

40th WEDC International Conference, Loughborough, UK, 2017

**LOCAL ACTION WITH INTERNATIONAL COOPERATION TO IMPROVE AND
SUSTAIN WATER, SANITATION AND HYGIENE SERVICES**

**Host and refugee population cooperation: case of Dumse
water supply and sanitation project, Damak-5, Nepal**

Prabesh Paudyal (Nepal) & Murray Burt

PAPER 2695

UNHCR promotes the use of technology and solutions with low long term operational cost and in line with the Sustainable Development Goals. UNHCR advocates for refugees' access to local services, and mainstreaming the management of refugee WASH services into local structures. In Nepal, Bhutanese refugees have been hosted in settlements in the forest areas of Jhapa and Morang for more than 24 years. In the past, water was provided from boreholes equipped with electric pumps powered by diesel generators. The cost of operating the diesel generators was high and unsustainable without ongoing support from UNHCR. This paper presents a 'best practice' case study describing the development of a new sustainable, low cost gravity flow water system, shared by refugees and host community, and mainstreamed into local structures.

Introduction

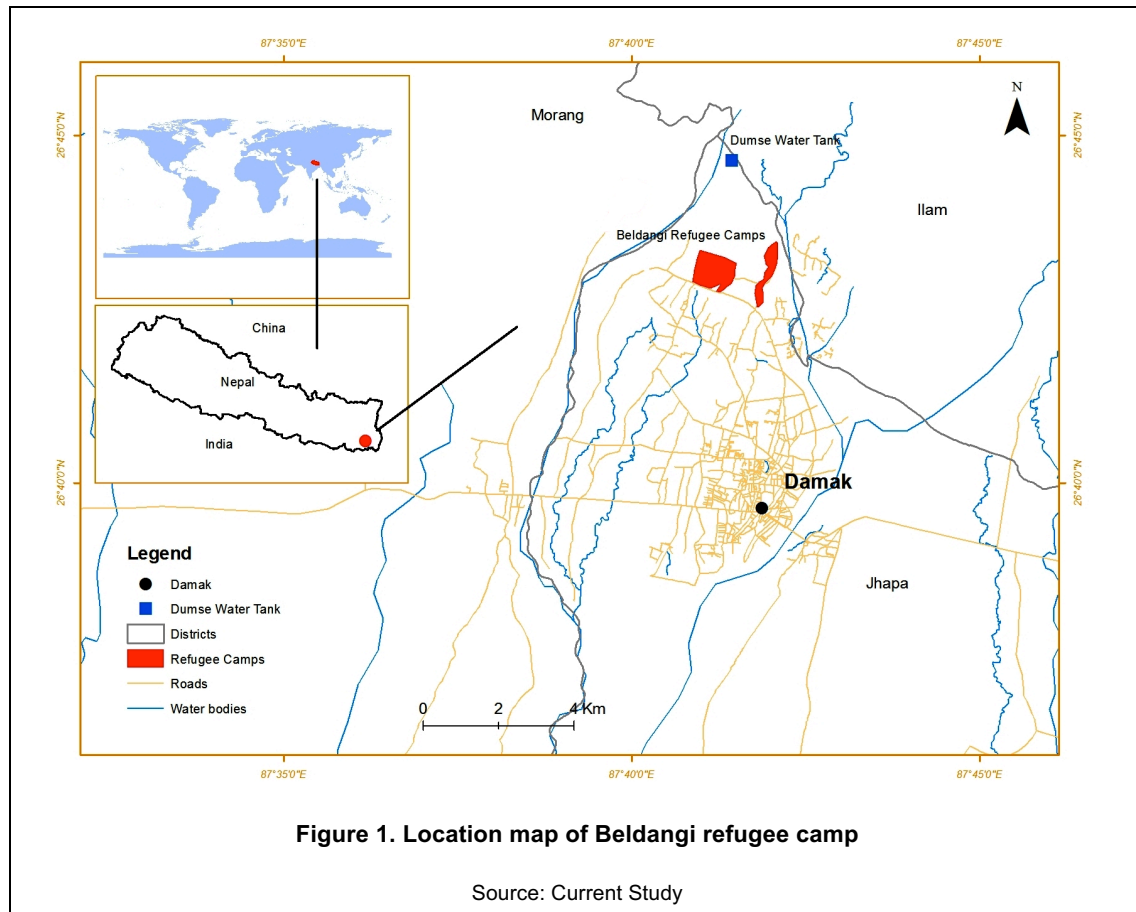
The average length of a protracted refugee situation is now 26 years (UNHCR Global Trends Report, 2016). In these situations UNHCR recognises that humanitarian funding steadily declines over time. Therefore UNHCR now promotes the use of technology and solutions with low long term operational cost and in line with the Sustainable Development Goals, encourages refugee's access to local services, and mainstreaming the management of refugee WASH services into local structures.

The Government of Nepal (GoN) and local communities have generously hosted Lhotshampa refugees from Bhutan over the last 24 years in two southeastern districts in Nepal, Jhapa and Morang. Following the enforcement of restrictive and discriminatory citizenship laws in Bhutan, most refugees from Bhutan arrived in Nepal in the early 1990s, where they were recognized on a prima facie basis by GoN. The refugees from Bhutan settled in seven refugee camps, where GoN and UNHCR provided them with basic humanitarian assistance and international protection, in cooperation with other national and international partners.

Currently a large number of refugees are choosing third country resettlement and so the remaining refugees have been consolidated into two camps Sanischare and Beldangi. The refugees have been provided with basic necessities for the survival in the refugee camps which includes ration, water, shelter, other NFI, etc. The maximum number of refugees in Damak area was 52,752 (2007) whereas the host population in Damak was around 63,820 (2007). The host community and refugees shared several natural resources. Due to the presence of refugees in the area, environmental degradation of renewable natural resources such as forests, soils and water resources has been observed (UNHCR, UNHCR ENVIRONMENTAL GUIDELINES, 2005).

Drinking water is one of the important needs and each refugee is entitled to 20 liters of drinking water daily (UNHCR, Handbook for Emergencies, 2007). From the beginning of the refugee settlement in Jhapa and Morang, pumped water was being distributed to the refugees (refugee population in the beginning was 108,000). Diesel power generators were being used to pump the water from deep boreholes. The bore holes were a good solution for immediate support to the refugees. In Beldangi camps, some taps were provided to the host community for support to the communities which have no access to the safe drinking water and request support from UNHCR. The refugee population has been slowly shrinking due to the third country resettlement. UNHCR has a strategy that slowly the basic necessities needs to be merged with the host

community like water. Similar kind of drinking water distribution through water pumping from boreholes is also practiced in the nearby community through the support from the community forest users group. The community clarified that the cost is very high to run these types of intervention. In refugee camps, as water management including maintaining the quality is very sensitive, funds were allocated on yearly basis. However due to reducing funds, low cost technology for the daily water need integrating the refugees and host population was needed.



Drinking water in host population and refugee population

There is a 15 meter high reinforced concrete (RCC) tank constructed for the refugee population inside the Beldangi II camp. The extension of water supply to the community having no water supply is not possible from the existing RCC overhead tank being in the upland. A new scheme was felt necessary to support the refugee community and host community. The construction of a bore in the host community area was not going to be successful because of the high cost of maintenance and electricity. Similar initiatives were done by the Humse Dumse Community Forest in 2011 under the support of UNHCR. The bore hole is running currently but the community forest states that it is paying a very high cost for electricity charges for the users in the east of the Beldangi I camp.

The upstream host community in Beldangi II Extn camp did not have access to the drinking water scheme even though it was inside the municipality. As per the request of the local organization, the host community in Beldangi II was provided with limited water supply from the camp from 1998. Two taps were provided in the host community in 1998 and then an additional 3 taps were provided from 2009 and in 2012 there was an addition 12 taps constructed for water supply in the community (Beldangi II and Extn). The supply of the water to the area where there was acute shortage was not possible due to the elevation of the village. The community faced an acute deficiency of clean water in the lean season. The communities often fetch water from the nearby river by walking for about 1-2 hour. The community requested with recommendation of Damak Municipality for support of water supply system nearby village (Tamang Basti, ward no. 5). The population of the host community is 1941 people according to the survey conducted in the beginning of

2013. The population of the refugees in the Beldangi II and Extn camp is 19357 (As of Jan 2014 at the start of the implementation). There is a gradual decrease in the refugee population due to the ongoing planned resettlement, the population of the Beldangi camp is expected to be substantially below 10,000 at the end of 2017.

Need of a new water supply initiative for host community and refugee community

UNHCR has a strategy to engage the refugees for the self-management for water management linking with the host community. Early in 2007, gravity water sources were explored in the Timai camp after the depleting water table was recorded. One of the nearby spring sources was tapped to provide drinking water in Timai camp. This was one of the successful models to switch from emergency to developmental activities. This scheme supported the drinking water to refugees and local population collectively. As the camp is closed, currently it is being used by the local community outside the camp. Similarly in Beldangi camp, a new scheme was planned to be developed based on the gravity flow concept and utilizing water from the nearby river in Dumse area (upstream of Beldangi II Extn camp). As per discussion with the Divisional Office of Water Supply and Sanitation (DOWSS), they had implemented water supply through sump well system which was discussed further and then jointly visited this completed scheme nearby the district. After visit, technical team from DOWSS, Damak Municipality and LWF Nepal jointly visited tamang basti and Mawakhola for feasibility study and decided to proceed for detail survey. After confirmation from UNHCR for a detailed study, the survey and design of the scheme was prepared after agreement with the user committee. The main work of the sump well is to collect additional water from ground and send to pipeline. Community members are so eager towards the water supply project and committed to continue and complete the work sooner the possible. One community member shared his feeling toward water project that, “we community people always slept on the water pillow but always remained thirsty and now this project creating the hope to address our thirst”. This project will also support water supply in the camp.

Objective of the intervention

- To provide safe drinking water to the host population and the refugees in Beldangi II Extn with minimum effect to environment
- To promote peaceful coexistence between refugees and host community.

The government lead agency for the drinking water is the Divisional Office of the Water Supply and Sanitation (DOWSS) based in Chandragadi, Jhapa was approached and design was requested to be developed by the DOWSS under the government standards as a lead including LWF and UNHCR. The experience and knowledge was also shared by the DOWSS for the management of the system. The officials from DWSS also assisted for the formation of the water user's committee and registering it to the District Development Committee (District water resources committee). After the formation of the water user's committee the DOWSS will help for the maintenance of the scheme in the future. Damak Municipality committed to support the project in the future and currently and participated in the implementation of the project. Similarly, the formation of the Dumse water supply user's committee (DWSUS) will help for the sustainable management of the water resource. The DWSUS is registered with the Damak Municipality and with the District Water Supply and Sanitation Division Office in Chandragadi with a detailed constitution for the operation.

Preliminary survey from the DOWSS found out that the water supply scheme can be implemented. Following are the salient feature of the project used for the design of the water supply.

Table 1.		
S.No.	Particulars	Total
A	General	
	Scheme name	Dumse W/S Project
	Municipality	Damak Municipality
	Ward covered	5

	District	Jhapa
B	Population	
	Survey year households (2013)	319
	Survey year population (2013)	1941
	Beldangi II refugee population (2014)	19357
	Base year households (2017)	351
	Base year population (2017)	1941
	Design year households (2032)	386
	Design year population (2032)	2611
	Design period	15
	Annual growth rate	2
C	Water demand / Water sources	
	Total water demand (design year)	227531
	No. of sources	1
	Type of sources	Sump Well
	Total safe yield (Lps)	8
	Tapped discharge (Lps)	5
D	Project components	
	Total length of Transmission Main (m)	1052
	Total length of distribution line (Host)	2534 m
	Total length of distribution line (Refugee)	2534 m
	Total length (m)	6120 m
	Total number of intakes	1
	Total number of reservoirs	1
	Capacity of reservoirs	100 m ³
	Provision of private connection, Yes/No	Yes
	Total number of valve chambers	4
	Total number of schools	1

Implementation of the Dumse water supply project

The Dumse water supply project (DWSP) was implemented from mid-2013. There was already a water management committee which was managing a small water supply scheme from a nearby spring source which dried in the lean season. This water user committee expressed interest to implement the project. Two refugee representatives are included in the user committee as an invitee member for the implementation/management of works. The financial contribution was also done by the community (as of Jan 2014).

Table 2.		
S.No.	Particulars	Total (NPR)
A	Financial Data	
	Total Estimated cost	5162889
	UNHCR Contribution	4331095.43
	Community Contribution Cost	831793.76
	Percentage of UNHCR	83.89
	Percentage of Community contribution	16.11
	Average per capita cost (Base year)	2659.91
	Average per capita cost (Design year)	1977.36
	Per liter cost	22.69
	Per meter cost	1439.73

The source protection of the water supply is being done by the committee. After the implementation of the project, currently there are 518 household in the host community who are using the water from Dumse Scheme. There is an office which has three staffs. All the household have water meters and monthly pay the tariff. In an average 12-13 units of water is being used by the residents (1 unit is 1000 litres). The cost structure of the water is as below.

Table 3.		
S.N	Unit	Cost
1	0-10	80 (minimum cost)
2	10-30	Increase of 10 NPR/unit
3	30-60	Increase of 15 NPR/unit
4	60- more	Increase of 20 NPR/unit

Note: 1 USD = 107.04 NPR

Note: In 2014 to ensure that water supply is not interrupted in the refugee camp an agreement with the user's committee was made which decided that 40% of the total water discharge will be diverted to the refugee camp.

Sustainability

Sustainability is a broad term and has different interpretation. In this case the sustainability concept includes the following:

- Minimum operating cost (less maintenance cost associated)
- Decrease of underground water pumping
- Problems sharing with all the community
- Support from the local bodies and district bodies.
- Registered to the government body.
- Initial cost supported from the donor funds
- Separate lines for refugee and host community
- Institutionalisation of the water system

Therefore the population of the refugees is decreasing. The water supply design with the help of bore hole and pumping the water by submersible pumps is costly for the locals. This design is based on the gravity water flow, which has no effect in the environment and can serve water partially/fully to the refugee population. The quality of the water in the tank is being tested by the partner of UNHCR. In 2016, water lab was established in the camp for monitoring water quality in the camp. The water test is being done from this lab facility which is also being used by the Dumse water group.

Discussion

The budget trend from 2008 of UNHCR spending in the diesel for water pumping in camp is as follows (the cost is in NPR).

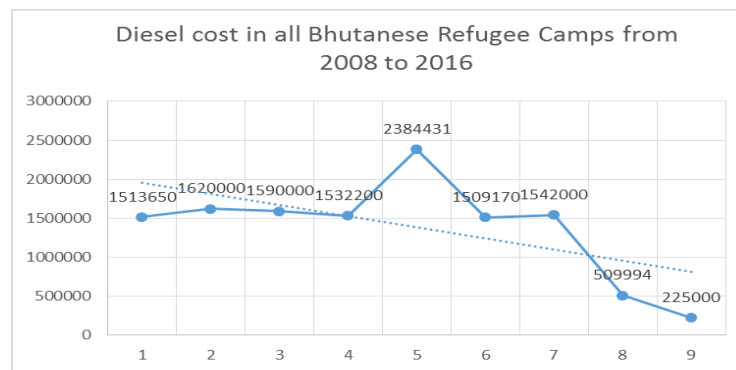


Figure 2. The budget trend from 2008 of UNHCR spending in the diesel for water pumping in camp

The cost of the diesel in consecutive years from 2008 to 2016 (end of October 2016) is explained in the figure. The cost of the diesel is decreasing steadily from 2014 (after the implementation of the project). The cost is also decreasing due to the refugee population leaving for third country resettlement. The refugee third country resettlement was started from 2007. The total refugee individuals (till Oct 2016) gone for resettlement is 106,923.

UNHCR is currently moving ahead with linking the water management with the host community with minimal support from UNHCR implementing partners. Due to the implementation of such projects, linking with the host community will be easy. The refugees and the host community will be engaged in the daily management activities including resources sharing. The strategy of UNHCR is to completely manage the water supply inside the camp in coordination with the host community. Therefore water user's group formation inside the refugee camp for the smooth transition is being planned which will promote peaceful coexistence.

Conclusion

The project is eco-friendly. The locals are happy and have overall served the water needs of host population as well as partially to the refugee population. The diesel consumption in the camps has been lowered. This project has been a model in the area and similar initiatives is being started in the nearby village.

Such type of intervention can be started in other refugee settings. Sustainable means of water supply with less management cost needs to be identified after the emergency phase where in many cases boreholes are dug. This will save a lot of managing cost which can be utilized for other important areas.

Acknowledgements

The author/s would like to extend thanks to UNHCR Office in Nepal for the support and guidance.

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Contact details

Prabesh Paudyal

Address

Tel: 977 9852676239

Email: mailprabesh@gmail.com; paudyal@unhcr.org

www: wash.unhcr.org

Murray Burt

94 Rue de Montbrillant, Geneva

burt@unhcr.org

wash.unhcr.org
