RiPPLE

Assessing seasonal water access and implications for livelihoods

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Introduction

This Note discusses the importance of understanding seasonal access to water at household level and the implications of changes in seasonal access to water for broader livelihoods. It also suggests ways to assess seasonal access so that interventions can be designed to both mitigate disaster risk and respond to disaster in an effective and timely manner.

The Note focuses on basic elements of the Water Economy for Livelihoods (WELS) approach as a means to assess seasonal access to water. Elements of the approach – still under development – have been pilot tested in SNNPR, Oromiya, and Somali regions in Ethiopia. The approach has been designed for inclusion in Ethiopia's current disaster risk management system within the Early Warning Department's Disaster Risk Management and Food Security Sector (DRMFSS). The DRMFSS uses the Household Economy Approach (HEA) to identify the food and livelihoods needs of populations affected by hazards and shocks in Ethiopia (see FEG, SCUK, RHVP 2008 for more detail). HEA forms the basis of early warning systems and vulnerability assessments across sub-Saharan Africa (SSA), but also in Asia, Eastern Europe and Latin America. WELS uses a similar analytical framework to account for and assess water and livelihoods needs for different socio-economic groups within populations.

The WELS approach outlined below is a work in progress, and recommendations made are tentative. However, the need for a broader understanding of livelihood vulnerability and protection needs in Ethiopia that includes 'water economy 'as a component is increasingly recognised. This Note explains the added value of water economy analysis, and suggests ways in which findings can be used to inform broader risk management policies and practices. It should interest policy makers and planners in the government, donor and NGO communities involved in early warning, disaster risk management and vulnerability reduction.

Why is understanding seasonal access to water important?

Access to safe water in drought – one of the most common hazards in Ethiopia – is a recurring problem, and water-related diseases resulting from restricted water availability and access often cause more fatalities than starvation in times of famine. Drought periods are characterised by an intensification of normal seasonality trends – trends relating to disease, labour allocation, and water, food and income deficits.

Until recently, livelihoods analysis has not looked at how water contributes to production, and to the ability of households to secure the resources they need to survive. In reality, access to food, income and water are linked in important ways, particularly during drought. This Note aims to strengthen our understanding of livelihoods and our responses to threats to livelihoods.

How can we assess seasonal access to water?

Step 1. Geography matters: Identify livelihood zones

Geography matters. It determines what physical (e.g. roads, clinics, schools, markets) and natural resources (e.g. forests, graze land, rivers, groundwater, soils, etc.) are available to households and frames the range of livelihoods strategies people have open to them. The first step in understanding seasonal access is to identify areas that share similar water access patterns and livelihoods so that access to food, income, and water can be assessed properly within those areas.

Fortunately, all *woredas* in Ethiopia have already been delineated into 'livelihood zones'[1] by the early warning department and the DRMFSS. These zones form the unit of analysis used for determining *woreda* food and non-food needs each year. Either through a WELS assessment, or informal survey methods, the following broad questions need to be addressed:

- How does the geography of the area influence what types of water sources are available to people? What sources are used in the dry seasons, and what sources are used in the wet seasons?
- What livelihoods activities are water-dependent? Do changes in access to water seasonally affect the ability of households to secure income or food for that period of the year?
- What are the human and animal populations that exert pressure on the water resource base?
- Is the water resource base sufficient to meet the needs of these populations? Is the water resource base large or safe enough to meet additional needs?

Identifying the water availability, access and use patterns within livelihood zones helps identify target areas for monitoring and intervention.

1 Livelihood zones are areas that share similar agro-ecology, access to markets, and livelihoods strategies pursued by the population.

Step 2. Wealth matters: Understand differences in wealth

Wealth matters. It frames what assets (e.g. physical, natural, social, human, and financial) households have available to them to secure access to food, income, and water. Households wealthy enough to afford donkeys, for instance, are able to transport more water to the home for use later, and are likely to be able to afford larger and more numerous jerry cans for transport and storage at home.

Poorer households are not likely to be able to afford more than one or two jerry cans and are likely not to have access to other resources (land, seed, agricultural or livestock inputs, capital) to 'capitalise' on access to water to create livelihoods activities that use water to generate wealth – such as livestock rearing, brewing, and irrigation of vegetables for sale. Poorer households almost always have fewer household members at home who are able to be released to collect labour, and also often send at least one adult out to perform casual or migratory labour, which further impedes their ability to release labour to collect adequate amounts of water on a daily basis.

Just as for livelihood zone delineation (see above), wealth groups and their asset-related characteristics have already been identified for socio-economic groups in all *woredas* and livelihood zones in Ethiopia through the DRMFSS's livelihoods baselines. Wealth group breakdowns – found in the livelihood profiles for each livelihood zone and *woreda* – can therefore help assess different asset bases affecting access to water for each wealth group. The constraints faced by different wealth groups in accessing water can then be examined in detail:

- How does wealth affect access to water in the dry and wet seasons?
- Can the poor obtain the volumes of water necessary to survive and build/protect livelihoods (e.g. do they have enough storage containers, and do they have difficulty with water transport?)
- Are the poor rationing access from higher quality sources due to time required to access water sources in the dry / wet seasons (e.g. protected/developed springs that are farther away)? Or due to barriers to payment (e.g. boreholes or shallow wells with fees)? How does this affect access to water at higher quality sources?

- Are poorer wealth groups more dependent on poorer quality sources, e.g. those associated with water-related disease (unprotected springs, rivers)?
- Does hygiene and sanitation awareness vary across wealth groups? Is there a link between this behaviour pattern and incidence of water-related disease seasonally?

Step 3. Identify seasonal conflicts over labour allocation and water access

Water collection requires the release of labour from other household activities. For poorer wealth groups in particular, conflicts over scarce time and labour resources at household level serve as an impediment to access to water of adequate quality and quantity. Along with constraints related to education (sensitisation) and income (purchase of soap) that serve as barriers to uptake of good hygiene and sanitation practices, these constraints amplify their risk of contracting water-related disease.

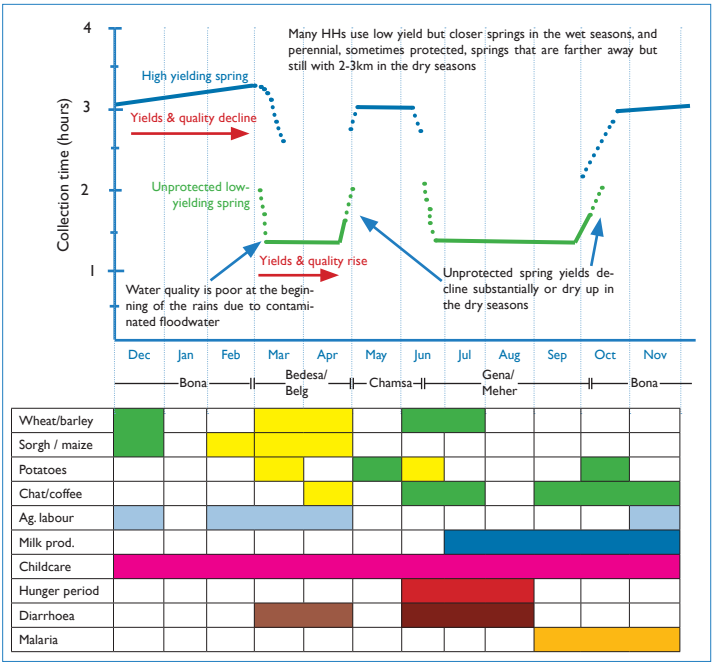
A simple tool that can be used to help summarise such conflicts over labour and time throughout the year is a seasonal calendar of water access and livelihoods. Water collection time at the main sources of water used by the population can be plotted for each month. Seasonal activities requiring household labour and/or time can also be noted for each month below the graphic. Identifying months where both water collection times and other labour requirements are high enables field staff to identify periods of vulnerability, when households may have trouble obtaining enough safe water for survival or livelihoods protection.

Periods of disease should also be noted, and if possible, water-related disease periods linked with the appropriate water source. Sources which are linked with disease should be targeted for protection or other measures to minimise risk of populations facing water-related disease risk. A sample seasonal calendar of water access and livelihoods is shown in Box 1.

Box 1: Seasonal calendar of water access and livelihoods in WBP livelihood zone

Periods of vulnerability for poor households in Wheat, Barley, and Potato (WBP) Livelihood Zone in parts of East and West Hararghe, Oromiya Region:

- November – February, peak agricultural labour season coincides with long queues and collection times during the long dry *bona* season (3-5 hours in a normal year). Such overlapping labour requirements restrict the ability of poorer households to secure enough good quality water – both because it limits the frequency of water collection, and the incentive for poorer households to travel farther to reach higher quality or protected water sources.
- March – April, the beginning of the *belg*/*bedessa* rainy season. Diarrhoea incidence peaks at the beginning of the rains, when water quality is extremely poor at springs due to contaminated floodwater runoff. This is problematic because disease coincides with the peak agricultural labour season, decreasing the productivity of households and stifling income generation.
- July – August, the beginning of the *meher*/*gena* rainy season. Diarrhoea again peaks due to contaminated floodwaters. This coincides with the hunger season from June – August, when cash reserves are lowest before the harvest, and households' own crop reserves have run out. Medical treatment is likely to be foregone in favour of food purchase during this time.



Step 4. Quantify seasonal water access and seasonal water deficits

Understanding seasonal access to water in normal years is essential for understanding periods of resilience and vulnerability within the yearly production cycle. When during the year are households not able to secure enough water to protect livelihoods (e.g. livestock rearing, irrigation), or for survival (e.g. drinking and cooking, hygiene and sanitation)?

WELS assessment can be used to quantify seasonal water access and water access deficits across wealth groups. Based on Sphere (2010) standards[2], survival needs are defined as 5 litres per person in a household per day for drinking and cooking needs, plus 6 litres per person per day for hygiene and sanitation needs. Livelihoods protection needs are defined as 4 litres per person per day for laundry, plus the minimum amount of water required to sustain livelihoods: e.g. to water livestock in each season (see Table 1) and fulfil other livelihoods needs such as irrigation. If households fail to meet the above water requirements for survival or livelihoods protection needs, such shortfalls in access represent water access 'deficits'.

In the absence of a WELS assessment, those involved in vulnerability assessments can make a start by identifying seasons or months of the year when households cannot obtain enough water to meet survival or livelihoods protection needs.

Table 1: Daily water requirements for livestock across seasons (voluntary intake)[3]

Daily Water Requirements – Livestock (Lpcd)	Wet seasons (23–27°C)	Cool dry seasons (15–21°C)	Hot dry seasons (27°C)
Camels	13	25	28
Lactating camels	17	30	33
Cattle	9	20	22
Lactating cows	13	26	29
Goats	2	4	4
Sheep	2	4	4
Horses & donkeys	5	16	18

Voluntary intake is the daily amount of water drunk by an animal assuming that feed contains 70-75% moisture during the wet season and 10-20% moisture during the dry season.

2 Minimum requirements are based on standards defined by the Sphere Project (2010) - see www.sphereproject.org. These standards are those used by the Ministry of Water Resources.

3 Voluntary intake is the daily amount of water drunk by an animal assuming that feed contains 70-75% moisture during the wet season and 10-20% moisture during the dry season

Implications for policy and practice

Understanding seasonal water access in normal years can help us to uncover important lessons for: (a) resilience building measures; and (b) hazard/drought year response and response targeting. Box 2 (page 11) illustrates how access to water – particularly for poorer people – affects livelihood resilience in an agro-pastoral zone, and what could be done to protect livelihoods before lives are threatened.

Risk mitigation: resilience building

Identification of seasonal water access deficits helps identify vulnerabilities to drought, and the corresponding resilience building measures aimed at reducing such vulnerabilities and deficits in a normal year. Interventions can include:

- provision of storage and/or transport containers (e.g. extra jerry cans);
- jerry can sanitisation training and/or supplies;
- protection of sources and/or separation of livestock from human use access points on the source;
- conflict mitigation and/or setup or improved enforcement of use allocation rules to enable improved access by certain wealth groups or certain user groups;
- Repair and rehabilitation of water points;
- Development of additional groundwater based sources – e.g. borehole drilling in areas where groundwater is available; spring/shallow well improvement and/or development; soil and water conservation measures around existing sources to improve yields; construction of sub-surface dams; building of artificial recharge enhancement structures to increase the water retention in the zone and reduce the seasonal decline in yield of groundwater sources; and
- Development of emergency boreholes that can be uncapped during drought periods.

Disaster response

1. Identify and monitor target groups and areas. What makes certain groups vulnerable to the hazard underway, why, and when?

Who, and why? Wealth groups facing seasonal deficits already in a normal year are likely to be among the most vulnerable. Consulting the livelihoods profiles and HEA information tools available at *woreda* level can also help in identifying what groups are affected most by the shock(s) underway

When? Generation of quantified seasonal water access trend data is important for monitoring and response in drought periods. Periods during the year known to be deficit periods should also be periods during which field staff are monitoring water (and food) access so that if deficits drop below normal year levels, appropriate responses can be identified before assets are depleted or lives are placed at risk.

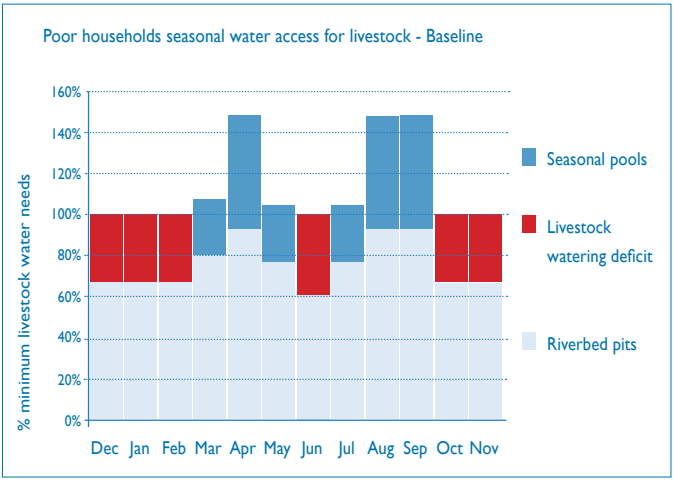
Drought years are often characterised by an extension of the dry season into months normally characterised by rainfall and water source recharge. If certain wealth groups face deficits in dry seasons of normal years, a drought would entail an extension and intensification of such deficit levels beyond the dry season and into months that are normally wet season months. A timely response would need to account for deficits already in progress by the time a drought technically begins so that adequate resources are mobilized for the relevant wealth groups.

2. Identify response measures

If adequate risk mitigation planning has been undertaken (see above), identification of response measures should already be underway – such as identification of areas where boreholes can be repaired or drilled, or where sources can be protected. Water tankering can also be considered for cases where groundwater is not available and where assets are being depleted (especially in livestock dependent areas) due to water shortages.

Wealth-based interventions might include, for instance, vouchers for fees provided to ensure that cash shortages – which often accompany drought due to lack of labour, harvest, or livestock income – do not become barriers to the poor accessing safe water. Provision of jerry cans or sanitisation materials to minimise contamination might also be considered.

Box 2: Access to water and wealth in Shinile Agro-Pastoral Livelihood Zone



Looking at constraints to accessing water for livelihoods in Shinile *woreda* gives us some insights into identifying vulnerabilities of populations – which helps us to identify resilience building measures to address those vulnerabilities and the appropriate timing of monitoring and response measures when disaster does hit.

Looking at vulnerabilities to identify risk mitigation measures:

Poorer wealth groups in agro-pastoral areas of Shinile *woreda* fail to secure enough water for their livestock in the dry seasons, which has important implications for their ability to maintain assets and generate wealth. Such low seasonal access levels significantly undermines livestock condition and increases susceptibility to disease, which is further compounded by lower expenditure on veterinary care.

Significant implications for livestock condition and prices fetched for animals sold on the market result from this constrained access: poor households receive an average of approximately 20% less for their cattle than the middle and better off households. Milk yields are also much lower for the poor, by nearly 50%. This has important implications for nutrition, particularly for children, as diets are already less varied and complete.

Such vulnerabilities point to resilience building measures aimed at improving nutrition, possible improvement of veterinary facilities, implementation of fodder improvement programs for the poor, and/or improvement of marketing and market chains to increase animal health and condition in order to improve viability of livestock in the market. They also point to the need to improve access to water – through source development, repair and/or storage.

Looking at timing of seasonal deficits to improve disaster management and response:

Generation of quantified seasonal access trend data (e.g. through WELS) is important for monitoring and response in drought periods. In this case, the poor cannot secure 40% of minimum water needs for livestock in the Jilaal dry season, which is 5½ months long (Oct-Feb), in normal years.

Such high seasonal deficits in normal years suggest that livestock of poorer households will need targeting earlier in the emergency cycle. Understanding seasonal deficits in the baseline year enables responses to reach the most vulnerable herds before their condition deteriorates past the point when interventions can still protect livestock assets.

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RIPPLE Toolkits provide guidelines on 'how-to' implement recommendations from supporting case study examples.