



Poverty impacts of improved access to water and sanitation in Ethiopia

This summary is based on RiPPLE Working Paper 8: **Water Supply and Sanitation (WSS) and Poverty: Micro-level linkages in Ethiopia** available at: www.rippleethiopia.org

Research-inspired Policy and Practice Learning in Ethiopia and the Nile region (RiPPLE) is a DFID-funded Research Programme Consortium led by the Overseas Development Institute (ODI) in partnership with IRC, Addis Ababa University, WaterAid Ethiopia and Harerghe Catholic Secretariat

Introduction, objectives and methodology

Although the expected poverty impacts of investments in WSS on poverty are considerable, there is still limited empirical evidence on this. The objectives of this study were to characterise existing WSS coverage and factors influencing access to improved services and to understand the effects of improved access on different aspects of poverty. The study examines:

- impacts of WSS on health;
- incidence of water-related diseases among households with and without access to improved WSS;
- relationship between household WSS access and participation in off/non-farm employment;
- and whether improved access and access to irrigation has led to a significant reduction in overall levels of poverty.

The survey was conducted in 1500 households in two woredas (districts) of Eastern Hararghe zone (EHZ), Oromia region, Ethiopia. Stratified random sampling by agro-ecology, distance to market centres and presence of improved WSS was used to select 20 kebeles (wards), with 75 households randomly selected in each kebele. Detailed data were collected on a number of factors relevant to the research objectives. A variety of approaches, from descriptive statistics to regression analysis, were used to describe the current situation and establish the links between water supply and different welfare outcomes. Establishing the link between access to water supply and health is relatively straightforward, but establishing a cause and effect relationship between access and poverty or food insecurity is more challenging. One could hypothesise a direct link, as water is an important input for increasing crop/livestock productivity at household level, and also an indirect link through improved human health.

Results and discussions

Access to improved WSS

Households in both woredas obtain water from protected and unprotected sources, and typically rely on multiple water sources for different uses. A significant proportion of



water drawn is for non-household uses, which suggests that the benefits of improved access extend far beyond human health, the main traditional justification for WSS interventions.

Many respondents indicated that they had experienced major changes in water supply over the past five years. The new systems were perceived as having resulted in increased supply, improved quality, shorter distances and increased awareness of sanitation and hygiene, and as providing good quality water on a reasonably reliable and accessible basis. Continuous service is achieved in only 60-69% of systems. Investments in new water points were more likely in better-connected kebeles. Moreover, highland communities were more likely to be targeted than those in lowland areas, where water shortage is more severe.

About 40% of households in Babile and 30% in Goro Gutu had their own latrines, but a considerable proportion did not use them. [This has important implications for sanitation policy and programming and suggests that access to infrastructure alone is not sufficient to bring desired improvements in public health.](#) Diarrhoea (including dysentery) accounted for 49% of health problems and malaria for 27%; with respiratory diseases, water-related illnesses make up the bulk of illnesses reported. These findings suggest that isolated efforts to improve access to WSS infrastructure are not sufficient.

Statistical association between improved water supply and welfare indicators

Improvements in access had a strong statistical association with increase in volume consumed per household and decrease in average distance travelled to a source. Both are expected to lead to significant time savings, which are expected to increase participation in production. Indeed, we find a strong association between improved access and participation in off/non-farm employment.

Households with access to improved sources had significantly higher consumption expenditure per adult equivalent than those without. They also experienced lower impact of food shortages and faced food insecurity less often. Income from livestock sales was found to have a significant association with improved access. There was also a significant association between improved access and illness and missing jobs/school through illness. The pathways through which improved access may impact on household welfare thus seem to relate more to time-saving-induced increased participation in off/non-farm employment and livestock income than to crop productivity.

Exploring linkages

Improved water supply and health

Households with access to water from an improved source are less likely to fall ill; with the probability of illness increased with distance to the source. Probability of water-related disease increased with access to improved sources and decreased with distance to water source. However, probability of non-water-related illness decreased with access to water from a protected source and increased with distance. This may be because the effect of distance on the incidence of waterborne diseases (e.g. malaria) relates to proximity, whereas its effect on water-related diseases (e.g. diarrhoea) relates to quality. The distance variable is perhaps picking up the effect of distance on incidence of waterborne diseases, particularly malaria.

Improved access and participation in off/non-farm employment

There was a strong association between participation in off/non-farm employment and improved access to water supply, after controlling for other covariates. This could be attributed to the time saving associated with increased availability of water, leading to increased availability of labour at household level, and reinforces the conjecture that such employment is one of the most important pathways for improved access to water supply to impact poverty. Access to credit and skills are also found to have a significant effect. Households with older or female heads were less likely to take part in off/non-farm employment. Meanwhile, as the number of adult males in a household increases, the probability of the household participating in off/non-farm employment decreases, which may point to the high level of rural unemployment in the study sites. It is clear that improved access can enable increased participation in off/non-farm employment; the fact that we see such strong effects even in an area with high rates of unemployment suggests that access to water may be a significant factor in ability to seek and participate in off/non-farm employment in rural areas.



Poverty impact of access to improved water supply

Households with access to improved water supply had significantly lower overall poverty levels in terms of incidence, depth and severity of both overall poverty and food poverty. About 87% of those without access were living below the absolute poverty line, compared with about 67% of those with access. About 79% of the population without access lived below the food poverty line, compared with 55% of the population with access. In addition, households with access to irrigation were found to have significantly lower overall poverty and food poverty levels in terms of incidence, depth and severity.

Access to an improved water source did not have a significant direct effect on household wellbeing. A host of variables were found to be significant in this. Most notably, land and livestock ownership had a significant positive effect and labour endowment had a negative effect. The latter may reflect the poor functioning of the labour market and high rural unemployment. Participation in off/non-farm employment had a significant effect on household welfare, as already noted. The amount of a loan taken by a household had a negative effect, which may point to suboptimal use of loans.

Female-headed households had significantly lower wellbeing. In addition, as the number of dependants increases, wellbeing decreases. Households closer to roads were better-off, but so were those located further from the market (distance is less important than presence of good roads). In addition, households with greater health problems had lower wellbeing. This captures the indirect effect of water supply on poverty through health.

Conclusions and policy implications

There is strong evidence of the impact of improved water supply on poverty, through (i) direct productive use of water in agriculture and (ii) time saving, increased participation in off/non-farm employment, improved health and increased productivity (indirect). Recent changes

in water supply have been mainly positive, but detailed analysis shows that kebeles located far from all-weather roads had a much lower likelihood of getting new water points. This highlights the difficulties of targeting remote rural areas and raises important questions for policymakers.

The results highlight that people in rural areas typically rely on multiple water sources for different water uses. The factors underlying these patterns are poorly understood and generally overlooked, but have important implications for sustainability. The evidence points to a wide range of livelihood benefits that have hitherto remained 'invisible' in sector monitoring and evaluation.

Access to improved water sources significantly reduces probability of illness, especially if the source is close, but it also seemed to have a positive association with water-related illnesses, suggesting a need for mitigative measures. It is clear that improving access to supply infrastructure alone is not sufficient to bring about public health benefits. Increased availability and perceived high quality of water were found to have significantly reduced incidence of illness. We also found that improved supply leads to significant reduction in households' health expenditures.

Probability of participation in off/non-farm employment significantly increased with access to improved supply. This could be attributed to the time-saving benefits of increased availability at a shorter distance. This is an important new finding, suggesting that lack of access may act as a significant binding constraint. This is a particular problem for labour-constrained households and has implications for the effectiveness of labour-intensive works designed to benefit vulnerable households.

Households with access were found to have significantly lower overall and food poverty levels in terms of incidence, depth and severity. This represents strong empirical evidence of the contribution of water supply sector investment to poverty reduction. However, water supply and/or productive water are not the only factors in poverty reduction: our findings confirm that the potential poverty impact of improved water supply access also depends on the availability of other livelihood assets. There is, hence, a need to build such community and household assets as an important entry point to enhance the impact of improved water supply on household poverty. Moreover, building of community assets such as roads could serve two purposes: enabling access to water supply and enhancing impact of improved water supply on poverty. This could be another entry point for policy interventions to ensure poverty reduction and equitable development.

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