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**Emergency Market Mapping and  
Analysis Report: Water Market  
Moyale Town  
Ethiopia**

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**OXFAM GB  
August 2012**

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**WATER MARKET SYSTEM: Moyale**

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## Summary

Moyale town is a border town between Kenya and Ethiopia and has an estimated population of 90-120k people although accurate population estimates are difficult to come by. A gradual increase in population over the years and the dilapidation of the water infrastructure has increased the pressure for water within the town. In (January) 2012 (5888 number) Borana & Gabra households crossed from the Kenyan side to the Ethiopian side of Moyale due to clan fighting on the Kenyan side. From (January) these households were hosted by Borana and Gabra households on the Ethiopian side. This displacement increased pressure for water and other resources. Since the onset of the displacements in (month February), Oxfam Great Britain (OGB) has been working on public health within the town and displaced communities. OXFAM is also looking at ways to use the current water market to supply water to poorer sections of the community and the remaining displaced communities. To assist in this investigation OXFAM GB carried out water market assessment. The objective of the assessment was to assess the functionality of the Moyale Commercial water system and investigate the various market related water access options to increase water access to vulnerable & displaced households in Moyale Urban. The Moyale water market assessment utilized an adapted version of the Emergency Market Mapping Analysis (EMMA) methodology. The assessment did not have a before and after market map as per usual EMMA methodology, it just examined the current state of the market and how OXFAM could programme better within such a market. Given the current city water supply the need is astronomical in relation to supply levels. Findings from the assessment are that households utilise municipal water from both public and private water stands when it is available. Municipal water is not always available and not all households have access to it. The main capacity issue within the market is the availability of water. Aggregate water supply is not currently adequate to meet demand. Given this scenario any market related intervention has to be planned in conjunction with increased water supply at aggregate level. Prices can potentially be affected by a big market intervention that increases water entitlements significantly from current levels thereby increasing demand when supply is static. The number and nature of players in the system would be adequate to cater for the population were adequate water supply available. The main conclusion is that the current commercial water market can be utilised to deliver humanitarian water but the scale and coverage of the intervention has to be adapted to the limited supply situation. Recommended interventions include water vouchers through public and private stands water vouchers through donkey carts, combinations of suppliers using vouchers, segregated water use and source access vouchers and monthly cash distributions premised on water price and use.

## Methodology

The Moyale water market assessment utilized an adapted version of the Emergency Market Mapping Analysis (EMMA) methodology. Although the EMMA is a rapid market analysis designed to be used in the first 2-3 weeks of a sudden onset crisis in the Moyale assessment EMMA principles were utilized to understand an already existing market regardless of any emergencies. The usual rationale of EMMA is to better understand the most critical markets to enable decision makers to consider a broader range of responses. EMMA can also be used in slow onset emergency contexts. EMMA provides the analytical framework to determine if a market system can support in delivering the response, and therefore if cash transfer programming is feasible and appropriate in the specific context. In this instance the adaptations were that the rationale of the assessment was to understand water markets better to

recommend feasible cash or non cash interventions that could be utilised for households to have access to water. The assessment did not have a before and after market map as per usual EMMA methodology, it just examined the current state of the market and how OXFAM could programme better within such a market. The methodology was mostly qualitative rather than quantitative.

The assessment team was made up of seven OXFAM GB staff members and organized into two sub-teams for data collection in the different Kebeles. All team members received training for one day and spent another half day going through data collection tools.

The assessment was done in five Kebeles of Moyale town in Ethiopia as shown in Table 1. Moyale is a border town on the border of Ethiopia and Kenya in the South East of Ethiopia. Four Kebeles were chosen as they hosted displaced communities from Kenya and the fifth kebele (kebele 01) was chosen later after realisation that households from the other Kebeles obtain their water from Kebele 01. OXFAM GB hopes to programme around assisting these households together with the host communities in accessing water.

The sources of information for the assessment were the host and displaced communities, municipal water authority, private and public water vendors and donkey cart water vendors. Key informant interviews and household interviews were chosen as the most appropriate data collection methods.

Table 1: Locations covered in the assessment

| Kebele        | Host Community | Displaced Hhlds | Municipal water stands | Private water stands | Donkey cart vendors | Municipal water authority |
|---------------|----------------|-----------------|------------------------|----------------------|---------------------|---------------------------|
| Kabenawa      | 12             | 8               | 2                      | 4                    | 5                   | 1                         |
| Arbale        | 10             | 2               |                        |                      |                     |                           |
| Bole          | 2              | 1               |                        |                      |                     |                           |
| Shewaber      | 8              | 6               |                        |                      |                     |                           |
| Kebele 01     |                |                 | 1                      | 2                    |                     |                           |
| <b>Totals</b> | <b>32</b>      | <b>17</b>       | <b>3</b>               | <b>6</b>             | <b>5</b>            | <b>1</b>                  |

## Background and Context

### Inadequate water access & displacement

Moyale town is a border town between Kenya and Ethiopia and has an estimated population of 90-120k people although accurate population estimates are difficult to come by. The town water supply system for Moyale is reportedly to have been designed to cater for a population of 7000 inhabitants. The increase in population over the years and the dilapidation of the water infrastructure has increased the pressure for water within the town. This has led to reduced access to water and the emergence of an opaque water market.

In January 2012 (5888) Borana & Gabra households crossed from the Kenyan side to the Ethiopian side of Moyale due to clan fighting on the Kenyan side. From January these households were hosted by Borana & Gabra households on the Ethiopian side. This displacement increased pressure for water and other resources. INGO working on the Ethiopian side started trucking water to improve water access to both displaced and host communities. Some displaced households have started migrating back to Kenya but the number of current displaced households and those that have migrated back cannot be accurately ascertained. Water trucking in these areas ceased in July 2012 and households have been relying on city water and water from other sources such as hand pumps and traditional wells since then.

### **Oxfam's current and planned role in geographical area**

Since the onset of the displacements in January, Oxfam Great Britain (OGB) has been working on public health within the town and displaced communities. Public health work has been centred on provision of NFIs, health campaigns and latrine construction. After the stoppage of water trucking OXFAM GB is investigating ways to increase the town water supply through technical improvements to the town's boreholes, which are the source of municipal water in the town. OXFAM is also looking at ways to use the current water market to supply water to poorer sections of the community and the remaining displaced communities. As cross border displacements are common in Moyale OGB hopes to investigate market methodologies that can be utilised to enable water access to host communities and displaced communities in the event of a displacement. OGB hopes to work with local partners in piloting any market related water access interventions recommended in this report.

### **Rationale for EMMA assessment**

#### **Objectives of the assessment**

- ✓ Assess the functionality of the Moyale Commercial water system
- ✓ Assess the various market related water access options to increase water access to vulnerable & displaced households in Moyale Urban

#### **Target population**

The target population for the assessment and any recommended interventions comprises of the Moyale Urban community and current or would be displaced households. Within the Moyale urban community specific focus would be on poor vulnerable households and households hosting displaced communities.

#### **Selection of critical market systems**

Due to increased population, poor water supply infrastructure and cyclical droughts in the area, households face chronic shortages of water. Periodic displacements also mean whatever water is available is stretched by incoming populations. The main water source in the town is the Municipal water system. An understanding of this water market would inform the design and implementation of market related water access programmes now and would provide baseline information for future water market related interventions.

#### **Key analytical questions**

The assessment focused on the following key questions:

1. What is the capacity/scale of the commercial water market (water availability, number and nature of players, pricing)?
2. How functional is the current commercial water market?

3. What is the willingness and capacity of players in the market to engage NGOs in market water access systems?
4. What are the main challenges/bottlenecks for different players in the market?
5. How responsive is water supply to increases in incomes/demand for water?

### Defining the reference years

Unlike in traditional EMMA assessments the Moyale water market assessment did not focus on a specific reference year. The assessment focused on the current situation and on how current market condition could be exploited to meet the humanitarian needs. The team felt there was no real before and after situation and if there was the market situation would not be very different. The focus was therefore on the current scenario and how it could be leveraged to support current and future water related market interventions. Water shortage and access problems have been a chronic issue in Moyale and do not have a specific start or kick in date but are gradual result of increase in population not matched by improvements in water infrastructure.

**Table 2: Target Population**

| Target population              |                                    |
|--------------------------------|------------------------------------|
| Target                         | Size (number of Households/people) |
| Moyale Urban Population        | 90k-120k                           |
| Displaced Population           | 29,240                             |
| <b>Total Target Population</b> | <b>120k</b>                        |

Source: Woreda administration and DPPO

### Needs analysis

Assuming minimum water needs of 7.5 litres per person per day the table below presents the level of water need. The table presents various population scenarios as current population estimates are not reliable. The calculation can be changed based on the number of displaced households at any given period.

Although there is currently no other aid to meet water needs, households have resorted to using other water sources such as hand pumps and wells. Supply from these sources could not be estimated as this would amount to trying to quantify the water cycle for the area. Previous water market assessments in the horn of Africa have shown that this approach does not work as such estimations would be impossible. The assessment therefore focused on one critical water market, the municipal water supply system.

OXFAM GB is working with private water engineers to rehabilitate the town water supply and increase output by 50+ %. The gap analysis and needs analysis has factored this in the Gap calculations.

The main weakness of the quantitative need and Gap analysis in this report is the unreliable population data for both host and displaced communities. Report recommendations will also rely heavily on qualitative analysis of the capacity of the water market.

Table 3: Needs Analysis

| <b>Target population:</b> 90k-120k Urban Households and 5,888k Displaced households |                                       | Total population staying : 120k |                                       |                                |
|---|---------------------------------------|---------------------------------|---------------------------------------|--------------------------------|
| <b>Needs analysis</b>   |                                       |                                 |                                       |                                |
| <b>Standard (need to be covered)</b>  | <b>Target group</b>                   | <b>Individuals in need</b>      | <b>Other aid (water trucking etc)</b> | <b>Total need to cover/day</b> |
| If 7.5 Litres per person per day  | Host Community                        | 90K                             | None to date                          | 600 + m <sup>3</sup>           |
|   | Displaced community                   | 30K                             |                                       | 300 m <sup>3</sup>             |
| Total needs – for all population  |                                       |                                 |                                       |                                |
| If 7.5 Litres per person per day  | Host community & displaced population | 120K                            |                                       | 900m <sup>3</sup>              |

Current and postulated water Supply situation

| Total need/day    | Current Supply/day | Postulated supply/day after rehabilitation | Current gap       | Postulated gap after repairs |
|-------------------|--------------------|--|-------------------|------------------------------|
| 900m <sup>3</sup> | 400m <sup>3</sup>  | 600+m <sup>3</sup>                         | 500m <sup>3</sup> | 300-m <sup>3</sup>           |

Given the current city water supply the need is astronomical in relation to supply levels. This has led to households engaging in various coping mechanisms to deal with the water supply deficit. Household interviews indicated that households minimise daily consumption, share water with neighbours, move long distances to wells as coping mechanisms. Households also segregate water use according to source as a coping mechanism. Municipal water is reserved for cooking and drinking and water from wells and other unprotected sources is used for washing, bathing and other household water needs.

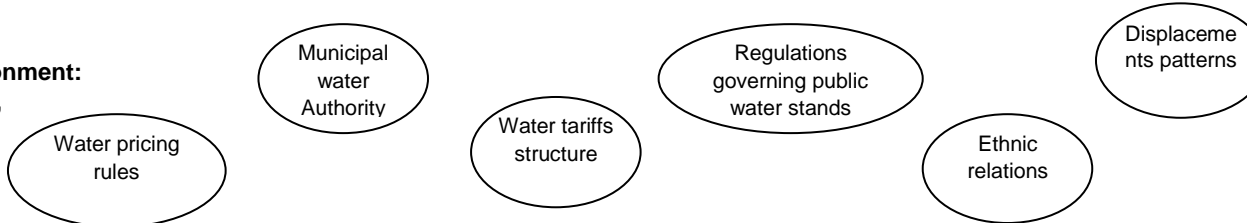
## **Current market situation**

### **Current Market map: August 2012**



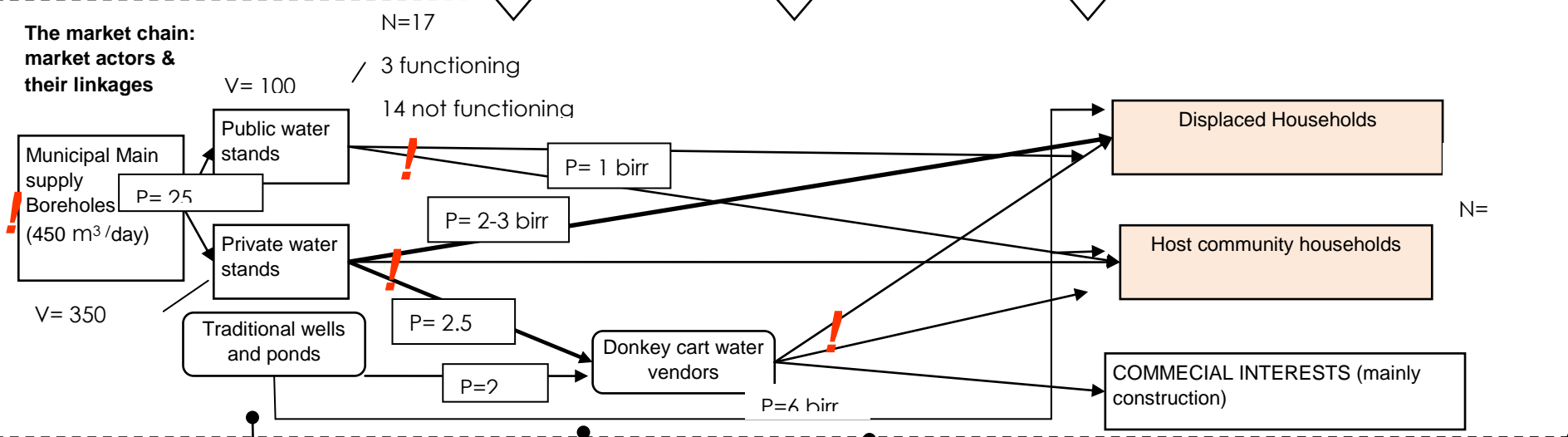
# COMMERCIAL WATER MARKET: Moyale Town

**The market environment: institutions, rules, norms & trends**

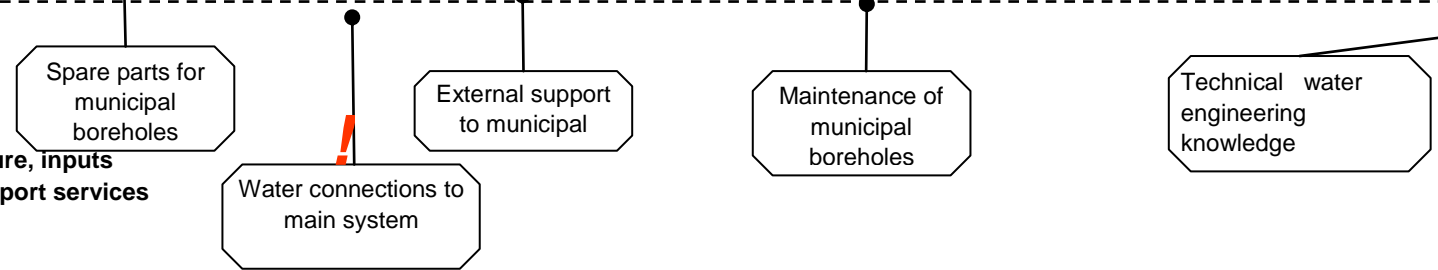


| Symbol Key         |   |
|--------------------|---|
| Critical issue     | ! |
| Major disruption   | X |
| Partial disruption | - |

**The market chain: market actors & their linkages**



**Key infrastructure, inputs and market-support services**



| Colour key            |   |
|-----------------------|---|
| Price/jerry can (20L) |   |
| Target groups         | ■ |

Households utilise municipal water from both public and private water stands when it is available. Municipal water is not always available and not all households have access to it. When municipal water is unavailable or inaccessible to households they utilise water from well and hand pumps for areas that have hand pumps. The market chain is such that more households obtain water from private stands and private water vendors than from public stands. Out of a total of 17 public water stands only 3 were functional at the time of the assessment.

On average households obtain 2 jerry cans (40 litres) of water per day and at an average of 6 members per households this translates to 6.6 litres per person per day.

In fewer instances households obtain water for donkey cart water sellers. Donkey cart water sellers on their part buy water mainly from private water stands and also from wells. They re-sell this water to wealthier clients for an average of 6 birr per jerry can (20 litres). Poor and vulnerable households indicated that they rarely purchase water from donkey cart sellers because of the high prices charged. Public water stands have their price regulated and sell water at 1 birr/20 litres whilst private stands sell the same quantity for between 1 and 2.5 birr.

Household interviews showed that households perceived the water pricing by private water stand owners and donkey cart water sellers as expensive whilst perceiving public water stands water prices as fair. Along the municipal water commercial water market chain no actors provide water on credit although well owners indicated that they provide free water to the very vulnerable households. An estimation by households revealed that water constitutes close to 10 % of monthly expenditure. This is a high proportion of expenditure and it may suggest that households are very sensitive to changes in the price of water.

Private water system and public water stands obtain water from the municipal water system at the prices stipulated below:

**Table 4: Water tariffs, Moyale**

| M <sup>3</sup> of water | Water tariff in ETB |
|-------------------------|---------------------|
| 0-3                     | 6.00                |
| 4-6                     | 7.20                |
| 7-10                    | 8.60                |
| 11-15                   | 10.30               |
| 16-20                   | 12.35               |
| >20                     | 14.90               |

Source: Municipal water Authority

Public water stands are directly managed by the cooperatives; however the Municipal Water authority (MWA) has the direct authority to supervise the stands and pays visits whenever there are complaints from the community.

The MWA supervises the private pipe water owners to check if the owners are using more than 10-20 m<sup>3</sup> volume of water, and selling price beyond the limits of accepted level.

The selling price of water by private stand owners is not set by the municipality and there is strict measure to monitor water selling prices

The MWA however monitors prices at public stands and penalises the cooperatives selling beyond agreed prices.

Private water stands are run by private households that sell whatever water they get from the municipal system in excess for their household requirements. Private water stands are scattered within the kebeles and get water on average once in two days. The behaviour and pricing by private water stands is not uniform and depends on the particular owner. Private water stand operators are therefore not a homogeneous unit operating along the same lines. Some private water stand owners have bigger connections and access more water. The location of a water stand in relation to the main system also determines water supply volumes. Private water suppliers however share common characteristics since they pay the same rates to the municipality and are supposed to be bound by municipal by laws.

Donkey cart water sellers are individuals who own or rent donkeys that they utilise for fetching and selling water. Donkey cart sellers mainly target wealthier clients and have prior agreements with their customers.

According to the municipal water authority the town supply is around 450 m<sup>3</sup> per day. 22 % of this amount is channelled through public stands and the rest through the private stands. The accuracy of this information is in doubt because currently only three out of a total of 17 public water stands are operational. The high number of stands that are non operational is as a result of low water availability and low pressure. Resultantly water cannot reach many public water stands. Wealthier households that have bigger connections to the main water system also lead to less water being available to other households and public stands that have smaller connections to the main water supply.

The main issue along the market chain is that water supply from the municipal water system is not adequate to meet demand for water. This problem gives the market the character and structure it has. The shortage determines how different players act in the chain. Other issues are that households cannot afford water from donkey cart sellers due to high prices.

The main **market environment** issues in the water market system are payment rates for the water, displacement patterns and municipal regulations as well as the operational rules for public stands.

Market **support services** include borehole spare parts and fuel supply for the municipal water system. Private water stands do not require any heavy market support systems as they are mainly individually run and administered. Public water stands operate at minimum levels and there are no major support services issues at this level. Organisational capacity of cooperatives running public water stands would be an issue were the stands operating at higher capacity.

## Market analysis

The main capacity issue within the market is the availability of water. Aggregate water supply is not currently adequate to meet demand. Given this scenario any market related intervention has to be planned in conjunction with increased water supply at aggregate level. Prices can potentially be affected by a big market intervention that increases water entitlements significantly from current levels thereby increasing demand when supply is static.

The number and nature of players in the system would be adequate to cater for the population were adequate water supply available. OGB could potentially work with both private and public water stands as well as donkey cart water sellers depending on the location of target populations. The market players are already organised and operate independently with minimal support therefore a framework already exists.

Market players interviewed expressed willingness to work with OGB in a market intervention as long they were paid timorously for water supply. Given that there are quite a number of players for each of the players it is possible to work with a number of players without worrying about few players monopolising the market. The only caution would have to be with private players as some of them are powerful and can potentially muscle other players /water users out in order to satisfy OXFAM GB beneficiaries demand creating conflict.

In terms of market power, bigger private water sellers seem to have more market power than smaller private water stand owners and public water stands. This is mainly because they are able to have bigger connections to the main system and access way more water than the other players. Currently public water stands cannot access much water for re sale due to this lack of market power and influence along other technical difficulties. Wealthier customers are able to access more water from both private water stands and donkey cart water re sellers. Some interviewed private water sellers admitted that they give priority to donkey cart sellers when selling water because donkey cart sellers pay more than ordinary households. Donkey cart sellers pay more for water because they require the water for re sale as opposed to households that require it for household use.

Although at micro level it is feasible for market players to increase supply in response to demand as shown by the donkey cart water sellers example above, at macro level this would be problematic as water would be channelled to those with a higher willingness to pay and lead to shortages in other sectors of the community potentially causing conflict. The implication of this finding on programming is that instruments that increase access to water through higher purchasing power are feasible but their scale has to be limited to avoid offsetting the market. Their scale in terms of value or coverage has to be considered carefully in light of already existing water shortages and tensions in the community.

## Response recommendations

The main conclusion is that the current commercial water market can be utilised to deliver humanitarian water but the scale and coverage of the intervention has to be adapted to the limited supply situation. The biggest hurdle to market intervention is constrained aggregate supply. OXFAM GB is currently working on technical solutions to increase the aggregate water supply. Should the plan to increase water supply work then there would be more flexibility in market interventions. Current market players are willing to engage NGOs in water access programming and a viable market already exists for water. Households are used to paying for water so a precedent on water marketing already exists.

**As the market currently stands, all recommended options need to have volumes limited to current or just above current access levels to prevent water shortages and inflationary pressure on water prices. Separate technical solutions are required to increase aggregate water supply without which current response recommendations would be hamstrung.**

**Table 5:** Response recommendations

| Option and Description                           | Advantages   | Disadvantages   |
|--|--|---|
| Water Vouchers through public and private stands | <ul style="list-style-type: none"> <li>- Private and Public stands ready to engage in such a system</li> <li>- Already the main sources of purchased municipal water i.e Use already existing infrastructure and market capacity</li> <li>- Proximity to households</li> </ul> | <ul style="list-style-type: none"> <li>- Public stands operation not very reliable would require education on use of vouchers</li> <li>- Initial high staff time/admin time on vouchers education/redemption etc</li> <li>- Does not address underlying water shortages</li> </ul>  |
| Water Vouchers through donkey carts              | <ul style="list-style-type: none"> <li>- Donkey cart water sellers are mobile and can reach distant households</li> </ul>  | <ul style="list-style-type: none"> <li>- Would require substantially many individual donkey cart sellers to meet volumes</li> <li>- Donkey cart water is substantially more expensive compared to public/private water stands</li> <li>- Water quality monitoring may be any issue to ascertain source of water ie Less OGB control on water quality standards</li> </ul> |

| Option and Description  | Advantages  | Disadvantages  |
|---|---|--|
| Combinations of suppliers using vouchers (households identify most suitable for their area)   | <ul style="list-style-type: none"> <li>- Flexibility among benefiting households</li> <li>- Will ensure appropriateness of supplier as households are free to choose most effective system in their area.</li> </ul>        | <ul style="list-style-type: none"> <li>- High admin requirements as OGB/NGO will be dealing directly with many players/sellers</li> </ul>  |
| Segregated access vouchers: Households entitled to different types of water (drinking and other uses) based on beneficiary uses and sources eg HHlds get vouchers for 10 litres municipal water and vouchers for 10 litres well water | <ul style="list-style-type: none"> <li>- Recognises existing system of segregating water use according to water source</li> <li>- Cost effective in supply of water for other essential uses other than drinking</li> </ul> | <ul style="list-style-type: none"> <li>- Water quality and accountability issues</li> <li>- May break down community coping mechanisms were households that can't afford well water are not made to pay for it</li> </ul>  |
| Monthly cash distributions: targeted /premised on water price and households have choice on amounts/sources   | <ul style="list-style-type: none"> <li>- Flexibility on part of households deciding on source</li> </ul>  | <ul style="list-style-type: none"> <li>- Less control on water quality</li> <li>- Cash more attractive to non vulnerable groups that may want to gate crash into the intervention</li> <li>- Less control on ensuring that cash is used to meet programme objective</li> </ul> |

