-ref-3)
4. National Institute of Statistics, Directorate General for Health and ICF International, 2015. *Cambodia Demographic and Health Survey 2014*. Phnom Penh, Cambodia, and Rockville, Maryland, USA [↑](#footnote-ref-4)
5. Thompson, P. et al., Rainfall and groundwater use in rural Kenya. Science of the Total Environment. 649, (2019) [↑](#footnote-ref-5)