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WASH Field Note FN/24/2019

Urban WASH programming in Protracted Conflict Contexts: Aleppo's Experience, Syria

SUMMARY

Water, sanitation, and hygiene (WASH) for urban populations is one of UNICEF's emerging areas of focus, highlighted in its Global WASH Strategy (2016–2030). In the Middle East, UNICEF is engaged in supporting urban populations affected by protracted conflict, either in their home cities or, having fled conflict, in locations to which they have been displaced. Provision of WASH services in these circumstances has presented the organisation with new and unfamiliar challenges as it seeks to ensure WASH for the vulnerable amid the devastation. Valuable lessons have been learned over the past few years as the organisation builds its experience and expertise in these particularly difficult situations. The focus of this Field Note is Syria's urban WASH programme, documenting the experience in implementing WASH in a city which has endured years of protracted conflict, and is designed as a learning note for the organisation as it strengthens its role in urban areas.

Introduction

Background

UNICEF's Global WASH Strategy (2016–2030) highlights urban WASH as one of the emerging areas of focus for the organisation—given the increasing numbers of vulnerable children living in poor urban environments across the world.

This Field Note forms part of UNICEF's efforts to document its urban WASH programme experience and expertise, to inform the development of a global urban WASH framework and support the Global WASH Strategy.

This note focuses on a specific context in urban WASH programming: cities affected by protracted conflict. It documents UNICEF's experiences in humanitarian WASH response in Aleppo, Syria, which aimed to provide life-saving interventions to a population whose existing WASH infrastructure had been destroyed by conflict. As such the project provides invaluable learning on the experience of delivering WASH services to urban populations in protracted conflict situations, and as a case study provides a starting point and guidance for country offices faced with similar urban WASH programming challenges. It is not prescriptive—every country is different and will require a thorough urban situation analysis prior to the development of a suitable programme, but the organisation now has considerable experience in urban areas in Syria, which can provide valuable lessons supporting urban WASH programming.

Understanding the context: Aleppo, Syria

Before the start of the conflict in 2009, nearly 96 per cent of the population in Syria was served by piped water systems through municipal networks, which were centrally managed and provided safe water following national water quality standards. In addition, 82.4 per cent of Syrians had access to improved sanitation services (urban 95 per cent; rural 65 per cent).

Today, up to 35 per cent of the population is assumed to be relying on alternative, often unsafe water sources to meet their water supply needs. It is estimated that 12.6 million people lack regular access to safe water and families are spending up to 15–20 per cent of their incomes to secure access to water[1].

Most waste water treatment plants in the country are now either non-functional or only partially functional. The sewage networks are discharging untreated water into waterways or open land, and untreated or partially treated waste water is used for irrigation.

The conflict has resulted in extensive damage to infrastructure and a lack of spare parts for repairs, meaning regular cuts to electricity and water supplies.

Eight years after the conflict began, rates of WASH-related diseases (such as acute watery diarrhoea, *leishmaniosis* and hepatitis) were on the rise throughout the country and in areas lacking adequate water and sanitation facilities, the risk of epidemics is high. The conflict added further risks to life for those searching for water supplies, especially in cities; during the worst of the fighting exposure to mortars and live ammunitions were increased; many children died collecting water in Aleppo. In many areas, households also turned to costly and often unsafe alternative water sources to meet their basic water needs.

KEY POINTS

- *WASH programming in cities under protracted crises presents new and different challenges to UNICEF country offices.*
- *Prior to the current conflict in Syria, water and sanitation provision through municipal networks in urban areas stood at 96% and 95% respectively.*
- *Since 2012, the focus of UNICEF programming has evolved over several phases, from (i) meeting critical needs through emergency water trucking and treatment and (ii) building resilience through the development of alternative water sources, to (iii) supporting network rehabilitation and technical assistance to service providers.*
- *Over the course of the intervention, the UNICEF team learned that the most efficient, equitable, and sustainable approach for bringing water services to children was not through a conventional humanitarian response, but by strengthening the capacity and capability of urban water service providers through training and targeted technical assistance.*

The Syria conflict entered its eighth year in 2018, and the conflict now affects nearly every person in the country. Around 6 million people, including over 2.5 million children, have sought refuge in Lebanon, Jordan, Turkey, Iraq, and Egypt, making it the world's largest displacement crisis. Inside Syria, over 13.1 million people are in need of humanitarian assistance. This includes 6.1 million internally displaced people, of whom 2.6 million are children[2].

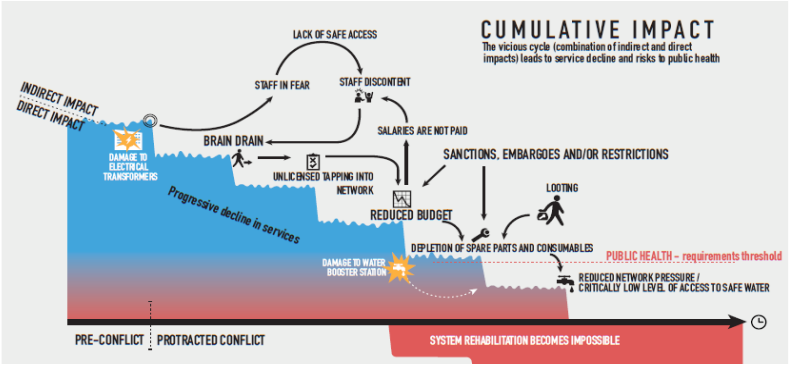

Figure 1: ICRC depiction of the cumulative impact of conflict on services and public health

[1] HRP 2018 and WoS WASH Atlas assessment (July 2018), and HNO 2018

[2] HRP 2018

Description of Intervention

UNICEF's intervention in the crisis in Aleppo can be described in four phases, with the WASH programme response adapting according to changing circumstances and learning as the intervention progressed.

- **Phase 1 (2012-2014)**: UNICEF led an immediate humanitarian response focused on alleviating critical needs through water trucking, water treatment, and emergency network repairs.
- **Phase 2 (2014-2016)**: UNICEF sought to build service resilience through the development of alternative water sources.
- **Phase 3 (2016-2017)**: UNICEF focused on repairing and maintaining the water network to decrease and eventually eliminate water trucking.
- **Phase 4 (2017 onwards)**: UNICEF has been deepening its focus on network rehabilitation and strengthening the capacity of service provider staff, through targeted training focused on issues of maintenance, cost recovery, and consumer engagement.

The current fourth phase of the UNICEF WASH programme in Syria aims to achieve '*equitable service provision through urban network services*' and consists of several components.

Component 1: Restoration of basic, reliable, and equitable services for all. This component has a focus on preventing the further collapse and degradation of WASH infrastructure and services.

This includes interventions to repair the most critical parts of the existing infrastructure, e.g. water intakes/wells, pumping stations, and core parts of the distribution system; and gradual resumption of reliable network services—starting with urban centres. UNICEF has also sought to reduce major water losses in the system and improve overall water flow by identifying and repairing leaks in the rubble, and by sealing off junctions to destroyed, uninhabited neighbourhoods. In smaller urban centres, reverse osmosis systems for filtration and water quality improvements have been installed in rural areas of Aleppo and are working successfully, and mobile kits producing sodium hypochlorite to disinfect drinking water kits have been deployed across the city.

Ultimately, the complete rehabilitation of the waste water treatment plants in Aleppo and in other major cities in Syria would bring huge improvements to wastewater treatment in urban areas. Since this is currently beyond the abilities of the ongoing humanitarian response, the programme instead focused on improving faecal sludge management through repairs to the sewage network, maintenance of pumping capacity, and improving access to sewage line clearing equipment ('jetters') to ensure that, at the very least, sewage is removed from the cities.

Component 2: System strengthening—operations and maintenance. This element of the intervention supports service providers to 'stand on their own feet', so they can provide regular maintenance, move towards preventive maintenance and, ultimately, recover costs to make service provision sustainable. UNICEF is also supporting setting up accepted standards for a minimum quality of service, re-establishing a customer database, and increasing customers' willingness to pay[3]. All of these will enable a gradual move towards recovering costs, with targeted subsidies better linked to performance indicators. It is also providing basic equipment and instruments, as well as encouraging and strengthening local production of essential supplies for water supply improvements, such as water treatment chemicals.

This system strengthening component also includes capacity development through engaging experienced local and international/regional experts to provide on-the-job technical assistance and tailored training programmes to fill gaps in capacity. It is hoped such capacity building will soon be strengthened further by the

[3] Historically, water provision was heavily subsidised by the government pre-crisis, which has left little sense of willingness or incentive to pay among consumers.

involvement of the Arab Countries Water Utilities Association (ACWUA), who provide specific training in water and waste water technologies.

Component 3: Provision of WASH services for institutions (collaboration with the International Committee of the Red Cross - ICRC). This component saw UNICEF and ICRC working together, with ICRC supporting water provision to health institutions, while UNICEF work on WASH provision for schools and child-friendly spaces. UNICEF supports the rehabilitation and development of drinking water and sanitation facilities in schools, including the provision of prefabricated classrooms and toilets where necessary, as well as raising hygiene awareness, especially on hand-washing with soap and menstrual hygiene management (MHM) supplies for adolescents. As at 2018, UNICEF has supported 150 schools in Aleppo.

Picture 1: Typical school toilet installed for internally displaced persons

Component 4: Hygiene promotion. UNICEF is supporting hygiene awareness through an agreed strategy developed by its C4D (Communication for Development) team, targeting children aged five to ten years old, women in internally displaced persons (IDP) locations, crowded schools, child-friendly spaces, and teachers. The hygiene awareness-raising includes sessions on hygiene promotion for children, as well as a toolkit for child engagement activities. Health workers engage new mothers at IDP locations and maternity hospitals, and family members and other community members are targeted through radio messages.

Component 5: Developing an enabling environment for urban WASH.

This component supports:

(i) Continued advocacy for and support to evidence generation, namely representative surveys and assessment of the status of WASH and other social sector services in Syria, given the ongoing challenge to obtain credible and widely accepted information, as well as approval for conducting representative surveys in the current environment;
(ii) Analytical work on the costs of achieving service sustainability; taking into account life-cycle costs and restoring waste-water treatment services for the long-term;
(iii) Water and sanitation safety planning;
(iv) Developing a road map for sector recovery; and
(v) Reviewing the pre-crisis policy framework in light of the changed situation.

Component 6: Funding and donor support. For these interventions to continue, ongoing funding is necessary. UNICEF continues to advocate for funding with current and potential donors, focusing on (i) gaining acceptance from humanitarian funding organisations that system support and restoration is an appropriate and equitable response in Syria, and (ii) conveying to these potential donors that such system-focused interventions are both life-saving and urgent, and often more appropriate, effective and sustainable for protracted conflict settings than simply focusing on conventional short-term interventions.

Outcomes

Rehabilitation works are ongoing in Aleppo, and new projects are in the planning and technical appraisal stages. When completed, UNICEF's rehabilitation work will have covered around half of the networks requiring restoration in Aleppo.

Through these interventions, approximately 1.5 million people in Aleppo city will have improved access to water through the rehabilitation of three water treatment plants and pumping stations (with stand-by generators also installed), as well as network restoration works to improve and ensure continuous supply. Importantly, these current interventions are focused on neighbourhoods that are expected to receive significant returnees.

In outer (eastern) Aleppo, the focus is on the rehabilitation of areas where the most vulnerable reside, and which are also expected to receive significant numbers of returnees. Some 2.5 million people in eastern Aleppo are expected to benefit through the rehabilitation of Al-Khafsah and Tal Aswad water treatment plants and pumping stations. This area will also have a restored sewage network benefitting 500,000 residents.

UNICEF identified the areas that would most benefit from these rehabilitation interventions based on the extent of damage to water systems. The ongoing water distribution network rehabilitation was then divided among the different humanitarian actors operating in Eastern Aleppo, to ensure the effective coordination of interventions and to avoid duplication of efforts.

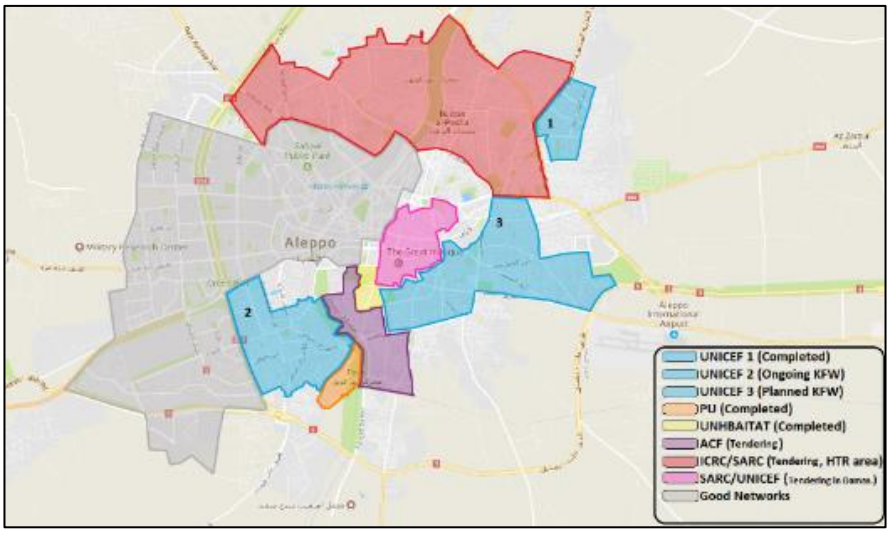

Figure 2: Map of planned and ongoing water distribution network rehabilitation programmes, conducted by different humanitarian actors in eastern Aleppo

Where networks have been restored and water is flowing, treated water availability has increased from 15 litres per person per day to 80 litres per person per day. However, as of 2018 it was estimated that there is still a treated water loss of 60 per cent (for example through leakage). The target is to reduce this loss by half with improved maintenance and repairs, to at most 30 per cent losses of treated water by the end of the project, in mid-2019.

Network and water treatment plant restoration has had an extremely significant effect on reducing the need for water trucking, as shown in the graph below. As water trucking is extremely expensive, this has brought the costs of the programme down significantly, allowing more and more funds to be invested in sustainable network rehabilitation rather than the one-off cost expenses of trucking.

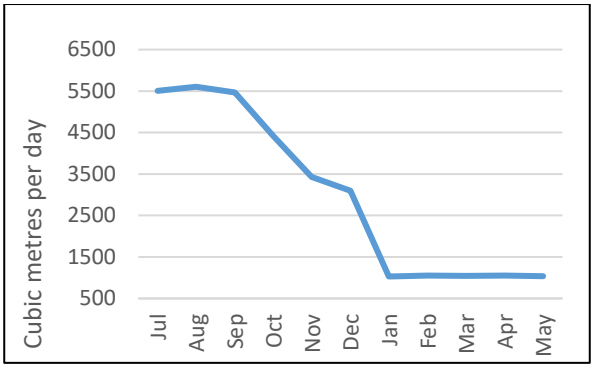

Figure 3: Decrease in water trucking in Aleppo, Syria between July 2017 and May 2018)

What worked well

Personnel/staffing: There was a strong WASH team based around experienced national officers who were technically sound and had knowledge of the country, area, and people, reflecting the depth of technical expertise in the region. This core team was backed up by contracted 'facilitators'; Syrian nationals with more freedom of movement than UN staff. UNICEF has a field office in Aleppo, fully staffed with national WASH professionals, working alongside partners with strong capacity and technical support from the WASH team (both international and national) based in Damascus. An experienced sanitation adviser was also seconded for a 12-month period by the Swiss Agency for Development and Cooperation (SDC) and strengthened the WASH team in challenging technical areas – for example helping understand the challenges of addressing faecal sludge management, which had previously not been prioritised in Syria.

UNICEF's coordination: UNICEF's presence and programming in the city was highly regarded both by the authorities and residents; the programme has specifically prioritised developing a good relationship with the Aleppo authorities. UNICEF's WASH programme is at the forefront of restoring and improving WASH services for the population of Aleppo, and its contribution to the survival of many residents through the provision of water gave it local recognition and credibility; something which served it well when negotiating with opposition forces in order to keep water flowing to and within the city. Residents' return to abandoned areas is reported to be much influenced by the presence of water and schools—both of which are core to UNICEF programming.

Contracting and implementation modalities: In order to optimise existing technical capacity for project tendering and implementation time, UNICEF's Syria country office has used the following contracting and partnership modalities, which have worked well:

- **For medium-size projects[4]:** the water authority proposes a specific repair and rehabilitation project (based on feedback and recommendations of the UNICEF field office) to the Ministry of Water Resources. The ministry in turn requests formal approval for the project from UNICEF at national country office level. Tender documents are drawn up and contractors submit their bids to government. UNICEF staff or the facilitators participate in witnessing the tender opening process. Once the work is complete, it is certified by the ministry and the water authority. After independent verification of completion by the facilitators and in compliance with the contractual agreements, UNICEF pays the contractor (vendor) direct.
- **For larger projects and more complex repair works**[5]: With the support of a consulting company, UNICEF carries out the tender and procurement of contractors directly. The advantage of this modality is that UNICEF has the full control of the whole project and procurement cycle. A downside can be that it can drain UNICEF capacity; though this can be compensated by the support of private sector engineering consultants.
- **For ongoing repairs and more immediate works** to be undertaken as and when needed: A bidding process sees successful contractors enter into a flexible Long-Term Agreement (LTA). The LTA is based on an agreed unit price; per metre of pipework, for example. UNICEF can then call on the contractor to carry out repairs wherever and

[4] Estimated cost of the project is not more than US$200,000

[5] Estimated cost of the project up to US$5 million

whenever required, and pays invoices only when certified by the water authority and accompanied by the facilitator's report.

- Programme cooperation agreements with the Syrian Arab Red Crescent (SARC) and local and international NGOs (Third Parties).

Relationship with principal donor: The donor recognised the need to prioritise restoration of network services, providing clean water into, and getting the sewage out of the city early on the process, which allowed for long-term investment in network restoration and other system strengthening activities.

Relationship with other implementing organisations: UNICEF and ICRC have been the principal international organisations working on WASH programming in Aleppo for the past three years. UNICEF developed a strong collaborative relationship with ICRC and SARC, which has led to the organisations readily sharing information and strategies, and agreement on who does what and where to get the best results for Aleppo, in close coordination with other WASH sector members.

Implementation challenges

Despite significant improvement in water and sanitation services in Aleppo, significant challenges continue to affect the response on WASH improvements for Syria. These include:

(i) A funding gap for critical interventions elsewhere in the country;
(ii) Donor recognition and acceptance of long-term restoration of basic services to prevent further collapse and degradation are as necessary as 'traditional' short-term interventions as part of the response to the crisis;
(iii) Security threats restricting the movement of UN staff; and
(iv) A multitude of new challenges involved in rehabilitating and operating technologically complex systems.

Other challenges include:

Sanitation: Sewage *networks* are far easier to restore than sewage *treatment facilities*. Rehabilitating these will be a huge challenge in the coming years.

The design, planning, and construction of treatment plants was already ongoing when the crisis interrupted the process. According to the Ministry of Water Resources (MoWR), 42 plants were functional in 2011. In total, they were designed to serve 6.8 million people. Aleppo and Damascus were by far the largest plants and together served 4.5 million people, covering 66 per cent of the total catchment population. Currently, neither Damascus nor Aleppo plants are operational. While the Damascus Adra'a plant could be meaningfully repaired[6], Aleppo's plant is severely damaged and may need to be completely reconstructed.

Treatment plant failures effectively mean that sewage is currently being discharged into open areas, waterways, and onto irrigation areas, constituting obvious health risks to huge affected areas.

Picture 2: Outflow of waste water treatment plant

Understanding the importance of sanitation is being prioritised as part of UNICEF's WASH programming in Aleppo and across Syria. The MoWR has agreed improving sanitation as a priority, and sewage treatment has become a central element of the national discussion around improving WASH for the country.

[6] ICRC has indicated that they are considering intervention in Damascus (the Adra'a sewage treatment plant).

Hygiene: There has been little engagement or focus on hygiene promotion since the WASH interventions in Syria effectively began in 2012.

Owing to the near total collapse of waste water treatment nationwide, and the discharge of raw sewage into the environment, the risk of water-borne disease remains very high. UNICEF has recently developed tools to promote hygiene and safe water handling, along the water safety chain, from source to mouth. The methodology is currently being used jointly with WHO to respond to a diarrhoea outbreak in Deir ez Zour.

As some sense of normalcy returns to Syria, there is a need for additional behaviour change communication around hygiene practices covering the full water safety chain; particularly where water is still collected in buckets, or where the system is erratic in flow and the storage of drinking water is an issue.

Lessons Learned

1. **Re-thinking the humanitarian response:** Humanitarian interventions in this particular context (middle-income economy; cities with substantial water and sanitation infrastructure) have to take a different approach to traditional emergency response, and a re-think is required among all stakeholders and partners. Restoration of existing services is considered the most efficient and equitable approach to provision of water and sanitation services.
2. **Resilience:** When a city is largely reliant on a single, distant, and vulnerable water source, this represents a high-risk situation which needs mitigation through alternative water sources; in Aleppo, for example, this meant supporting the connection of emergency boreholes to the water system in Aleppo as a contingency measure.
3. **Improving access and movement for implementation and monitoring in high-risk areas:** To overcome the movement restrictions placed on UN staff, and in order to continue oversight of implementation, UNICEF Syria contracts 'facilitators'; individual consultants with the required technical and local knowledge who have more freedom and flexibility to travel to otherwise no-go areas.
4. **Fitting new equipment to older systems brings challenges**: The installation of new equipment requires considering how operators will be able to carry out operation and maintenance of the new equipment in the future. Contractors providing and installing new equipment should be expected to train operators to ensure they understand the new requirements.
5. **Flexible contracting modalities are necessary:** The installation of equipment and conducting repairs to existing, large-scale water and sanitation systems requires specific contracting types often not considered as normal practice in UNICEF. LTAs with local contractors, based on agreed unit costs, provide the necessary flexibility in terms of where and when repairs are to be made, enabling immediate response when necessary.
6. **Credibility with local authorities is critical:** International organisations were forced to leave Aleppo because of the violence, and as of 2018, only UNICEF and ICRC had returned. This enhanced the credibility of both organisations with the authorities and population. This credibility helped UNICEF to negotiate access to water sources and pumping stations to assess how they could be repaired and improved.
7. **Technical project proposal evaluations and oversight mean considerable time constraints:** The evaluation of technical proposals places considerable time constraints on UNICEF WASH staff. The Syria country office has now initiated a process of contracting an overall consultant engineering team (through international bidding combined with local capacity as a consortium). The team will handle elements of the technical process such as the development and assessment of proposals, bidding processes, and construction supervision of more complex and larger scale interventions, as well as quality control.

8. **Wider professional referencing capacity is significantly reduced:** The difficulties of providing sufficient references during the tender process should not be underestimated in a protracted conflict situation. Both international and local consulting companies find it extremely difficult to carry out 'business as usual', so an increased time burden and the demand for flexibility and inventive thinking should be built in to the planning and bidding process.
9. **There is a critical need for a maintenance plan:** Without a maintenance plan, the degradation of the system will be inevitable, and experience shows it is likely to result in collapse within three to four years. A quarterly plan is suggested, based on clear performance indicators and service level benchmarks.

Next Steps

- Continuing to strengthen advocacy and lobbying with donors and funding organisations, to convince them further of the need for a different approach to urban WASH emergency response in the context of protracted conflict.
- Using UNICEF's standing and strong relationship with the authorities to advocate for developing a comprehensive sanitation strategy/policy with the Syrian government; including a strategy for the use of wastewater for irrigation, which is critical for the nation's food supply.
- Given limited funding, UNICEF is considering more affordable 'transitional' projects for addressing the challenges of sewerage treatment. Decisions on such smaller scale treatment technologies will be city-specific and require consideration of various criteria, such as the expected costs and complexity, or the need for high staff capacity, and should include conventional and non-conventional approaches (such as constructed wetlands), as each situation dictates.
- Using waste water for irrigation makes sense in principle, given the huge dependency of the country on agriculture for food. However, this must be done responsibly, in line with the (pre-crisis) rules of sanitation safety planning. The SDC is developing a regional project for sanitation safety planning for waste water treatment and agricultural use with ACWUA, and UNICEF will advocate for Syria to be included in such a potential project.
- Assessing ways to strengthen hygiene education, focusing on the safe water chain from source to mouth, handwashing, MHM, and food preparation, particularly in schools; including specific consideration of the high risk of contaminated irrigation products. UNICEF will seek ways to involve the private sector more as it re-grows.
- Developing more comprehensive maintenance, business, and capacity development plans with the relevant authorities.
- Documenting the processes, achievements, **and** mistakes as lessons for country offices working in similar situations.

Photo Credits

Cover photo - © UNICEF/UN046879/Al-Issa: Others: UNICEF Syria and Ben Henson

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Heartfelt thanks to the Syria WASH team in Damascus and especially Aleppo, for welcoming and supporting the country visit and providing information for this Field Note; they are working under extremely challenging circumstances, but still managing to achieve a great deal, improving the lives of Aleppo's citizens in a unique urban WASH programme.

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UNICEF's water, sanitation, and hygiene (WASH) country teams work inclusively with governments, civil society partners, and donors, to improve WASH services for children and adolescents, and the families and caregivers who support them. UNICEF works in over 100 countries worldwide to improve water and sanitation services, as well as basic hygiene practices. This publication is part of the UNICEF WASH Learning Series, designed to contribute to knowledge of best practice across UNICEF's WASH programming. The documents in this series include:

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