

CASE STUDY

IRAQ 2016–2017 / CONFLICT

KEYWORDS: Site planning, Infrastructure, Coordination, Coverage and scale

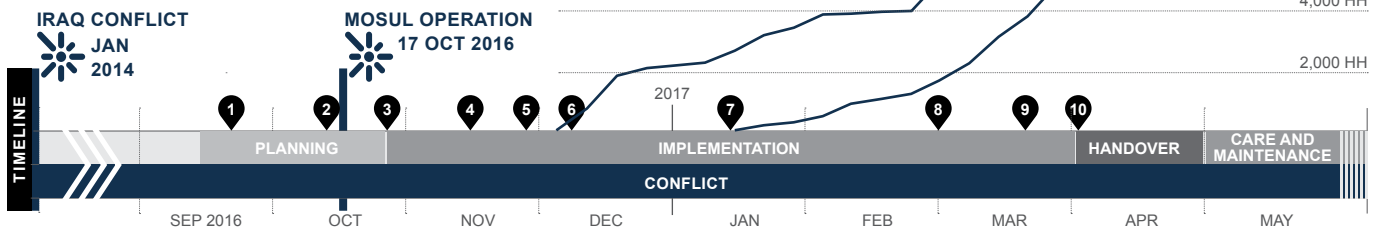
CRISIS	Mosul operation, 17 Oct 2016–July 2017 (though displacement continued)	
TOTAL PEOPLE DISPLACED*	Over 170,000 households (1,021,476 individuals) from 17 Oct 2016 to 29 Jun 2017	
PROJECT LOCATIONS	Al Qayyarah sub-district, Mosul district, Ninewa governorate	
PROJECT BENEFICIARIES	17,500 households (105,000 individuals)	
PROJECT OUTPUTS	Two emergency sites established with a capacity of 10,000 and 7,500 households	
SHELTER SIZE	24m² (standard government tent of 6x4m)	
SHELTER DENSITY	3.5–4m² per person	
MATERIALS COST	USD 1,200 per household (estimation including the tent and installation costs)	<p>PROJECT COST USD 1,700 per household</p> <p><small>* Cumulative number of IDPs displaced by Mosul liberation operation from 17 October 2016 to 29 June 2017. Source: DTM.</small></p>

PROJECT SUMMARY

To respond to the mass displacement as a result of military operations in Mosul, this project established two emergency sites following a request from the government and in coordination with CCCM and Shelter Clusters. The organization adopted a rapid-response settlement approach whereby – together with partner agencies – the sites were selected and planned in a month and an initial capacity of 1,200 households was established within two months. Additional capacity was created incrementally, with infrastructure upgrades such as water supply, electricity and service facilities. The project eventually achieved an accommodation capacity of 17,500 households within less than six months.



Courtesy of the organization



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| <ul style="list-style-type: none"> 1 21 Sep 2016: Initial site assessments. 2 15 Oct 2016: Government approval of Qayyarah Airstrip emergency site. 3 27 Oct 2016: Site development and construction start. 4 14 Nov 2016: First 1,200 tents installed at Qayyarah site. 5 End-Nov 2016: Installation of communal facilities and upgrade works begin in phases. | <ul style="list-style-type: none"> 6 6 Dec 2016: First 180 IDP families arrive at Qayyarah site. 7 5–26 Jan 2017 East Mosul offensive leads to another IDP influx in the sites. 8 Feb–Mar 2017: West Mosul offensive triggers new surge. 9 23 Mar 2017: Qayyarah site completed (capacity 10,000 households). 10 1 Apr 2017: Haj Ali emergency site completed (capacity 7,500 households). |
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STRENGTHS

- + Timeliness of the intervention.
- + Leadership and coordination generated buy-in.
- + Development of special guidelines on the planning, set-up and maintenance of the emergency sites.
- + Remote site planning through observation and satellite imagery.

WEAKNESSES

- Minimum surface area of the site.
- Vulnerability to rains and floods.
- Delays in installation of water and sanitation facilities.
- Tents quality and durability.



Before mine clearance was completed, sites were only accessible from the perimeter. Planning was done remotely, by observation and thanks to satellite images.

CONTEXT

For more background on the Iraq crisis and shelter response, see overview A.33 in *Shelter Projects 2015-2016*.

BEFORE THE MOSUL OPERATION

Before the Islamic State of Iraq and the Levant (ISIL) took control of Mosul, the city had a population of 1,377,000 people. After ISIL occupation in June 2014, up to half a million people were believed to have fled.¹ In 2016, the operation to liberate Mosul was expected to be the largest and most complex humanitarian response in the world. In February, lead humanitarian agencies started working on a contingency plan, estimating a worst-case scenario of up to 1.5 million people requiring assistance.

In September, 200,000 civilians were expected to be displaced during the first week of the military operation. Following a request from the government, the organization agreed to support the establishment of emergency sites² in locations protected by security forces, and immediately deployed a surge team composed of five engineers and site planning experts.

SITUATION DURING MILITARY OPERATIONS

Since military operations to retake Mosul started on 17 October 2016, displacement figures raised on a daily basis.

During the first few weeks, operations took place in areas surrounding the city, so people fled to nearby villages and stayed with host families or in unfinished buildings. In December, the operation reached the city and IDPs started to arrive to the emergency sites, directed by the military. Large-scale displacement out of the city continued until the completion of the operations in late 2017. By the end of June 2017, over one million individuals were displaced, with nearly 350,000 hosted in camps.³ Access to safety and provision of basic services for those fleeing Mosul were considered the main priorities by the government and the humanitarian community.

COORDINATION

For site identification and set-up, the organization worked with the government and humanitarian coordination centres specifically established for this crisis. The CCCM Cluster was the primary forum under which technical standards were discussed and multi-sectoral services coordinated. The Shelter Cluster focused on delivery of tents and Non-Food Items, while the WASH Cluster coordinated with partners for installation of latrines and bathing facilities, as well as other WASH services. Further, civil-military coordination was provided by a humanitarian coordination agency to support communication between the organization and the Iraq Security Forces, for access and safety issues.

¹ UN-Habitat, Mosul city profile, October 2016.

² These are basic camps relatively quick to set up and with minimum services such as WASH.

³ DTM, 2017. Mosul Crisis – Population Movement Analysis.

SITE IDENTIFICATION

Due to the scale of the needs and the administrative burden of preparing and managing multiple small sites, it was agreed that a few large sites would be set up instead.

With support from the government, the CCCM Cluster and civil-military coordinators, the organization and partners conducted joint site selection missions to assess eight government-proposed locations near likely escape routes from Mosul. Due to the urgency, only a limited number of criteria were assessed: safety of the location, terrain and topography, mine contamination, and availability of water and electricity. The assessment team was composed of civil engineers, WASH experts, mine-action and civil-military coordination specialists. This process was challenging, as the military plan was confidential and operations largely unpredictable. The security situation – due to the presence of armed groups – was also dynamic and caused delays in finalizing site selection.

As Iraq was coming from decades of war, it was very complex to assess mine risks in a short time frame. For this reason, multiple sources of information were analysed, and high-risk locations were excluded. Other sites were discarded due to serious security issues, with fighting occurring nearby.

Based on the above criteria and guidance from the government, the organization suggested two large sites for immediate set-up. These were located in rural areas surrounded by agricultural land with host community houses scattered around. To determine the site perimeter, joint visits were conducted with site planners, the CCCM Cluster coordinator, government officials and host community leaders, which were followed by the issuance of official government letters.

EMERGENCY SITE GUIDELINES

Due to the uncertainty of the military operations, funding could not be mobilized and plans could not start until just one month before the influx. For this reason, the organization proposed to adopt a rapid-response settlement approach. This consisted of providing shelter and basic services first, and then incrementally upgrading the site in phases, to meet minimum humanitarian standards. The approach initially received strong criticism because of the low standards in the first phase. To gain cooperation, special emergency site guidelines were developed and the approach had to be carefully discussed and presented to various stakeholders.

The guidelines, developed by the Shelter, WASH and CCCM Clusters, determined minimum requirements for site planning, earthworks, drainage, shelter options, security, access, WASH and other site facilities.

SITE CAPACITY ESTIMATES

The project initially aimed to accommodate as many as 200,000 individuals. Once the detailed military operation plan was revealed, the target figure was adjusted to 105,000 based on anticipated displacement figures. Another six locations were assessed and site plans for 100,000 individuals across those locations were developed, in case of changes in military operations.

PROJECT IMPLEMENTATION

The organization directly implemented site planning and construction works, while collaborated with partner agencies for the installation of other site facilities for all the other humanitarian clusters. The project was implemented by the technical team of the organization composed of four international and 10 national staff (including two site planners and eight civil engineers). Local contractors were hired to carry out construction works under the supervision of field engineers. Most labour was hired from the host communities upon request of the government, to help mitigate possible tensions.

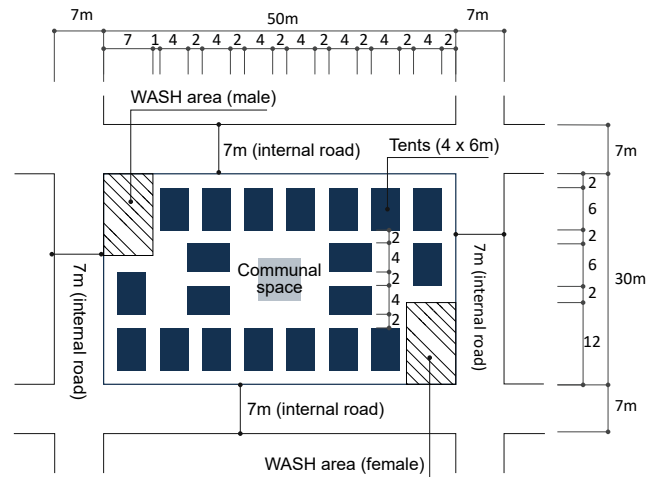
1. SITE PLANNING. Initial site plans were developed based on the guidelines. A standard block layout was discussed with CCCM, Shelter and WASH Clusters. This included 20 family tents in an area of 30x50m and considered the sex segregation of WASH facilities, a communal space, and kept a minimum distance of 2m between tents. Although this spacing was very limited and did not allow for significant future expansions around tents, the Shelter and CCCM Clusters agreed to this solution due to space constraints. Tents were gathered around a common space and, as suggested by WASH partners, WASH areas were located at both corners of the block, so that their construction – which was supposed to happen at a later stage – would not interfere or damage the tents.

Shelter blocks were then arranged within the site perimeters considering contingency space for future expansions. Some blocks were also pre-allocated to communal facilities to be installed in a later step. The sites were divided into zones and the construction schedule planned zone by zone.

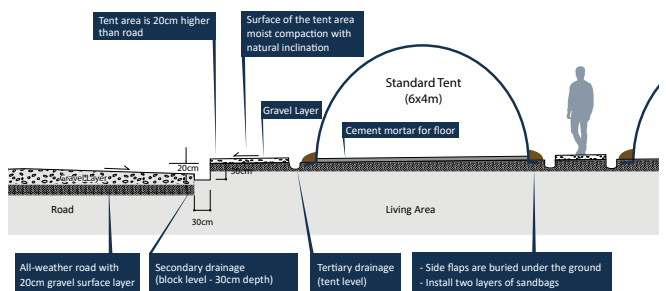
Until mine clearance was completed, due to potential mine contamination, only perimeter roads were accessible, and staff were not allowed to step into the middle of the site. High-resolution satellite imagery was used to plan the site remotely.

2. MINE CLEARANCE. In coordination with mine-action agencies and security forces, surface mine clearance – instead of full demining – was conducted before construction, taking less than a week.

3. EARTHWORKS AND SITE PREPARATION. This phase included emergency earthworks, such as ground clearing, levelling, grading and compacting. This was followed by the construction of internal roads, storm-water drainage, security fences, and access gates that CCCM agencies would manage for population counting. Internal roads were excavated to raise the shelter plots of 20cm above road level.



Typical block layout – plan. Each block contains 20 tents and two WASH areas.

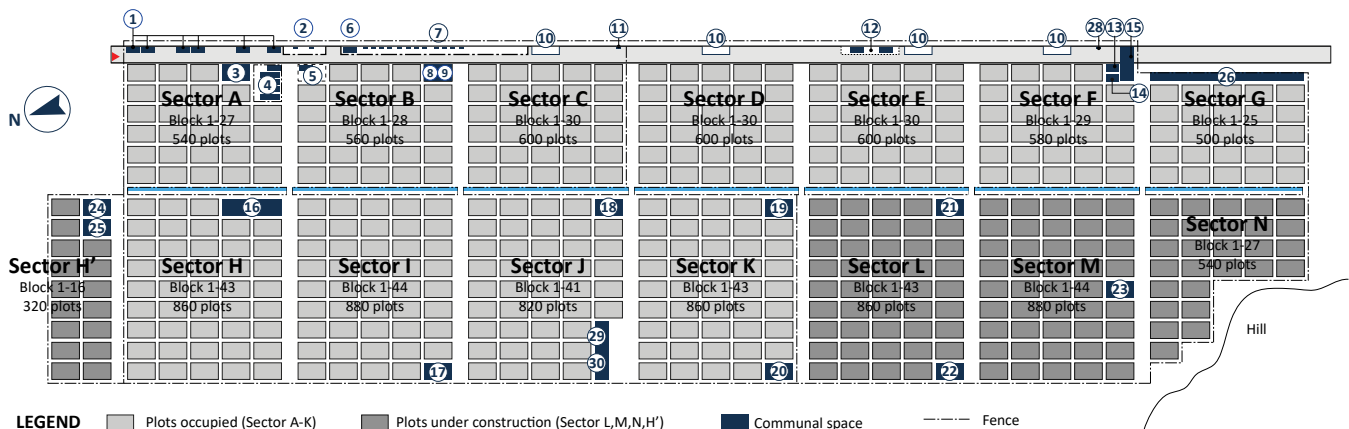


Cross section. Sandbags protect the tent base, and roads are excavated 20cm.

4. TENTS AND BASIC STRUCTURES. After demarcating their location, government-standard tents were installed and their base surrounded by sandbags. Mobile storage units and containers were installed for humanitarian services and camp management activities in areas that were easily accessible from the main gates.

5. WASH INFRASTRUCTURE. The WASH Cluster assigned partner agencies for the installation of latrines, bathing facilities and water tanks. The organization constantly shared detailed construction progress with WASH partners.

Once WASH facilities were installed, the block capacity was reported to the CCCM Cluster for allocation. Based on the figures, the security forces directed IDPs to the zones that were ready. Further improvements were conducted once IDPs were already living in a zone, through the following two steps.



Qayyarah Airstrip site plan. 1) NFI storage (rubb hall); 2) Construction office; 3) Waiting area (rubb hall); 4) Logistics hub; 5) Warehouse (rubb hall); 6) Distribution space (rubb hall); 7) Camp management / WASH / Protection; 8/21) Psychosocial support; 9/17/23) Clinic; 10) Livelihood programme (small shops); 11) Legal support; 12/30) Distribution site; 13) Child-friendly space; 15) Women-friendly space; 16/26) Education, child-friendly space; 18) Camp management; 19/28) Protection; 25) GBV support.

6. SITE UPGRADE, LIGHTING AND ELECTRICITY.

Concrete was poured over the tents' floors and gravel placed in the outdoor living areas. During this step, families temporarily moved to adjacent empty tents or large unused multi-purpose tents, or were hosted by other families in the camps. Perimeter lighting was installed in all corners of the blocks and standby generators and electricity lines were provided for camp management facilities.

7. HUMANITARIAN SERVICE FACILITIES. While IDPs settled in sites, the organization coordinated with CCCM, Health, Protection, Education, and Logistics Cluster partners to prepare spaces for facilities such as clinics, temporary learning centres, women-friendly spaces, logistic hubs, and distribution sites. This coordination was challenging, as all partners had different timelines and funding constraints. Because of the urgency of the intervention, meetings were held regularly both at inter-cluster and field level, with all clusters involved being asked to nominate one agency focal point.

Within a month from the start of construction, an initial 1,200 tents (60 blocks) were erected with latrines and gradually occupied in December. By the end of the year, 2,200 households were accommodated in the Qayyarah Airstrip emergency site.



In less than six months, capacity for 17,500 households was established in two sites. The main roads were used for small shops and storage of materials.



Government standard tents of 6x4m were installed in clustered blocks of 20 each. Space for extensions was minimal but, after families had moved in, upgrades were conducted to the floor and electricity was installed. Partners could then build service facilities in specific blocks pre-allocated in the site plan.

DRAINAGE AND FLOODING

In addition to the small tertiary drainage around each tent, 30x30cm secondary drains were dug around shelter blocks. These were connected to large ditches around the perimeter of the site through pre-cast concrete culverts. The site drainage system was eventually connected to natural drains to discharge rainwater from the site.

Drainage was designed based on preliminary studies on ground conditions, rainfall data and a topographic survey, as well as after checking runoffs to nearby valleys.

In 2017, after unprecedented levels of rainfall, low-lying sectors of the sites were flooded mainly because of the surcharge of water from an adjacent site and poorly constructed culverts in surrounding residential neighbourhoods.

Storm-water drainage was later expanded in early 2018, after five new sites were built around the main Qayyarah Airstrip site. This consisted in wide earthen channels with protective berms and large concrete culverts.

In late 2018, minor flooding occurred due to the blocking of culverts by informal settlements outside the site.



One site was vulnerable to heavy rains and suffered minor flooding during winter. In 2018, storm-water drainage channels and culverts were upgraded.



Using a rapid settlement approach, families were accommodated before all facilities and infrastructure were installed. Gravel was added in the shelter areas and roads excavated 20cm lower than the blocks, to prevent flooding.

SUPPLY OF TENTS

Tents were partly supplied by the government and partly procured by the organization within the country. These followed the government standard specifications and had an estimated lifespan of 6–12 months. About two years after the sites were set up, most tents were damaged due to the extreme weather conditions and the flooding events. In early 2019, the organization was planning to replace the mobile components of over 23,000 such tents, while maintaining the steel structure.

HANDOVER, CARE AND MAINTENANCE

After the completion of construction in April 2017, one site was handed over to a CCCM partner agency. The organization provided site maintenance trainings and remained responsible for site maintenance for the following six months. The other site continued to be managed by the organization.

Repair of fences, drainages and roads were carried out since then, often through the employment of camp residents through cash for work.

To mitigate fire hazards, camp management teams conducted weekly awareness trainings and two fire extinguishers were installed in each block. Although minor fire incidents occurred in kitchens within each block, these never spread to adjacent blocks.

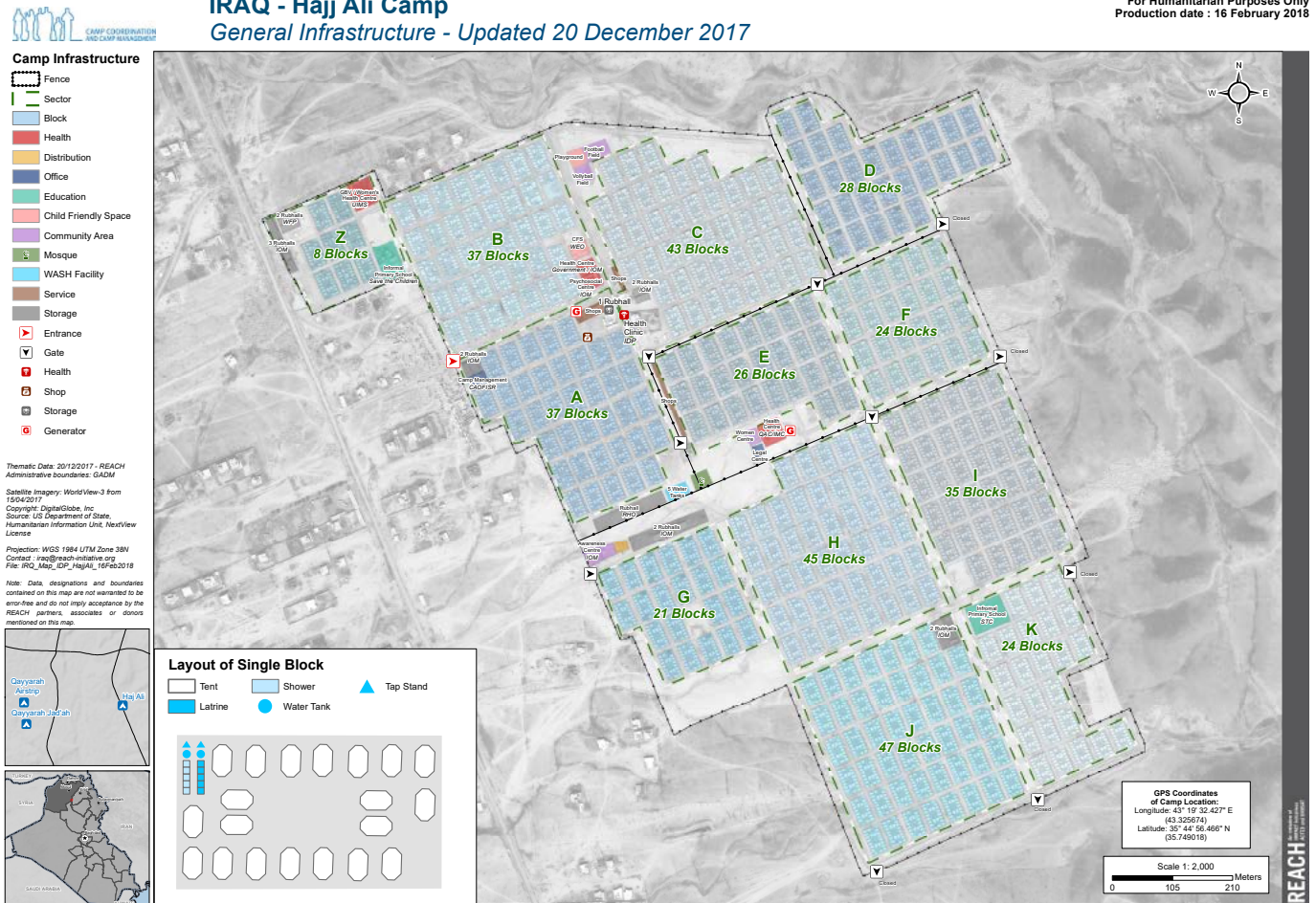
By early 2019, returns had started to occur, but emergency sites were still hosting nearly 90,000 people. The two sites set up by this project were at about 70 per cent capacity. According to a survey conducted by the organization, about 88 per cent of camp residents either intended to remain or did not have an intention to return within the following 12 months.

WIDER IMPACTS OF THE PROJECT

Apart from providing accommodation for 105,000 IDPs, the project enabled over 20 partners to provide humanitarian assistance to the sites.

IRAQ - Hajj Ali Camp
General Infrastructure - Updated 20 December 2017

For Humanitarian Purposes Only
Production date : 16 February 2018



STRENGTHS, WEAKNESSES AND LESSONS LEARNED

STRENGTHS

+ **Timeliness of the intervention.** Tents and WASH facilities were set up in the emergency sites before the first arrival of families fleeing from Mosul.

+ **Leadership and coordination generated buy-in.** The phased approach used by the project initially faced strong opposition, as most actors did not accept that IDPs could be accommodated before all basic services had been provided. The organization succeeded in generating buy-in thanks to extensive coordination and this then allowed all partners to incrementally provide humanitarian assistance in the sites.

+ To support the coordination process and harmonization of activities to implement this phased approach that was new to the context, **special guidelines on the planning, set-up and maintenance of these emergency sites were developed** in a highly consultative process.

+ **Remote site planning.** In the initial planning stage, the site could not be accessed and so topographic analysis and measurement of site boundaries were done by a mix of observation from the perimeter and analysis of satellite imagery. Plans were then adjusted during the implementation phase. Such remote planning worked well thanks to the high-resolution satellite images acquired from authorized agencies.



105,000 IDPs fleeing Mosul found shelter in the two sites. About two years later, the majority of the site residents did not intend to return to their homes yet.

WEAKNESSES

- **Minimum surface area of the site.** As this project aimed at sheltering as many IDPs as possible to provide life-saving assistance, initially the minimum surface area per individual was 20–23m², which was about half of the Sphere recommended indicator (45m²). The plan included the gradual decongestion of the sites as people started to return to Mosul, which entailed the modification of block layouts to increase the surface area per person. Since after two years the occupancy rate was still about 70 per cent, this was only possible to a limited extent.

- **Vulnerability to rains and floods.** Before upgrade works could be completed, the shelter blocks' areas became muddy due to the heavy rains. This was later improved by installing drainage and adding a layer of gravel in the living areas. However, mainly due to poorly constructed or maintained drains and culverts (especially outside the site), minor flooding occurred in some sectors of one site.

- **Delays in WASH installation.** This project relied on partners for the funding and installation of WASH facilities, which was not always timely, since different agencies had different timelines. During the peak of the IDP influx, the shortage was mitigated thanks to a camp management agency installing temporary toilets, while partners worked to fill the gap.

- **Tents quality and durability.** The tents installed had a limited lifespan and required constant maintenance and repair, which was not always conducted due to funding constraints. The need for future replacement was expected, but proper plans and resource allocation did not happen early on, leading to a need for replacement of almost all units after about two years.

LESSONS LEARNED

- **Various levels of coordination were required.** To coordinate the implementation of all the site facilities with partners, meetings were held at multiple levels, including the Inter-Cluster operation centre, CCCM and Shelter Cluster coordination meetings, and on-site construction briefings. Sharing construction progress regularly with partners on the ground was essential to align interventions and keep the rapid pace of all the construction activities.
- **Camps tend to last for years, but decisions need to be taken with urgency and in uncertain conditions.** In the initial stages, it was challenging to anticipate the lifespan of the sites, and this influenced decision-making and resource allocation. Although the project's main objective was to provide emergency assistance quickly, it was expected that the sites would exist for years rather than months, requiring maintenance and continuous fundraising. After over two years, indeed most of the IDPs remained in the camps and did not intend to return soon.
- **Tents' specifications and procurement plan should have been better designed.** Partly related to the above, the need for replacement of tents could have been better anticipated, and resources allocated for in advance. Specifications could have been more detailed and include quality control parameters and replacement procedures. Alternative shelter solutions could have also been proposed from the outset, choosing more durable options with reduced need for maintenance, although costlier up-front.
- **Construction managers should be part of coordination meetings.** For the smooth progression of coordinated site planning and development activities, an overall construction manager should be nominated from the lead site planning organization to attend coordination meetings, and all partner agencies should appoint a construction focal point (i.e. an engineer), as well.