



This paper is based on findings from the following two studies:
Water supply and sanitation (WSS) and poverty: Micro-level linkages in Ethiopia and *Economic impacts of access to water and sanitation in Ethiopia: Evidence from the welfare monitoring surveys*

Economic benefits of access to water in Ethiopia

The case for packages of investments

Key points

- Packages of investments which combine water supply (domestic and productive) with other investments to support employment, market access and income generation are recommended to maximise benefits to rural households and promote pro-poor growth.
- Access to improved water supply brings economic benefits to rural households, but these benefits depend upon access to land, credit, market infrastructure and other assets and services.
- Lack of improved water supply may prevent poor households from taking part in off-farm employment, including under the Productive Safety Net Programme.
- These packages should be informed by an assessment of the main constraints to income generation in the target area, and should recognise the need to provide water for multiple uses - both domestic and productive.

Investments in water lie at the heart of Ethiopia's policies for poverty reduction, food security and climate change adaptation. This briefing paper draws on micro- and macro-level studies of the economic impacts of access to water in Ethiopia (Hagos et al, 2008; Andersen et al, 2008), to argue that investments in water do appear to offer economic and livelihood benefits to households, increasing their income and resilience. However, rural households also face many other constraints to income generation, including poor access to markets, lack of credit availability and limited opportunities for non-farm employment. Packages of investments, combining water supply with interventions to address these other constraints, are therefore recommended to tackle rural poverty and vulnerability and promote pro-poor growth.

Investments in water are vital to reduce poverty

Water can contribute to poverty reduction through two main routes. First, improved access to drinking water reduces the time spent collecting water (mainly by women and children) and the time spent sick from water-related diseases. Adults can spend this time in productive activities (on the farm or in off-farm employment), or caring for children and other household members. Children can attend school more and gain better job opportunities. The time savings can be huge: in parts of Ethiopia five hours per day is spent collecting water from unimproved sources (Deneke et al, 2008).

The second route is via productive uses of water. Many households use water for income-generating activities such as home gardens, which are a vital component of their livelihoods, even where very limited amounts of water are available



(Slaymaker et al, 2007; Joshi, 2004). Multiple use water services (MUS), which provide for both domestic and productive uses of water in an integrated way, have been shown to bring multiple benefits which outweigh their additional costs compared with traditional single use services (Adank et al, 2008). A global review has suggested that MUS could improve livelihood security for highly vulnerable households, and offer pathways out of poverty for poor households with a more secure asset base (Renwick et al, 2007).

Aiming to gather detailed on-the-ground evidence of how investments in water impact on poverty, RiPPLE conducted case studies in Ethiopia asking the following questions:

1. Does better access to water contribute to higher incomes, improved food security and reduced vulnerability for households — and under what conditions?
2. Which types of households and communities benefit most from improved access to water, and what constraints prevent others from benefiting?
3. How should investments in water be combined with other interventions to maximise economic benefits to poor households?

RiPPLE conducted a survey of 1500 households in East Harerghe Zone, Oromia Regional State, providing evidence on how water is used by households and the benefits it brings in terms of health, food security and income (Hagos et al, 2008). In addition, a macro level study was conducted to explore links between access to water supply and sanitation and economic growth across Ethiopia, using data from the Central Statistical Agency's Welfare Monitoring Survey (Anderson et al, 2008). The following sections of this paper are based on the findings of this research.

Access to water is increasing but unequal

Both studies showed that access to improved water supply has increased since 2000. New water systems in East Harerghe are generally reported by users to be reliable and relatively accessible, and to provide good quality water. However, unimproved sources such as streams, ponds and unprotected wells are still the major water source for over half of households nationally. In the survey area around 60% of households lack an improved water source, and diarrhoea is reported as the most common health problem.

Disparities in access to improved water sources are high both at a national scale and at local level. Access varies considerably between regions, even if the urban regions of Addis Ababa, Dire Dawa and Harar with their high rates of access are excluded. At woreda-

level, communities close to an all-weather road are significantly more likely to have access to a water point than those further away. Agricultural highland communities are also disproportionately served compared with lowland pastoral and agro-pastoral communities, even though lowland areas are most prone to drought (GoE, 2007). There is, however, evidence that services tend to be targeted towards more food-insecure and vulnerable communities.

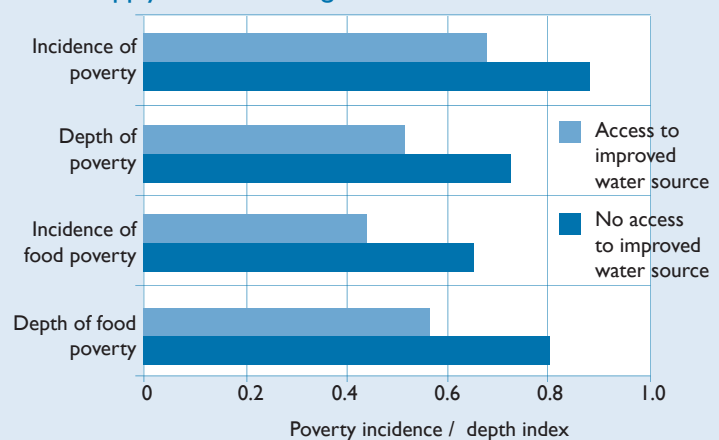
Households use different water sources for different uses

The survey found that households in rural areas usually rely on multiple water sources for different uses. A significant proportion of water is used for non-domestic uses, including water from high quality sources such as boreholes, even though these activities do not require potable water. In Gorogutu woreda, 12% of households with access to public standpipes reported that they use water from standpipes for non-domestic uses. These patterns of water use have implications for scheme design and sustainability, which need to be taken on board by implementers. In particular, they suggest that MUS could improve the cost-effectiveness of services (Faal et al, 2009).

Improved access to water is linked with economic benefits for households

The studies strongly indicate that improved access to water is linked with economic benefits for households. The survey found that households with access to improved water supply were significantly less likely to be poor, and were on average less poor, than those without access (see Figure 1)¹. They were also more likely to be able to meet the minimum costs of food than those without access². National welfare monitoring data further confirmed that there is a significant correlation

Figure 1: Poverty in households with and without improved water supply in East Harerghe



Differences between those with access and no access are all significant at the 1% level.

Adapted from Hagos et al, 2008.

between a household's drinking water source and its self-reported food security situation.

It is not proven that improved access to water caused increases in household income or employment. It is possible that the slightly better-off households have better access to water because they can afford to pay for it. However, the findings do suggest a plausible pathway by which access to improved water could lead to higher incomes. It was found that households with access to improved water supply were 14% more likely to participate in income-generating off-farm employment than those without access (statistically a highly significant difference), and participation in off-farm employment was found to significantly decrease household poverty. Improved water sources are strongly associated with reduced distances to collect water, and resultant time savings may well explain households' greater ability to take up employment opportunities. Improved health may also contribute to these time savings, as household members spend less time sick and unable to work.

These findings also suggest an important lesson for programmes that aim to provide new income-generating activities in rural areas. If improved water supply is not present, smaller households with less spare labour (which are often the poorest and most vulnerable) may lack the time to participate. Lack of improved water supply may thus act as a serious barrier to the effectiveness of efforts towards increasing rural incomes through new forms of employment and enterprise. This has particular implications for food-

for-work and cash-for-work schemes such as the Productive Safety Net Programme (PSNP), which may need to include a component of improved water supply to enable all targeted households to participate.

Economic benefits depend on access to other assets, services and skills

Poverty is an outcome of a complex set of underlying factors, of which access to water is only one. At the macro level in Ethiopia, key determinants of poverty were found to be ownership of assets (principally land and livestock), distance to an all-weather road and distance to a local market.

The presence of particular non-farm skills in the household was shown to strongly affect whether or not they engage in off-farm employment. Households that lack relevant skills may therefore not be able to translate time savings gained from improved access to water into income-generating employment opportunities. Gender composition of households and availability of employment opportunities are also important in determining whether off- or non-farm employment is taken up. Altogether, the impact of increased access to water on poverty depends upon the availability of other assets, services and skills that households can access and combine to increase their income.

This strongly suggests that investments in water would be most effective if delivered in packages alongside training in skills for non-farm employment (e.g. construction or other skills in local demand),

Box 1: Identifying and addressing constraints to income generation – a planning tool

Household Assets	Possible Interventions to build assets (short to medium term)	Household Capacities	Possible Interventions to build capacities (short to medium term)	External Factors	Possible Interventions to improve external environment (medium to long term)
Water	Develop improved water supply for domestic and productive uses (MUS); build capacity of local water management institutions	Skills for non-farm employment (e.g. construction, carpentry, etc)	Support local training institutions; increase extension provision; support skill-sharing between communities	Off- / non-farm employment opportunities	Enhance transport links to local market centres/towns; support local private sector development and employment creation schemes.
Labour	Health-related interventions e.g.: improved water supply and sanitation; support local health points/clinics and extension work.	Skills for productive use of water (e.g. brewing, market-gardening)	Support local training institutions; increase extension provision; support skill-sharing between communities	Available water resources	Support water conservation; link water supply with sustainable watershed management; support non-water-based options for income generation.
Land	Support local institutions which mediate conflicts over tenure and access	Business and marketing skills	Establish or support business development advisory services; increase extension provision; support skill-sharing between communities	Institutional environment	Support local institutions which mediate conflicts over resources and promote equity in access.
Finance (for inputs, transport, marketing)	Support and establish credit institutions, micro-finance schemes, saving & lending schemes, etc	Other?	?	Other?	?

Source: Elaborated by the author, after Eshetu et al, forthcoming.



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credit and business support services, and improvements in market infrastructure. Such packages would maximise the impact of investments in water on household resilience and income, and contribute to inclusive, pro-poor growth.

Recommendations

Investments in water need to encompass both domestic and productive uses, and be linked to measures to support market access, employment and income generation. Packages of investments should be developed, linking programming under the Universal Access Plan for water and sanitation with productive water services and investments in markets, credit and training. These approaches should also be coordinated with investments in water made under the PSNP.

This approach would enhance the benefits from investments in water, beyond improving health, and contribute to achieving wider goals of securing livelihoods, building resilience to climate change, and creating opportunities for pro-poor growth.

- **Water services should take account of actual patterns of water use, based on an understanding of users' needs and preferences.** Rural households use water from different sources for multiple uses and at different times throughout the year. Understanding these patterns of demand will help in developing water services which meet the livelihood needs of communities, within the constraints of water availability.
- **Income-generation schemes aimed at reducing poverty may need to include a component of improved water supply to enable targeted households to participate.** Without this, time constraints may prevent small, poor households from engaging. This includes the PSNP.
- **Where new water supply systems are installed, 'water plus' investment packages could maximise the economic benefits from water.** These would include measures to promote local

employment, increase access to training, credit and markets, and build up the asset base of households.

- **A simple assessment should be made of the major constraints to income generation, to develop appropriate, cost-effective investment packages.** The framework suggested in Box 1 would help planners to identify major constraints and possible interventions, which may be at different scales, and assist the development of the intersectoral responses which are needed.

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Endnotes

- ¹ This analysis used a poverty line of 1821.05 Birr per year (Ethiopia's official poverty line adjusted for inflation).
- ² The same was found using a lower poverty line of 1096.03 Birr per year, allowing only for the cost of meeting a household's basic food needs (again an official figure adjusted for inflation).