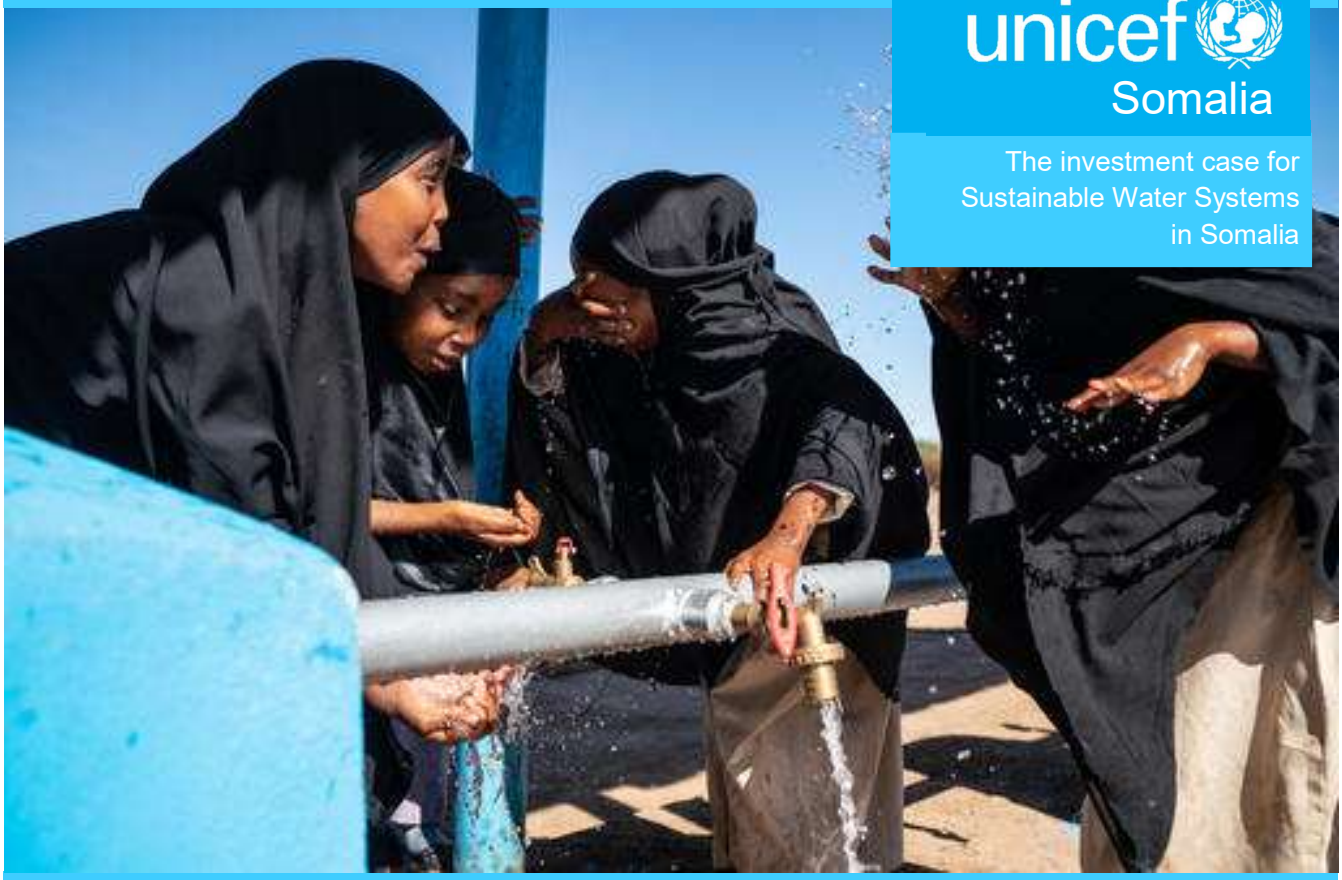


unicef Somalia

The investment case for Sustainable Water Systems in Somalia

The investment case for sustainable water systems in Somalia

Drought is a recurrent issue in Somalia, a water-scarce country that receives an average of just 200mm rainfal a yar and is on the fringes of an expanding desert. Most surface water sources dry up during the dry season, putting extra pressure on existing ground water sources, that leads to congestion, high water prices and population displacement. The water situation is compounded by a complex emergency with an active conflict.

To address water scarcity during dry periods, UNICEF with the help of Donors periodically provides emergency water supply through water trucking/vouchers to affected population. This can happen for more than the WASH Cluster standard of 90 days. Water trucking costs vary during different seasons with lower costs during the rainy season and very high costs during the extended dry seasons as demand rises with the scarcity of water.

Fig. 1 shows average water prices between 2018 and 2019 (at the onset of the current drought period) across Somali zones through the two main seasons of Gu' and Deyr. The situation is repeated in the last decades with highlighted price peaks when there is delayed or failed rains.

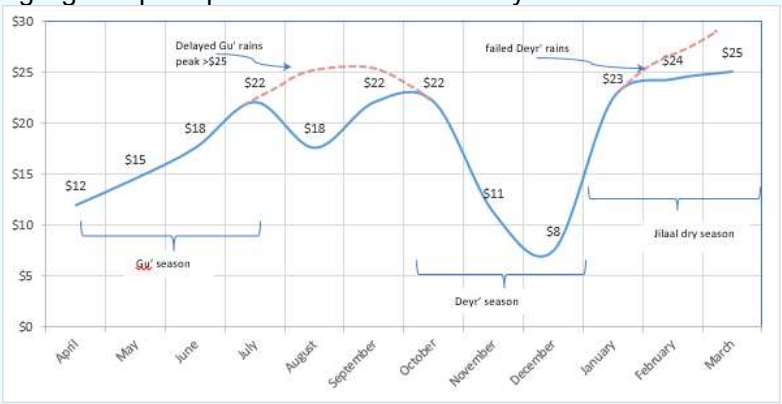


Figure 1: Somalia Water Prices for 1 M3 water 2018/19

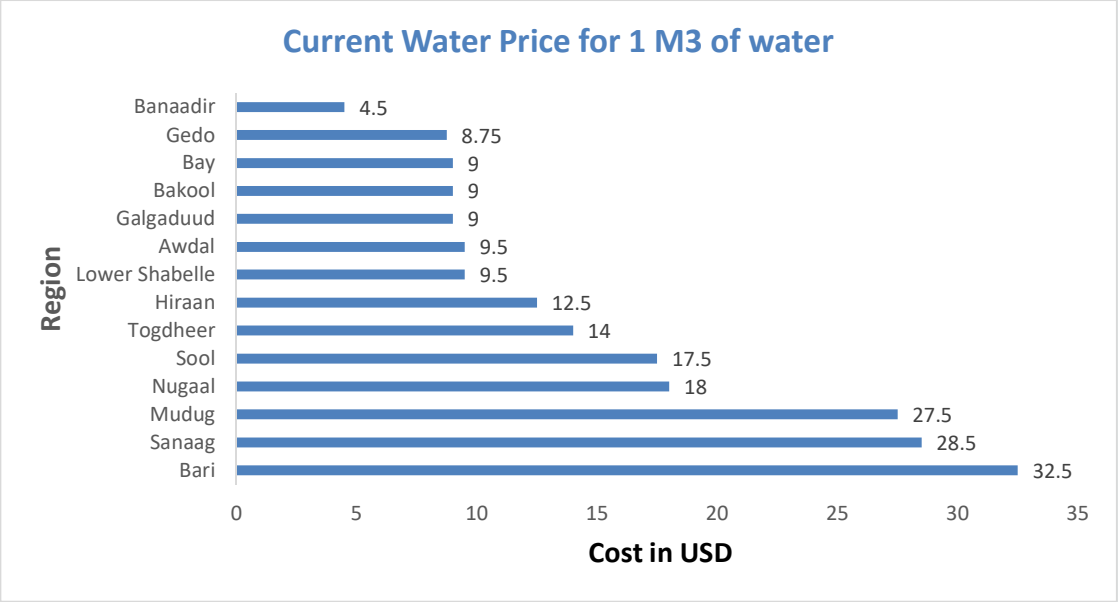
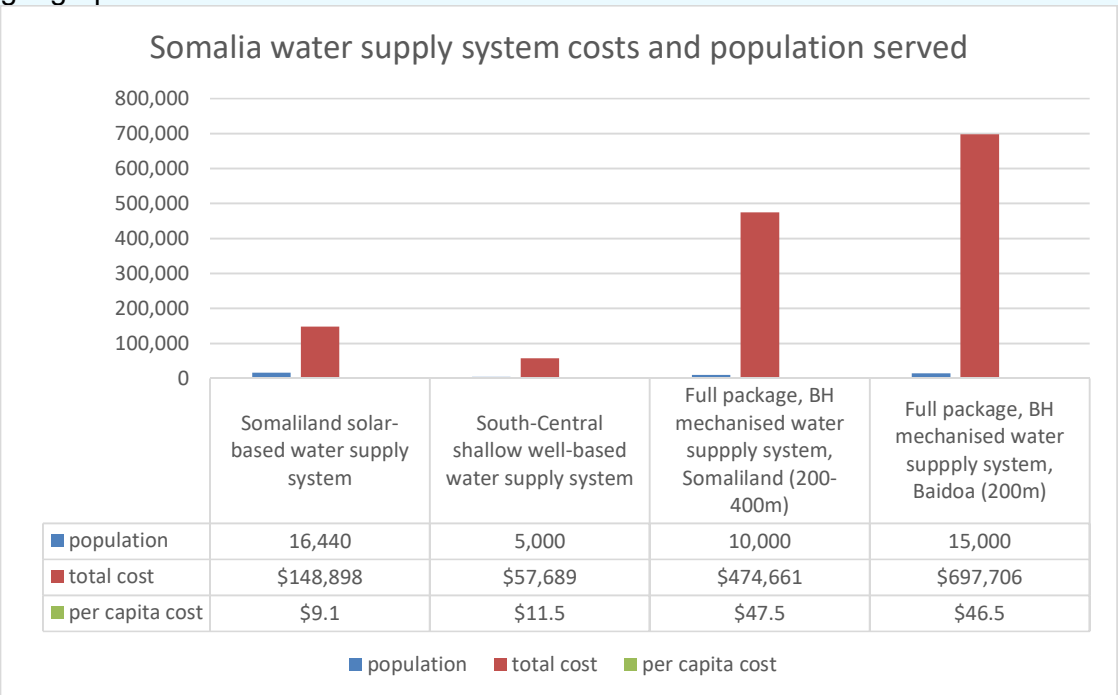


Figure 2: Somalia Water Prices for 1000 lt by locations-May 2019

Very high-water trucking costs and recurrence of drought in Somalia makes a very strong case for government and humanitarian/development partners to have a more strategic approach for improving access to safe water supply for chronically drought affected locations and humanitarian-development continuum. In Somalia, the most feasible sustainable water supply systems are deep and shallow wells with motorized and solar pumping systems operated and maintained by communities and public private partnership agreements.

Figure 3 shows average costs of establishing water supply systems in different geographic locations of Somalia.



	Somaliland solar-based water supply system	South-Central shallow well-based water supply system	Full package, BH mechanised water suppply system, Somaliland (200-400m)	Full package, BH mechanised water suppply system, Baidoa (200m)
population	16,440	5,000	10,000	15,000
total cost	$148,898	$57,689	$474,661	$697,706
per capita cost	$9.1	$11.5	$47.5	$46.5

Figure 3: Sustainable Water Supply Costs

Return of Investment (RoI) of different water supply models

A comparison of the return of investment in water trucking versus rehabilitation of water supply systems, construction of new motorized water supply systems and blended rehabilitation and construction of sustainable water supply systems for a typical population of 10,000 people is done below;

1) **Water Trucking**- Utilizing water trucks to access existing water sources and transport to the beneficiaries. This include cost of water, cost of transportation and cost of establishing temporary water storage and water distribution facilities.

2) **Rehabilitation/upgrading of water supply systems-** This includes a combination of rehabilitation of generator powered deep water supply systems and rehabilitation and upgrading of shallow wells to solar powered water supply systems for a typical 10,000 population including operation and maintenance of the water supply systems. In this scenario a temporary water trucking for an average of 1 month is also considered to bridge the gap between the emergency supply and rehabilitation works and the total life span of the rehabilitated facilities is estimated to be 5 years.

3) **Construction of New water supply systems –** In this scenario a combination of construction of deep boreholes (200-300 meters) with generator powered water supply systems and shallow wells with solar powered water supply systems with distribution points, pump house and other components considered for a typical of 10,000 population. In this scenario, a temporary water trucking for an average of 2 month is also considered to bridge the gap between the emergency supply and the construction works and the total life span of the new facilities is estimated to be 10 years

4) **Blended Rehabilitation and New construction of water supply systems** - In this scenario a combination of construction and rehabilitation of deep boreholes (200-300 meters) with generator powered water supply systems and shallow wells with solar powered water supply systems with distribution points, pump house and other components considered for a typical of 10,000 population with 60 per cent of the population targeted by rehabilitation and 40 per cent with new construction. In this scenario a temporary water trucking of an average of 1.5 month is also considered to bridge the gap between the emergency and the rehabilitation/construction works to be completed

Assumptions and costs – The following are the basic assumptions and costs in Somalia used for the return of investment calculations for different scenarios:

Table 1- Assumptions

Target population	**10,000**
liters of water per beneficiary per day	**15**
Average family size	**6**
No. of families	**1,667**
Average annual inflation rate	**10%**
Estimated gov't/Development partners/community contribution rate for O&M	**60%**

Cost Comparisons and Return of Investment Analysis – By using the UNICEF WASH return of investment tool and the above assumptions and costs in Somalia the cost comparisons and return of investment for the four different scenarios for a period of 4 years (48 months) was analysed as indicated in table 2 and figures 4 and 5 below:

Table 2- Return of Investment for different water supply strategies

Costs & Savings (nominal future values, inflation adjusted)	**Scenario 1** Water trucking only $	**Scenario 2** Rehab of existing infrastructure w/temporary water trucking $	**Scenario 3** New construction of infrastructure w/temporary water trucking $	**Scenario 4** Blended rehab & new construction w/temporary water trucking $
Capital investment costs	78,000	323,800	812,600	519,320
Total O&M subsidy covered by govt/Community/development partners	-	234,000	489,600	336,240
Other Operation costs	3,164,400	71,500	(170,000)	(25,100)
Total system costs	3,242,400	629,300	1,132,200	830,460
Total savings vs. water trucking	n/a	2,613,100	2,110,200	2,411,940
Return on investment	n/a	415%	186%	290%
Net % value savings	**n/a**	**5,978,800**	**3,988,800**	**5,182,800**

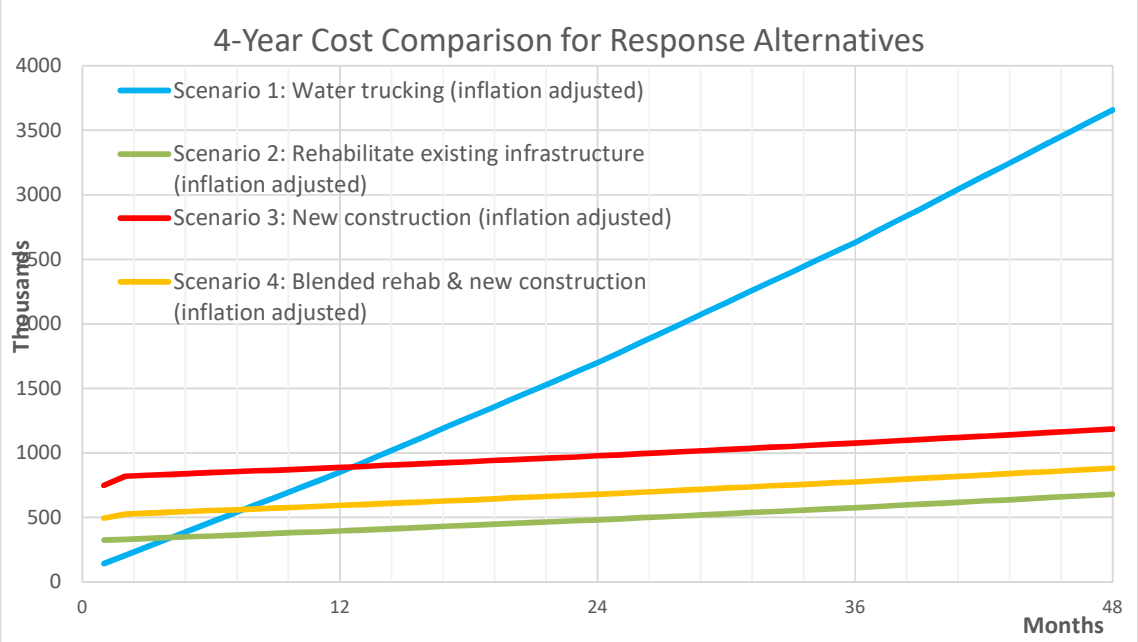


Figure 4: 4-Year cost comparison for Sustainable sources vs water trucking

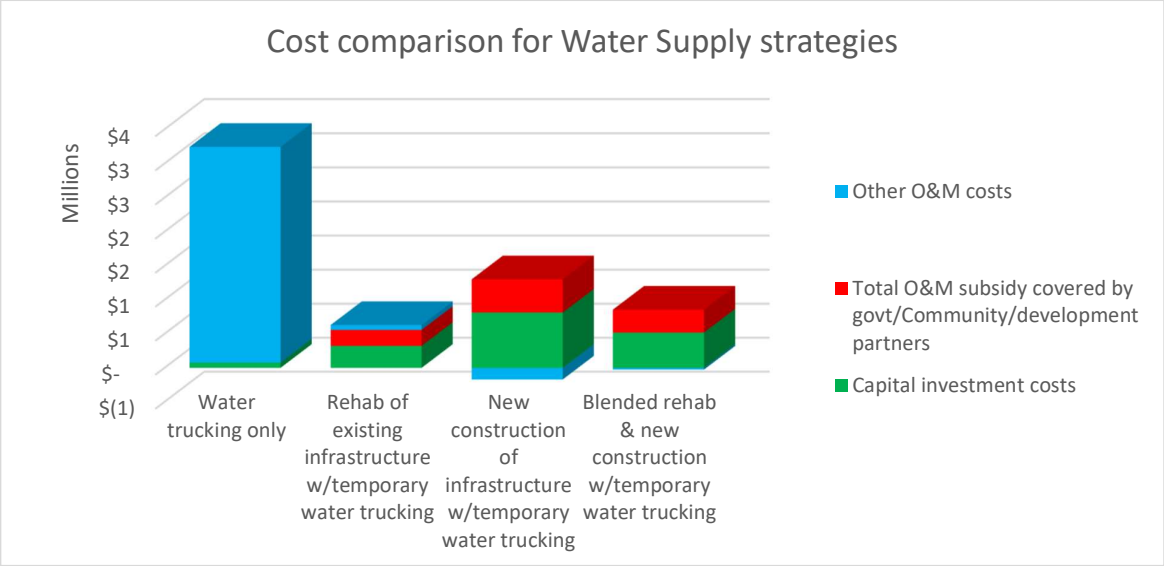


Figure 5: Cost Comparison for Different water supply strategies

Key conclusions

The above analyses provided the following key findings on different scenarios for providing access to safe water supply for a typical of 10,000 population;

- Water trucking is the most expensive option for provision of water supply for a period of 4 months and above and there is no any return of investment during the comparison period of 4 years. The Water trucking costs rise quite steeply and in about 13 months, has surpassed all the sustainable sources, including construction of new water supply systems.
- Water trucking is more expensive than construction of new water supply systems if it is conducted for a period of 13 months and construction of new water supply systems has an average of 186 per cent RoI in 4 years period
- Rehabilitation/upgrading of existing water supply systems is the least expensive of all sustainable water supply options and has over 415 per cent RoI within 4 years period
- Rehabilitation/upgrading of existing water supply systems is the most cost-effective investment with high return of investment in the long run whenever such existing facilities are available.
- While the initial cost of developing new sustainable water supply systems is high in Somalia, it is still cost-effective within a year of operation and have a substantial return of investment during the long run.