

Concept Note on the Global Monitoring of WASH Affordability

Version 1: Prepared by the WHO/UNICEF Joint Monitoring Programme

Please send comments to ghutton@unicef.org by 2nd April 2018.

1. Background

1.1 A central place for affordability in the Sustainable Development Goals

While a full costing of the 169 targets across 17 Sustainable Development Goals has not been conducted, ballpark estimates suggest around US\$ 3.9 trillion is needed annually to cover key sectors, with an annual gap of up to US\$ 2.5 trillion¹. Whether or not this figure is an underestimate or an accurate reflection of the financing need, what is known is that the costs of achieving the 169 targets are well in excess of the current spending levels, especially in poorer countries. Therefore, given that funding has to come from at least one of the three 'T's (taxes, tariffs, transfers), the issue of affordability is at the fore of the debates on the achievement of the SDGs. Indeed, affordability has been explicitly mentioned within the targets of seven of the goals, covering some of the most basic human needs (see Box).

To date, the focus of the affordability debate has been on whether households can afford to access goods and services at current prices, rather than the overall costs of providing the goods and services. Hence affordability can be addressed by various interventions that change the price faced by the consumer at the point of access (e.g. subsidy, insurance or efficiency measures).

In the context of financing the achievement of multiple inter dependent SDG targets, it is clear that affordability of meeting one basic human need cannot be looked at in isolation from meeting all basic human needs. Hence, what is needed is a comprehensive, integrated assessment of affordability across all SDGs. Indeed, this is already done by countries and international agencies in setting a poverty line, which takes into account a 'basket' of goods and services considered essential, and their price levels. However, the goods and services included in a country's poverty basket are unlikely to align completely with those included in the SDG targets. Furthermore, the service levels targeted vary within and between countries and also in comparison to service levels implicit in the SDG global indicators. Hence, any discussion on affordability must take into account the quality of the goods and services in question.

1.2 The rise of WASH affordability in the international sphere

WASH affordability has been on the agenda at least since the Millennium Declaration (2000), which formed the basis for the Millennium Development Goals, stating to "halve those unable to reach or to

SDG targets with explicit references to affordability of goods and services:

SDG 3.8: Financial risk protection (health coverage).
SDG 3.b: Affordable essential medicines & vaccines.
SDG 4.3: Affordable education.
SDG 6.1: Affordable drinking water.
SDG 7.1: Affordable energy services.
SDG 9.1: Affordable infrastructure.
SDG 9.3: Affordable credit
SDG 9.c: Affordable internet access.
SDG 11.1: Affordable housing.
SDG 11.2: Affordable transport systems.

¹ UNCTAD. World Investment Report 2014. Spending included in the study covered basic infrastructure (roads, rail and ports; power stations; water and sanitation), health, education, food security (agriculture and rural development), and climate change mitigation and adaptation,

afford drinking water". This was followed by the General Comment 15 on "The Right to water" at the 29th session of the UNGA in 2002 (see section 1.3).

UN General Assembly Resolution 64/292 in the year 2010 called upon States and international organizations "to provide financial resources, capacity-building and technology transfer... to scale up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all". The Human Rights Council Resolution 18/1 (2011) strengthened this direction, including affordability as one of the normative criteria of the human right to drinking water and sanitation, calling on States to provide the maximum financing available. Most recently, under the Sustainable Development Goals, affordability has been included explicitly in the water target 6.1, and it is implicit in the sanitation and hygiene target 6.2².

1.3 From the conceptual to the measurable in monitoring 'affordable' WASH services

Despite growing attention to the affordability of WASH services, the understanding of what it is and how it can be measured has varied. Some assessments have focused on water, while others include both water and sanitation (see Table 1).

The General Comment³ does not provide any quantitative metric in determining what is affordable. The Committee did, however, state

"Any payment for water services has to be based on the principle of equity, ensuring that these services, whether privately or publicly provided, are affordable for all, including socially disadvantaged groups. Equity demands that poorer households should not be disproportionately burdened with water expenses as compared to richer households." (para 27).

In preparing for the 65th Session of the UNGA in 2010, the Independent Expert on the human right to water and sanitation underlined the importance of making progress on affordability:

*"Services must be affordable. Access to water and sanitation must not compromise the ability to pay for other essential needs guaranteed by human rights such as food, housing and health care" and "(In the Millennium Declaration) States saw the significance of affordability for ensuring actual access to services, but could not undertake to monitor it because of the lack of data. Developing such data sets is crucial to monitor affordability levels and progress in that regard. The affordability criterion needs to be revived and prioritized"*⁴

International treaties do not, however, define how to actually measure water or WASH affordability. Hence, international organizations and many countries have used a proxy for affordability which estimates the ratio of WASH expenditures to total household spending or income, and compares this ratio with a benchmark. To make a judgement about affordability, threshold levels of spending on water or water and sanitation as a share of total household income (or expenditure) have been defined. Expenditure above the threshold would therefore render a service 'unaffordable'. Smets (2012) reports significant inter-country differences in affordability benchmarks⁵ (see Table 1). For example, for water supply the threshold varies between 2% in the USA and 4% in Indonesia and Mongolia. For both water and sanitation, the threshold varies between 2% in Lithuania and 6% in Mongolia. Likewise, multilateral development banks and the OECD have defined thresholds of between 3% and 5%.

² Through use of the word 'equitable', and targeting 'women, girls and the vulnerable'.

³ General Comment 15: The right to water (Twenty-ninth session, 2002), U.N. Doc. E/C.12/2002/11 (2003). paras. 26-27.

⁴ Human rights obligations related to access to safe drinking water and sanitation.

⁵ Smets H (2012). Quantifying the affordability standard, in *The Human Right to Water: Theory, Practice and Prospects*. Cambridge University Press.

While these efforts are laudable, and have allowed international agencies, NGOs, countries and service providers to make broad assessments of the affordability of existing services, it is worthwhile revisiting whether such a ratio approach captures the true essence of affordability.

In trying to understand ‘affordability’ it is clear that it is a *relative* term. The affordability of a good or service is a factor of the price of the good or service, the spending power of the consumer, and the competing nature of different needs (and spending required on other goods and services).

In effect, therefore, the motivation to measure affordability is to ensure that (1) the price of WASH services faced by consumers does not strongly affect the quantity or quality demanded, such that households would choose not to consume the service, or to demand below the minimum acceptable service level to meet the human rights to water and sanitation, and (2) the price paid does not place the household into debt, and (3) the price paid does not lead to reduced consumption of other essential services. The latter would need to be defined, according to what services are included (e.g. nutrition, health care, education, shelter) and the local context of price paid and minimum acceptable service levels.

Therefore, the twin concerns of ‘unaffordable’ water, sanitation and hygiene services are that households will either pay too much for them and hence go into debt or reduce other essential expenditure, or households will cut back on WASH consumption, thereby resulting in other negative consequences for themselves as well as for others (e.g. adverse health outcomes). Comparison of expenditures against thresholds addresses the first but not the second of these concerns. In a new book on achieving equitable WASH services, Hutton and Andres (2018) define four potential outcomes for a household according to whether they are connected to a (minimum) service or not, and whether the service is affordable or not⁶. This framework leads to three possible ‘unaffordability’ situations, as follows:

Unaffordability situation 1: Households consume the minimum service level, but pay too much

There is no international consensus around what level of expenditure on WASH services is affordable or unaffordable, and the threshold that defines these (see Table 1). Due to its simplicity and the availability of data, current practice of measuring affordability by countries and international organizations have focused on WASH, or water, expenditure as a proportion of income (or expenditure, which can be measured more reliably). The UNDP, World Bank, OECD, EC and African Development Bank have all defined a threshold of expenditure as a proportion of income (or expenditure) for water to be affordable, between 3% and 5%⁷. Also, a number of countries have set similar affordability thresholds for water between 2% and 6%⁸. In addition, some experts are exploring

Table 1. Affordability benchmarks in selected countries

Country	Benchmark
Water and sanitation	
Lithuania	2%
Northern Ireland	3%
Venezuela	4%
Chile	5%
France	3%
Kenya	5%
Mongolia	6%
Water only	
Argentina	3%
United States	2%
Venezuela	3%
Indonesia	4%
Mongolia	4%

Source: Smets (2012)

⁶ Hutton G and Andres L: ‘Counting the costs and benefits of equitable WASH service provision’, in “Achieving Equality in Water and Sanitation”, eds Cummings O and Slaymaker T (2018). Routledge, UK.

⁷ Not all of these thresholds by international organizations are official, or apply organization-wide.

⁸ Some countries include only water, some include water and sanitation. See Smets, H. Quantifying the affordability standard, in *The Human Right to Water: Theory, Practice and Prospects*. 2012. Cambridge University Press.

how to construct an augmented water poverty line taking into account the cost of a minimum service level for WASH.

While the threshold approach described above provides a crude assessment of expenditure relative to income, the utility of this approach for informing policy and programming has been questioned. For one, it ignores variations in the willingness of households to pay for WASH services and the benefits that flow from them in different contexts. Second, it does not take into account other spending commitments a household has on essential services, which will vary by context and by household. The latter issue highlights the need to take a multi-service perspective when measuring affordability, hence WASH cannot be considered in isolation. Other sectors such as food and health have defined their own frameworks over the affordability of for example, adequate nutritional intake or catastrophic health spending which propels a vulnerable households into poverty. Third, the threshold approach also ignores other aspects of affordability such as whether existing financing from non-household sources is sustainable, and hence might be passed eventually to the household, or if the level of subsidies is affordable for society as a whole. Hence, these objections need to be addressed – either to find alternative ways of assessing affordability, or else to find ways to interpret thresholds taking into account these issues.

Unaffordability situation 2: Households do not consume the minimum service level, but still pay too much

This outcome is quite common in urban areas, where households do not have access to utility services and pay considerable sums for water supply, or where they have access to poor quality utility services and pay high tariffs for it, without any kind of subsidy or social protection. There is much anecdotal evidence on such populations, but limited systematic evidence. For example, households that pay high sums for vendor-supplied water might be undersampled in national household surveys, and also their expenses might not be captured well in the survey questions, given the variability in expenditure from day to day and from month to month. Second, for households with utility services, the issue of low service level is not well picked up. In a household survey they would be seen as having a service, but limited data exist on the availability (e.g. hours per day, days per week) and the quality. Hence, in order to understand more about populations falling into this ‘situation 2’, more in-depth data on WASH expenditure needs to be collected, as well as deeper analysis of available data sets.

Unaffordability situation 3: Households have low or zero expenditure, but do not consume the minimum service level

This situation is very common, especially for poor and vulnerable households and remote communities. In many cases they might have a basic water service, for example if they have a protected well within 30 minutes round trip. But in many cases too, they do not have a basic sanitation service. In both the water and sanitation cases, there are considerable hidden costs which include most importantly (a) the amount of time taken to collect water or travel to a place of open defecation, time which could be used for productive purposes; and (b) the health consequences of lower service levels (i.e. that are not safely managed), due to contamination of water at the source or while transporting home; and the spread of disease from open defecation and non-safe management of human excreta from pit latrine, septic tank and untreated sewage. Hence while households might have ‘affordable’ services according to a proxy that is based on expenditure, given that the household members can suffer significant negative consequences of not having an adequate level of service, it should therefore not be considered ‘affordable’.

In both situations 2 and 3, it is important to assess what a minimum service level would cost, and assess the consequences of households paying this cost on their spending on other essential items or their debt levels (if they do not receive subsidies or other types of social protection). This proposal is picked up again under Objective 2 of section 2.3, which covers the approach planned under this present initiative on affordability.

1.4 Aligning national and global efforts to monitor WASH affordability under the SDG

Until now, efforts to monitor WASH affordability globally have been limited, and hampered by lack of data. A number of publications from Henri Smets at the Water Academy, Paris, have documented how countries have monitored affordability and presented some indicative numbers on water or WASH expenditure as a proportion of total expenditure, focusing on poorer households. IBNET also collects the monthly costs of utilities for a basic minimum of water per household per month (6 m³).

To date, two main data sources for monitoring affordability have been used: (1) various types of income and expenditure surveys, which ask households about recurrent water tariffs and sometimes wastewater payments, and (2) utility billing records. However, for both of these, other types of WASH spending are not reflected, either because they are hidden in other broader categories (such as 'utilities' or 'rent'), or excluded (such as periodic capital contributions towards the establishment or rehabilitation of water, sanitation and hygiene facilities). Furthermore, the expenditure data collected refers to a given level of WASH service which when aggregating across populations in different service areas makes it hard to know what service level expenditure data is reflecting for the assessment of affordability.

In July 2017, WHO and UNICEF published the JMP SDG baseline report⁹ which provides estimates in the year 2015 for the new SDG targets and indicators relating to household drinking water, sanitation and hygiene (see Table 2). In this report, data from income and expenditure surveys were drawn on for 52 countries¹⁰. Hence, given the excluded costs mentioned above, such estimates of existing levels of WASH expenditure/affordability present an incomplete picture.

Table 2. WASH targets and indicators in the SDGs

WASH SECTOR GOAL	SDG GLOBAL TARGET	SDG GLOBAL INDICATOR
Ending open defecation	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation , paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Population practising open defecation
Achieving universal access to basic services	1.4 By 2030, ensure all men and women, in particular the poor and vulnerable, have equal rights to economic resources, as well as access to basic services...	1.4.1 Population living in households with access to basic services (including basic drinking water, sanitation and hygiene)
Progress towards safely managed services	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Population using safely managed drinking water services
	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Population using safely managed sanitation services 6.2.1 Population with a basic handwashing facility with soap and water available on premises

Furthermore, the WASH SDG baseline report published by WHO and UNICEF presents expenditure data separately from estimate of the type and level of WASH service that households use, in terms of their accessibility, availability and quality. A point of contention remains over whether WASH access figures should be adjusted downwards for those who are judged to not 'afford' the service they consume, to reflect fully whether the human rights to drinking-water and sanitation are being

⁹ Progress on Drinking Water, Sanitation and Hygiene Update and SDG Baselines. 2017.

¹⁰ Reflecting those countries for whom the World Bank has created harmonized data sets.

respected. Reasons offered for not adjusting coverage numbers for the service affordability are categorized as: (a) empirical / data limitations – regarding the inability to triangulate data on all the human rights components for the same household, as they are extracted from different data sources, and (b) conceptual – the approach to measuring affordability being imperfect – given that the threshold approach does not reflect the willingness of a household to pay nor the true capacity to pay for a WASH service based.

1.4 Conclusion

Therefore, further review and discussion of these issues are needed in order to develop a consensus on how affordability can be better measured and monitored over time, for both national and global monitoring, so that necessary policy and programming interventions can be designed for those groups where access to WASH services is a financial challenge. In the short-term, compromises may need to be made over the quality of data acceptable and the limited spending categories available from surveys and administrative or utility-level data sets, in order to make preliminary assessments of WASH expenditure/affordability, as has been done in JMP’s SDG baseline report. Naturally, there needs to be a longer term strategy related to strengthening the data sets and assessment methodologies, so that households and communities in greater need can be identified and targeted to make WASH services more affordable.

2. Proposal for strengthening global monitoring of expenditure/affordability

2.1 Overall goal

The goal of this initiative is to build a consensus and develop a vision and methodology for monitoring WASH expenditure/affordability globally, based on the human rights to safe drinking water and sanitation. Indicators for monitoring should be linked with the policy responses to make WASH services more affordable. Given other bodies of work on affordability in other sectors and the range of WASH partners with a stake in the outcome of this initiative, the vision and methodology should be developed collaboratively with partners from a range of constituencies. The solutions proposed should be actionable so that WASH affordability can be reported nationally and globally in future JMP reports, with a plan for progressive improvements as more data sets become available. In addition to national and global monitoring, recommendations will be made for how countries can conduct more in-depth assessments of sub-national inequalities in WASH affordability.

2.2 Specific objectives

Based on this goal, four specific objectives have been identified.

1. Objective 1: to generate clarity and consensus around an understanding of what affordability of WASH services means, so that it can be defined and measured.
2. Objective 2: to determine how best to measure WASH affordability with the current data sets.
3. Objective 3: to propose how to incrementally improve national and global monitoring of WASH affordability through improving the quality and availability of national data.
4. Objective 4: to identify ways in which analysis of WASH affordability can inform practical actions to make services more affordable, especially for poor and vulnerable populations.

Each objective provides a basket of different questions for the initiative to answer.

Basket 1 concerns generating clarity and consensus around a basic **conceptualization of affordability**, and ensuring that water / WASH affordability is at least aligned, if not connected with, affordability monitoring across the SDGs.

- What is understood by the term ‘affordable’? How is affordability defined? What is included and excluded?

- How can explicit judgements be made about whether WASH services and behaviours are affordable or not? Can a simple framework / matrix be used to aid interpretation?
- How can WASH affordability be connected with affordability of other basic or essential services?
- How can WASH affordability be understood and defined in a way that directly informs policy and programmatic response?

Basket 2 involves **measuring affordability in an imperfect data world**, given the paucity of data for some variables that are needed for a complete assessment of affordability.

- What are the sources of data to enable assessment of affordability? How complete are these data sources and at what scale? How often are these data sources updated?
- How do we categorise and analyse data available for each WASH cost or expenditure item so that affordability can be assessed?
- How does harmonising data sets¹¹ benefit or limit the data analyses, and impact on the global assessment of affordability?
- Can data gaps be filled or compensated for through combining data sets or making informed assumptions? What is the role of mixed methods work, including qualitative assessments?
- How can income and expenditure data be interpreted to make conclusions about affordability?

Basket 3 consists of the steps that need to be taken to **improve data availability and quality for measuring WASH affordability in the future**.

- What is the usefulness of existing questions applied in different national income and expenditure surveys¹² in terms of comprehensiveness and reliability, and what is the full range of WASH expenditure that could potentially be captured?
- What are the recommendations for reformulating WASH expenditure 'core' questions to gather better data for assessing affordability in income and expenditure surveys? How will international agencies and national statistical offices be engaged to ensure these questions are understood, tested, prioritized, and incorporated?
- What other data sources can complement or fill gaps of household surveys, such as data from utilities, other service providers and goods markets?
- What are the recommendations for conducting more in-depth assessments of sub-national inequalities in affordability through tailored surveys?

Basket 4 covers the **linking of affordability monitoring to policy making and programming**.

- How can WASH coverage and affordability assessments be presented in a way to support better policies and programmes?
- How should different thresholds for expenditure or expenditure/income ratios be interpreted to inform the policy and programmatic response? What context-specific factors affect this interpretation?
- How should the impact of policies and programmes on WASH affordability be tracked?
- How should broader or longer term financing issues be incorporated, such as societal affordability or environmental accounting (full cost pricing)?

¹¹ Such as done for Income and Expenditure Surveys by the World Bank

¹² This involves the provision of questions to global 'owners' of surveys and national statistical offices, who have to select which questions to be included in specific national surveys. The core questions are typically provided by expert groups representing a specific sector. In the case of WASH, the WHO/UNICEF Joint Monitoring Programme has been playing this role, with the inputs of sector experts.

2.3 Approach

The approach for meeting each objective and answering the related questions is described below.

Objective 1. Conceptualization: understanding and quantifying affordability

The key questions to answer are provided in the box.

- ✓ *What is understood by the term 'affordable'? How is affordability defined? What is included and excluded?*
- ✓ *How can explicit judgements be made about whether WASH services and behaviours are affordable or not? Can a simple framework / matrix be used to aid interpretation?*
- ✓ *How can WASH affordability be connected with affordability of other basic or essential services?*
- ✓ *How can WASH affordability be understood and defined in a way that directly informs policy and programmatic response? (this is covered more fully under basket 4)*

An understanding of the term affordable need to be reviewed from the WASH sector as well as other sectors or essential needs, and different options provided. This review will cover essentially what international organizations have published, either as an institutional policy or identified in other publications. The review will also cover what countries have set as an expenditure/affordability benchmark, either nation-wide or in specific coverage areas (such as a utility). The review will include reaching out to experts working in other sectors, and depending on the response, a possible convening of WASH and other sector stakeholders to discuss how affordability can be jointly measured across several SDGs.

In terms of concrete ways to judge whether WASH services are affordable or not, the following four methods are available for household-level assessment of WASH affordability. Only the first of these has been used extensively.

- Threshold approach on WASH expenditure as a percentage of total expenditure or income. This can be done using the actual service and hence expenditure level. However, this will underestimate potential problems of affordability, as many households will not be consuming services that reflect the human rights standard, and second, the available expenditure data typically only covers some but not all WASH expenditure items. Hence, an alternative approach is to estimate what a household would need to spend in order to access a minimum acceptable level of service which would meet the human rights standard. For this to be done, the minimum acceptable level of service would need to be defined in very concrete terms, and in different contexts (as rural might be different from urban for example).
- Willingness to pay measures, using the contingent valuation method. This approach involves asking households what they would be willing to pay for given service levels. There are various strengths and weaknesses of this approach, which need to be explored. The main advantage of the approach is that it takes into account household priorities and eventual choices based on their own situation (constraints, opportunities, preferences). For example, it might happen that a household is willing to pay well above a defined affordability 'threshold' because of the social and economic benefits they recognize as resulting from using a good WASH service.
- Households stating that they are not accessing a preferred water source because they are unable to pay for it. This has some similarities to the contingent valuation methodology, in that it relies on household subjective assessments. However, it is a simpler, more direct way to assess whether there are affordability constraints. If households are not accessing a WASH service, they are given a range of reasons why not, among them "we cannot afford to pay for it" or "we do not want to pay for it". However, it only has the current availability of WASH services within the range of possibilities, and their associated prices.

- An assessment of whether WASH expenditure is leading to a lower consumption of other essential services. If it does, then it implies that WASH services are unaffordable. This interpretation of affordability is seen by some as most within the spirit of the human right. It might, however, implicitly suggest that other essential services are more important than using WASH services. While in reality, (poor) households are having to balance the multiple needs they have and are often consuming all the basic or essential services at a level below what the human rights would imply. Hence, those other essential needs would require listing and a decision made on what are the minimum levels of each good or service. This is commonly done in the drawing up of the poverty line, and often part of decisions around the minimum wage. A further issue relates to how one would develop a questionnaire and expenditure categories to assess the tradeoffs that are happening within a household economy, and whether in fact WASH expenditure is infringing on the consumption of other essential categories.

Hence, each of the above methods or approaches will need to be assessed for how well they reflect the different definitions of affordability (covered earlier) and how well they can be monitored now and in the future based on the data available. Steps to take include:

- Exploring existing practice in the WASH sector and other sectors on affordability thresholds, monitoring approaches, frameworks for interpreting affordability level, and the pros and cons of these practices.
- Conducting further assessment of the potential for including direct questions in household surveys about willingness to pay and affordability.
- Reviewing how to link expenditure on WASH and other essential needs to ongoing poverty and minimum wage assessments. This includes assessing how to construct an ‘augmented’ poverty line, that is, a poverty line that takes into account the full WASH costs faced by households (defined at the ‘basic’ or ‘safely managed’ level of WASH service, or some other).

Objective 2. Measuring affordability in an imperfect data world

The key questions to answer objective 2 are provided in the box.

- ✓ *What are the sources of data to enable assessment of affordability? How complete are these data sources and at what scale? How often are these data sources updated?*
- ✓ *How do we categorise and analyse data available for each WASH cost or expenditure item so that affordability can be assessed?*
- ✓ *How does harmonising data sets benefit or limit the data analyses, and impact on the assessment of affordability?*
- ✓ *Can data gaps be filled or compensated for through combining data sets or making informed assumptions?*
- ✓ *How can income and expenditure data be interpreted to make conclusions about affordability?*

The sources of data for monitoring affordability were assessed in a paper commissioned by the UNOHCHR and the Special Rapporteur in 2012¹³. These sources will need to be revisited and updated regarding the surveys conducted and what other data sources have become available in the past 5 years. It needs to be assessed how the JMP can gain access to national data sets in the future, given most of these data sets are proprietary. The data sources in the 2012 affordability UNOHCHR report were identified based on the indicators proposed in the report, and do not cover the affordability options described earlier on expenditure across essential goods and willingness or ability to pay.

¹³ Hutton G (2012). Monitoring “Affordability” of water and sanitation services after 2015: Review of global indicator options. United Nations Office of the High Commissioner for Human Rights, Geneva.

However, given that household survey questions do not currently include these aspects of affordability, there are no data sources for monitoring at present and proposals will need to be made for future data sources (covered under objective 3).

As a next step, the WASH expenditure (and income) data available from different sources needs to be assessed in terms of exactly which expenditure categories are included and which are excluded. In the SDG WASH Baseline Report, the WHO/UNICEF Joint Monitoring Programme detailed the fuller range of costs for water, sanitation and hygiene separately, classifying them by whether they are recurrent financial, capital financial, or non-financial (see Table 3). While income and expenditure surveys commonly have a question on water tariffs, and some include wastewater tariffs, these tend to capture regular monthly expenditure and not lumpy expenditures on irregular services or varying demand (such as wet and dry season). This has been detailed by the water diary method developed by Oxford University and tested in Kenya¹⁴. Other costs, such as soap and detergent, get lumped together with other household cleaning material costs. Furthermore, WASH capital and maintenance items tend to be bundled as part of housing improvements. Non-financial costs are not captured in expenditure surveys, although some surveys (e.g. DHS, MICS) ask questions about the time for a round journey to collect water.

Table 3. Different costs associated with WASH services

SERVICE	RECURRENT COSTS	CAPITAL COSTS	NON-FINANCIAL COSTS
Water	<ul style="list-style-type: none"> • Water tariff or user fee • Bottled or vendor water • Maintenance fees 	<ul style="list-style-type: none"> • Piped network connection • Water supply construction 	<ul style="list-style-type: none"> • Collection time for water
Sanitation	<ul style="list-style-type: none"> • Wastewater tariff • Public toilet user fees • Maintenance costs 	<ul style="list-style-type: none"> • Toilet construction • Sewer network connection 	<ul style="list-style-type: none"> • Travel time to community facility or open defecation
Hygiene	<ul style="list-style-type: none"> • Purchase of soap • Menstrual hygiene materials • Maintenance costs 	<ul style="list-style-type: none"> • Handwashing station • Bins for menstrual materials 	<ul style="list-style-type: none"> • Collection of water for handwashing and anal cleansing

Given different expenditure categories, the World Bank has made significant progress in harmonizing data sets. This simplifies considerably the task of analyzing hundreds of data sets across almost 200 countries, but the process of simplification and recategorizing expenditure is a major task and in some cases it risks excluding less common questions (e.g. those unique to a country).

Given the missing cost items, a question arises as to whether some of these gaps can be filled by adding the expected additional costs of accessing a minimum acceptable service to those costs captured for a household. This might involve a minor cost adjustment based on their current service levels rather than necessarily imagining a complete overhaul of service providers. For households in slum areas, this might mean adding the cost of using public toilets, if they meet the minimum acceptable service level. For households supplied with microbiologically contaminated, it might involve adding the cost of a reliable water treatment system at household level. The validity and ease of implementing such an approach needs to be examined in greater detail.

¹⁴ REACH Consortium led by Oxford University. Publications pending.

On the other hand, if households are currently consuming a very low (or no) service level, then there will be more gaps, as the expenditure will also be low. In fact, the cost of a minimum level of WASH services that meets human rights standards might be large, but either those services may not be currently available or it might not be demanded due to the unaffordable costs. Hence, one approach could be to estimate the full cost to a household of accessing a minimum acceptable level of WASH services, and compare this with the household expenditures or incomes of different income groups, especially the poorest. Ideally, the costs estimated would reflect as closely as possible the context in which the assessment is being made, based on existing services from similar contexts or tailored 'engineering' costing studies (like a pre-project budget estimate).

Alternatively, given the lack of data on all the expenditure categories in Table 3, it might be preferable to lower the affordability benchmark to only cover the monthly water and wastewater tariff. Naturally, this is most relevant for those with utility services and/or a system of regular billing. This approach is an imperfect way of reflecting affordability using a benchmark approach, but it may add to the ability to properly interpret the imperfect and incomplete data sets available on WASH expenditures.

A further issue that needs to be addressed is related to the fact that many expenditures are not monthly or annual, but are 'lumpy' such as capital investment, rehabilitation and maintenance. This is the case when the service tariff does not include annuitizing¹⁵ capital items. Hence, should separate assessments be made of the affordability of capital items versus the affordability of recurrent items? The argument for adopting this approach is that it allows separate assessment of different expenditure streams, whereby capital costs might be unaffordable to a household due to a lack of funds for cash outlay, but where monthly recurrent cost might be affordable. This can lead to specific recommendations for the equitable and affordable financing of capital costs such as through (subsidized) microfinance. Or instead should capital and recurrent costs be merged, such as by annualizing the capital items (cost divided by expected life duration) and adding it to the recurrent cost? The advantage of this approach is that it gives a single conclusion on affordability taking into account all costs together.

A final issue to resolve is that of whether the non-financial costs of household WASH access should be included. Services that are nominally free often need the time of household members, such as hauling water or finding a place to openly defecate. Time has a value, whether it is for income earning, other productive use, future economic value (e.g. school time) or leisure time. Many poor households suffer from time poverty, in that time is devoted to energy needs (e.g. collecting firewood) and water needs, and therefore reduces the time available for income-earning or other productive activities. Also, previous JMP reports have shown that about 15% of water haulers are children and 62% are women¹⁶, with subsequent impacts on health and time spent at school. The common challenge in economic evaluation is to decide on an appropriate value of time for different population groups, which vary by productive status and income level.

The proposals for dealing with these challenges outlined above need to be written in a methodology note and tested in a number of countries.

¹⁵ In this case, annuitization means breaking down an investment expenditure into an annual value, so that the costs can be spread out over the lifetime of the investment. Some utilities use this methodology to charge the costs of capital replacement to the customer.

¹⁶ Based on MICS and DHS surveys from 25 sub-Saharan African countries. JMP 2012 Report.

Objective 3. Improving data availability for measuring WASH affordability now and in the future

The key questions to answer for objective 3 are provided in the box.

- ✓ *What is the usefulness of existing core questions applied in different national surveys and what is the full range of WASH expenditure that could potentially be captured?*
- ✓ *What are the recommendations for reformulating WASH expenditure 'core' questions to gather better data for assessing affordability in routine income and expenditure (or other) surveys?*
- ✓ *How will international agencies and national statistical offices be engaged to ensure these questions are understood, prioritized, and incorporated?*
- ✓ *What other data sources can complement or fill gaps of household surveys, such as data from utilities, other service providers and goods markets?*
- ✓ *What are the recommendations for conducting more in-depth assessments of affordability through tailored surveys?*

The broad assessment of data sources conducted under objective 2 will be the basis for assessing how these data sources can be improved for future monitoring of affordability, or introducing new data sources.

A first task will be to further develop the list of expanded questions for household surveys in order to better capture all WASH expenditure items relevant for a comprehensive affordability assessment. Given the space limitation in household surveys that are already very long, it will be necessary to prioritise and shortlist the expenditure items that capture the main costs items in a majority of different settings. In particular, it will be important to capture the WASH costs of non-utility service providers. This means capturing lumpy expenditures over 12 months prior to the survey (which is the maximum recall time in a survey), taking into account that prices, quantities and sources might vary considerably over a single year period. In addition, capital items need to be better captured in terms of their value and regularity and expected duration for which a hardware item lasts.

When reviewing the core and expanded questions to measure WASH affordability, there is an opportunity to better capture water needs and expenditures for other uses, given their importance in the economy of (especially rural) households.

A second area to explore is the sampling used in national surveys, the level of disaggregation they allow, and how well they reflect different population groups. For example, some poor and vulnerable groups might not be well represented in national surveys due to their small number or because they are limited to certain pockets which might not be selected with a random sampling methodology. To allow more information to be gathered on these groups, it might mean adjusting the sampling procedures of the national survey (e.g. to oversample some groups), or alternatively it might mean conducting specific surveys for those groups. The latter approach allows more detailed questions to fully capture WASH expenditures for these groups.

Given the limited numbers of questions on WASH expenditure that can be added in existing surveys, it will be important to explore the potential of obtaining expenditure data from other data sources needs. These data can either cover the full cost of WASH services, or they might cover some of the missing expenditure categories from household surveys. Other sources of data include new surveys, current prices of goods in markets (e.g. water filter, latrine parts), providers of credit/microcredit, or WASH service providers.

Objective 4. Linking affordability monitoring to policy making and programming

The key questions to answer for objective 4 are provided in the box.

- ✓ *How can WASH coverage and affordability assessments be presented in a way to support better policies and programmes?*
- ✓ *How should different thresholds for expenditure or expenditure/income ratios be interpreted to inform the policy and programmatic response?*
- ✓ *How should the impact of policies and programmes on WASH affordability be tracked?*
- ✓ *How should broader or longer term financing issues be incorporated, such as societal affordability or environmental accounting (full cost pricing)?*

Various questions need to be answered in order to make the results of affordability monitoring relevant for policies and programmes. For example:

- How can WASH coverage be presented together with the affordability assessments? How can the service levels of different groups be included, to make judgements about affordability of *what*?
- As posed by Brown and Heller (2017)¹⁷, how can pricing applied to WSS serve the triple function of:
 - Providing the maximum possible benefit to all users in accessing safe, quality WASH;
 - Recovering funds necessary to cover the multiple costs involved in administering WASH; and,
 - Ensuring environmental protection?
- Related to this, what is the price elasticity of demand (PED) for WASH services¹⁸? How can the PED be interpreted and used?
- How do different policy responses perform on making services more affordable for the targeted groups? For this question, various mechanisms need to be assessed, for example¹⁹:
 - Regulatory or legal mechanisms (e.g. design and implementation of regulations; formalization of services; complaints mechanisms); and
 - Economic mechanisms (e.g. tariff structures allowing cross-subsidy such as block tariffs; direct subsidies whether targeted or blanket subsidies; efficiency or competitive measures to lower the unit costs).
- How do you track the impact of policies to address affordability when implemented?

For the performance of policy responses, it will be important to review the experience of countries in responding to affordability challenges. Initially a broad and rapid review is needed of country case studies that could serve as examples. A mix of developed and less developed countries is needed.

In addition to household affordability, policy analyses cannot ignore that the costs have to be paid from one of the 3 Ts (tariffs, transfers, taxes). Hence, an exploration is needed of how to link household affordability with broader issues of societal affordability taking into account the full production costs and sustainability considerations where full water pricing takes into account long-term water availability. Also, the affordability of WASH services for public institutions, especially schools and health care facilities, needs to be addressed.

¹⁷ Brown C and Heller L (2017). Affordability in the provision of water and sanitation services: Evolving strategies and imperatives to realise human rights. *International Journal of Water Governance* 5(2): 19–38

¹⁸ The extent to which demand for a service changes when the price changes.

¹⁹ *ibid*

In setting price levels for services, there are many considerations to take into account. Hence, an assessment is needed of the principles for pricing. For example, financial pricing, economic pricing, ecological pricing and social pricing need to be compared.

2.4 Summary

Table 4 presents a summary of outputs, methods and deadlines for the main four baskets of questions to answer.

Table 4. Outputs, methods and deadlines

Basket	Output	Method	Deadline	
Overall	Invite stakeholders to expert group	Email/calls	02/2018	
	Hold webinar of expert group	Webinar	03/2018	
	Recruit consultants	UNICEF procurement	03/2018	
	Event at UN Statistics Commission	Side event	03/2018	
	Revise concept note and methods	Revised concept note (1)	04/2018	
	Agreement of roles and contributions	Consultation	04/2018	
	Consolidated report	Consultation Final report (9)	12/2018	
Basket 1	Conceptualization of affordability, including review of other sectors	Literature review	03/2018	
		Convene other sectors	04/2018	
		Feedback of expert group	04/2018	
		Report (2)	05/2018	
	Assessment of options for quantifying WASH affordability	Literature review	03/2018	
		Analysis of options performance Report (2)	04/2018 05/2018	
Basket 2	Update list of surveys conducted per country, with relevant questions covered per survey type	Literature reviews Analyses Report (3)	03/2018	
	Assessment of harmonized data sets – status and potential		03/2018	
	Compile other data sources		03/2018	
	Assess data gaps per expenditure item and methods to fill data gaps		04/2018	
	Methodology guidance document for country case studies		Methodology options (4)	05/2018
	Conduct country case studies		Country case studies Synthesis report and findings (5)	10/2018
Basket 3	Develop expanded questions and prioritise these for core questions (including broader water expenditure)	Literature review Consult with survey owners Report (6)	03/2018 04/2018 09/2018	
	Assess sampling in surveys for population groups facing affordability constraints	Literature review Report (6)	06/2018 09/2018	
	Assess potential of other data sets (service providers, markets)	Literature review Report (6)	06/2018 09/2018	
Basket 4	Assessment of affordability – policy /programme linkages, and different responses to lack of affordability	Literature review Report (7)	04/2018 05/2018	
	Country case studies on policy /programme responses	Country case study and analysis Report (8)	07/2018 10/2018	
	Societal affordability and principles for pricing	Literature review Report (8)	07/2018 10/2018	

Some of the major steps are:

1. Formation and functioning of expert consultative group (see below);
2. Consultation and finalization of concept note, and agreement of roles;
3. Literature reviews and information gathering to answer key questions;
4. Guiding methodology for implementation of country case studies (monitoring);
5. Selection and conduct of country case studies for monitoring and for policy responses;
6. Report writing (baskets 1 to 4), draft synthesis report, consultation and final report.

Working group of international experts and representative institutions

The expert working group will serve as a sounding board for proposals and reports presented by the core team. The purpose is to co-create a vision for measurement and monitoring of WASH affordability globally, and ensuring it is closely linked to policy and programme response. The expert consultative group will review and comment on proposed methodology options for measuring affordability at national level, and review the case study findings and implications for global monitoring. Some working group members will offer their countries as case studies, while others will contribute to the implementation of the case studies –through providing access to data bases, conducting the analyses and reviewing the results.

The members that will be invited include, but are not limited to: selected members of the UN Statistical Commission; UN Statistics Division; World Bank and other Multilateral Development Banks; International Household Survey Network; Owners of other data sets / evidence programmes such as IBNET (World Bank), TrackFin (UN-Water/WHO) and IRC (WASHCost); the academic community; the Human Rights community, including the UN Special Rapporteur; other interested member states, covering programme and non-programme countries; regulators (WHO RegNet members); and potentially international NGOs implementing large WASH programmes, providers of microcredit for WASH, and other sector representatives and relevant civil society organisations.