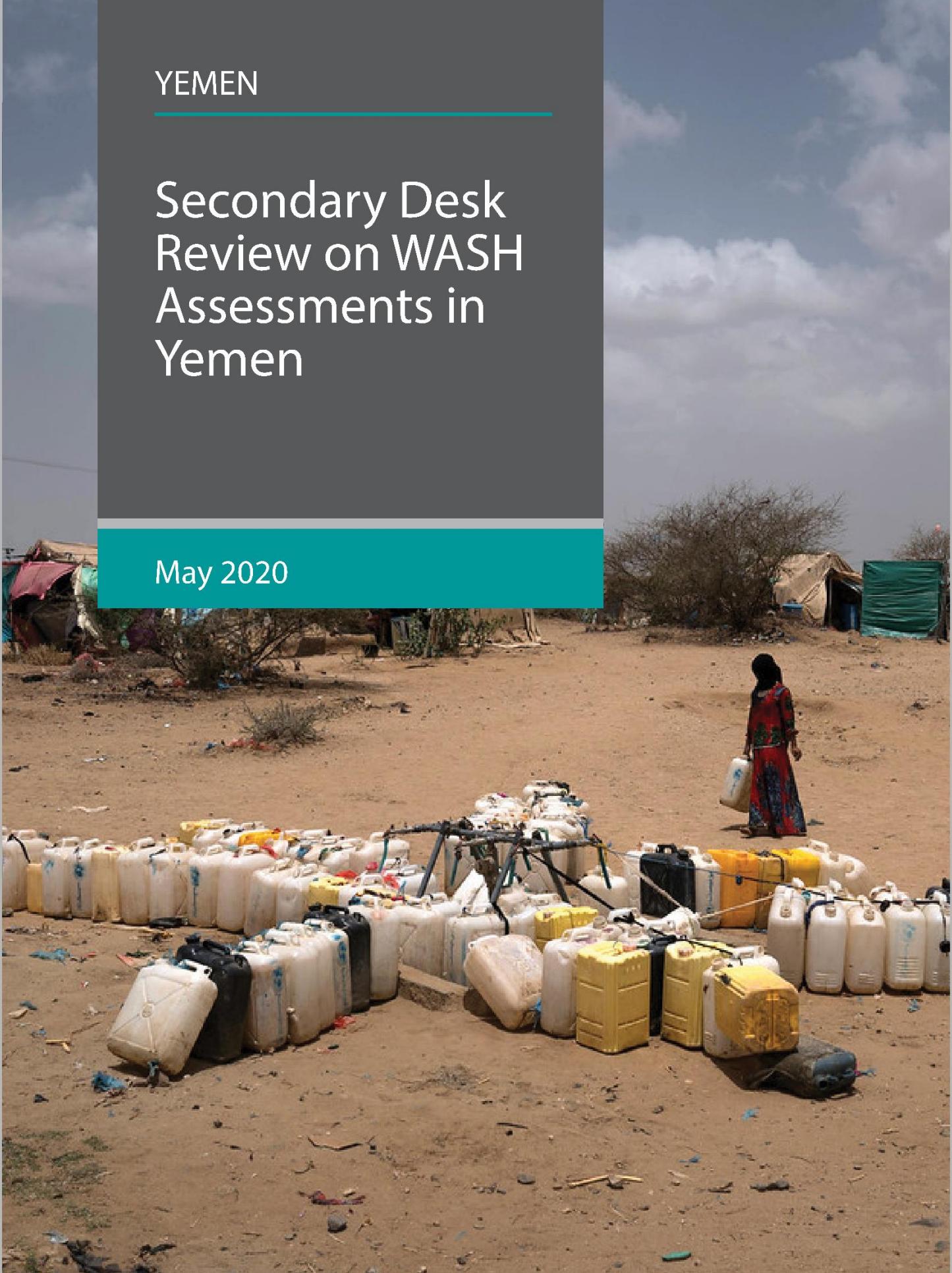


YEMEN

# Secondary Desk Review on WASH Assessments in Yemen

May 2020



## SUMMARY

### Introduction

Yemen has been in crisis since 2015, with conflict and continued political and economic disruptions resulting in increased levels of poverty as well as large-scale displacement.[1][2] High levels of malnutrition and recurrent cholera and dengue fever outbreaks across the country put strain on the already overstretched health care system, which are only able to provide half of the currently required capacity.[3] With the arrival of COVID-19, it is expected that the health situation in the country will worsen, as this situation will disproportionately affect vulnerable groups, including those who already live in poverty.[4][5] One of the driving underlying factors of disease outbreaks and high malnutrition rates is a lack of access to clean and safe water, improved latrines, adequate environmental sanitation, and soap.[6][7] In 2019, it was estimated that over half of the population (55%) did not have access to safe and clean water, and that almost half (45%) did not have access to soap due to economic reasons. The 2019 Yemen Humanitarian Needs Overview estimated that over two thirds of Yemenis were in need of Water, Sanitation, and Hygiene (WASH)-related assistance, with 12.6 million of those in acute need of support.[8]

Due to a lack of comprehensive, nationwide WASH needs assessment data, the Yemen WASH Cluster (YWC) initiated this Secondary Desk Review (SDR) to collate existing information related to WASH needs in Yemen. The main objective of the SDR is to better understand the severity of WASH needs across the country, as well as the underlying causes of these needs, in order to inform appropriate response planning and resource mobilization. Findings will also be used to inform the calculation of the WASH People in Need (PIN) and district severity score figures for 2020. This SDR was conducted jointly by REACH and the YWC in collaboration with ACAPS.

In order to analyse the severity of WASH needs, the following four steps were undertaken. Further details about the Methodology can be found in the [Methodology](#) section of this report, as well as in [Annex 1](#).

Figure 1: Severity Score and PIN Calculations

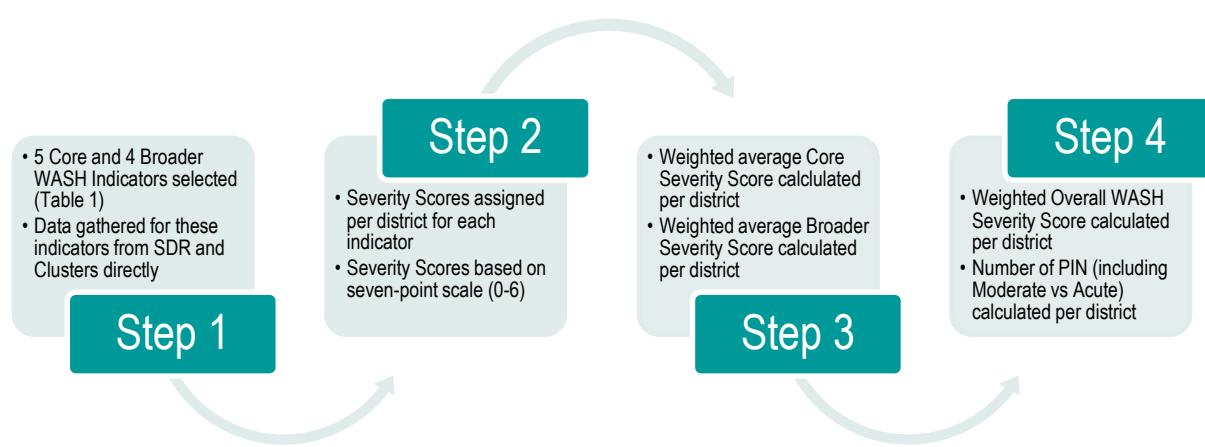


Table 1: Indicators and Weighting

Indicator	Source	Weighting Core + Broader Severity Score	Weighting Overall Severity Score
CORE	SDR	22%	60%
Access to improved water sources		22%	
Access to minimum water quantities needed		22%	
Access to functional and improved sanitation facilities		22%	
Access to adequate environmental sanitation		17%	
BROADER		17%	40%
Access to functional handwashing facilities and soap			
Global acute malnutrition rate	Nutrition cluster	38%	
Cholera attack rate	Health cluster	37%	
Infrastructure access rate	GIZ	20%	
Flood susceptibility rate	REACH 2020	5%	

## Key Findings

The secondary literature review retrieved 117 reports that matched a set of inclusion criteria.<sup>1</sup> These reports covered 110 of the 333 Yemeni districts (33%). In 16 districts both Internally Displaced Person (IDP)-hosting sites as well as mixed populations were assessed, whereas in 55 districts, only mixed populations were assessed, and in 38 districts only IDP hosting sites were assessed. Not all assessments report on all of the five indicators used for this study. As such, when discussing each of the five indicators individually in this report, the number of districts with findings on each of these indicators will vary. For 223 districts, no assessments were available or met the inclusion criteria.

In total, **16.1 million people were found to be in need of WASH assistance**. Of these, **10.4 million are in acute need**. Compared to last year, the number of PIN has decreased by 1.7 million, and the number of Acute PIN has decreased by 2.2 million. Access to safe, clean, and proximate water sources remains one of the highest needs in Yemen. Of the 66 districts where mixed populations were assessed, **49 districts (74%) were assessed to be in acute need of improved access to water**.<sup>2</sup> A lack of improved access to water is particularly problematic for women and children, as they are traditionally tasked with fetching water and may be more at risk of protection concerns when travelling.[9][10] In addition, access to improved water sources is crucial in the prevention of water-borne and vector-borne diseases such as cholera and dengue fever. **The need for improved sanitation is also high, with acute needs in 33 out of the 62 districts (53%) among mixed population groups**. The lack of improved sanitation is especially problematic for women, as they may face gender based violence or other hazards when practicing open defecation and hygiene at night.[11] Environmental sanitation is also a concern: **70% (28) of the districts with findings from mixed-population assessments were in acute need of assistance for environmental sanitation**. Poor environmental sanitation is related to water-borne diseases due to the contamination of ground water. Adequate hygiene was among the highest needs of those assessed. Out of the 58 districts that had findings on mixed population groups, **43 districts (74%) were assessed to be in acute need of soap and handwashing facilities**. Handwashing with soap is one of the key preventive measures for diseases such as cholera and COVID-19.[12][13] With the arrival of COVID-19 in Yemen, soap and hand hygiene are even more crucial in preventing morbidity and mortality.

Overall, **WASH needs were particularly high in the governorate of Al Hodeidah**. This is a governorate that has faced intense fighting, severe constraints on humanitarian access and high levels of suspected cholera cases as well as acute malnutrition.[1][14] Findings of assessments conducted in IDP hosting sites generally indicated higher rates of having access to WASH services and facilities than assessments of the general population, which may be due to a greater level of targeted assistance for these sites. However, the difference may also be due to differences in data collection and analysis methodologies, as IDPs in general have higher and more urgent needs when compared to other population groups.

Analysis of reports included in this SDR was challenging as most of the assessments had used only a few reports included in this SDR included findings disaggregated by sex and gender. Finally, the SDR found that in general, WASH assessments frequently report on improved access to water sources (100% of assessed districts) and sanitation (99% of assessed districts), but less so on environmental sanitation (79% of assessed districts) and hygiene (60% of assessed districts).

**In conclusion, this SDR highlights the need for continued humanitarian assistance for improving access to clean and safe water; improved sanitation; adequate environmental sanitation; and soap and handwashing facilities.** The needs were found to be particularly high in the governorate of Al Hodeidah and among vulnerable populations such as women and children as a lack of access is particularly problematic for such populations. Improved hygiene facilities and practices (handwashing facilities and soap) will be crucial in mitigating and preventing the spread of the COVID-19, as well as preventing water-borne and vector-borne diseases and tackling the high rates of malnutrition.

<sup>1</sup> The original full-text report was available; The report was written in Arabic or English; The data collection, analysis and reporting were done by a non-governmental organization, United Nations body, Yemeni governmental body, university, or think-tank; Reports were based on primary data; Primary data was collected in 2019; A methodology for the data collection was provided (either in the report itself, or upon request); The report reports on at least one of the five [Core WASH Needs Indicators](#); Findings were presented in an unambiguous and objective way.

<sup>2</sup> Improved access to water is defined as accessing an improved water source, for which a round trip to collect water does not take more than thirty minutes.

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## LIST OF ACRONYMS

<b>AWD</b>	Acute Watery Diarrhoea
<b>CCCM</b>	Camp Coordination and Camp Management
<b>FGD</b>	Focus Group Discussion
<b>GAM</b>	Global Acute Malnutrition
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>HH</b>	Household
<b>IDP</b>	Internally Displaced Person
<b>KII</b>	Key Informant Interview
<b>PIN</b>	People in Need
<b>SDR</b>	Secondary Desk Review
<b>SES</b>	Socio-Economic Status
<b>WASH</b>	Water, Sanitation and Hygiene
<b>WHO</b>	World Health Organization
<b>YER</b>	Yemeni Riyal
<b>YWC</b>	Yemen WASH Cluster

## GEOGRAPHICAL CLASSIFICATIONS

<b>Governorate</b>	Highest form of governance below the national level
<b>District</b>	Governorates are made up of several districts
<b>Locality</b>	The lowest administrative boundary

## INTRODUCTION

Yemen has long been considered one of the world's most water-poor countries. This is partly due to the country's naturally dry weather conditions, which have been exacerbated by climate change in recent years. Water scarcity has also been made worse by rapid population growth; between 2006 and 2014 the population increased by 25%, increasing the demand for water. Furthermore, in contrast to the traditional methods that farmers had previously relied on to accommodate scarce water resources, in the 1970s deep tube wells were built that allowed the rapid extraction of water from aquifers in order to harvest more water intensive crops, such as qat. The result is that groundwater is now being depleted far quicker than it can be replenished.[15]

In addition to the change in farming methods and population growth, there has also been a long history of insufficient management of water resources, as well as a lack of investment in maintaining vital water infrastructure such as sewage treatment facilities. Inadequate water infrastructure has exacerbated the problem of groundwater contamination, further reducing the supply of potable water. Prior to the start of the current conflict, only 50% of the urban population and 40% of the rural population had access to a public water network.[16] Since 2015, water shortages have only become more severe. Basic water systems and other WASH facilities have been repeatedly damaged during the conflict, and many are on the verge of collapse. In addition, conflict, limited services, and a lack of livelihood opportunities continue to drive displacement, which leads to overcrowded living conditions in IDP hosting sites and urban areas. As displacement rises, additional pressures are placed on already limited water resources. Finally, the impact of the armed conflict on WASH services is made worse by the economic crisis, which leads to regular fuel shortages that further impact availability and access to water countrywide.[17] [18]

The 2019 Yemen Humanitarian Needs Overview estimated that over two thirds of Yemenis were in need of WASH-related assistance, with 12.6 million of those in acute need of support. Over half of the population was found to not have improved access to water, while half of all IDPs did not have access to safe sanitation. In addition, nearly half of households had no access to soap, mostly due to financial barriers.[8] Poor provision of WASH services are often related to an increased burden of disease, including water-borne diseases such as cholera.[8] Since 2016, the country has faced multiple cholera outbreaks that have affected nearly 2 million people and caused over 3,500 associated deaths across the country.[19] The prevalence of diarrhoeal diseases caused by poor sanitation and hygiene conditions is also strongly linked to increased rates of malnutrition, which is a critical issue in Yemen.[20]

Due to a lack of comprehensive data on WASH needs in Yemen, the YWC initiated this Secondary Desk Review (SDR) to collate any existing information. The objective of the SDR is to better understand the WASH needs in Yemen, as well as the underlying causes of these needs, to inform appropriate response planning and resource mobilization. Findings will be used to inform the calculation of the WASH People in Need (PIN) and district severity score figures for 2020. This SDR was conducted jointly by REACH and the YWC in collaboration with ACAPS.

**Main research question:** What are the WASH-related needs of people in Yemen, the severity of those needs, and the factors driving those needs?

**Sub-research questions:**

1. What % of households have access to safe and adequate WASH services and facilities?
2. What are WASH-related behaviours and practices among affected populations?
3. What is the rate of Global Acute Malnutrition (GAM) in districts, if available?
4. What is the Acute Watery Diarrhoea (AWD)/cholera attack rate in districts? And what are related trends?
5. What is the status of water and sanitation systems in Yemen? How is this status influencing WASH needs?
6. How are laws and policies influencing WASH needs in Yemen?
7. How is the climate in Yemen influencing WASH needs?
8. How is the economy in Yemen influencing WASH needs?
9. How do WASH needs affect different population groups (such as IDPs, refugees, migrant, returnees, non-displaced, women, men, boys, girls, and people of different age groups)?

## METHODOLOGY

The methodology of this SDR consisted of a review of secondary data and literature related to WASH needs in Yemen. Three different approaches were adopted for obtaining data. To inform the [WASH PIN and Severity Scores](#) and [WASH Needs](#) sections, a systematic literature search was performed, while a non-systematic literature search was used to find sources to inform the [WASH Context](#) section. To inform the [Physical Wellbeing](#) section, information from the [Health](#) and [Nutrition Clusters](#), as well as Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and REACH was used. Based on information related to WASH Needs and Physical Wellbeing, severity scores and PIN figures were calculated. The below methodology focuses on the process of calculating the 2020 PIN and severity scores. Further methodological details can be found in [Annex 1](#).

The systematic literature review involved four different strategies to obtain relevant reports and data:

1. Contacting YWC partner organizations via email to ask them to complete an online questionnaire in Arabic or English to determine if the organization could share any WASH-related information collected in 2019;
2. Searching the [YWC assessment registry](#);
3. Using online search engines such as ReliefWeb and Google Scholar;
4. Requesting relevant data from the Camp Coordination and Camp Management (CCCM) Cluster.

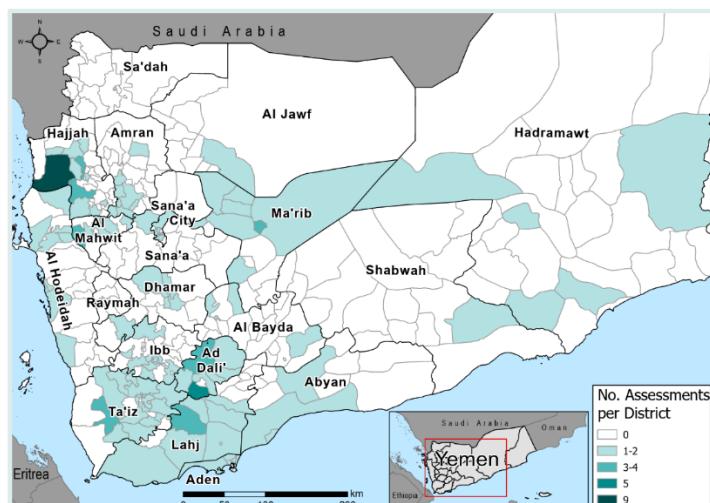
Reports and assessments were screened for quality and relevance using a set of inclusion criteria, which can be found in [Annex 1](#). Ultimately, 117 reports were selected to be included in the analysis. For more detail on the report selection process, see the diagram in [Annex 2](#). Included reports were of different quality and focus: some only focused on WASH, while others were multi-sectoral. Table 2 displays characteristics of the reports used for this SDR, counting reports separately for each district covered. This means that some reports were counted multiple times, as these reports are based on assessments that were conducted in multiple districts and/or governorates. Therefore, the total in the table below (158) is higher than the total of included reports mentioned above (117).

Table 2: Characteristics of included reports

Report characteristics	WASH-only focus	HH Survey	KII	FGD	Mixed Methods	Representative sample used	IDP- focussed studies	Total
% reports	43%	47%	45%	18%	18%	11%	42%	100%
# reports	68	74	71	28	27	17	67	158

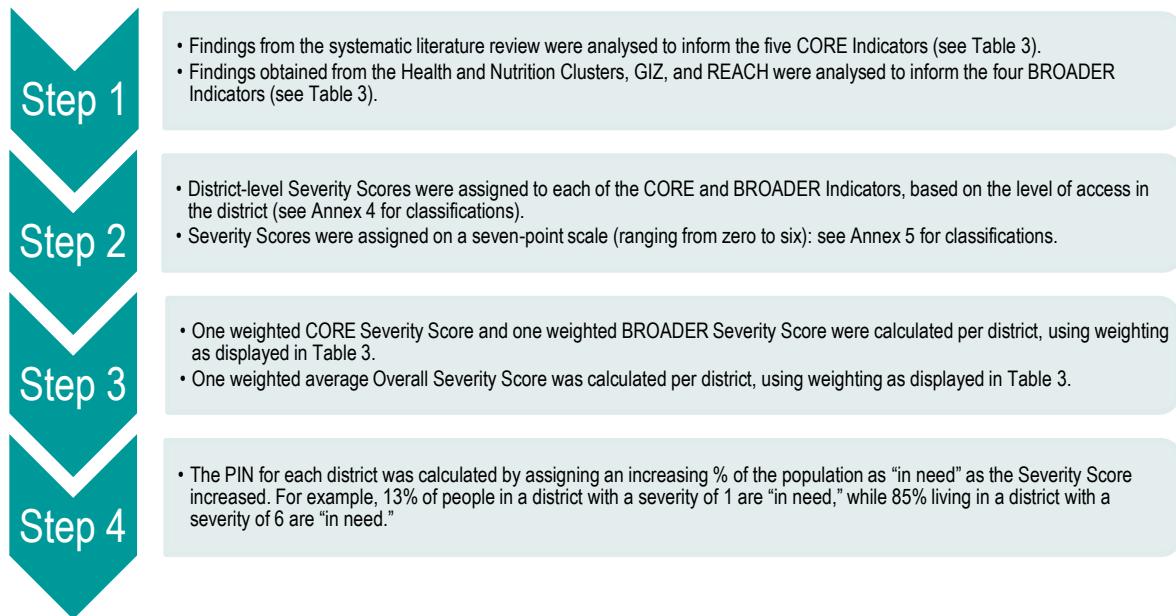
Out of the 333 districts in Yemen, reports covered 110 (33%), leaving 223 (67%) districts with no findings. See Map 1 below, which displays the number and location of the reports included through the systematic literature search. The district that was assessed most frequently was Abs, in Hajjah governorate. This was because this district faced the most severe humanitarian situation in 2019 as well as the highest displacement numbers. In addition, it is worth noting that districts in the South of Yemen seem to have been assessed more than districts in the North.

Map 1: 2019 WASH Assessments in Yemen included in SDR



Findings from systematic literature review and the findings obtained from the Health and Nutrition Clusters, GIZ, and REACH were then analysed against selected indicators (see Table 3) to produce district-level Severity Scores and PIN figures. This process is depicted in Figure 3. For more in-depth methodological notes, see [Annex 1](#).

Figure 2: Steps for Calculating Severity Scores and PIN



The proportion of the population in Moderate versus Acute Need was decided depending on the Severity Score assigned to the district, as follows:

- Severity score of less than 3:** 100% of PIN in Moderate Need;
- Severity score of 3:** 75% of PIN in Moderate Need and 25% in Acute Need;
- Severity score of 4:** 50% of PIN in Moderate Need and 50% in Acute Need;
- Severity score of 5:** 25% of PIN in Moderate Need and 75% in Acute Need;
- Severity score of 6:** 100% of PIN in Acute Need.

Table 3: WASH Needs Indicators and Weighting

Indicator	# of Districts with findings (%)	Weighting Core + Broader Severity Scores	Weighting Overall WASH Severity Score				
			1 <sup>st</sup> Choice	2 <sup>nd</sup> Choice	3 <sup>rd</sup> Choice	4 <sup>th</sup> Choice	
<b>CORE</b>	Improved access to water sources	104 (31%)	22%	Core Severity Score (combining mixed populations + IDP only scores)	Core Severity Score – mixed populations	Core Severity Score – IDP only	No Core Severity Score available
	Access to minimum water quantities needed	98 (29%)	22%				
	Access to functional improved sanitation facilities	90 (27%)	22%				
	Access to adequate environmental sanitation	82 (25%)	17%				
	Access to functional handwashing facilities and soap	62 (19%)	17%		60%	60%	20%
<b>BROADER</b>	Global acute malnutrition rate	333 (100%)	38%	40%			
	Cholera attack rate	333 (100%)	37%		40%	80%	100%
	Infrastructure access rate	59 (18%)	20%				
	Flood susceptibility rate	333 (100%)	5%				

This SDR has limitations that need to be taken into account when interpreting the presented findings:

1. No raw data was obtained to inform this SDR, and the analysis largely relied on reported figures and analysis. This means that for the district-level data used to inform indicators, it remains unknown how data was cleaned and analysed;
2. Only a small percentage of reports used to inform the WASH Needs indicators were based on assessments involving representative samples;
3. Overall Severity Scores were not informed by Core Severity Scores for all districts; instead, this was only the case for 110 out of the 333 districts in Yemen; and
4. Reports used different categorizations and standards to interpret the level of need. This made analysing the findings challenging and decreased the robustness of findings.

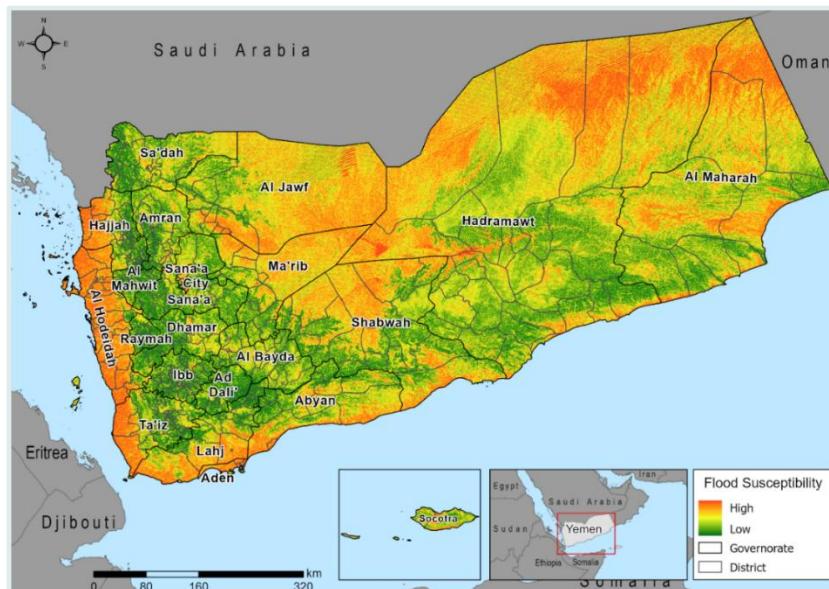
## FINDINGS

### Contextual Factors Influencing WASH Needs in Yemen

 **Climate**

The Yemeni climate is one of the factors influencing current WASH needs in the country. Yemen has two yearly rainy seasons that occur during the winter and the summer.[21] Rainy seasons frequently result in floods and flash floods that particularly affect lower-elevation areas such as the plains and desert areas, but also Sana'a city. Historically, floods provided a valuable resource for farmers in terms of irrigating their lands. However, due to the ongoing effects of climate change, **floods are becoming more intense**. In addition, **desertification is also increasing**, which leads to increased damage when floods do occur.[22] In relation to WASH, these floods can cause damage to WASH-related infrastructure, and can also contribute to an **increase in the spread of infectious diseases such as cholera, malaria, and dengue fever**.[23][24]

Map 2: Yemen Flood Susceptibility



Furthermore, **Yemen has the lowest per capita water availability in the world**, which is decreasing yearly.[25] **Abstraction of its water resources is occurring at an unsustainable rate**, which may cause these resources to be depleted in no more than twenty years.[21] This means that during pre-crisis times, water resources were already stressed, and an increase in temperatures, changing weather patterns across the country, and high rates of depletion have led to a situation in which the groundwater aquifers will not adequately replenish. In addition to this, the ongoing conflict has caused the system of water resources management to collapse, leading to the over-use of groundwater sources.[26][27] This means that access to water is under high pressure and many face the risk of seeing their water sources depleted.

 **Governance**

Yemeni governing bodies have made substantial efforts to maintain sustainable and equitable access to water. However, as Yemen is the country with the lowest per capita water availability, this remains challenging. **Water governance is currently incapable of ensuring proportional, sustainable and equitable use of water resources**. Alongside over-abstraction of groundwater, **the specific needs of certain population groups, including women and girls, are not well represented in Yemeni water laws**.[28][10] Due to reduced capacities since 2014, legislation is inadequate for protecting water resources from being over-extracted, which is currently all the more needed as water resources are being depleted at a higher than a usual rate due to the current crisis. Moreover, there is little to no law enforcement on protecting these water sources from being over-extracted.[25] This will likely lead to a further deterioration of access to water in Yemen's nearby future.

When it comes to gender equality, Yemeni water law allocates the same rights to both women and men. However, the law was drafted by men, and water management is seen as a topic that should be typically managed by men due to the nature of water management being technical and requiring field visits.[10] Female participation in the water governing bodies is further complicated as only 35% of Yemeni women are literate.[28] Indeed, evidence suggests that the rate of women actively and meaningfully participating in local water committees is low.[10] In more local water governing structures, such as in local water committees, women remain largely unrepresented. Indeed, only 1.9% of politicians in Yemen are female, with Yemen being at the bottom of the Gender Gap Index.



## Economy

Five years of conflict have degraded Yemen's economy. **Over half of all jobs have disappeared**, and food and basic commodity prices rose in 2019 for the fifth year in a row to double pre-conflict levels. In 2014, 48% of the population fell below the poverty line, of whom 75% were rural and 25% urban. Following five years of conflict, the World Bank estimated that between **71-78% of the Yemeni population (a minimum of 21 million people) had fallen below the poverty line at the end of 2019**. Millions of water, sanitation, maintenance, and health workers have not received regular salaries for five years, leading to cuts in services.[29][30]

The Yemen economy relies heavily on commercial imports for between 80 to 90% of its basic needs, including WASH-related commodities. This means that any reduction in the value of the riyal is passed on to Yemeni consumers and businesses in the form of higher prices. The **Yemeni riyal has lost over half of its value** since the start of the war, and food and fuel prices have doubled.[31]

The costs of meeting basic water needs in Yemen (the WASH Survival Minimum Expenditure Basket) is heavily influenced by fuel prices. Fuel is needed to truck water to IDP sites and communities, run pumps in rural areas, operate urban water pumping facilities and wastewater treatment plants, and to transport goods and supplies. **Unfortunately, fuel prices are extremely volatile in Yemen**. Fuel price spikes led to increases in water trucking prices in April/May and September/October 2019,[32] and fuel continues to be the main area of economic competition between the north and the south.[33] The fuel crises in 2019 only lasted several weeks but still had a major impact on the economy. Yemen currently only has fuel reserves of around three to four weeks,[31] so if the next fuel crisis lasts for several months, there could be chronic shortages across the country that could contribute to rising costs of fuel and other basic commodities.



## Infrastructure

Critical infrastructure, including water systems, have been repeatedly damaged since the start of the conflict in 2015. The impact of **repeated damage to water infrastructure** over the past five years, exacerbated by fuel and energy shortages, has resulted in **reduced functionality of basic water and sanitation services**, which in turn impacts how well critical services such as hospitals are able to operate. The disruption of WASH facilities has led to a **decreased ability to treat sewage, causing higher rates of water contamination** and consequently disease outbreak. In 2018, the highest numbers of cholera cases were reported from areas where the waste-water treatment centres are entirely non-functional. [16][34]

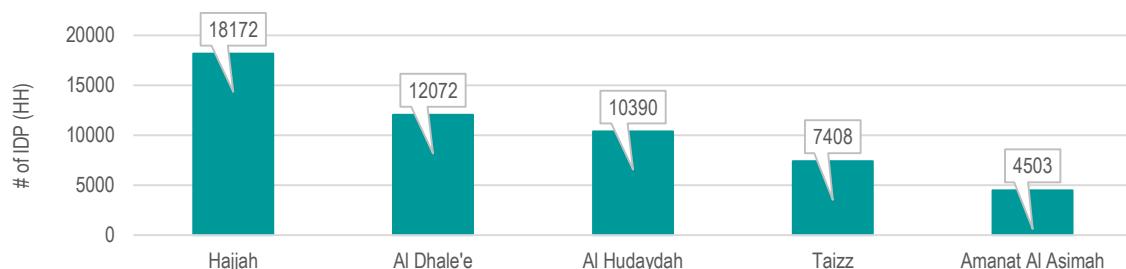
Despite the fact that in 2019 there were fewer reported instances of damage to critical infrastructure than in 2018, the reduced functionality of these essential WASH services continues to be a primary driver of WASH needs, and consequently drives needs in other humanitarian sectors, particularly health. **Throughout 2019, there were 176 reported incidents of damage to critical infrastructure as opposed to 390 in 2018**. The governorate with the most damage to infrastructure was Al Hodeidah, accounting for 70 of the total number reported, with the majority of incidents occurring in Al Hali district (27) followed by Al Hawak district (16). **Of the total number of incidents of damage reported, 12 were WASH infrastructure, in comparison to 31 in 2018**.

While there was a reduction in damage to critical infrastructure in 2019 when compared to 2018, there was an increase in reported damage to civilian houses; **17% more civilian houses were impacted in 2019 than in 2018**. Throughout 2019, 6,839 incidents of damage to civilian houses were reported. Depending on the level of damage to homes, there is an increased risk of reduced access to water supply networks and therefore a potential increase in WASH needs of people living within these homes.[35][36]

## Displacement

Although **displacement decreased by 40% in 2019 compared to 2018**, it continues to be a primary driver of WASH needs. Throughout 2019 up to 350,000 people were displaced, albeit at a more localised level than in previous years, as people were mostly displaced within their district or governorate of origin. However, as fighting continues and people are displaced on a monthly basis, resources are increasingly stretched, including access to adequate WASH facilities. Increased resource scarcity exacerbates tensions between different population groups and in 2019 there were more reports of social cohesion issues between IDPs and host communities, likely due to depleted capacity amongst host communities to accommodate IDPs. Tensions over water scarcity is an issue that pre-dates the war in Yemen and has led to conflict between different tribal groups or between urban and rural communities. As displacement rises, and communities are forced to mix, this is an ever growing area of concern.[8][1][35] The graph below shows the five governorates hosting the most IDP households in 2019, including IDP households living in informal settlements and those living with host communities:

Figure 3: Total of # IDP households in 2019 by top 5 governorates



In 2019, over 900,000 of the 3.3m IDPs in Yemen were living in IDP hosting sites, and a CCCM site reporting exercise conducted between November 2019 and February 2020 found that of the 461 IDP hosting sites surveyed, **only 6.4% reported access to adequate WASH services.**[37] A notable change in 2019 was that between 35% to 50% of IDPs were living in informal settlements, as opposed to in 2018 when most of displaced people stayed with host families or in rented accommodation. People living in informal settlements are particularly vulnerable as they are cut off from a public water network. They therefore rely on water trucking, which is also limited in supply, and often unaffordable, particularly amidst the deteriorating economic crisis. There are also no formal sewage systems or garbage disposal mechanisms in settlements and there are reports of open defecation, often in crowded areas, which is problematic as it exacerbates disease spread. Latrine use is generally reported to be lower in IDP sites, and particularly amongst female IDPs.[16].[2]

Despite the ongoing conflict, Yemen continues to be a place of transit for migrants from East Africa, mostly making their way towards Saudi Arabia. **In 2019, IOM estimates that over 138,000 migrants entered Yemen.** A continued flow of migrants, as well as a rising number of IDPs, places further strain on limited resources including WASH facilities and potable water. Access to resources is already a point of tension between local and migrant communities. Additional response mechanisms are needed to continue to meet the needs of the migrant population in addition to the needs of Yemenis.[38]

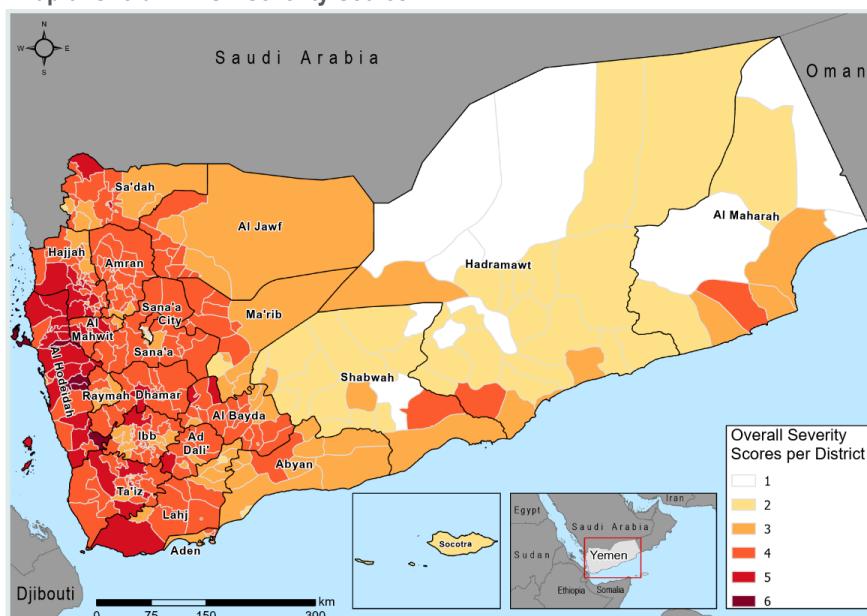
## 2020 Yemen WASH PIN and Severity Scores

### Overall WASH Severity Scores

In total, 97% of districts (323 out of 333) have been classified as having Moderate or Acute WASH need, as these districts were assigned Overall Severity Scores between two and six (Map 3). 63% of these districts, (209 out of 333) were classified as in Acute Need (severity score between four and six) and 114 (34%) were classified as in Moderate Need (severity score two or three). This is a slight improvement when compared to last year, when all districts were classified as in Moderate or Acute need. The number of districts in Acute Need decreased by 33 (from 242 to 209), and the number of districts in Moderate Need increased by 23 (from 91 to 114).

**97% of districts are in need  
63% are in Acute Need  
34% are in Moderate Need**

Map 3: Overall WASH Severity Scores

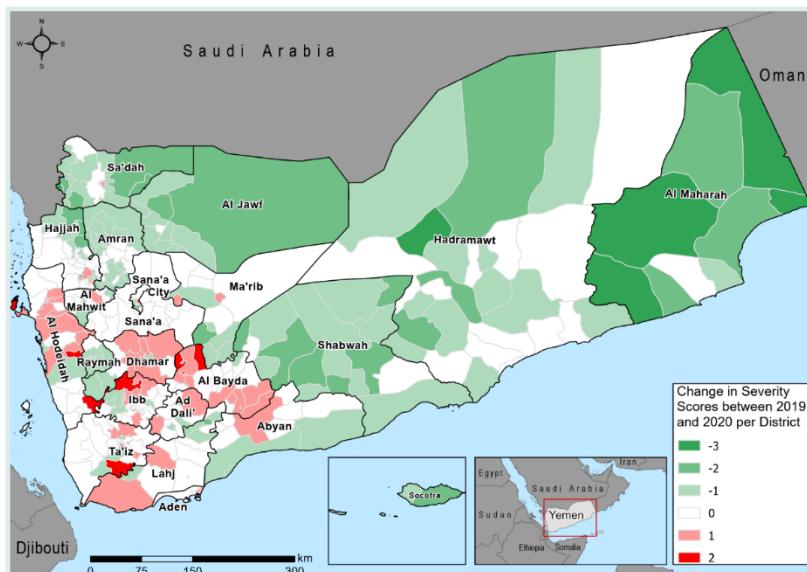


Governorates with the highest severity scores were Hajjah, Al Hodeidah, Tai'z, and Amran. This is the same list as last year. The common factor among these governorates is that humanitarian access has been assessed to have extreme constraints.[39] In addition, all of these governorates (apart from Amran) have been assessed as being highly impacted by the conflict.[40] Districts with the highest Overall WASH Severity Scores were all located in Al Hodeidah governorate, which is also where the five districts with the highest 2019 severity scores were located. However, the highest severity scores for 2020 are only based on the Broader WASH indicators (see Table 3 in the methodology), meaning that the scores of these districts are mostly informed by GAM and cholera attack rate data. Districts with the highest average Core WASH Needs severity scores are mostly located in Al Mahwit governorate.

Table 4: Top 5 Severity Scores

Governorate	District	Overall Severity Scores 2020	Overall Severity Scores 2019
Al Hodeidah	Kamaran	6.0	4
	Al Mansuriyah	5.9	4
	As Salif	5.9	5
	Ad Dohi	5.8	5
	As Sukhanah	5.7	5
Al Hodeidah	As Salif	5.9	5
	Ad Dohi	5.8	5
	As Sukhanah	5.7	5
	Alluhayah	5.4	5
	Al Jarrahi	5.3	5

Map 4: Change in Severity Scores 2019 -2020



**206 districts (62%) saw their Severity Scores improve from 2019** (see Map 4, green colours indicate improved scores, red colours indicate districts where scores deteriorated). 119 districts (36%) saw their scores worsen compared to 2019, while 8 districts (2%) remained the same. **Governorates where Severity Scores increased most are Al Bayda, Al Hodeidah, and Ibb.** These governorates faced severe access constraints, surges in cholera cases; and high levels of water scarcity, while Al Bayda and Al Hodeidah also faced active frontlines.[1][14][41] The governorates where Severity Scores decreased most are Hadramawt, Al Maharah, and Shabwah.

## 2020 WASH PIN

16.1 million people (16,092,433) have been classified as in need of humanitarian assistance for WASH services and/or facilities. This is 54% of the total Yemeni population, which is five percentage points lower than the percentage of PIN in 2019 (59%, or 17.8 million people).[8] Of the total number of people in need, 10.4 million (65%) are in Acute Need and 5.7 million (35%) are in Moderate Need. The top two governorates with the most PIN are Al Hodeidah and Ta'i'z, which is the same as 2019. In addition, the top five governorates with the largest numbers of PIN remained the same as last year, though with a different order.

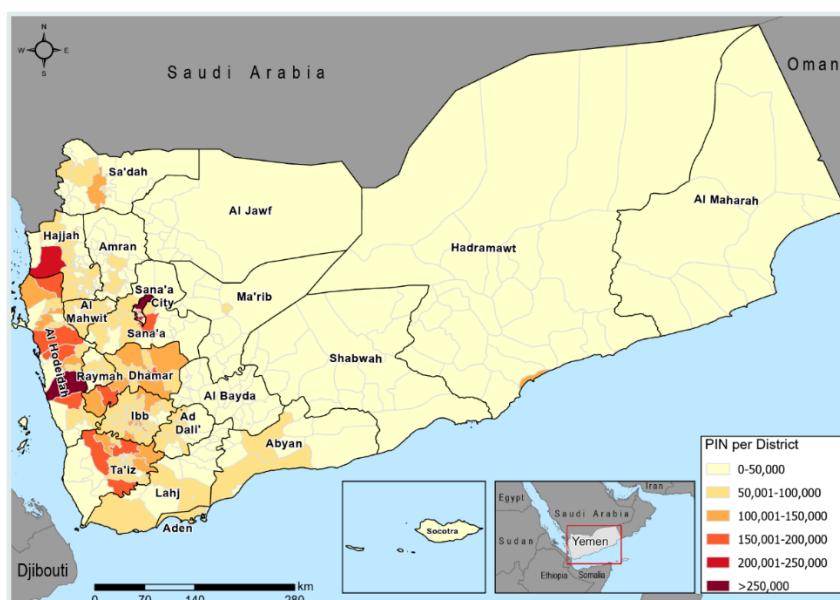
**2020 PIN: 16.1m**

**2019 PIN: 17.8m**

**10.4m people in Acute Need**

**5.7m people in Moderate Need**

Map 5: Number of PIN



Districts with the highest numbers of PIN are fairly similar to those of 2019, with the highest number of PIN in Sana'a City (Table 5). It is important to take into account that the PIN figures presented here are absolute numbers, and therefore also represent the fact that certain governorates or districts are more densely populated than others.

**Table 5: Top 3 Districts per Number of People in Need**

Governorate	District	Overall PIN (% of district pop.)	Acute PIN (% of district pop.)	Moderate PIN (% of district pop.)
Sana'a City	Bani Al Harith	257,509 (56%)	128,755 (28%)	128,755 (28%)
Al Hodeidah	Bayt Al Faqih	251,938 (61%)	125,969 (30%)	125,969 (31%)
Sana'a City	Ma'in	250,709 (41%)	62,677 (10%)	188,032 (31%)
Hajjah	Abs	206,157 (66%)	154,618 (49%)	51,539 (17%)
Al Hodeidah	Zabid	189,281 (67%)	141,961 (50%)	47,320 (11%)
Tai'z	At Ta'iziyah	185,262 (66%)	138,947 (49%)	46,316 (17%)
Sana'a City	Ma'in	250,709 (41%)	62,677 (10%)	188,032 (31%)
Sana'a	Sanhan wa Bani Bahlul	172,023 (49%)	43,006 (12%)	129,017 (37%)
Sana'a City	Bani Al Harith	257,509 (56%)	128,755 (28%)	128,755 (28%)

## WASH Needs



### Access to Water

The level of need in relation to water access was measured using two indicators: access to improved water sources and access to adequate quantities of water (see [Annex 4](#)). Improved water sources are defined as water sources that: 1) are protected from contamination; and 2) require commuting of no longer than thirty minutes both ways during peak time. Adequate water quantities refer to whether people had access to at least 15 litres of water per person per day.

**Table 6: Governorates with highest severity of water access needs (mixed population groups)**

Governorate	Improved Access to Water Score	Highest scored district(s)	Governorate	Adequate Water Quantities Score	Highest scored district(s)
Shabwah	6 <sup>3</sup>	Mayfa'ah (6)	Al Bayda	6 <sup>4</sup>	As Sawma'ah (6)
Al Mahwit	6 <sup>5</sup>	Ar Rujum/Hufash/Al Mahwit (6)	Al Mahwit	5.1 <sup>6</sup>	Ar Rujum/Hufash/Al Mahwit (6)
Hajjah	5.5 <sup>7</sup>	Bani Qays/ Ku'aydinah (6)	Hajjah	4.3 <sup>8</sup>	Ku'aydinah/Abs(6)
Amran	5.4 <sup>9</sup>	Jabal Eyal Yazid/As Sudah/As Sawd/Maswar (6)	Tai'z	4.3 <sup>10</sup>	Ash Shamayatayn (6)

Access to improved water sources was most frequently reported upon compared to the other four Core WASH Needs indicators, and findings relating to this indicator are available for 104 of the 333 districts (31%). Severity scores for access to improved water sources (based on assessments conducted among mixed population groups) are visualised in Map 6. **The average severity score for this indicator is 4, meaning that on average only between 30% and 44% of people were found by these assessments to have improved access to water.** Governorates that faced lowest rates of access were **Al Mahwit and Hajjah**. All but one assessment in Al Mahwit reported that no respondents had improved access to water. In Hajjah, 11 of the 19 assessments reported that few to none of the respondents had improved access to water. Access also appeared low in Shabwah; however, this was based on one assessment.[42]

**Improved access to water among people living in IDP hosting sites seemed to be better than that among**

**On average, between 30-44% of people had access to improved water sources (Severity Score 4)**

<sup>3</sup> Findings based on one assessment in one district.

<sup>4</sup> Findings based on one assessment across two districts.

<sup>5</sup> Based on eight assessments across four districts.

<sup>6</sup> Findings based on six assessments across five districts.

<sup>7</sup> Findings based on 11 assessments across seven districts.

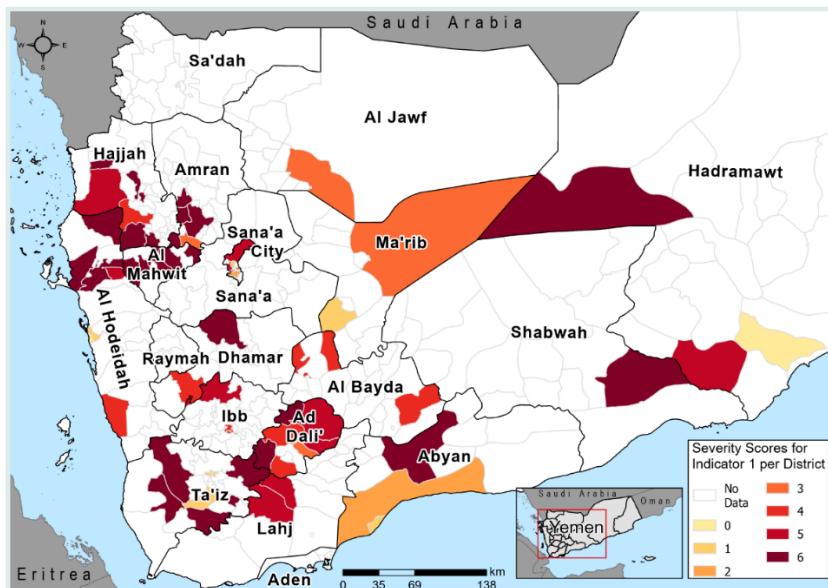
<sup>8</sup> Findings based on 11 assessments across six districts.

<sup>9</sup> Findings based on five assessments across five districts.

<sup>10</sup> Findings based on ten assessments across eight districts.

**mixed population groups.** However, this difference is likely related to a difference in how need was measured, as the methodology for collecting information in IDP hosting sites involved one key informant speaking on behalf of the needs of the entire IDP population in that site (see [Annex 1](#) for methodological details). Nonetheless, **assessments conducted in Hajjah indicated particularly low improved access to water by IDPs** (between 20% and 25% of IDP populations in hosting sites were estimated to have improved access to water).

Map 5: Improved Access to Water Sources



**Compared to 2018, it seems that improved access to water slightly deteriorated,** as a household level YWC study conducted that year reported that 52% of respondents had improved access to water.<sup>[11]</sup> However, these findings should be interpreted with caution due to the indicative nature of the data used in this SDR.

The use of unimproved water sources is risky, as those sources have a higher risk of contamination, and are linked to increases in burdens of disease, particularly in a lower income country such as Yemen.<sup>[43]</sup> Specifically, **the use of unimproved water sources is related to water-borne and vector-borne diseases such as cholera, malaria, and dengue fever.** Indeed, nearly half of the cholera cases during the recent outbreaks in Yemen were caused by the use of contaminated water sources.<sup>[44]-[45]</sup> **Longer commutes to water sources can also cause problems**, because if time spent on water collection increases, time spent on other activities is reduced. This puts pressure on those responsible for fetching water (often women and children), and may put children at risk of dropping out of school.<sup>[46]</sup> **Increased time spent collecting water may also pose a protection concern.** As commutes prolong, exposure to various hazards increases.<sup>[11]</sup> Female-headed households are disproportionately impacted by a lack of improved access to water compared to male-headed households, as they need to balance their time between fetching water, ensuring income, and caring for household members. This often leads them to use closer, less preferred water sources, putting them at higher risk of contracting water-borne diseases.<sup>[47]</sup>

Findings on water quantities were available for only 98 of the 333 districts in Yemen (29%). No findings were available on water quantities for seven governorates, including Aden and Sana'a (see Map 7). In **districts where data was available, access to sufficient quantities of water was on average between 50% and 55% as reported in assessments conducted among mixed populations.** Access to insufficient water quantities was most frequently reported in Al Mahwit district, with on average only around 20% of assessed populations having access to sufficient water quantities.<sup>11</sup>

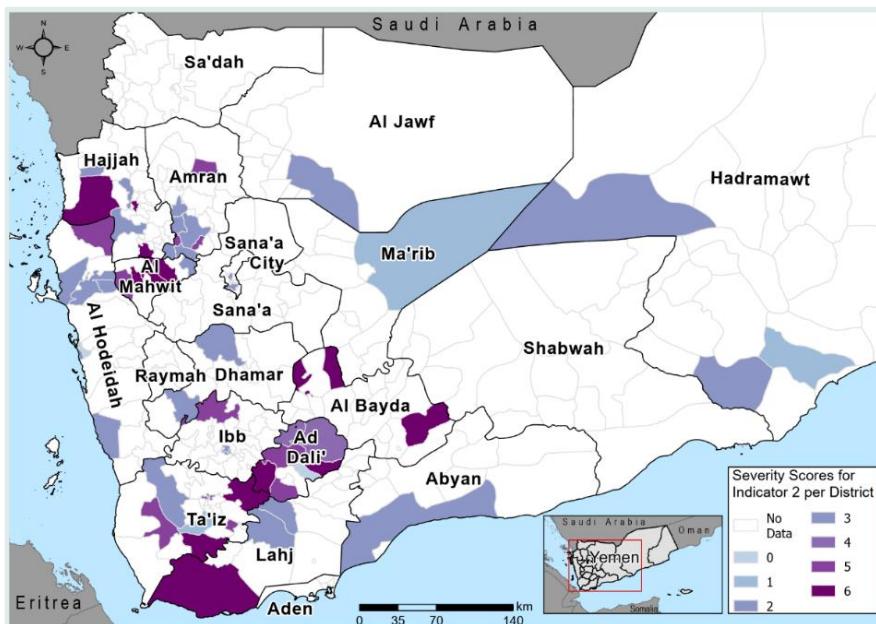
**On average, between 50-55% of people had access to sufficient water quantities (Severity Score 3)**

Access seemed to be better among IDP populations in hosting sites than among mixed populations. **Overall, between 65% and 70% of assessed IDP populations in hosting sites had access to sufficient water quantities.** However, in Tai'z governorate, access was found to be lowest, with only around 55% of IDP populations

<sup>11</sup> Based on six reports conducted across five districts.

in hosting sites found to have access to sufficient water quantities.<sup>12</sup> Again, differences observed between mixed and IDP populations may reflect the difference in research methodology rather than differences in access.

**Map 6: Access to Sufficient Water Quantities**



Overall, the fact that access to sufficient water quantities seems to be less severe a need than the type of water source used is in line with observations from the WASH Cluster household assessment from 2018, when a similar trend was observed. However, it is important to note that a cut-off of 15 litres per person per day was used, as specified in the SPHERE Handbook.[48] Even though this standard is considered sufficient for surviving, it might not be enough for maintaining health and dignity. Indeed, a reduced intake of water is linked to an increased burden of disease.[49][50] Therefore, it is crucial to focus on ensuring that all affected populations have access to sufficient water for maintaining both health and dignity

## Access to Sanitation



Access to adequate sanitation was measured using two indicators: 1) access to latrines; and 2) environmental sanitation (see [Annex 4](#)). Access to adequate sanitation was defined as having access to both improved<sup>13</sup> as well as clean and functional latrines. Access to environmental sanitation was defined as household waste being regularly collected and little to no visible wastewater within 30 metres of the shelter.

**Table 7: Governorates with highest severity of sanitation needs (mixed population groups)**

Governorate	Improved Latrines Scores	Highest scored districts	Governorate	Environmental Sanitation Scores	Highest scored districts
Lahj	5.2 <sup>14</sup>	Al Qubaytah (5)	Al Hodeidah	6.0 <sup>15</sup>	Al Mina (6)
Al Mahwit	4.7 <sup>16</sup>	Al Mahwit/Ar Rujum/Hufash (6)	Ibb	6.0 <sup>17</sup>	Al Qafr (6)
Hajjah	4.6 <sup>18</sup>	Bani Qays (6)	Lahj	6.0 <sup>19</sup>	Al Qubaytah (6)
Ibb	4.3 <sup>20</sup>	Al Qafr (6)	Ad Dali'	5.4 <sup>21</sup>	Al Husha (6)

Access to latrines was reported upon in 90 of the 333 Yemeni districts (27%). The overall reporting on access to

<sup>12</sup> Based on 67 KIIs conducted by the CCCM cluster across 13 different districts.

<sup>13</sup> Improved latrines: Flush latrines; pour-flush latrines; VIP latrines. Unimproved latrines are: flush latrines to the open; open pit-latrines; pit-latrines without slab; open holes; bucket toilets; plastic bags; hanging toilets/latrines; and open defecation.

<sup>14</sup> Findings based on three assessments across two districts.

<sup>15</sup> Findings based on one assessment across two districts.

<sup>16</sup> Findings based on seven assessments across five districts.

<sup>17</sup> Findings based on three assessments across three districts.

<sup>18</sup> Findings based on 11 assessments across seven districts.

<sup>19</sup> Findings based on one assessments across two districts.

<sup>20</sup> Findings based on four assessments across three districts.

<sup>21</sup> Findings based on 12 assessments across seven districts.

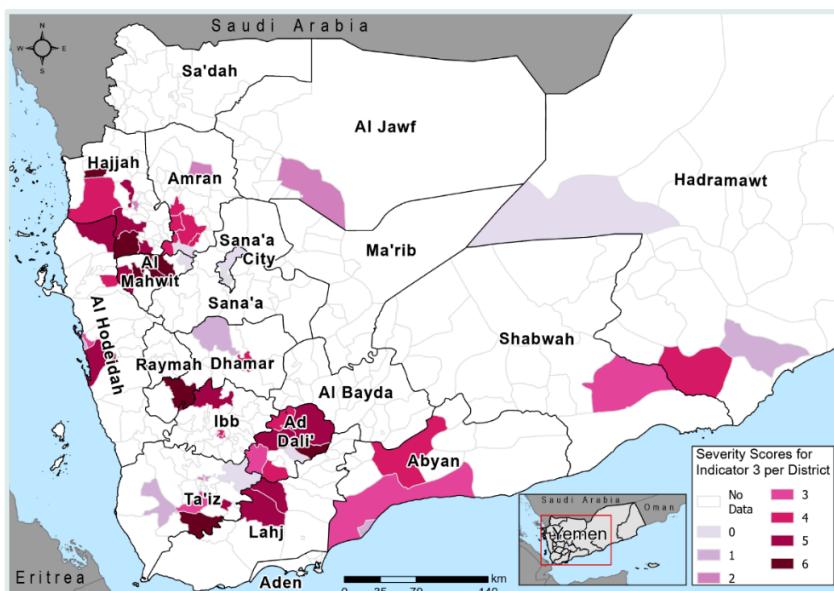
latrines is lower than the reporting on improved access to water and adequate water quantities.

On average, the severity score for adequate sanitation was 3. This means that on average, between 45% to 50% of assessed populations had access to improved, functional and clean sanitation facilities. Severity scores based on assessments of mixed populations are visualised in Map 8. Governorates where access to adequate sanitation among mixed populations was reported to be lowest were Al Mahwit and Hajjah, where access was around 40%. Districts in Al Mahwit that had the lowest access rates were Al Mahwit, Ar Rujum, and Hufash, which all had access rates of between 0% and 14%. In Hajjah governorate, the assessment conducted in Bani Qays district reported the lowest access rates (also between 0% and 14%).

**On average, between 45-50% of people had access to adequate latrines (Severity Score 3)**

Contrary to findings on access to water, findings on access to latrines seem to indicate that IDPs had less frequent access to improved, clean, and functioning sanitation. Based on assessments conducted in IDP hosting sites, access to adequate sanitation was lowest in Hajjah (15% to 20%) and Ma'rib (20% to 25%). Compared to findings from the 2018 WASH household assessment, access to adequate sanitation has remained similar.

Map 8: Access to Improved Sanitation



Lack of access to adequate sanitation might increase risks for users in areas where faecal-oral diseases are already present. In addition, the lack of adequate sanitation and particularly open defecation pose a great risk to women and children.[11] Due to the lack of privacy with this practice, girls and women may prefer to do this at night, which poses a risk of gender-based violence.[10] Lastly, a lack of adequate and accessible sanitation facilities is particularly problematic for elderly people and people with physical disabilities, as those populations are especially limited in their mobility.

Environmental sanitation has been reported upon in 82 out of the 333 districts of Yemen (25%). Among mixed population groups, on average, between 35% and 40% of people saw their household garbage being collected and had little to no wastewater near their shelters. Governorates with the lowest reported rates were Al Hodeidah and Ibb. In all of the assessed districts in those governorates, between 0% and 14% of respondents saw both their garbage being collected and had little to no wastewater near their shelters.

**On average, between 35-40% of people had adequate environmental sanitation (Severity Score 4)**

On average, adequate environmental sanitation was less frequently reported for IDPs living in hosting sites than among mixed population groups. This is in line with findings from the 2018 WASH household assessment, which also showed that IDPs had less access to adequate environmental sanitation. Between 0% and 14% of IDP populations in hosting sites had access to adequate waste disposal services. Governorates where IDPs had the least adequate environmental sanitation were Ma'rib, Dhamar, Sana'a, Ad Dali', and Hadramawt.

**When compared to the pre-crisis situation, waste collection rates have declined.**[51][11] Poorly managed solid waste and sewage pose serious health hazards for residents living nearby.[52] Inadequate solid waste management can lead to the contamination of groundwater, and poorly managed sewage is linked to increased childhood diarrhoea and certain tropical diseases.[53][54][55] Indeed, the highest numbers of cholera cases of 2018 were reported from areas where the waste-water treatment centres are entirely non-functional. In 2019, there were over 861,000 suspected cases of cholera compared to 370,200 suspected cases in 2018.[56][16][34]

## Access to Adequate Hygiene

In this SDR, adequate hygiene was defined through one indicator related to households having access to both soap as well as having a functioning handwashing facility (see [Annex 4](#)).

Table 2: Governorate with highest severity of hygiene needs (mixed population groups)

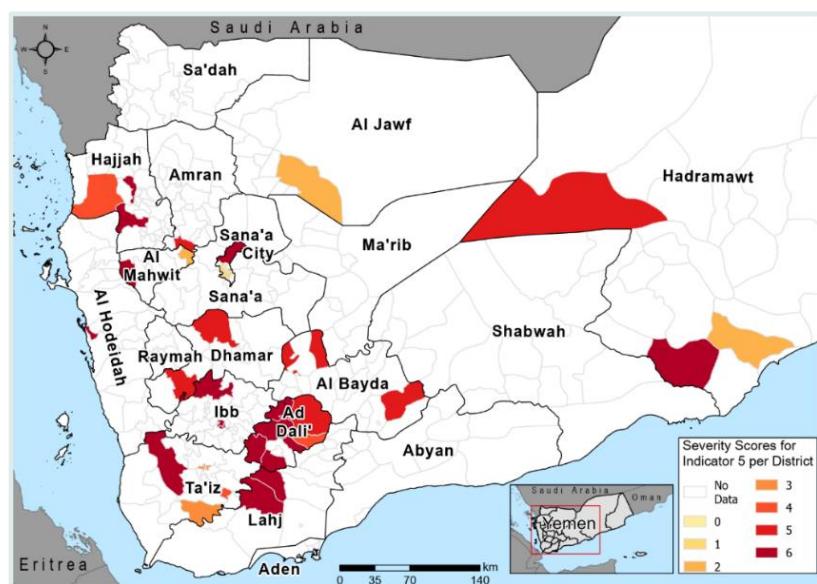
Governorate	Adequate Hygiene Score	Highest scored districts
Shabwah	6 <sup>22</sup>	Mayfa'ah (6)
Ibb	6 <sup>23</sup>	Al Qafr/Al Mashannah/Adh Dhihar (6)
Al Jawf	6 <sup>24</sup>	Al Hazm (6)
Lahj	6 <sup>25</sup>	Al Musaymir/Al Qubaytah (6)

Compared to indicators on access to water and sanitation, reporting on adequate hygiene was the least frequent across the assessments included in this SDR. In total, data was available on soap or handwashing facilities in 62 of the 333 districts in Yemen (19%).

Based on the assessments conducted among mixed populations, on average only between 35% and 40% of respondents had access to both soap and a handwashing facility (Map 9). Governorates and districts with the lowest rates of having access to soap and handwashing facilities are presented in Table 8, however it is important to note that findings are based on a limited number of assessments.

**On average, between 35-40% of people had access to adequate hygiene (Severity Score 4)**

Map 9: Access to Adequate Hygiene



As observed earlier in this report, assessments conducted among IDP populations found higher access rates to soap and handwashing facilities when compared to assessments conducted among mixed populations. **On average, between 40% to 45% of IDPs were indicated to have access to soap and handwashing facilities.** However, it is relevant to note that these figures are based on five assessments only. Despite this, these

<sup>22</sup> Based on findings from one assessment in one district.

<sup>23</sup> Based on three assessments across three districts.

<sup>24</sup> Based on findings from one assessment in one district.

<sup>25</sup> Based on findings from one assessments in two districts.

findings are in line with data on the main threats reported to be facing IDP hosting sites in Yemen, according to CCCM site reporting figures. **Infectious diseases and water contamination were the most highly reported threats to IDP hosting sites, with 53.5% and 38.4% of sites reporting these threats, respectively.**[37]

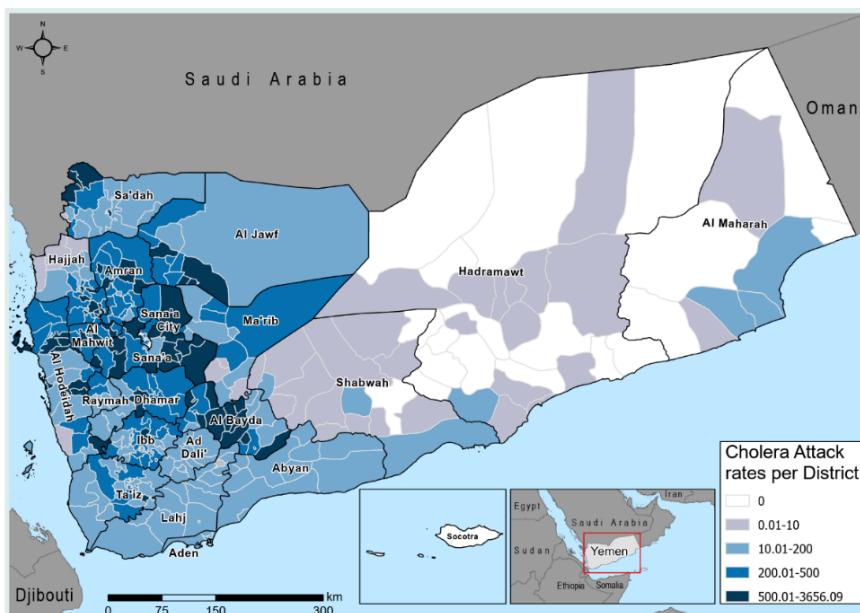
Both the low access to and low reporting on soap and handwashing facilities are highly concerning, particularly in light of the recent COVID-19 pandemic.[57] In controlling the spread of COVID-19, hand hygiene is one of the most important prevention measures.[13] Hand hygiene is not only crucial in preventing COVID-19, but also for the prevention of other communicable diseases of which Yemen has had recurring outbreaks.[7][6]

## Physical Wellbeing

### Water-Borne, Vector Borne, and other Communicable Diseases

Yemen faces a number of infectious diseases that are exacerbated by inadequate WASH services and facilities.[58][59] This includes water-borne diseases such as AWD and cholera; but also vector-borne diseases such as malaria, dengue fever, and chikungunya, which see recurrent outbreaks.[16][60] **Cases of dengue spiked in the last quarter of 2019**, with most cases in the governorates of Al Hodeidah, Aden, Ma'rib and Lahj. This spike in cases seems to be related to increased rainfall. In addition, **Al Hodeidah faced the highest cholera incidence rate after Sana'a in 2019**, with 655 suspected cases per 10,000 population (Map 10). A related risk factor for contracting cholera is the use of unimproved and inadequate water sources.[61] Other factors that are associated with increased risk for water-borne diseases such as cholera are poor hand hygiene, a lack of access to clean and functioning latrines, and the presence of wastewater or sewage near residences.[7][6]

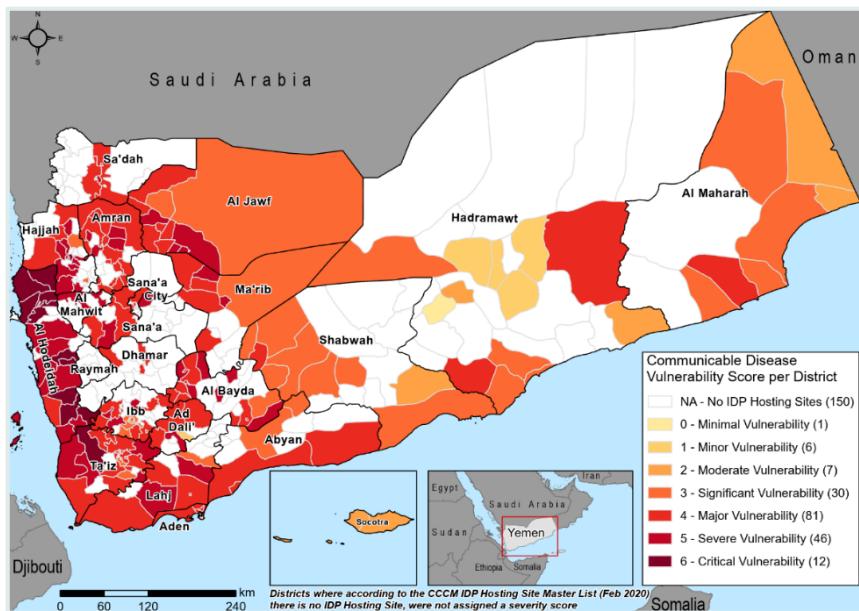
Map 10: Cholera Attack Rate



When it comes to treatment of these water or vector-borne diseases, health care is often hard to reach or unavailable. Even though more health care facilities have opened over the past years, overall access to adequate health care remains far below standards as set by the World Health Organization (WHO), with Al Hodeidah governorate again being one of the governorates with the lowest access to adequate health care.[62][3] The required number of hospital beds per population, as per WHO standards, decreased from 61% in 2016 to 50% in 2018. In addition, the required number of health care workers per population is far below WHO standards, with only 45% coverage. This further exacerbates the already dire situation of the Yemeni population.

In April 2020, the CCCM Cluster published a Communicable Disease Vulnerability Score Map that illustrates the relative vulnerability of IDPs in hosting sites across Yemen to being affected by communicable diseases, including COVID-19 (Map 11).[63] **IDPs in sites in Al Hodeidah governorate were classified to be the most vulnerable to communicable diseases.** Out of the 12 districts that received the highest vulnerability score of six, 10 are in Al Hodeidah governorate. Maqbanah district in Taiz and Aflah Al Yaman district in Hajjah also received a score of six.

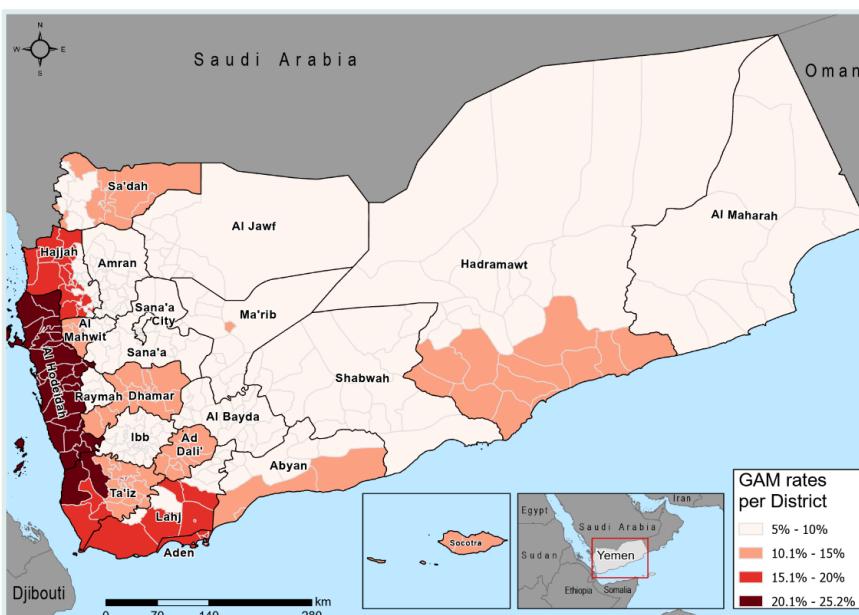
Map 11: Communicable Disease Vulnerability Score (IDP Hosting Sites)



## Malnutrition

 In 2019, Yemen ranked 116<sup>th</sup> out of 117 on the Global Hunger Index, classifying Yemen's food security as "alarming." [64] The majority of the districts (69%) were at risk of famine, with 45 districts being already in a state of emergency. [65] Despite continued food assistance, GAM rates remain high across the country (Map 12). Malnutrition is present in all districts, with an average rate of 11% and the lowest rate as high as 5% (Al Maharah governorate). [66] [65] The highest rates of acute malnutrition (25%) are found in the governorate of Al Hodeidah, and the second highest rates of acute malnutrition are in Ta'iz governorate (16%).

Map 12: Global Acute Malnutrition Rate



One of the most important underlying conditions related to GAM are poor WASH conditions. [67] [68] [69] The use of an unimproved water source is significantly associated with GAM in children under five years old due to an increased risk of AWD. In addition, the practice of hand hygiene before eating and after defecating and general personal hygiene are strongly associated with higher rates of malnutrition. Indeed, this SDR finds that access to adequate WASH services and facilities is the lowest in Al Hodeidah governorate, which also has the highest GAM rates in the country.

## CONCLUSION

The humanitarian situation in Yemen remains dire, with continued fighting and recurrent widespread disease outbreaks. To inform response planning and resource mobilization, this study aims to provide an understanding of humanitarian needs related to WASH, the severity of those needs and the most important drivers of those needs. As humanitarian organizations face many access constraints in Yemen, the most appropriate methodology for this study was to conduct an SDR. This SDR was conducted between November 2019 and March 2020 and involved a review of assessments that provided an overview of access to WASH services and facilities in 2019. A total of 117 assessments were included in this review. These assessments covered 110 of the 333 districts in Yemen (33%). In order to understand WASH needs in those districts that were not covered by these assessments, proxy data was used. This proxy data included prevalence rates of cholera and GAM, flood susceptibility rates of populated areas, and rates of access to WASH infrastructure.

According to the calculations of this SDR, 16.1 million people are in need of WASH humanitarian assistance in Yemen, which is 1.7 million less than in 2019. In total, 97% of districts (323 out of 333) have been classified as having Moderate or Acute WASH need. 63% of these districts were classified as in Acute Need, while 34% were classified as in Moderate Need. This is a slight improvement compared to last year. Al Hodeidah governorate has the largest number of people in need, and also has high severity scores compared to other governorates.

Overall, **improved access to water was low across the country** (between 35% and 40%). A lack of access to improved water is directly linked to an increase in water-borne diseases such as cholera, which has seen recurrent outbreaks in Yemen. Prolonged commutes to water sources may also be a protection concern (presenting a higher exposure to risk) for women and children, who are traditionally responsible for fetching water. In addition, **only a minority of respondents of the reviewed assessments had access to improved, clean, and functioning sanitation**. This is also problematic for women, as they face particular threats related to inadequate or non-existent latrines. **Environmental sanitation was particularly problematic in Al Hodeidah governorate**, with hardly any of the assessment respondents seeing their household waste regularly being collected through a public system. **Adequate hygiene is also an issue nationwide**, with only a minority of respondents having access to both soap and a handwashing facility. Inadequate hygiene is strongly related to GAM, and is may also increase vulnerability in light of the recent outbreak of COVID-19.

Interestingly, according to the assessments included, access to some WASH services and facilities in IDP hosting sites was better than among the general population. However, this finding is based on indicative data, and could be explained due to differences in data collection and analysis methodologies between assessments of IDP hosting sites and assessments among mixed populations (including host communities, migrants, refugees, and IDPs). Regardless, the needs among IDP populations are generally higher as they have had to leave their means and livelihoods. Other **population groups that are disproportionately affected by a lack of adequate access to WASH services and facilities are women, children, elderly people, and disabled people**, as those populations are more vulnerable and have specific needs and/or responsibilities related to WASH.

This SDR also allowed for a review of the quality of WASH assessments conducted in 2019. The assessments reviewed frequently used different data collection tools, making data analysis challenging and illustrating the need for the use of harmonized data collection methods across humanitarian organizations. Whereas **data on type of water sources and sanitation facilities was collected in almost all assessments, reporting on environmental sanitation and hygiene were frequently left out**. The lack of reporting on hygiene is especially problematic for response planning and resource mobilization, since Yemen is facing several disease outbreaks requiring adequate hygiene and hygienic practices, and it is crucial to understand where these are lacking. **In addition, assessments rarely reported sex and age disaggregated data**, which is needed to better understand the specific needs of the most vulnerable populations.

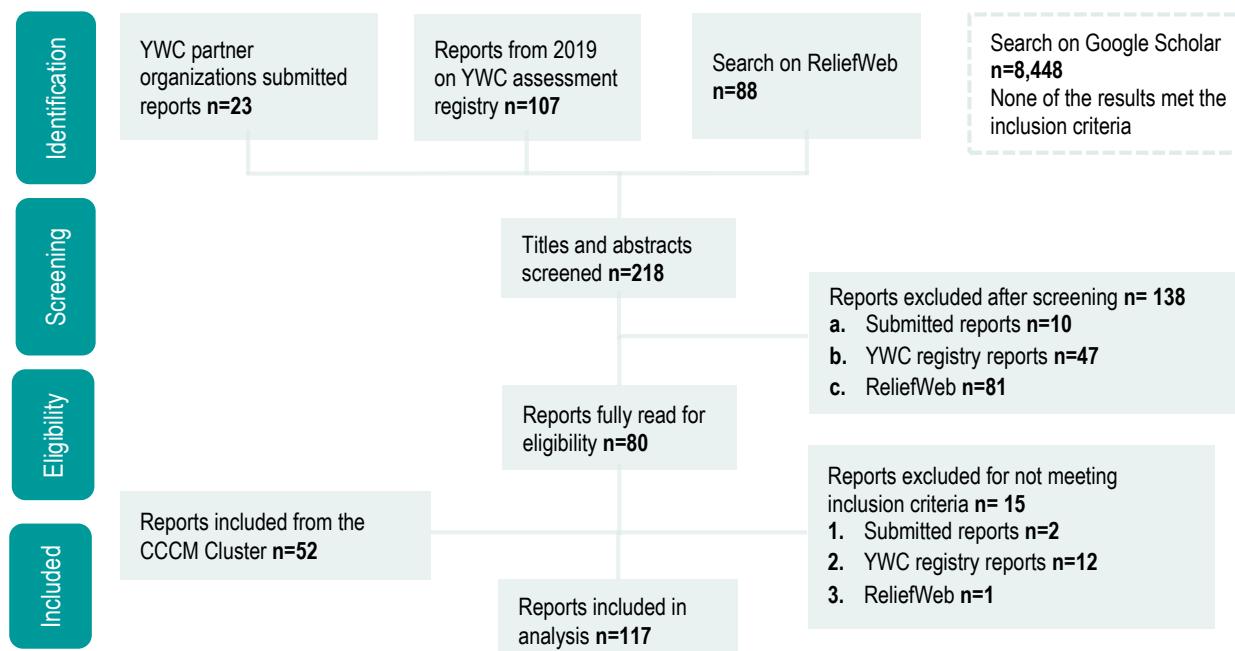
Overall, this SDR aimed to highlight the severity of different WASH-related needs facing Yemenis, and findings indicates the urgency of these needs in light of the current economic, political, and public health situation of Yemen. Humanitarian assistance for improved access to water sources; access to environmental sanitation and hygiene is urgently needed to mitigate and prevent further morbidity and mortality. In order to allow the continuation of effective and efficient humanitarian assistance, it is crucial to continue collecting data on all WASH indicators, while making sure data collection processes are standardized and harmonized across organizations.

## ANNEXES

### Annex 1: WASH Secondary Desk Review Terms of Reference and Methodology Note

For a more detailed description of methodology used to conduct this SDR, please refer to the [Terms of Reference for this report on the REACH Resource Centre](#).

### Annex 2: Flow Diagram Systematic Literature Search



## Annex 3: Included reports, systematic literature search for Core WASH Needs Indicators

#	Name of Report	Date of Publication	Partner Organization
1	Abs RNA KII Summary	Dec-19	OXFAM
2	Al Rugmah Alsofia IDPs camp Bani Thawab sub district - Abs district - Hajjah governorate		MSF
3	Bani Mushta camp - Bani Thwab sub-district - Abs district - Hajjah governorate		MSF
4	CCCM Site Report (52 reports)	20-Jan 2020	CCCM Cluster
5	IDP Camps Needs Report	21-Mar-19	Abs Development Organization for Women and Child
6	IDPs Hosting Site Baseline Assessment	Jun-19	Abs Development Organization for Women and Child
7	Improved Access To Essential Goods Through Cash Transfers - Baseline Survey Report	Feb-19	CARE
8	Improved Access To Essential Goods Through Cash Transfers - Endline Survey Report	Jun-19	CARE
9	In Water	Oct-19	Al-Awn Foundation for Development
10	In Water	Oct-19	Al-Awn Foundation for Development
11	Initial Situation Assessment	Jun-19	CARE
12	Integrated basic emergency assistance to conflict-affected and vulnerable communities in Yemen project - Baseline Survey Report	Sep-19	CARE
13	KAP Survey Report Taiz & Dhale'e	Sep-19	IMC
14	Kuaidenah RNA KII Summary	Dec-19	OXFAM
15	Multi-sectoral needs assessment report		CARE
16	Narrative of Needs Assessment 2nd Allocation	Nov-19	Probably Relief and Development Peer Foundation
17	Needs Assessment	13-Feb-19	Building Foundation for Development
18	Needs Assessment	13-15 February 2019	Resilient Communities Organization (RECO)
19	Needs Assessment of IDPs and Host households (HHs) in Mawza and Mawiyah Districts in Taiz Governorate	Jan-19	BCFHD
20	Needs Assessment Wash project	Feb-19	National Prisoner Foundation
21	Rapid FSL and basic WASH needs assessment report	Feb-19	Solidarités International
22	Rapid Need Assessment in Mahweet Province (Mahweet Governorate)	Oct-19	CARE
23	Rapid Need Assessment Integrated Health & WASH	January - February 2019	Yemen Family Care Association (YFCA)
24	Rapid Needs Assessment in IDPs hosting sites in Dhamar , Marib, and Sana'a governorates	25th- 30th December 2018	Sama Al Yemen Development Foundation
25	Rapid Needs Assessment Milhan District - Al Mahwit Governorate, Yemen	Aug-19	CARE
26	Rapid Needs Assessment of The existing Water points in Salt, Alqahira and Almodhafer Districts of Taiz Governorate	Aug-19	BCFHD
27	Report about Humanitarian situation in AL-Mahweet Mailhan District caused by heavy rains	7-Aug-19	Human Life for Development and Relief
28	Report on Multi-Sectoral Rapid Assessment in Bni Qais District Hajjah Governorate, Yemen	Jan-19	CARE
29	Report on Multi-Sectoral Rapid Needs Assessment in Alzedeah and Al Munera Districts of Alhudeidah Governorate, Yemen	Jan-19	All Girls Development Foundation
30	RRM Household Assessment Report	Jun-19	ACF
31	Survey Methodology	Apr-19	ADRA
32	UN Inter-Agency Mission Report	25-Sep-19	UN OCHA

33	WASH & Cholera Assessment at Al Azareq, AL Shuaib, Qataibah, Musaimeer, Juban, Damt & Qatabah Districts in Al Dhalea & Lahj Governorates	10-22 October 2019	Yemen Family Care Association (YFCA)
34	WASH & Nutrition Needs Assessment Report	15-Jan-19	Direct Aid
35	WASH Need Assessment	Jun-19	Yemen Family Care Association (YFCA)
36	WASH Need Assessment Report of As silw district Taizz Governorate.	28-Jan-19	Tamdeen Youth Foundation
37	WASH Needs Assessment	2019	LMMPO
38	WASH Needs Assessment in Catchment Area Ghaleel Health Facility Al Hawak District	Feb-19	Tamdeen Youth Foundation
39	WASH Needs Assessment of Al Mathaf Camp - Marib	Mar-19	Al-Burdhan Foundation for Development and Relief (BDR)
40	WASH Needs Assessment Report	Feb-19	Abs Development Organization for Women and Child
41	WASH Needs Assessment Report	May-19	Al-Awn Foundation for Development and Millenium Development Foundation
42	WASH Needs Assessment Report	Oct-19	IOM
43	WASH Needs Assessment Report	Oct-19	IOM
44	WASH Needs Assessment Report	Sep-19	IOM
45	WASH Needs Assessment Report	Jul-19	IOM
46	WASH Needs Assessment Report	Jul-19	IOM
47	WASH Needs Assessment Report	Jun-19	LIFD Foundation For Development
48	WASH Needs Assessment Report	Feb-19	National Foundation for Development and Humanitarian Response (NFDHR)
49	WASH Needs Assessment Report	Nov-19	Relief and Development Peer Foundation (RDP)
50	WASH Needs Assessment Report	Feb-19	Relief and Development Peer Foundation (RDP)
51	WASH Needs Assessment Report - Hodeidah (Al-Mighlaf District)	Nov-19	All Girls Development Foundation
52	WASH Needs Assessment Report Governorate Hadramout	Nov-19	Al-Awn Foundation for Development
53	WASH Needs Assessment Report Hadramout Governorate	Novemver 2019	Al-Awn Foundation for Development
54	WASH Rapid Needs Assessment Report	Nov-19	DRC
55	Water Sanitation and Hygiene Need Assessment Report	Feb-19	Nahda Makers Organization
56	Water Sanitation, Hygiene (WASH) Rapid Needs Assessment Report	Nov-19	NRC
57	Watsan and shelter assessment Alnassarah (Al Hajah Alolia camp) Bani Thwab sub-district - Abs district - Hajjah governorate	5-Feb-19	MSF
58	Yemen - Abs - Hodeish IDP Camp Deep Watsan assessment		MSF
59	Yemen Multi sectoral rapid need assessment report	3-Jan-19	ZOA
60	تقرير املسح امليداني ضمن مشروع املاية والصرف الصحي بمحافظة ابى مديريتي زنجبار وخفغر		Abyan Youth Foundation (AYF)
61	جمع معلومات عن فجوة الاصلاح البنى		Stars Foundation for Sustainable Development
62	قائمة بنقاط المياه التي تم مسحها أثناء التقييم السريع لمديريات ( صالة، القاهرة - المظفر ) - محافظة تعز		BCFHD
63			IMC

## Annex 4: Classifications of Access

<b>INDICATOR 1: IMPROVED ACCESS TO WATER</b>		<b>No Access</b>	<b>Access</b>
<b>1.1 Main water source in the district</b>		Improved water source	Unimproved water source
Borehole/Protected well/Protected rainwater tank/Bottled water/Protected spring	Improved	AND	OR
Unprotected well/Unprotected rainwater tank/Unprotected spring/Water trucking, River, Pond or Lake	Unimproved	Short commute	Long commute
<b>1.2 Time spent on foot to main water point, fetch water, and return (at peak time)</b>			
Water source is located at the property/30 minutes or less	Short commute		
More than 30 minutes	Long commute		
<b>INDICATOR 2: ACCESS TO MINIMUM WATER QUANTITIES NEEDED</b>		<b>No Access</b>	<b>Access</b>
<b>2.1 Means of transporting water</b>		Piped into compound	Less than 15 litres
Piped water into the house or compound	Piped to compound	OR	
Water not piped into the house or compound	Not piped to compound		
<b>2.2 Number of litres of water per person per day</b>		15 litres or more	
15 litres of water per person per day or more	15 litres or more		
Less than 15 litres of water per person per day	Less than 15 litres		
<b>INDICATOR 3: ACCESS TO FUNCTIONAL IMPROVED SANITATION FACILITIES</b>		<b>No Access</b>	<b>Access</b>
<b>3.1 Type of toilet</b>		Improved	Unimproved
Flush latrine to a tank/sewer system/pit/Pit latrine – covered/with slab	Improved	AND	OR
Flush latrine to the open/Pit latrine – open/without slab/defecation in the open	Unimproved		
<b>3.2 Status of the toilet</b>		Functional	Not functional
Functional but dirty/Clean and functional	Functional		
Not functional or dirty	Not functional		
<b>INDICATOR 4: ACCESS TO ADEQUATE ENVIRONMENTAL SANITATION</b>		<b>No Access</b>	<b>Access</b>
<b>4.1 Garbage is regularly collected</b>		Garbage collected	Garbage not collected
Yes	Garbage collected	AND	OR
No	Garbage not collected		
<b>4.2 Household witness visible wastewater in the vicinity (30 metres) of their shelter in the last 30 days</b>		Little or no wastewater	Much wastewater
No/Yes, once or twice	Little or no wastewater		
Yes, three – five times/Yes, there is always visible wastewater in the vicinity of the household	Much wastewater		
<b>INDICATOR 5: ACCESS TO FUNCTIONAL HANDWASHING FACILITIES AND SOAP</b>		<b>No Access</b>	<b>Access</b>
<b>5.1 Household have access to a handwashing facility</b>		Facilities	No facilities
Yes	Access	AND	OR
No	No Access		
<b>5.2 Household have water with soap in the handwashing facility</b>		Water and Soap	No water/soap
Both water and soap	Water and Soap		
Soap only/Water only/No water and soap	No water/soap		
<b>INDICATOR 6: GLOBAL ACUTE MALNUTRITION RATE</b>		% of Global Acute Malnutrition in district	
<b>INDICATOR 7: CHOLERA ATTACK RATE</b>		Suspected cholera cases/AWD per 10,000 population	
<b>INDICATOR 8: INFRASTRUCTURE ACCESS RATE</b>		% HHs accessing functional water and sanitation infrastructure per HHs connected to water and sanitation infrastructure	
<b>INDICATOR 9: FLOOD SUSCEPTIBILITY RATE</b>		% of populated areas within the district that is highly susceptible to floods	

## Annex 5: WASH Severity Scales

### INDICATOR 1: IMPROVED ACCESS TO WATER SOURCES

0	1	2	3	4	5	6
90%-100% have access	75%-89% have access	60%-74% have access	45%-59% have access	30%-44% have access	15%-29% have access	0%-14% have access

### INDICATOR 2: ACCESS TO MINIMUM WATER QUANTITIES NEEDED

0	1	2	3	4	5	6
90%-100% have access	75%-89% have access	60%-74% have access	45%-59% have access	30%-44% have access	15%-29% have access	0%-14% have access

### INDICATOR 3: ACCESS TO FUNCTIONAL AND IMPROVED SANITATION

0	1	2	3	4	5	6
90%-100% have access	75%-89% have access	60%-74% have access	45%-59% have access	30%-44% have access	15%-29% have access	0%-14% have access

### INDICATOR 4: ACCESS TO ADEQUATE ENVIRONMENTAL SANITATION

0	1	2	3	4	5	6
90%-100% have access	75%-89% have access	60%-74% have access	45%-59% have access	30%-44% have access	15%-29% have access	0%-14% have access

### INDICATOR 5: ACCESS TO FUNCTIONAL HANDWASHING FACILITIES AND SOAP

0	1	2	3	4	5	6
90%-100% have access	75%-89% have access	60%-74% have access	45%-59% have access	30%-44% have access	15%-29% have access	0%-14% have access

### INDICATOR 6: GLOBAL ACUTE MALNUTRITION RATE

0	1	3	4	5	6
GAM is 0%	GAM is between 0.1% and 4.9%	GAM is between 5 and 9.9%	GAM is between 10 and 14.9%	GAM is between 15 and 19.9%	GAM is 20% or more

### INDICATOR 7: CHOLERA ATTACK RATE

0	1	2	3	4	5	6
Suspected cholera cases/AWD is 0 per 10,000 population	Suspected cholera cases/AWD is between 0 and 0.9 per 10,000 population	Suspected cholera cases/AWD is between 1 and 9.9 per 10,000 population	Suspected cholera cases/AWD is between 10 and 99 per 10,000 population	Suspected cholera cases/AWD is between 100 and 199 per 10,000 population	Suspected cholera cases/AWD is between 200 and 499 per 10,000 population	Suspected cholera cases/AWD is 500 or more per 10,000 population

### INDICATOR 8: INFRASTRUCTURE ACCESS RATE

0	1	2	3	4	5	6
85%-100% have access	71%-84% have access	57%-70% have access	42%-56% have access	28%-41% have access	14%-27% have access	0%-13% have access

### INDICATOR 9: FLOOD SUSCEPTIBILITY RATE

0	1	2	3	4	5	6
85%-100% of populated areas within the district that is highly susceptible for floods	71%-84% of populated areas within the district that is highly susceptible for floods	57%-70% of populated areas within the district that is highly susceptible for floods	42%-56% of populated areas within the district that is highly susceptible for floods	28%-41% of populated areas within the district that is highly susceptible for floods	14%-27% of populated areas within the district that is highly susceptible for floods	0%-13% of populated areas within the district that is highly susceptible for floods

## Annex 6: List of PIN and Severity Scores by District

P-Code	District	Score	P-Code	District	Score	P-Code	District	Score
YE1101	Al Qafr	4.7	YE1310	Bani Al Harith	3.9	YE1520	At Ta'iziyah	4.6
YE1102	Yarim	3.7	YE1401	Nu'man	3.3	YE1521	Al Ma'afer	3.1
YE1103	Ar Radmah	3.7	YE1402	Nati'	3.3	YE1522	Al Mawasit	3.9
YE1104	An Nadirah	3.3	YE1403	Maswarah	2.8	YE1523	Sami'	3.8
YE1105	Ash Sha'ir	2.8	YE1404	As Sawma'ah	4.1	YE1601	Khab wa Ash Sha'f	2.9
YE1106	As Saddah	3.7	YE1405	Az Zahir	3.7	YE1602	Al Humaydat	4.2
YE1107	Al Makhadir	4.2	YE1406	Dhi Na'im	4.2	YE1603	Al Matammah	3.8
YE1108	Hobeish	3.7	YE1407	At Taffah	4.2	YE1604	Az Zahir	3.8
YE1109	Hazm Al Odayn	3.3	YE1408	Mukayras	4.2	YE1605	Al Hazm	3.4
YE1110	Far' Al Odayn	3.7	YE1409	Al Bayda City	4.2	YE1606	Al Mutun	3.8
YE1111	Al Odayn	3.2	YE1410	Al Bayda	3.7	YE1607	Al Maslub	3.8
YE1112	Jiblah	3.9	YE1411	As Sawadiyah	4.2	YE1608	Al Ghayl	4.2
YE1113	Ba'dan	3.3	YE1412	Radman	4.2	YE1609	Al Khalaq	4.3
YE1114	As Sabrah	3.6	YE1413	Rada'	4.2	YE1610	Barat Al Anan	3.7
YE1115	As Saiyani	3.7	YE1414	Al Quraishyah	3.7	YE1611	Rajuzah	2.8
YE1116	Dhi As Sufal	3.9	YE1415	Wald Rabi'	4.7	YE1612	Kharab Al Marashi	3.8
YE1117	Mudhaykhirah	3.3	YE1416	Al Arsh	3.7	YE1701	Bakil Al Mir	3.3
YE1118	Al Mashannah	4.2	YE1417	Sahab	3.7	YE1702	Harad	3.5
YE1119	Adh Dhihar	4.0	YE1418	Ar Ryashyyah	3.3	YE1703	Midi	3.6
YE1120	Ibb	3.6	YE1419	Ash Sharyah	4.2	YE1704	Abs	4.6
YE1201	Al Mahfad	2.9	YE1420	Al Malajim	4.2	YE1705	Hayran	4.4
YE1202	Mudiyah	3.3	YE1501	Mawiyah	4.3	YE1706	Mustaba	4.1
YE1203	Jayshan	2.8	YE1502	Shar'ab As Salam	4.0	YE1707	Kushar	2.8
YE1204	Lawdar	3.8	YE1503	Shar'ab Ar Rawnah	4.4	YE1708	Al Jamicah	3.7
YE1205	Sibah	2.8	YE1504	Maqbanah	4.7	YE1709	Kuhlan Ash Sharaf	3.7
YE1206	Rassd	2.8	YE1505	Al Makha	3.8	YE1710	Aflah Ash Sham	3.7
YE1207	Sarar	2.8	YE1506	Dhubab	4.0	YE1711	Khayran Al Muharraq	4.5
YE1208	Al Wadi'	2.9	YE1507	Mawza'	4.2	YE1712	Aslam	4.6
YE1209	Ahwar	3.5	YE1508	Jabal Habashi	3.8	YE1713	Qalf Shammar	4.7
YE1210	Zinjibar	2.0	YE1509	Mash'rah Wa Hadnan	3.8	YE1714	Aflah Al Yaman	4.8
YE1211	Khanfar	3.3	YE1510	Sabir Al Mawadim	3.7	YE1715	Al Mahabishah	4.7
YE1301	Old City	3.8	YE1511	Al Misrakh	4.7	YE1716	Al Miftah	4.2
YE1302	Shu'ub	3.8	YE1512	Dimnat Khadir	4.1	YE1717	Al Maghrabah	3.7
YE1303	Azaal	2.9	YE1513	As Silw	5.2	YE1718	Kuhlan Afar	4.2
YE1304	As Safiyah	3.8	YE1514	Ash Shamayatayn	5.0	YE1719	Sharas	4.2
YE1305	As Sab'in	2.5	YE1515	Al Wazi'iyah	3.8	YE1720	Mabyan	5.3
YE1306	Al Wehdah	2.7	YE1516	Hayfan	4.2	YE1721	Ash Shahil	4.2
YE1307	At Tahrir	3.4	YE1517	Al Mudhaffar	3.5	YE1722	Ku'aydinah	4.6
YE1308	Ma'in	2.9	YE1518	Al Qahirah	3.7	YE1723	Wadrah	3.3
YE1309	Ath Thawrah	2.2	YE1519	Salah	3.5	YE1724	Bani Qays	5.5

P-Code	District	Score	P-Code	District	Score	P-Code	District	Score
YE1725	Ash shaghadirah	5.3	YE1910	Sayun	1.9	YE2112	As Sa'id	2.4
YE1726	Najrah	3.7	YE1911	Tarim	1.9	YE2113	Ataq	2.8
YE1727	Bani Al Awam	3.7	YE1912	As Sawm	1.8	YE2114	Habban	2.4
YE1728	Hajjah City	3.8	YE1913	Ar Raydah wa Qussay'ar	2.0	YE2115	Ar Rawdah	1.5
YE1729	Hajjah	5.1	YE1914	Ad Dis	2.0	YE2116	Mayfa'ah	3.7
YE1730	Washhah	4.2	YE1915	Ash Shahr	2.8	YE2117	Radum	2.9
YE1731	Qarah	3.3	YE1916	Ghayl bin Yamin	1.9	YE2201	Baqim	4.7
YE1801	Az Zuhrah	5.2	YE1917	Ghayl Bawazir	2.1	YE2202	Qatabir	4.2
YE1802	Alluhayah	5.4	YE1918	Daw'an	1.9	YE2203	Monabbih	4.2
YE1803	Kamaran	6.0	YE1919	Wadi Al Ayn	1.5	YE2204	Ghamr	3.7
YE1804	As Salif	5.9	YE1920	Rakhayah	1.5	YE2205	Razih	3.3
YE1805	Al Munirah	4.5	YE1921	Amd	1.4	YE2206	Shada'a	2.4
YE1806	Al Qanawis	5.3	YE1922	Ad Dulay'ah	1.9	YE2207	Adh Dhahir	4.2
YE1807	Az Zaydiah	4.6	YE1923	Yab'uth	1.9	YE2208	Haydan	2.8
YE1808	Al Mighlaf	4.6	YE1924	Hajar	4.0	YE2209	Saqin	2.8
YE1809	Ad Dohi	5.8	YE1925	Brum May'ah	2.9	YE2210	Majz	3.7
YE1810	Bajil	4.7	YE1926	Al Mukalla	1.6	YE2211	Sahar	3.8
YE1811	Al Hujaylah	5.2	YE1927	Al Mukalla City	3.2	YE2212	As Safra	3.8
YE1812	Bura'	5.2	YE1928	Haridah	1.8	YE2213	Al Hashwah	3.3
YE1813	Al Marawai'ah	4.9	YE2001	Al Hada	4.2	YE2214	Kitaf wa Al Boqa'	3.3
YE1814	Ad Durayhimi	4.8	YE2002	Jahran	3.8	YE2215	Sa'dah	4.9
YE1815	As Sukhanah	5.7	YE2003	Jabal Ash Sharq	3.8	YE2301	Hamdan	4.0
YE1816	Al Mansuriyah	5.9	YE2004	Maghrib Ans	4.7	YE2302	Arhab	3.8
YE1817	Bayt Al Faqih	4.3	YE2005	Otmah	3.8	YE2303	Nihm	4.2
YE1818	Jabal Ras	5.6	YE2006	Wusab Al Ali	4.3	YE2304	Bani Hushaysh	4.2
YE1819	Hays	4.4	YE2007	Wusab As Safil	3.8	YE2305	Sanhan wa Bani Bahlul	3.4
YE1820	Al Khukhah	4.5	YE2008	Dhamar City	4.1	YE2306	Bilad Ar Rus	4.2
YE1821	Al Hawak	2.6	YE2009	Mayfa'at Ans	4.2	YE2307	Bani Matar	3.8
YE1822	Al Mina	4.1	YE2010	Ans	4.2	YE2308	Al Haymah Ad Dakhiliyah	4.2
YE1823	Al Hali	3.8	YE2011	Dawran Anis	3.7	YE2309	Al Haymah Al Kharijiyah	4.2
YE1824	Zabid	4.7	YE2012	Al Manar	4.7	YE2310	Manakhah	3.8
YE1825	Al Jarrahi	5.3	YE2101	Dahr	1.4	YE2311	Sa'fan	4.2
YE1826	At Tuhayta	3.7	YE2102	At Talh	1.9	YE2312	Khawlan	4.2
YE1901	Rumah	1.5	YE2103	Jardan	2.4	YE2313	At Tyal	4.2
YE1902	Thamud	2.4	YE2104	Arma'a	1.9	YE2314	Bani Dabyan	4.2
YE1903	Al Qaff	1.5	YE2105	Osaylan	2.5	YE2315	Al Hissn	4.2
YE1904	Zamakh wa Manwokh	1.5	YE2106	Ayn	2.4	YE2316	Jihanah	4.2
YE1905	Hajar As Say'ar	1.4	YE2107	Bayhan	3.3	YE2401	Dar Sa'd	3.8
YE1906	Al Abr	2.8	YE2108	Markhah Al Olya	2.4	YE2402	Ash Shaykh Othman	3.8
YE1907	Al Qatn	1.9	YE2109	Markhah Al Sufla	2.4	YE2403	Al Mansurah	3.5
YE1908	Shibam	1.9	YE2110	Nisab	2.4	YE2404	Al Burayqah	3.4
YE1909	Sah	1.9	YE2111	Hatib	2.4	YE2405	At Tawahi	3.1

P-Code	District	Score	P-Code	District	Score	P-Code	District	Score
YE2406	Al Mu'alla	3.6	YE2802	Hat	2.4	YE3106	Al Ja'fariyyah	2.8
YE2407	Kritar - Sirah	3.4	YE2803	Hawf	1.4	YE3201	Hadibu	2.0
YE2408	Khur Maksar	3.5	YE2804	Al Ghaydah	3.0	YE3202	Qalansiyah wa Abd Al Kuri	2.0
YE2501	Al Had	3.3	YE2805	Man'ar	1.5			
YE2502	Yafi'	2.8	YE2806	Al Masilah	1.5			
YE2503	Al Maflahi	2.4	YE2807	Sayhut	2.6			
YE2504	Yahr	3.3	YE2808	Qishn	3.5			
YE2505	Habil Jabr	2.8	YE2809	Haswin	3.1			
YE2506	Halmin	3.3	YE2901	Harf Sufyan	3.7			
YE2507	Radfan	2.7	YE2902	Huth	3.8			
YE2508	Al Malah	3.9	YE2903	Al Ashah	3.7			
YE2509	Al Musaymir	4.5	YE2904	Qaflat Odhar	3.7			
YE2510	Al Qubaytah	4.2	YE2905	Shaharah	3.7			
YE2511	Tur Al Bahah	4.0	YE2906	Al Madan	4.2			
YE2512	Al Maqatirah	2.8	YE2907	Suwair	3.8			
YE2513	Al Madaribah Wa Al Aarah	5.2	YE2908	Dhulaymat Habur	4.2			
YE2514	Al Hawtah	4.4	YE2909	Dhibain	4.2			
YE2515	Tuban	4.1	YE2910	Kharif	3.7			
YE2601	Majzar	3.6	YE2911	Raydah	3.7			
YE2602	Raghwan	4.0	YE2912	Jabal Eyal Yazid	4.3			
YE2603	Madghal Al Jid'an	3.9	YE2913	As Sudah	4.3			
YE2604	Harib Al Qaramish	4.0	YE2914	As Sawd	4.3			
YE2605	Bidbadah	3.7	YE2915	Amran	4.2			
YE2606	Sirwah	3.6	YE2916	Maswar	4.3			
YE2607	Al Jubah	4.2	YE2917	Thula	2.9			
YE2608	Rahabah	2.1	YE2918	Eyal Surayh	3.3			
YE2609	Harib	3.3	YE2919	Khamir	3.7			
YE2610	Mahliyah	3.3	YE2920	Bani Surim	4.2			
YE2611	Al Abdiyah	2.8	YE3001	Juban	4.1			
YE2612	Ma'rib City	3.9	YE3002	Damt	4.4			
YE2613	Ma'rib	3.5	YE3003	Qa'tabah	4.2			
YE2614	Jabal Murad	2.8	YE3004	Ash Shu'ayb	4.5			
YE2701	Shibam Kawkabin	3.2	YE3005	Al Hasayn	2.5			
YE2702	At Tawilah	4.2	YE3006	Ad Dali'	3.7			
YE2703	Ar Rujum	5.1	YE3007	Jahaf	3.3			
YE2704	Al Khabt	4.2	YE3008	Al Azariq	4.2			
YE2705	Melhan	4.8	YE3009	Al Husha	4.6			
YE2706	Hufash	5.5	YE3101	Bilad Atta'am	3.7			
YE2707	Bani Sa'd	4.2	YE3102	As Salafiyyah	3.3			
YE2708	Al Mahwit City	3.7	YE3103	Al Jabin	3.7			
YE2709	Al Mahwit	5.3	YE3104	Mazhar	3.3			
YE2801	Shahin	1.4	YE3105	Kusmah	3.3			

## Annex 7: References

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