

ACCESS TO IMPROVED WATER SOURCES IN YEMEN

Secondary Data Review, July 2017



BACKGROUND

Yemen is among the most water-stressed countries in the world, due to a naturally dry climate, regional drought in recent years and falling groundwater levels due to unsustainable drilling¹. **Even before the escalation of the current conflict in March 2015, only a little over half of Yemen's population (59%) was able to access drinking water from an improved source².** The 2017 Humanitarian Needs Overview reports that access to safe drinking water represents one of the main priorities for affected populations, with no information however on how many people are in need and how situation has changed since the onset of the conflict.

To support the Yemen WASH Cluster planning, REACH conducted a review and analysis of indicators on water sources at governorate level, or lower, in existing reports. The objective of this secondary data review (SDR) was to identify and compare the proportion of households having access to an improved water source prior to March 2015 and in 2016-2017, in order to provide insights on ongoing trends since the beginning of the crisis on water access, as well as on one of the underlying factors of the cholera outbreak.

¹ C. Douglas, "A Storm Without Rain: Yemen, Water, Climate Change, and Conflict", *The Center For Climate And Security*

² The 2006 Multiple Indicator Cluster Survey (MICS 2006); The 2013 Demographic and Health Survey (DHS 2013)

Funded by:



METHODOLOGY

Data Sources

Identified and reviewed data sources included 5 country-wide reports, the Standardized Monitoring and Assessment of Relief and Transitions surveys (SMART) for 6 governorates and 43 reports from national and international organisations. The following pre-crisis datasets were included in the analysis: the 2013 Demographic and Health Survey (DHS) and the 2014 Comprehensive Food Security Survey (CFSS). The recent data sources included in the analysis were the 2016 Emergency Food Security and Nutrition Assessment (EFSNA), the SMART surveys from 2016 and 2017 for six governorates, as well as gender-focused survey conducted by CARE, Oxfam and GenCap (Care/Oxfam)³.

The following data sources were reviewed but could not be included due to several issues. From the pre-crisis nationwide surveys, the 2004 Census proved impossible to integrate due to its water source classification that was incomparable with other datasets. The 2014 Emergency Food Security and Nutrition Assessment (EFSNA 2014) was not included because no breakdown by water source was available. The data from the 2006 Multiple Indicator Cluster Survey (MICS) were not representative at governorate level, so it was also excluded. However, this dataset has been used while looking at national level comparisons.

³ From the ground up: Gender and Conflict Analysis in Yemen; Care International, Oxfam Great Britain, the Gender Standby Capacity Project (GenCap) of the Inter-Agency Standing Committee (IASC), October 2016

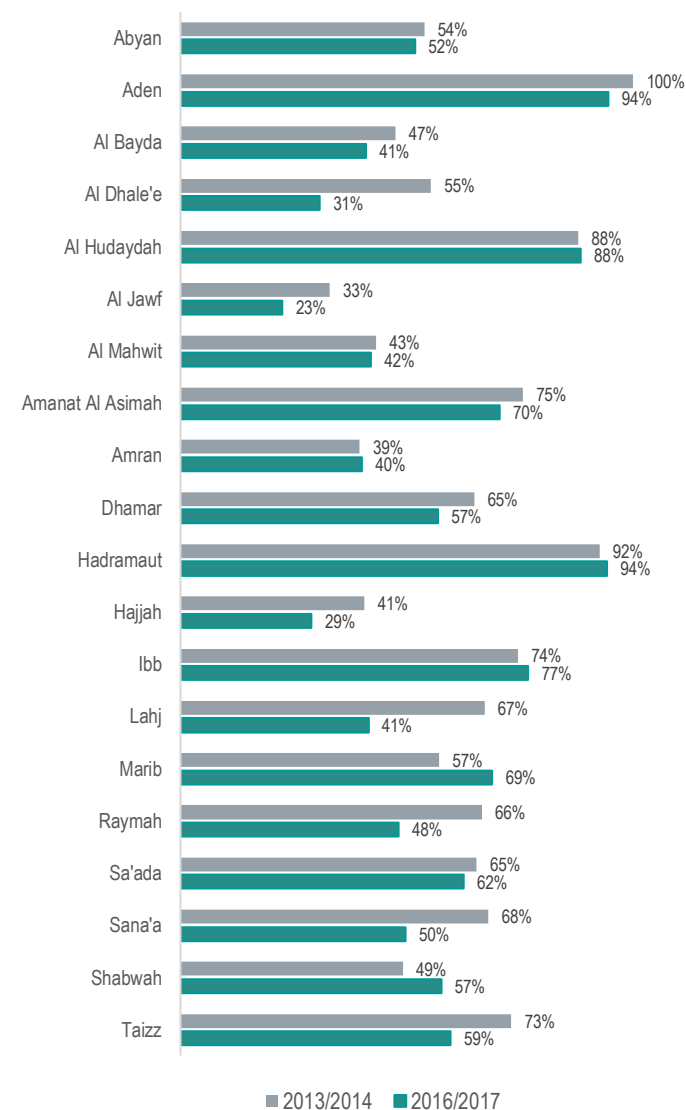


Figure 1. Proportion of households with access to improved water sources pre-crisis (2013-14) and in-crisis (2016-17), by governorate

Localized assessments conducted by individual agencies and gathered by the WASH Cluster were classified through basic criteria and reviewed if relevant indicators were included. Unfortunately, a vast majority of them lacked available datasets, or relied on an inaccurate methodology for SDR purposes.

While some surveys also included indicators on access to improved sanitation facilities and drinking water treatment by households prior to 2015, data on the current situation were not sufficient to conduct comparative analysis. All consolidated datasets have been shared with the Yemen WASH Cluster Coordination Team and are available on request.

Water Source Categorisation

The lack of or different classifications of the water sources in nearly all of the assessments turned out to be the main challenge in the analysis to the extent that it was impossible to use data from the 2004 Census (see above). To address this issue, the WASH Cluster created a comprehensive list of water sources for the Yemen context classifying them as either improved or non-improved in line with the Joint Monitoring Program (JMP) for Water Supply and Sanitation guidance⁴.

To ensure comparability of data, a reorganization of some of the data was done following the above mentioned categories, which explains why some of the values presented in this document differ from the original reports. For example, the bottled water was considered by some sources as improved (DHS, CFSS, MISC, Care/Oxfam) while by others as unimproved (SMART, EFSNA). In the final categorisation it was classified as an improved source due to the fact that information on secondary water sources were not collected in most cases, making it impossible to follow the JMP guidance,

and that the 2013 Demographic and Health Survey classified bottled water as an improved source. In the Yemen context, it does remain one of the most reliable sources of clean water, along with the piped network. That being said, it is clear that the quality of bottled water is not consistent and that further tests would need to be conducted to determine its safety. Bottled water is not the only water source for which the level of safety is uncertain. Indeed, none of the water sources in Yemen can currently be considered 100% safe as there was, and still is, no systematic testing done for the various sources. This explains why the indicator analyzed here can only measure access to improved water sources, and not its safety.

IMPROVED	Safely managed
	Piped water into dwelling, compound, plot or yard
	Basic
	Piped water connected to a public tap/standpipe
	Borehole or tube well
	Protected well (dug or artesian)
	Protected rainwater
	Protected spring
Bottled water	
UNIMPROVED	Unimproved
	Water trucking (truck or cart with trunk/drum)
	Illegal connection to piped network
	Unprotected rainwater tank
	Unprotected dug well
	Unprotected spring
Surface water	
River, dam, lake, pond, stream, canal, irrigation channels	

Table 1. Yemen WASH Cluster Adaptation of the JMP Drinking Water Ladder

54% of people have access to a **free improved water source**

25% of people have access to a **free, but unimproved water source**

21% of people have to pay to access **any water source**

Calculations

The water sources included in each of the datasets have been reorganized according to the classification explained above. Based on that, the percentage of households with access to improved water sources per governorate has been calculated for each dataset. Subsequently, governorate level values have been compared between data sources and extreme outliers were removed. To get the final value for access to improved water sources for each governorate, an average of all available figures was calculated. Overall, it was possible to calculate the average for all but two governorates – data on Al Maharah was not available, while only one data source exists for Socotra (CFSS 2014). The minimum variation between pre-crisis and in-crisis values considered as representing a change in the situation for this analysis is 5%.

All estimations of population with access to given water sources have been calculated for the 20 assessed governorates based on population projection for 2014 from the Central Statistical Office for pre-crisis data and Task Force for Population Movement estimations for 2016 data⁵.

⁴ [Joint Monitoring Program for Water Supply and Sanitation guidance. WHO/UNICEF, 2015](#)

⁵ Task Force For Population Movement 11th Report, October 2016

FINDINGS

While all the data sources included in this review provide findings only at governorate level, specific dichotomies can be noted at national level, in particular: **the difference in access to improved water sources between urban and rural areas is significant – respectively 74 % and 52 % of households⁶**. Socioeconomic status has an even bigger influence – access ranges from 28% among the poorest households to 82% among the richest⁷. The results of EFSNA 2016 also indicate differences due to displacement status, with host communities having a highest access to safe water (54%) than IDPs and returnees (46% and 44% respectively).

Access to Improved Water Sources

Considering that pre-crisis data show that only around 6% of the population appropriately treat the water before drinking⁸, the lack of access to improved water sources can be considered an indication of the proportion of households using unimproved water for drinking.

A decrease in households' access to improved water sources was noted in 11 of the 20 analysed governorates; 7 show little or no change, while an improvement was reported in 2 of them. Overall, the number of governorates where less than half of the population can access water from improved sources has almost doubled between 2014 and 2016.

The highest access to improved water sources (69% of the population and more) has been noted in locations with developed piped network (Aden, Al Hudaydah, Hadramaout, Ibb and Marib) or affordable bottled water (Amanat Al Asimah).

⁶ MICS 2006

⁷ Ibid.

⁸ MICS 2006; DHS 2013

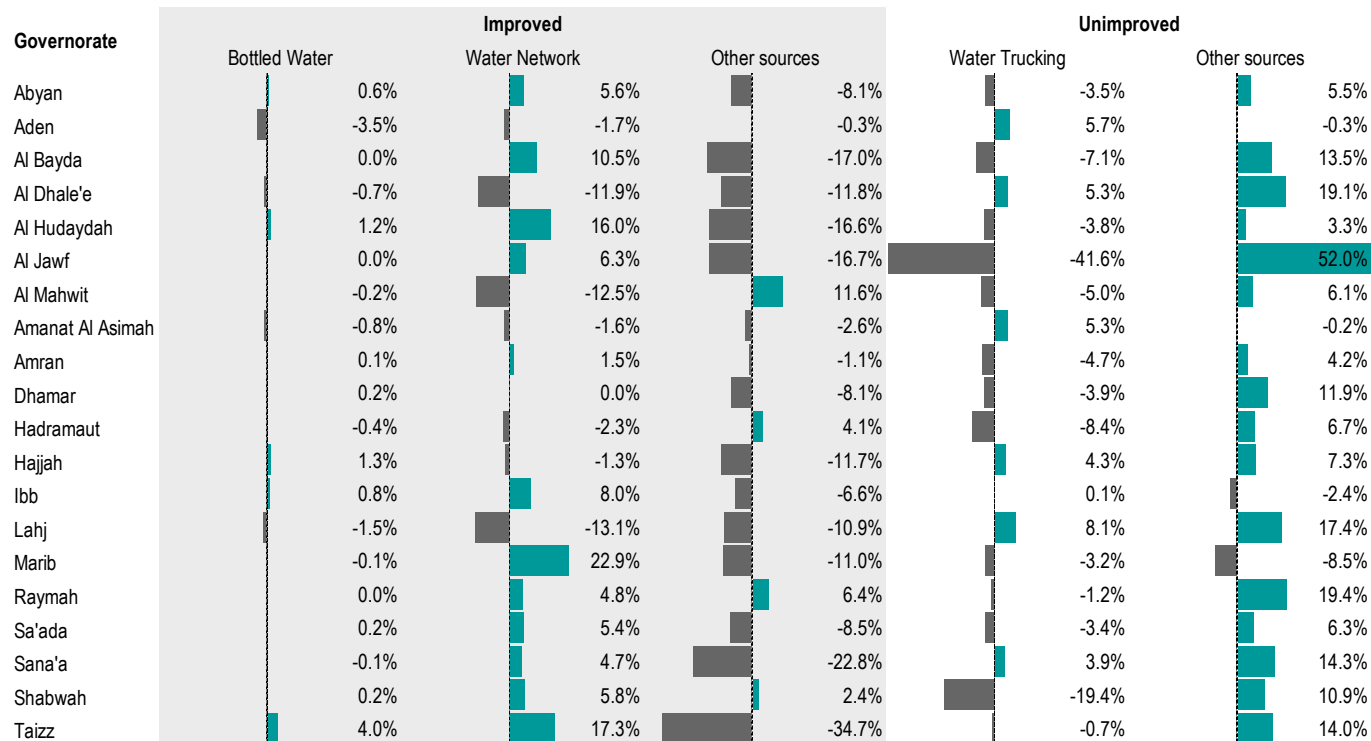


Figure 2. Change in type of water source used by households as primary source from pre-crisis (2013-14) to in-crisis (2016-17)

These location also experienced little or no reduction in access to improved water sources compared to the pre-crisis situation.

Governorates with the lowest access to improved water rely mostly on free non-improved water sources, with around half of the population using such sources in Al Jawf, Hajjah, Al Mahwit and Raymah. As it could be expected, all governorates which experienced considerable decreases in access to improved water (more than -10%) since 2014 show a predominant shift to free unimproved water sources.

The Role of the Water Network

In 2013, only 30% of the population was connected to piped network, with an important discrepancy between urban and rural areas (42% and 25% of households, respectively⁹), compared to the average of 96% in the North Africa and Middle East region¹⁰. Analysed data for 2016 indicate none or a small increase in piped network coverage with around 38% of the population reached in the 20 assessed governorates.

⁹ DHS 2013

¹⁰ World Bank, Yemen Preliminary Damage and Needs Assessment, 2015

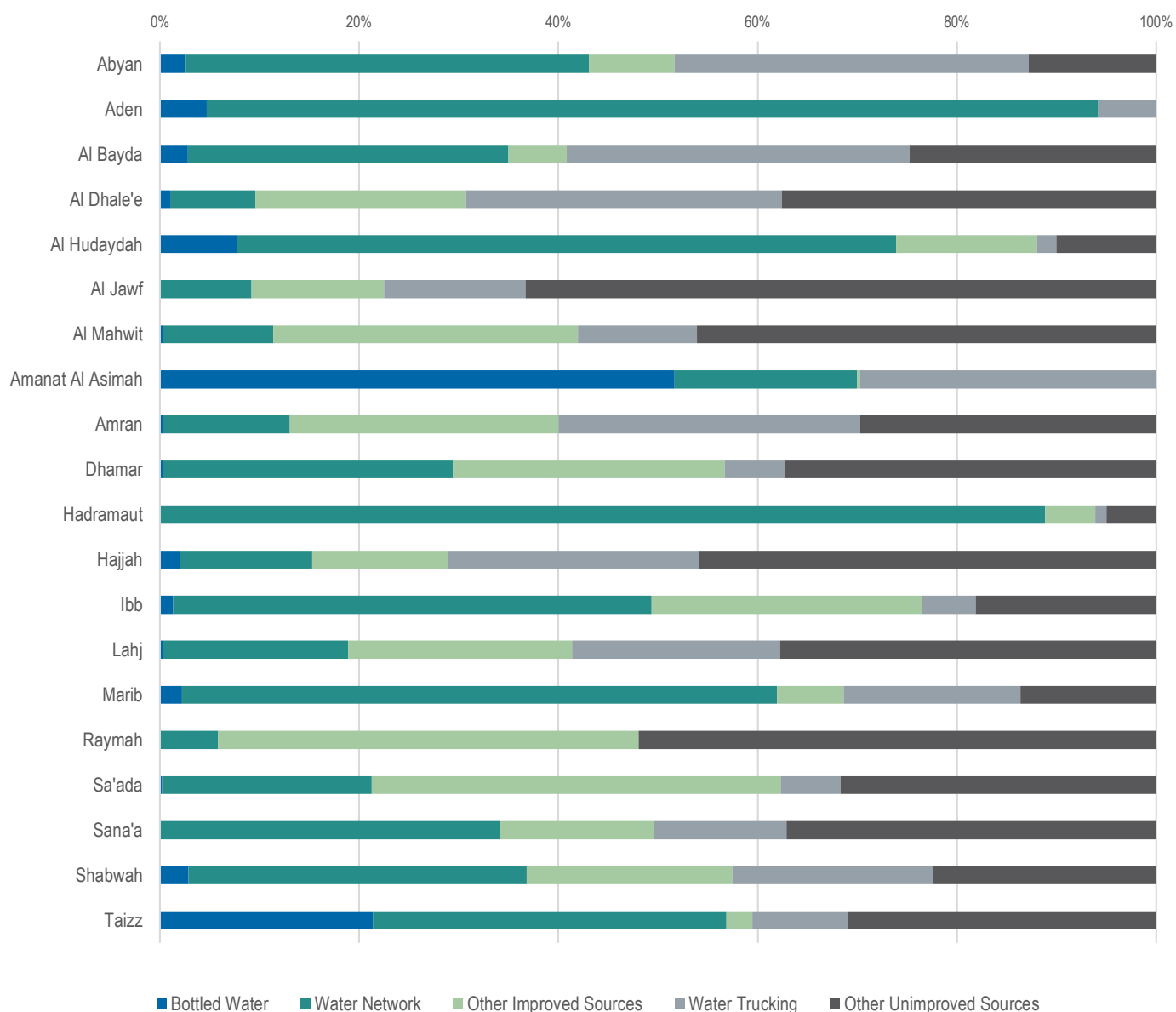
Despite the severity of the crisis, some governorates exhibited an improvement in access to improved water sources. Initial analysis pointed to the efforts of local and humanitarian actors to maintain a functioning municipal water networks. The case of Marib, where the proportion of the population using the water network has increased by 23% since 2014 and where fuel assistance was provided by humanitarian actors to local water corporations during 2016, is a good example. Since the increased usage of the network was accompanied by a decrease in the use of other water sources, it translated in an overall increase in access to improved water sources. This was not the case in all governorates where access to the network increased: in Al Bayda, Al Hudaydah and Taizz, the increased network access (at least 10%) was ultimately offset by decreased usage of other improved water sources (and not unimproved), leading to a lack of noticeable improvement at governorate level.

The proportion of households using the water network has decreased in three governorates (Al Mahwit and Al Dhale'e by -12%, and Lahj by -13%). While no significant damage to infrastructure has been noted in these areas, the lack of network functionality may be linked to fuel shortage.

Purchase of Water by the Population

The needs of households not connected to public piped network are met by an unregulated private sector, through tanker-trucks, carts with tank and bottled water. The 2016 surveys report that in six governorates, 30% of the population have to pay to access water from improved sources, with this proportion as high as 81% in the capital city of Sana'a. Furthermore, in 7 out of the 20 assessed governorates, more people rely on water trucking than on connection to piped network.

Figure 3. Primary water source type used by households per governorate in 2016-17



The total number of people using water trucking services as a primary source of water is estimated to be around 4 million, or 15 % of the population, in the 20 assessed governorates.

The use of bottled water remains unchanged pre and post 2015, with only a limited part of the population relying on it (6%). Exceptions are Amanat Al Asimah (52%) and Taizz (21%), the biggest cities in Yemen, where bottled water is easily available and considered as a safe option.

Significant reductions in the use of water trucking were reported in Al Jawf and Shabwah (-42% and -19%), which are not linked to significant increases in the use of the water network or of any other improved water sources. As a result, these decreases could be linked to a loss of purchasing power or to external barriers in supplying water through trucking, such as fuel shortage or insecurity hampering delivery.

CONCLUSION

This analysis exercise highlighted that the amount of quality WASH data remains very low in Yemen, especially in-crisis one. The Yemen WASH Cluster assess that one of the main causes relates to the fact that the various assessment formats that actors use to collect data are incompatible and inconsistent, and cannot be analyzed against each other. It is hoped that this issue will be addressed by the harmonization process the WASH Cluster and its partners have been rolling out recently, which should permit to slowly build a national operational WASH dataset.

Similarly, as pointed out in the methodology section, one of the main challenges faced during the SDR was that nearly all of the assessments had either a different classification of water sources or no explanation of which water source was considered as improved. The categories from the 2004

census, for example, were so different from all others that it was impossible to use the data for comparison. To address that challenge, the WASH Cluster created a comprehensive and standardized list of water sources in line with global guidance and classified for the Yemen context.

Furthermore, the Yemen WASH Cluster is aware that to ensure that affected populations receive an adequate response, clarification and classification of which of the different water sources are considered safe will be needed. In Yemen, there is currently no agreement on which water source is considered safe, so the recommended next step would be to determine which sources are considered safe through extensive randomized water testing. Beyond an access to an improved water source, what ultimately matters is the safety of the water. It will be crucial for WASH partners to conduct extensive and nationwide water testing to be able to ensure population are provided with safe water.

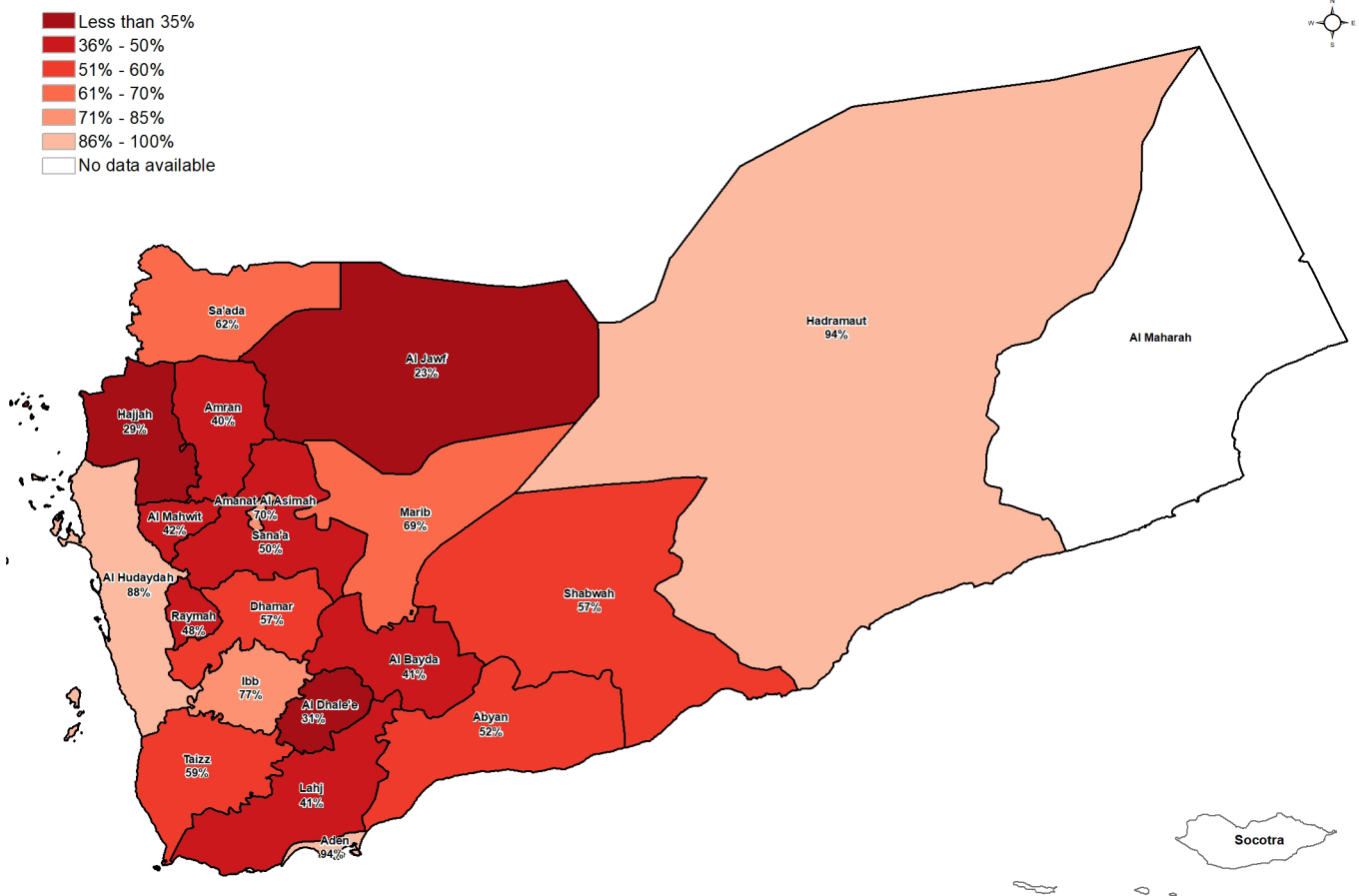
The results of this SDR show that the efforts of humanitarian partners have contributed to maintaining (or in some cases even improving) access to the piped water network. However, supporting the operation and maintenance of these networks is costly, and requires flexible and reliable funding to continue this activity. If this support would not be available, people in these governorates would likely shift from piped water network to a paid or unimproved water source. Therefore, efforts to operate and maintain the existing water infrastructure should continue and scaled up to include water projects in Al Mahwit, Al Dhale'e and Lahj where access to piped network has decreased in the last years.

It must be noted that the 21% of the population currently paying to access water only considers bottled water and water trucking. In Yemen, people are generally expected to pay to access water through piped network or boreholes, since this

is required to cover operation and maintenance cost of these water supplies. However, in the last two years revenues of water corporations have gone down significantly, which has reduced the ability of Local Water Corporations to operate the networks, and this is where they rely heavily on humanitarian partners for support. The payment for water also needs to be contextualized for the Yemen crisis, where government salaries have not been paid for months and many have lost their livelihood. Reduction in income and increase in fuel prices could potentially negatively affect access to sufficient water, especially in areas where people rely heavily on purchased water. To understand better these dynamics, the WASH Cluster is planning to monitor price of water trucking, starting in areas where a large part of the population relies on this type of water supply.

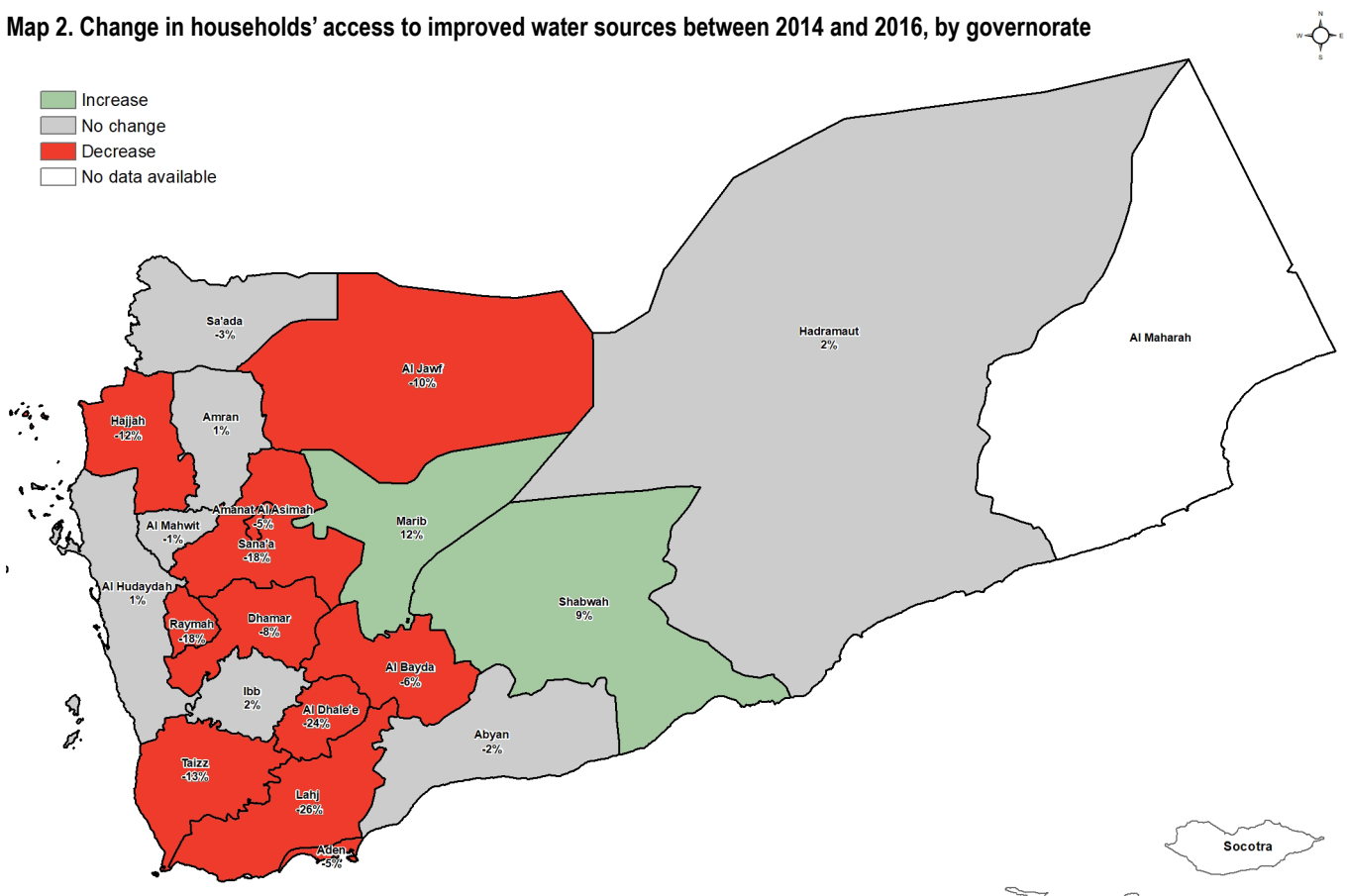
Governorates that have very low access to improved water also require further attention from the WASH Cluster, either through enhanced efforts to promote household water treatment and safe storage practices, or through providing people with sustainable access to an improved water source.

Map 1. Households with access to improved water sources in 2016, by governorate



Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the REACH partners, associated, donors mentioned on this map.

Map 2. Change in households' access to improved water sources between 2014 and 2016, by governorate



Note: Data, designations and boundaries contained on this map are not warranted to be error-free and do not imply acceptance by the REACH partners, associated, donors mentioned on this map.