



## WATER CRISIS AND CHOLERA OUTBREAK IN YEMEN (QUICK REVIEW)

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**Executive Summary:** *The Republic of Yemen, a country located in a dry and arid region of the Middle East, was already struggling with a severe water crisis before the current armed conflict. Disruptions of the public health system, together with collapsing water, sanitation and hygiene (WASH) services are worsened by the armed conflict and blockade to the country. In this environment, cholera, which is spread mostly by unsafe water and unsafe food, appears as an epidemic affecting thousands and aggravating the humanitarian crisis in Yemen. The conflict, the humanitarian needs and the cholera outbreak are clearly interlinked. The study of these links is beyond the scope of this product.*

**Key words:** *Yemen Civil War, humanitarian crisis, water crisis, food crisis, cholera outbreak, water sanitation and hygiene clean water WASH*

### **Highlights:**

- Humanitarian crisis figures in Yemen: estimated 17.8 million are food insecure, 16 million lack access to safe water and sanitation, and 16.4 million lack access to adequate healthcare. In addition, as a result of the ongoing armed conflict, 9,000 deaths have been reported, with around 50,000 people injured and over three million people forced to flee from their homes.

- Education has been disrupted and two million children are out of school. The discontinuation of the payment of teacher salaries has created an education crisis, risking a generation of illiterate children if no mitigation measures are put in place.

- In the current armed conflict in Yemen, water plays a significant role: 13 million Yemenis (50% of the population) struggle daily to find or buy enough clean water to drink or grow food. This lack of clean water triggers many health problems such as cholera and diphtheria.

- Cholera is spread mostly by unsafe water and unsafe food that has been contaminated. The risk of death among those affected is usually less than 5% but may be as high as 50% if it is not treated.

- In October 2016 a cholera outbreak was declared in Yemen. In 2017 resurged, and between April and November 2017 there have been 900,000 suspected cases and 2,192 associated deaths.

- In addition to the cholera outbreak, the World Health Organization (WHO) reported in January 2018 that 48 diphtheria-related deaths had been recorded and 610 suspected cases have also been reported across the country.

- Currently, 191 humanitarian partners are working in Yemen including 147 national Non-Governmental Organisations (NGO's), 36 international NGO's and eight UN agencies.

### **BACKGROUND IN WATER SCARCITY.**

Yemen is a country with one of the highest rates of population growth in the world. Unlike other Middle-Eastern countries such as Lebanon, Syria, Iraq and Egypt, it has no rivers and depends on rainwater as well as underground water. Yemen's water shortage is far worse than that of any other country in the Middle East. It is also the country with the highest rate of exhaustion of water sources in the region.

Surface water is considered to be an important source for irrigation in Yemen. Surface water consists of seasonal spate water and springs, with differing quantity and quality depending on the area. This source of water is less affected by drought and other natural and geographical factors. Surface water in Yemen is estimated to be about 1,500 M m<sup>3</sup>/year.

Groundwater resources are also vital for Yemen's agriculture. For their recharge they depend mainly on spate running water and rainfall. There are estimated to be more than 50,000 active wells in Yemen. These wells have relatively low levels of production. It is clear that there is a big gap between the demand for water and the size of the renewable resources. The deficit is covered from the deep underground aquifers. The annual water share is under 125 m<sup>3</sup> per person, which is below the water poverty line.

The combination of high population growth (which was around 5% in early 90's and 2.5 % annually by 2016) and exhaustion of water by misguided agricultural development and policies, the use of water to grow khat (a plant that needs vast amounts of water to grow), a lack of law enforcement to regulate water use and a high vulnerability to climate change has contributed to a severe water crisis in Yemen that may be one of the most catastrophic in the world. Sana'a is the only capital city in the world that may run out of water within the next decade.

### **HUMANITARIAN SITUATION IN YEMEN**

Almost three years of armed conflict in Yemen have devastated the lives of millions of people. The UN named the situation as "the worst man-made humanitarian crisis". According to United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) more than 60 % of the total population is food insecure while almost 3 million people are internally displaced. An estimated 10.4 million people lack access to basic healthcare, including 8.8 million living in severely under-served areas. Medicine and medical supplies/materials are in chronically short supply. The blockade since the beginning of November 2017 to Yemen's ports (sea, land and airports), is making things a lot worse; prices of basic supplies have risen significantly throughout the country, making them unreachable for most of the population.

According to WHO, more than 1,900 out of 3,507 health facilities in 16 governorates are either non-functional or partially functioning which leads to a result of having only 1.5 primary health care units and centres per 10,000 people. A child under 5 dies in Yemen every 10 minutes from preventable causes. In addition, 1.8 million children and 1.1 million pregnant or lactating women are suffering from Moderate Acute Malnutrition (MAM), while Global Acute Malnutrition (GAM) rates are as high as 31 % in some locations – more than twice the emergency threshold. Because almost only 50 % of health facilities are fully functioning, the actual figures are likely to be higher.

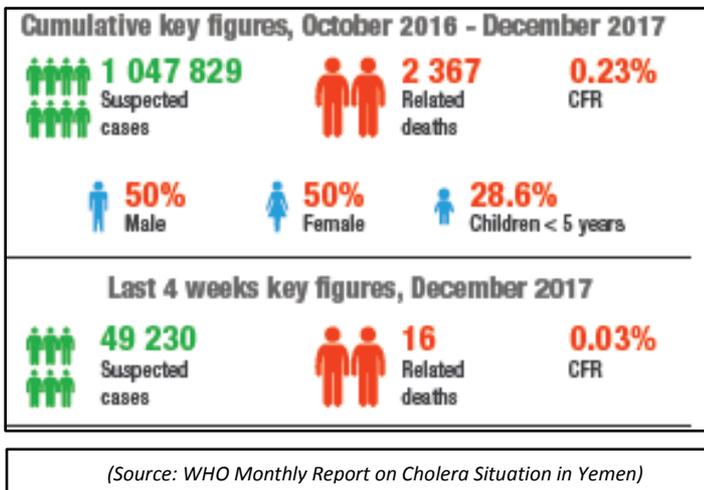
An estimated 16 million Yemenis need humanitarian assistance to establish or maintain access to safe water, basic sanitation and hygiene (WASH) facilities, out of which 11.6 million are in acute need. Water and sewage networks require increased support to continue providing a minimum level of services. Humanitarian actors are working to repair infrastructure, but reliable fuel imports are critical to maintaining filtration systems, and this cannot be guaranteed as long as the blockade is maintained. Following these developments, WASH is likely to remain a priority need also in 2018.

Yemen is now also in the world's largest man-made food security crisis. However, this crisis is not driven by a lack of food in the country. Rather, Yemen's food crisis is driven by factors constraining the supply, distribution and people's diminishing purchasing power. Ongoing conflict and economic decline have steadily eroded people's coping mechanisms, leaving large parts of the population at the risk of famine. 17.8 million people are now food insecure – a 5 % increase over 2017 UNOCHA Humanitarian Needs Overview-HNO estimates. Out of this, approximately 8.4 million people are severely food insecure and at risk of starvation, an increase of 24% since 2017.

### **CHOLERA OUTBREAK.**

As a consequence of all these factors, an epidemic of any disease was inevitable and after less than 2 years since the beginning of the conflict a cholera outbreak was declared in Yemen in October 2016.

The trend of the outbreak and case-fatality rate (CFR) declined during January to March 2017, though more than 25,000 suspected cases, including 143 associated deaths (with a case-fatality rate of 0.44 %) were reported by the end of March 2017. A resurgence of the outbreak was identified by the end of April 2017, followed by an unprecedented spike of 900,000 suspected cases and 2,192 associated deaths (0.25 % CFR) between 27 April and 5 November 2017.



The spread of the outbreak has quickly surpassed Haiti as the biggest one since modern records began in 1949. While there were 815,000 cases of cholera in Haiti between 2010 and 2017, Yemen has exceeded that number in just six months.

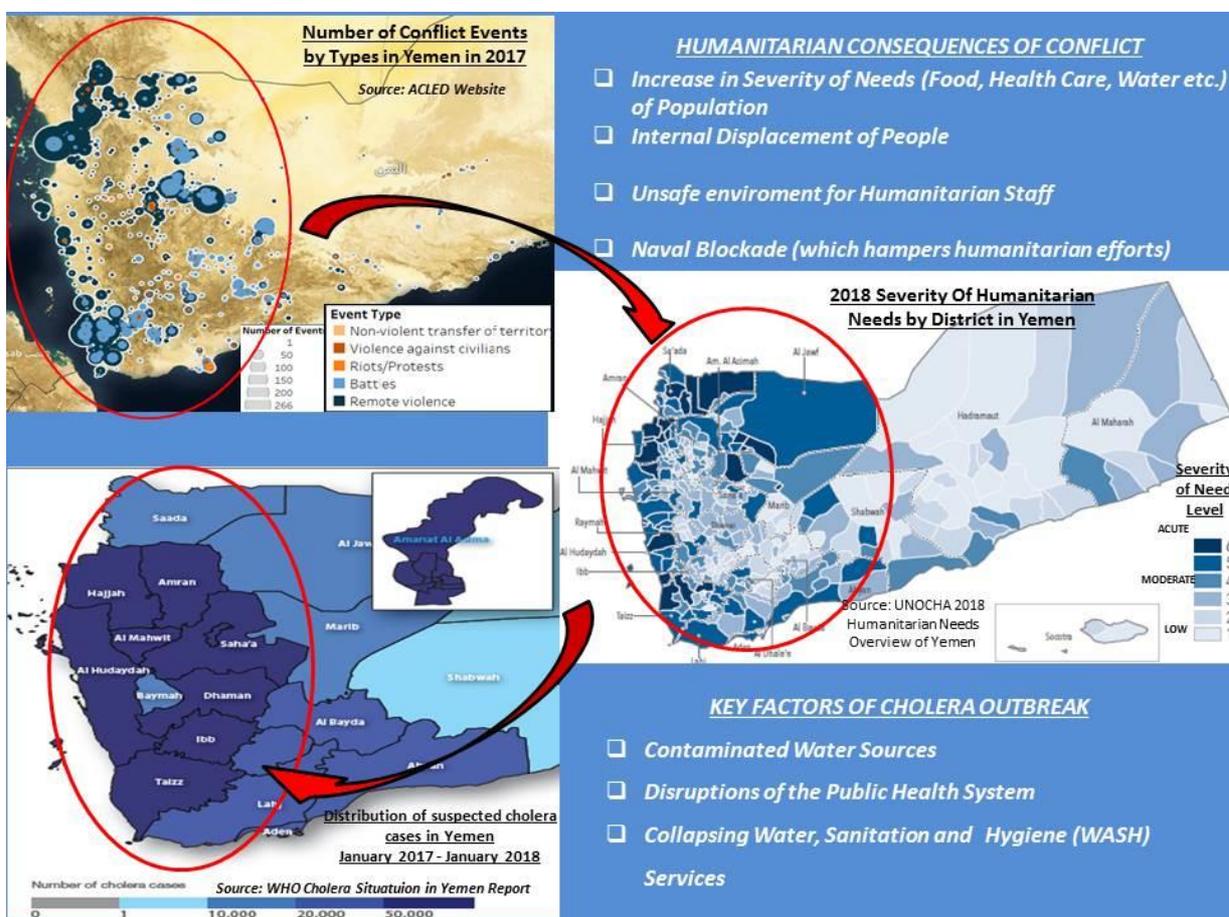
The main factors contributing to the outbreak are contaminated water sources and disruptions to the public health system, collapsing water, sanitation and hygiene (WASH) services, most of which are increasing because of the armed conflict and blockade.

### VIOLENCE, HUMANITARIAN NEEDS AND CHOLERA.

The unsafe environment makes difficult for humanitarian partners to perform their activities, and for national institutions to work on the water conservation solutions. There is a blockade on the Yemen's sea, air and land borders which hamper humanitarian aid entry and distribution and import essential goods and equipment. Yemen highly depends on imported products such as bottled water, food and fuel.

The graphic below shows that people living in the west side of the country are those that experience most conflict related incidents. We may also observe that those are also the ones with the highest severity of needs and suffering more cases of cholera.

We know that cholera is spread mostly by unsafe water and unsafe food, so it seems that the reason behind this geographical overlapping is that this unsafe water and food environment is mainly found in the zone of conflicts. This situation is exacerbated by the military blockade (that hamper humanitarian arrival) and the lack of security (that hamper distribution). The detailed interaction of violence, humanitarian need and cholera needs a more dive analysis and it is not the scope of this short product.



## FINAL REMARKS

If the fighting sides don't fulfill their responsibilities according to International Humanitarian Law, the humanitarian situation is likely to deteriorate in 2018 particularly in the Southern, Western, and Northern governorates. Food security will continue to deteriorate, and cholera, diphtheria or other epidemic diseases are likely to continue to spread.

UNOCHA, UNICEF, WHO and many other organizations are doing their best to reverse the humanitarian disaster in Yemen. In addition, the UN High Commissioner for Refugees is leading an initiative called Global Protection Cluster, which coordinates and provides global level inter-agency policy advice and guidance, for addressing the humanitarian situation in Yemen.

After a solution for armed conflict is found all these massive efforts should be directed in a way to solve the challenge of water conservation.

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