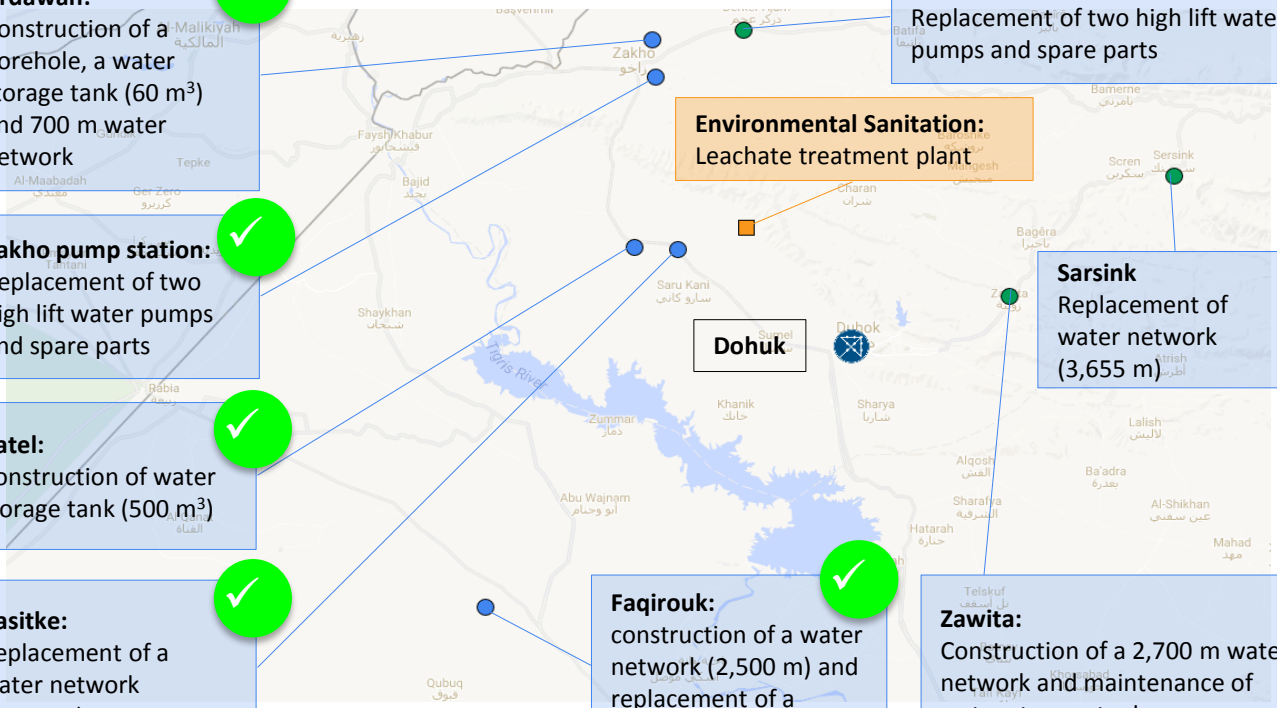
BUILDING RESILIENCE IN MOST AFFECTED COMMUNITIES IN IRAQ

ACTED is implementing a 5 million CAD project **(eq. 3.8 million USD)** funded by the Government of Canada, throughout Dohuk and Ninewa Governorates. This project is part of a larger program to improve community resilience through investment in community water, sanitation and hygiene (WASH) infrastructure. This includes a comprehensive approach by implementing infrastructure constructions in parallel of high-visibility small-scale projects and capacity building program of WASH services of local authorities.

The project is supervised by ACTED team made of 4 engineers and WASH specialised program manager/officer (2). The work involves strong collaboration with local authorities to identify, design and supervise WASH construction. The quality of work is strengthened by environmental impact assessment for each intervention as well as consultation of engineering bureau for the validation of design and construction plan/activities.

3.8M USD	1.5 year project	300,000 – Host	33,000 – IDP

CONSTRUCTION ACTIVITIES: WATER SUPPLY PROJECTS & WASTEWATER TREATMENT PLANT



Ardawan: Construction of a borehole, a water storage tank (60 m³) and 700 m water network

Zakho pump station: Replacement of two high lift water pumps and spare parts

Batel: Construction of water storage tank (500 m³)

Basitke: Replacement of a water network (5,300 m)

Darkar Hizawa Replacement of two high lift water pumps and spare parts

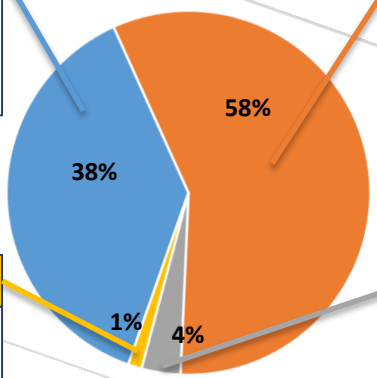
Environmental Sanitation: Leachate treatment plant

Sarsink Replacement of water network (3,655 m)

Faqirouk: construction of a water network (2,500 m) and replacement of a booster pump

Zawita: Construction of a 2,700 m water network and maintenance of water storage tanks

FINANCIAL DISTRIBUTION OF PROGRAM ACTIVITIES = 3,420,000 CAD (eq. 2,610,510 USD)



WASH infrastructure

Investment in community-level water, sanitation, and hygiene infrastructure in 8 most-affected communities

1,311,000 CAD (1 million USD)

Environmental Sanitation

Treatment & management of leachate at sanitary landfill, Kwashe Landfill site, Dohuk Governorate, Iraq

1,989,000 CAD (1.5 million USD)

Capacity Building

Capacity-building of municipal authorities and key service providers delivering WASH services in 8 targeted communities

42,100 CAD (31,000 USD)

Small-scale projects

Small-scale projects in 8 target communities (rehabilitation, awareness campaigns e.g.)

120,000 CAD (92,000 USD)

ENVIRONMENTAL SANITATION: TREATMENT AND MANAGEMENT OF LEACHATE AT SANITARY LANDFILL

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

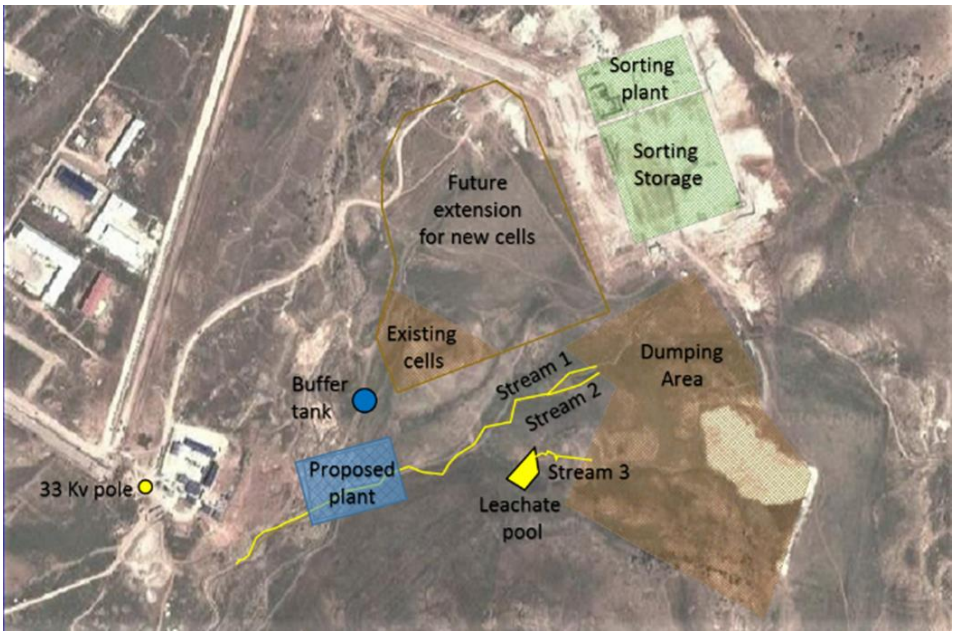
LEACHATE TREATMENT PLANT FOR KWASHE LANDFILL SITE

Kwashe landfill is the municipal landfill serving the entirety of Dohuk Governorate. Due to the current economic situation, coupled with the increased service provision caseload from IDPs, local authorities have not been able to continue investment in the landfill, which now remains in a state of incompleteness.

The main goal of this project is to build a leachate treatment facility to **manage and minimise the negative environmental** implications of the toxic wastewater produced from the percolation or decomposition of solid waste, according to national discharge standards for reuse/irrigation purposes.
Based on several technical consultations, the plant will have a treatment capacity of **72 m^3/day**, enough to accommodate periods of high rainfall and future landfill expansion.

Estimates indicate that the project will cost between **1.6 - 1.7 million USD**, and will require 6 months to build. To ensure sustainability of the project, a comprehensive handover process will occur; including on-site training, remote monitoring and support, and provision of 1 year supply of consumables and spare parts. Monthly operation and maintenance costs to be incurred by the municipal authorities are estimated between **8,000-12,000 USD**.

LANDFILL OVERVIEW



Daily amount of waste: 800 t/day
Current cells: 20 000 m^2 | Future cells: 120 000 m^2

Planning phase

- Preliminary design with engineering consultancy
- Environmental impact assessment
- Chemical analysis of the leachate
- Technical report
- Bilateral discussion with local authorities
- International call for tender

Construction and handover

- Supervision of construction with specialized company
- Handover period of 1 year with on-site support, supply of consumables, training

PROPOSED DESIGN

Influent → **Primary Treatment** Sedimentation → **Secondary Treatment** Membrane Biological Reactor → **Tertiary Treatment** NF or RO → Effluent

Key Contacts

Dohuk Directorate-General of Municipalities
Engineer Haval Amedi
Deputy Director

Key Figures

1,700,000 USD

250,000 people

6 Months

ZAKHO DISTRICT, DOHUK GOVERNORATE
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

✓ COMPLETED: ZAKHO: INSTALLATION OF 2 HIGH-LIFT PUMPS

The Zakho pumping station supplies water throughout the municipality of Zakho and nearby villages. Zakho city is the capital and most populous urban area in the district of Zakho. The recent influx of displaced persons, growing host populations, and the local economic crisis has resulted in increased pump operations and decreased resources for maintenance. This has lead to the un-serviceability of several of the 32 pumps in the station. Consequently, the pumping station cannot supply sufficient water supply to the network, and existing pumps are being operated at unsustainable limits in an attempt to meet the water demands.

This project has been identified by the Zakho Municipality and Zakho Directorate of Water as a priority, and is now:

1. Allowing expansion of the existing water network to reach newly settled locations on the outskirts of the community
2. Restoring the pumping station to a sustainable level of operation, and increase the lifespan of the existing pumps
3. Ensuring sufficient water supply for users, especially with the increased per capita demand in the upcoming summer
4. Facilitating preventative maintenance of the existing pumps
5. Shifting water supply dependence away from more fluctuating existing ground water sources

PROCESS:

- ✓ **Stakeholder consultation**
- ✓ **Design and BOQ**
- ✓ **Engineering consultation**
- ✓ **EIA**
- ✓ **MoU (with authorities)**
- ✓ **CVP (with GAC)**
- ✓ **Implementation (Constru.)**
- ✓ **Handover (3 month)**

Key Contacts

Zakho Directorate of Water
Engineer Mohammed
Deputy Director

Zakho Pumping Station
Engineer Saleh
Pump Station Manager
Engineer Khalet
Pump Station Deputy Manager

Activities

ACTED invested in the Zakho pumping station, in order to ensure continued adequate and sustainable provision of quality drinking water, despite the influx of IDPs into the community. Planned works include:

1. Procurement and installation of two high lift water pumps, including motors and electrical equipment
2. Rehabilitation of other mechanical parts to reduce leakages, such as pipes and valves
3. Provision of spare parts for maintenance purposes

Figures:

- Q = 300 m3/h per pump
- Operation time:
  ~ 5 to 7 hours in Winter &
  ~ 8 to 10 hours during Summer

Key Figures

86,320 USD

250,000 - Host

20,000 - IDP

3 months

3,600 to 7,200 m^3/day

SARSINK: CONSTRUCTION OF A WATER NETWORK

Amedi District, Dohuk Governorate
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

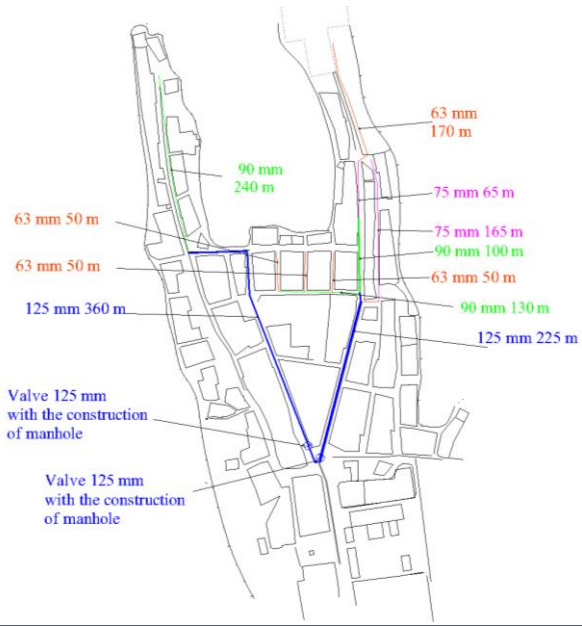
ONGOING IMPLEMENTATION: WASH INFRASTRUCUTRE

Sarsink is a large township in Amedi district which has absorbed a large population of IDPs since the onset of the crisis. Some IDPs live in rented accommodation, however there are large concentrations - an estimated some 1,200 - occupying large unfinished buildings. The increased demand on public infrastructure has led to inequitable access to service delivery. Local authorities in Sarsink also advocate about a lack of government and NGO investment in the area; whilst Amedi district is further away from the crisis and hosts less overall IDPs, this area has still been considerably negatively impacted.

Sarsink is served by an aged water network which is in poor condition. Residents at the ends of the water network regularly complain about no access water, requiring the Directorate of Water to implement intentional water cuts for various parts of the network in an attempt to ensure equitable access. Many households therefore go long periods without water supply. The poor water provision is predominately due to high water leakages in the network. The network is also at high risk of surface contamination due to the leakages. The boreholes are operated at unsustainable levels in an attempt to meet usage demands.

The Sarsink Directorate of Water has prioritised this project, given the severity of the water shortages. This project will:

1. Ensure all current and planned households have adequate, reliable, and direct access to water
2. Improve water quality by reducing likelihood of contamination through damaged water infrastructure
3. Reduce the amount of water wastage through non-revenue water, lessening pump operation and improving lifespan
4. Reduce costs spent on the unsustainable maintenance of the existing network
5. Feed into future strategic plans to expand the water storage tank and connect the community to the Dereluk pumping project, in order to reduce dependence on ground water.



PROCESS:

- ✓ **Stakeholder consultation**
- ✓ **Design and BOQ**
- ✓ **Engineering consultation**
- ✓ **EIA**
- ✓ **MoU (with authorities)**
- ✓ **CVP (with GAC)**
- ▪ **Implementation (Constru.)**
- ▪ **Handover (3 month)**

ACTED will invest in WASH infrastructure in Sarsink to ensure all residents receive sufficient quantity and quality of water, despite the large influx of IDPs. Planned works include:

1. Construction of a new 3,655 m water distribution network (lot 1 - infra)
2. Construction of a new 410 m water distribution network (lot 2 – small-scale)
3. Replacement of existing valves in the water distribution network

This project has been complemented by ACTED's additional activities, which include:

1. Capacity building training for local authorities in advanced computer design programs such as GIS, WaterCAD and EPANET
2. Hygiene promotion training, including messages in water conservation
3. Distribution of hygiene items to IDPs in unfinished buildings

Key Contacts

Sarsink Directorate of Water
Engineer Dilshad
Director

Key Figures

136,000 USD

15,000 - Host

6,000 - IDP

10 weeks

4 km network

Amedi District, Dohuk Governorate
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

ONGOING IMPLEMENTATION:
SARSINK SSP: WATER NETWORK EXTENSION

Dohuk Governorate

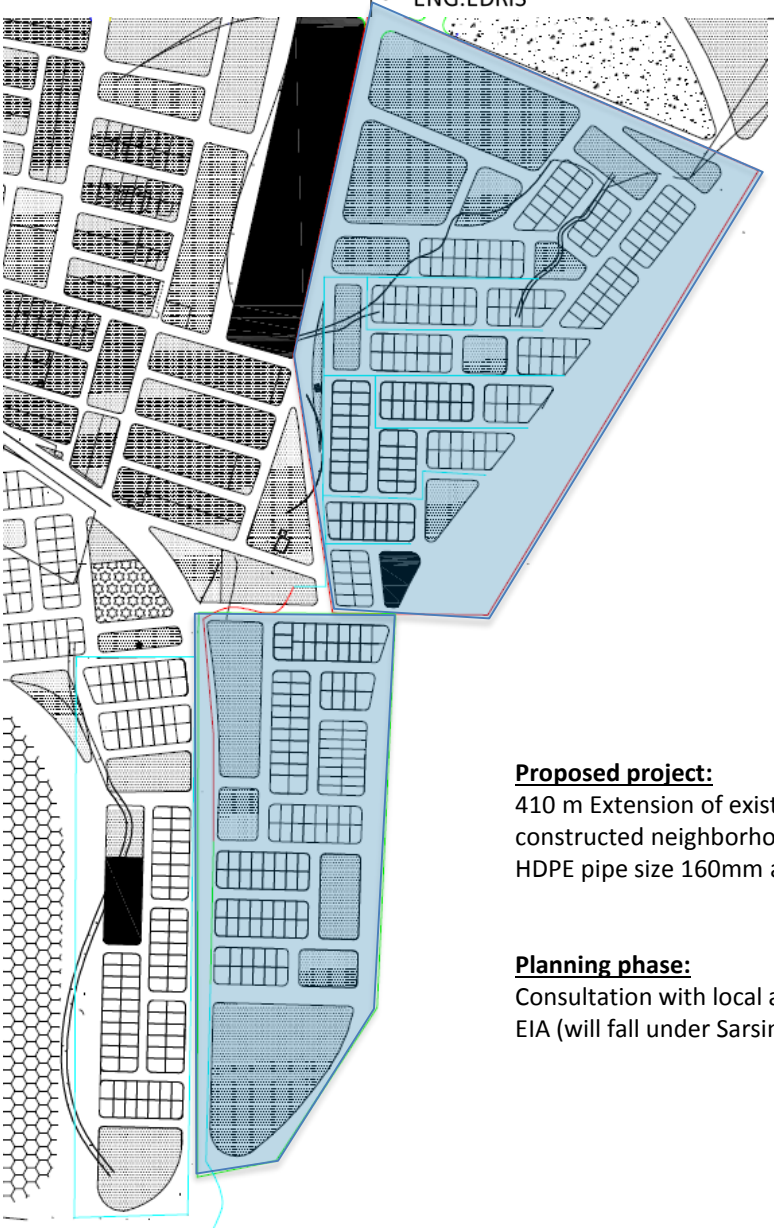
Amedi District:

Sarsink Water directorate
- Eng.Dilshad Sarsink

SarsinkMunicipality
Eng.Benjimen

➢ Sarsink: Construction of a new water distribution network

Board for Humanitarian and Relief Affairs (BHRA)
- ENG.EDRIS



Key Figures

12,000 USD (est.)

1,800 – Host & IDP

410 m network

Proposed project:
410 m Extension of existing water network to supply two newly constructed neighborhood (host and IDP communities mixed)
HDPE pipe size 160mm and 125mm.

Planning phase:
Consultation with local authorities / site visit
EIA (will fall under Sarsink infrastructure WASH EIA + CVP, same supplier)

ZAWITA, Dohuk District
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL Canada

✓ COMPLETED: ZAWITA SMALL-SCALE PROJECT
WASH REHABILITATION AND CONSTRUCTION IN AN INFORMAL CAMP

Proposed initiative:
In parallel of awareness campaign (hygiene kits distribution and hygiene promotion sessions) ACTED rehabilitated WASH facilities of the informal camp by providing long-lasting facilities and repair existing old items as much as possible. This will improve the access to safe sanitation as well as water supply. Solid waste collection has also been considered, hence the whole camp received garbage bins to maintain the cleanliness of the area.

Planning phase:
WASH assessment / BoQ / Gov approval / Procurement (quotations)

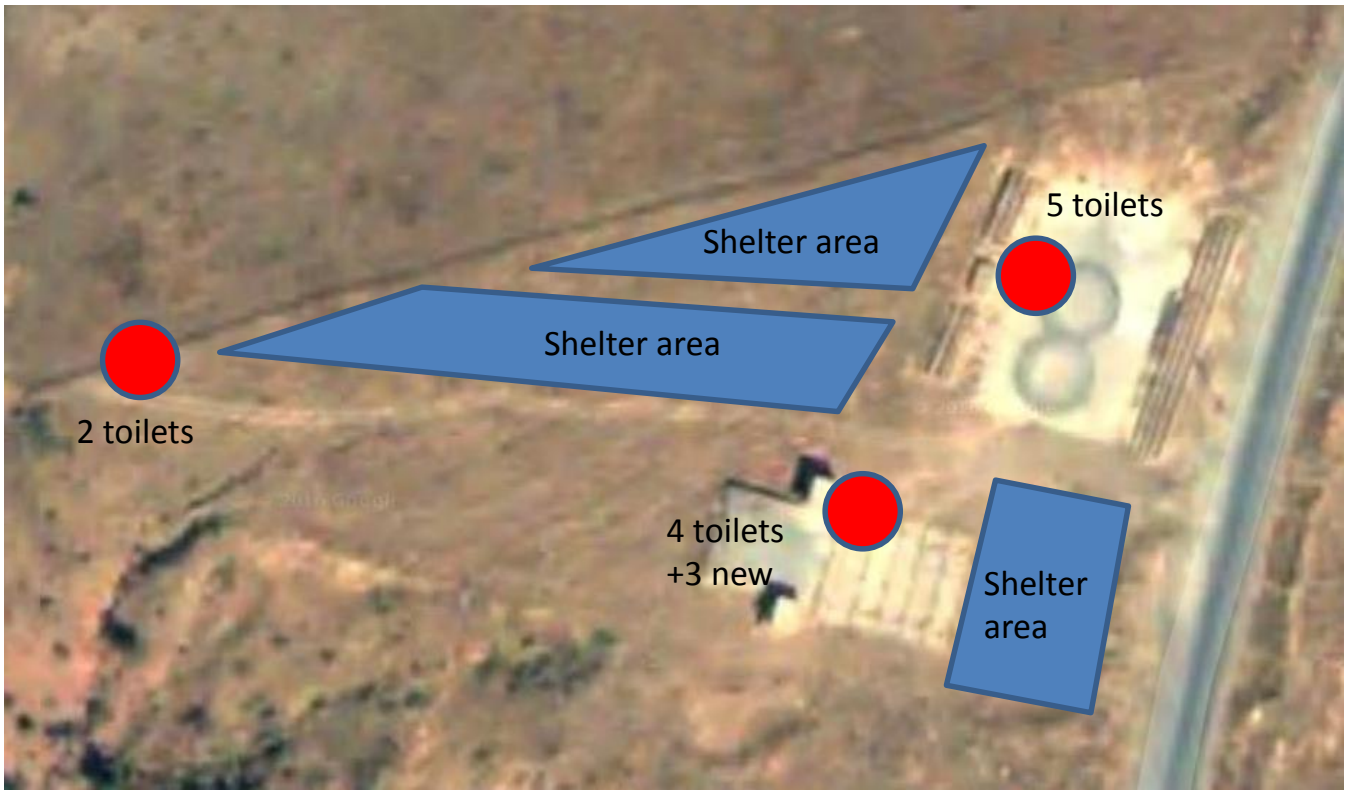
Activities:
- Installing or repairing toilets and showers, by fixing the doors and installing locks; repair of piping and general maintenance.
- Renovating an unused building and converting into 3 new toilets
- Improvement of the waste disposal: construction of cesspit connected to septic tank
- Rehabilitate the existing hand-wash basins (taps and pipework);
- Relocating two large communal water tanks closer to the road. The tanks will also be elevated for improved water pressure;
- Repair all pipe fitting for both water supply and wastewater evacuation

Key Figures
5,369 USD

300 IDPS

3 new long-term toilets (and)

6 weeks



Zakho District, Dohuk Governorate
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL Canada

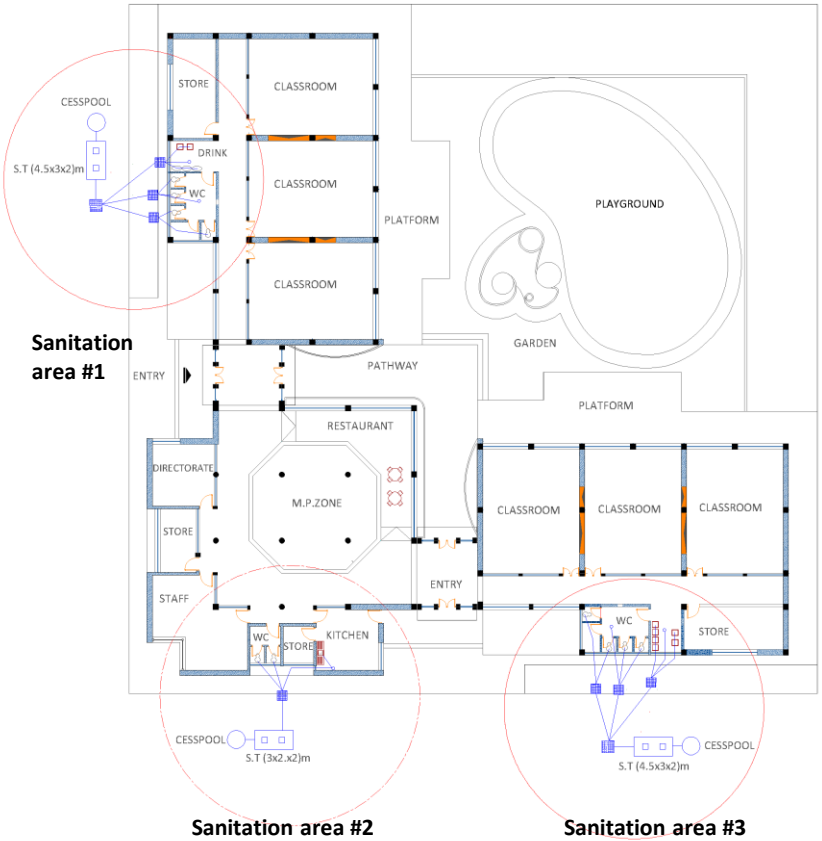
✓ COMPLETED: WASH REHABILITATION IN DARKAR KINDERGARTEN

High visibility small-scale project:

Renovation of WASH facilities in Darkar kindergarten school, Dohuk Governorate, Iraq Kurdistan.

After consultation with Darkar Sub-District, the ACTED WASH team has identified a small-scale investment in community infrastructure rehabilitation by renovating an existing kindergarten school. The building was completed in 2014, but due to the influx of internal displaced people (IDPs), it has been used as a temporary shelter for approximately 50 families (around 300 individuals) for more than one year.

The proposed initiative allowed to **repair the school's WASH facilities**, cleaning both inside and the surrounding areas of the school, and improve the overall condition of the building (e.g. fixing the lights, painting the walls, replace broken windows, etc.). This will ensure pupils can attend a school which is in good condition and which has access to clean water and sanitary facilities.



Sanitation area #1

Sanitation area #2

Sanitation area #3

Stakeholders:

Darkar Sub-district (eng. Zeravan)

Planning phase:

Consultation with local authorities / site visit assess. / BoQ / project description

9,560 USD

200 Beneficiaries

In April 2016, a new IDP Camp was opened outside Darkar, and all the 50 IDP families moved to this camp, leaving the school empty and ready for rehabilitation. The Darkar Municipality and Darkar sub-district) have authorized ACTED to rehabilitate the school in order to re-open it for next year.

Summel District, Dohuk Governorate
MAY 2017

ACTED ACT FOR CHANGE INVEST IN POTENTIAL Canada

BATEL SMALL-SCALE PROJECT: WASH REHABILITATION AND CONSTRUCTION IN A COLLECTIVE CENTER

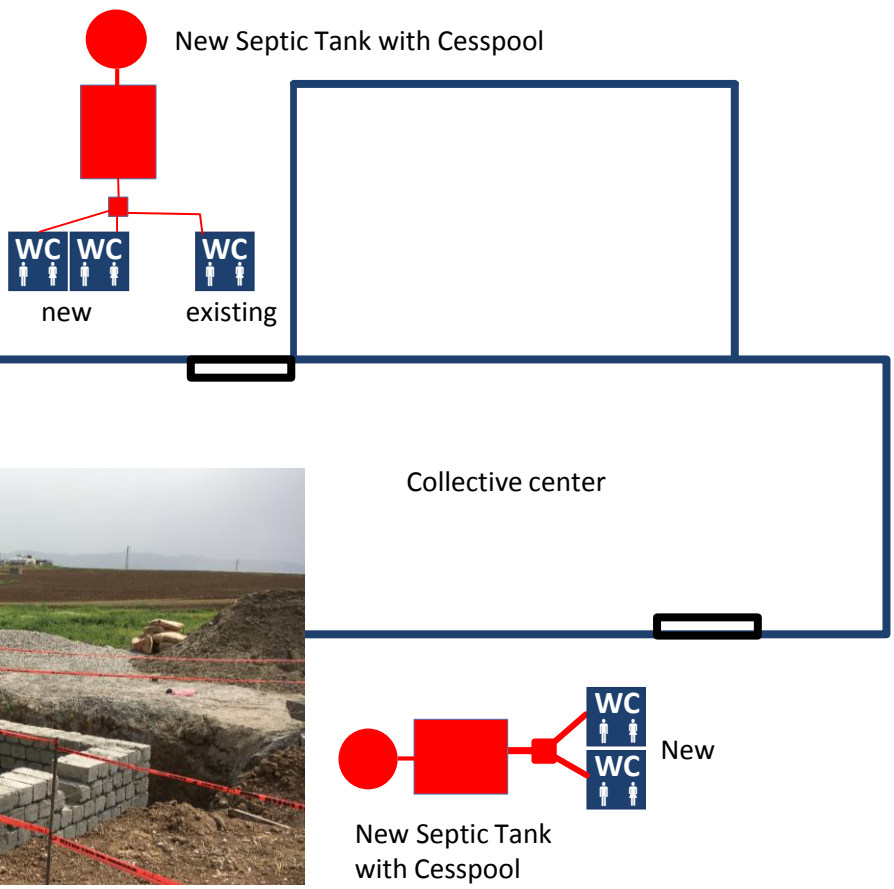
Proposed initiative:
Decommission "emergency latrines" and provide long-term sanitation systems equipped with water for flushing and hand washing, in this IDP collective center.

Planning phase:
WASH assessment / BoQ / Gov approval / Pre-assessment + EIA / Procurement (quotations)

Key Figures

- 9,922 USD
- 300 IDPS
- 5 new long-term toilets (and)
- 6 weeks

Activities:
- Clearing the site
- maintenance of 1 existing toilet
- Construction of 2 new septic tanks and 2 cess pits
- Construction of 4 toilets
- Installation of water tanks for each sanitation point (x3)
- Include sinks for hand washing (x2) and lighting
- Drainage trench to avoid water floods



ARDAWAN 2: CONSTRUCTION OF A BOREHOLE, WATER TANK AND NETWORK

Zakho District, Dohuk Governorate
Tuesday 22 November

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

Background

Ardawan lies at the fringe of the Zakho municipal water supply network, served by the Zakho pumping station. Ardwan is a new residential area which is still undergoing development. Many IDPs have settled into this area, due to a large number of unfinished buildings.

Parts of Ardawan are connected onto the municipal water supply, although many households remain un-served by this network. Where the main does not reach households, these households have tapped into the existing mains themselves using flexible pipes; this coupled with the limited capacity of the Zakho pumping station, has resulted in low pressures and frequent water shortages for the entire population in Ardawan. Residents have resorted to relying on water trucking to meet their water usage requirements.

The Zakho Municipality and Zakho Directorate of Water are concerned about the water supply to this area, given their lack of funds to invest in infrastructure to match the rate of population growth in this area. This project will:

1. Decrease load on the strained Zakho pumping station, and improve water supply for the greater Ardawan area
2. Eliminate need for informal water connections, and thus reduce non-revenue water and risk of water contamination
3. Provide storage capacity, and minimise operational duty cycles of pumps to improve pump lifespan
4. Ensure sufficient and sustainable access to safe drinking water for newly developed houses in the Ardawan 2 quarter

Activities

Water supply infrastructure is almost non-existent in this area. ACTED will provide a sustainable and complete water supply solution for this area, i.e. supply, storage and distribution. Planned works include:

1. Construction of a borehole and installation of a submersible pump
2. Construction of an elevated water tank to enable on demand water supply
3. Provision of a generator, to ensure reliable operation of the pumps
4. Extension of the water distribution network to enable access to water
5. Connection of new infrastructure to existing municipal water network

This project will be complemented by ACTED's additional activities, which include:

1. Capacity building training for local authorities in advanced computer design programs such as GIS, WaterCAD and EPANET
2. Provision of water tanks to allow household water storage
3. Hygiene promotion training, specifically in water conservation

Key Contacts

Zakho Directorate of Water
Engineer Mohammed
Deputy Director

Key Figures

116,448 USD

3,750 - Host

500 - IDP

8 weeks

480m^3/day

60m^3 storage

700m network

BATEL: CONSTRUCTION OF A 500 M3 WATER TANK

Summel District, Dohuk Governorate
Wednesday 23 November

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

Background

Batel is a town located in Summel district which has seen a large influx of IDPs due to the presence of many abandoned or unfinished buildings. There are some 300 individual IDPs concentrated in a single large abandoned building alone. The large proportion of IDPs has resulted in a noticeable decrease in water availability as compared to pre-crisis levels.

The community is served by a water distribution system centered around a 200m^3 hill top reservoir. This reservoir is fed by boreholes in the area. There is insufficient reserve or production capacity to match the peak usage demands of the community. Boreholes are being operated beyond levels conducive to service life in a meager attempt to meat peak demands. Furthermore, the existing reservoir is old and leaking, but cannot be rehabilitated without causing considerable disruption to the community's water supply.

The Summel Directorate of Water has prioritised this project, given the severity of the water shortages. This project will:

1. Provide storage redundancy and enable the existing water reservoir to be rehabilitated to eliminate leakages
2. Ensure sufficient storage capacity to meet peak water usage demands
3. Enable more sustainable pump and water resource management better matched against usage demands
4. Increase water supply to the community, through the connection of an additional borehole to the tank
5. Feed into future strategic plans to connect the community to a larger water pumping station from Mosul reservoir and thus reduce the dependence on ground water.

Activities

The negative impacts of the IDP influx can be clearly felt in this community. ACTED will invest in this community to mitigate these negative impacts, improve living conditions for IDPs, and also strategically develop future WASH investments. Planned works include:

1. Construction of a 500m^3 concrete water tank
2. Connection of an additional borehole to the water reservoir

This project will be complemented by ACTED's additional activities, which include:

1. Capacity building training of local authorities in preventative maintenance and root cause analysis
2. Small scale investment in the construction of septic tanks and rehabilitation of existing toilets to minimise risk of water contamination
3. Distribution of household water storage containers for IDPs

Key Contacts

Summel Directorate of Water
Engineer Ahmed
Deputy Director
Engineer Juni
Engineering Supervisor

Batel Sub-District
Engineer Saad
Sub-district Officer

Key Figures

49,568 USD

2,400 - Host

940 - IDP

8 weeks

500m^3 storage

BASTKE: CONSTRUCTION OF A WATER DISTRIBUTION NETWORK

Summel District, Dohuk Governorate
Wednesday 23 November

ACTED ACT FOR CHANGE INVEST IN POTENTIAL

Canada

Background

The current water infrastructure in Bastke community was installed more than 40 years ago, and the town has undergone considerable expansion since, including a recent influx of IDPs. The water infrastructure consists of two boreholes supplying an elevated water tank, which is connected to the iron pipe water distribution network.

Due to the poor state of the aging current water distribution network, many households do not receive a reliable and sufficient water supply, or any at all. Furthermore, the water is of poor quality due to contamination within the distribution network. The network also has insufficient reach to newer properties, with many of these households having made informal, and thus sub-optimal, connections to the network; this further increases non-revenue water and leakages. The leakages also permit ground contaminants to infiltrate the water. The network is deemed no longer feasible to repair due to the extremely poor state of the pipes and high number of leaks.

The Summel Directorate of Water deems this project critical, especially with large waste of water through leakages and subsequent unnecessary burden on the boreholes. This project will:

1. Ensure all current and planned households have adequate, reliable, and direct access to water
2. Improve water quality by reducing likelihood of contamination through damaged water infrastructure
3. Reduce the amount of water wastage through non-revenue water, lessening pump operation and improving lifespan
4. Reduce costs spent on the unsustainable maintenance of the existing network

Key Contacts

Summel Directorate of Water
Engineer Ahmed
Deputy Director
Engineer Juni
Engineering Supervisor

Batel Sub-District
Engineer Saad
Sub-district Officer

Activities

ACTED will implement a new water distribution network, designed for adequate pressure and quantity currently, as well as future population growth. Access to water will be equitable for all households. Works include:

1. Construction of water distribution network directly serving all households
2. Replacement of the existing pipework from the boreholes to the water tank

This project will be complemented by ACTED's additional activities, which include:

1. Regular community engagement meetings to identify and mitigate issues related to equitable water access
2. Capacity building training for local authorities in advanced computer design programs such as GIS, WaterCAD and EPANET
3. Small scale investment in the construction and rehabilitation of latrines to minimise risk of water contamination

Key Figures

90,942 USD

2,300 - Host

500 - IDP

8 weeks

5,300m network

Zakho District, Dohuk Governorate
Tuesday 22 November

ACTED ACT FOR CHANGE INVEST IN POTENTIAL Canada

DARKAR-HIZAWA: INSTALLATION OF HIGH-LIFT AND SUBMERSIBLE WATER PUMPS

Proposed project:

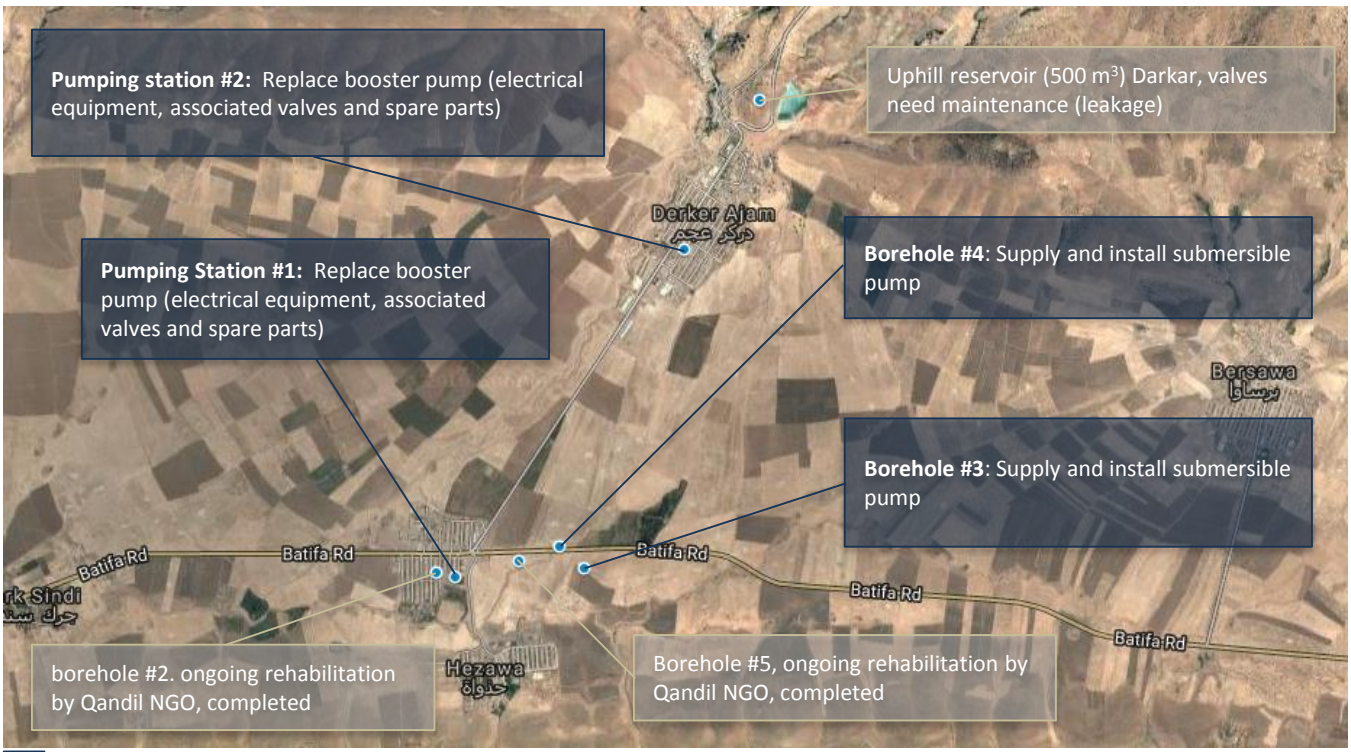
- Replace (supply and install) two of the broken water pumps and corresponding motors at Darkar-Hizawa pumping station. Each centrifugal pump needs to provide approximately a flow of **120m³/h** (Q), and **120 m** of pressure head (H).
- Supply and install two submersible pumps with associated motors, (Q_{min} , H_{min}) and (Q_{max} , Q_{min}),depending on each borehole's yield

Planning phase:

Site visit / EIA / Water quality / Groundwater analysis / consultation with authorities

Key Figures

~ 100,000 USD | 28,000 – Host | 3,800 – IDP



ACTED Project

Dohuk Governorate

Zakho District:

Zakho Water directorate
- Eng. Mohammed

Mayor office
- Eng.Heja

water station director
- Eng.Salih

- Zakho pumping station
- Ardawan: Borehole, water network, water tank, electricity network
- Darkar & Hizawa: Installation of high-lift and submersible water pumps

Board for Humanitarian and Relief Affairs (BHRA)
- ENG.EDRIS