



Adaptive management of shallow groundwater for small-scale irrigation and poverty alleviation in sub-Saharan Africa

Livelihoods and the institutional context: potential opportunities and constraints associated with community management of shallow groundwater irrigation.

AMGRAF Project Report, 2014

Background and objectives

Shallow groundwater irrigation has the potential to improve livelihoods and reduce poverty in large areas of Sub-Saharan Africa (SSA) (Giordano, 2006; Evans et al, 2012). Although evidence from Asia (Molden, 2007) suggests that groundwater irrigation promotes greater inter-personal, inter-gender, inter-class and spatial equity than is found under large scale canal irrigation, there is a significant risk that rapid development of groundwater resources in SSA will lead to inequitable resource use (Sokile & van Koppen, 2004). It is important that appropriate social and governance systems support the development of resource management to ensure equitable access by poor people. This requires better (gender disaggregated) understanding of how individuals and communities value groundwater and make decisions regarding its use. We plan to pursue participatory research in case study communities and to investigate the nature of poverty through a capabilities approach (CA) with particular attention to the differential costs and benefits to women and men (e.g. Robeyns, 2005, 2006; Alkire & Santos, 2013; see also various publications from <http://www.welldev.org.uk>).

CA moves beyond subjective well-being and income measures of poverty to identify the characteristics that contribute 'towards improving the ability of persons to lead a life that they have reason to value' (Frediani et al. 2014, Oughton and Wheelock, 2003). A particular strength of the approach in this project is that it is able to embrace both socio-technical and policy effects of well-being and is explicitly interdisciplinary in linking the participatory modelling and management of groundwater availability to multi-level governance of the resource (Bevan & Pankhurst, 2007). CA expands the analysis further through study of the individual's poverty situation and intra-household dynamics (Mabsout & van Staveren, 2010) and the importance of identifying the specific needs of women in relation to new agricultural technologies and their management (Doss, 2001; van Koppen et al, 2013). Evidence from across SSA has shown that greater gender equality in achieving benefits from agricultural development stems from empowerment, not through 'power over' but 'power with' in order to profit from collaboration between men and women (Farnworth et al., 2013).

Progress to date

In December 2013 Elizabeth Oughton (Newcastle University) and Gebrehaweria Gebregziabher (IWMI East Africa) visited the field sites selected in Dangila *woreda*. Working with officers from the *Woreda* Agricultural Office we met development officers and farmers in the area and arranged focus groups in two of the selected *kebele* Kwakorta and Gult. The aim of our visit was to carry out preliminary investigations of the following issues:

1. To obtain a general picture of the village and household economies. Determine the distribution of productive assets in the household and who was responsible for decision making and acting upon those decisions. Who benefits from the production activities of the household and how?



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2. Discover what householders thought could be the optimum outcomes from expanding SGWI and how they could set about achieving this
3. Identify perceived difficulties, looking in particular at the different opportunities and constraints affecting men and women
4. Identify the help or support they thought necessary to achieve optimum outcomes.

In both villages we met the agricultural development agents for the *kebele* and other officers including livestock, natural resources, and crop production specialists. Preliminary discussions with these groups around published maps (scale 1:50,000) allowed us to draft out simple maps with the key features of the village marked and obtain background socio-economic information.



Figure 1: Participatory enquiry at pilot study sites.

The simplified hand drawn maps produced were then used in discussions in four focus groups: two in Gult and two in Kwakorta. In both *kebele* we held one female and one male group using the same schedule for all exploring the issues outlined above.

Conclusions and further research

The preliminary findings show that 'rules in practice' can differ significantly from the 'rules as written'. Two examples show the importance of understanding how any intervention may work on the ground. First, decisions over cropping, both in field crops and gardens are overwhelmingly taken by males within the household. Although women may decide to sell garden crops to raise cash for immediate household necessities decisions may be vetoed by male heads of household. Choice of crops for the gardens is negotiated but ultimately males have the say (for example Eucalyptus planting rather than vegetables or fruit) although labour in gardens is provided by females and children. Second, there are a high proportion of female headed households in this region as women that have been widowed, divorced or abandoned are not permitted to remarry. Although women may retain legal ownership of fields they require male labour to farm them. We were given several instances of where female landlords had agreed cropping and management of fields with male tenants who did not then comply because they wanted to spend more time on their own fields. Losses in yield or quality or even in some cases of planting with alternative unwanted crops were the result. In law women have redress against these practices but none had achieved satisfaction in



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practice. It is clear that changes in the availability and management of irrigation water could have very different effects on men and women affecting relative poverty, livelihood and environment.

Both villages currently produce agricultural surpluses of maize, tef and finger millet, these products are farmed and sold by men. The products are mostly sold locally to local traders and brokers. The current product markets are regarded as satisfactory and farmers felt that they received a fair price. These findings reflect the work that has been done in the area on market transformation to support agricultural development in the region. However, the introduction of expanded irrigation opportunities may encourage a step change to commercially focussed farming. For example farmers saw opportunities for growing malting barley and hops for the local brewing industry or producing a second field crop each year. The markets currently used are local, either within the villages or to the two nearby large towns; large commercial surpluses will require development of links with more distant markets. Cereal markets are dominated by male farmers and traders and it is not clear what potential opportunities for women exist in market development. Institutional support in the development of markets and price transmission may be necessary for crops grown by both men and by women should larger surpluses become available.

Preliminary discussion of poverty revealed inter-personal, inter-gender and inter-class differences that encompass the use and control of resources, power differentials and lack of voice. It is in this area that we see clear opportunities for further development of an institutionalised capabilities investigation. Figure 2 outlines the proposed conceptual structure of this work.

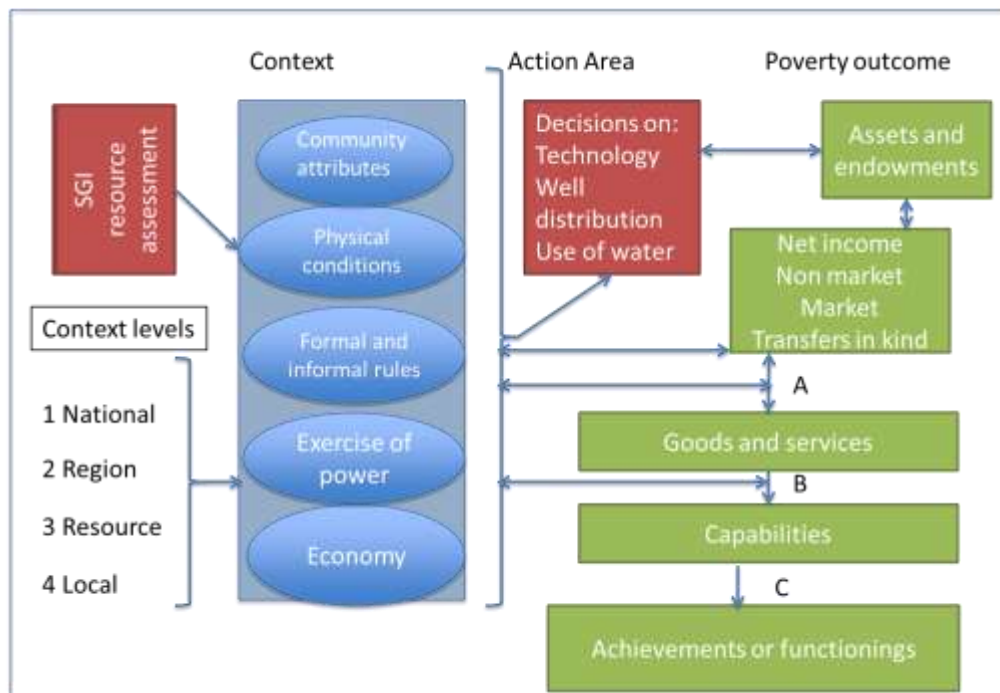


Figure 2: The interaction of poverty and governance with shallow groundwater irrigation



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References

- Alkire S. and Santos M.E. (2013) A Multidimensional Approach: Poverty Measurement and Beyond, *Social Indicators Research* 112: 239-257
- Bevan P and A. Pankhurst (2007) Power structures and agency in rural Ethiopia Development Lessons from Four Community Case Studies. Paper prepared for the Empowerment Team in the World Bank Poverty Reduction Group.
- Doss C. (2001) Designing Agricultural Technology for African Women Farmers: Lessons from 25 Years of Experience, *World Development* 29 (12) 2075-2092.
- Evans A, Giordano M, Clayton T (Eds) (2012) Investing in agricultural water management to benefit smallholder farmers in Ethiopia. AgWater Solutions Project country synthesis report. Colombo, Sri Lanka: International Water Management Institute. (IWMI Working Paper 152).
- Farnworth C. et al (2013) Transforming Gender Relations in Agriculture in Sub-Saharan Africa, SIANI, Stockholm
- Frediani A.A, Boni A and Gasper D (2014) Approaching Development Projects from a Human Development and Capability Perspective. *Journal of Human Development and Capabilities* 15: 1-12.
- Giordano M (2006) Agricultural groundwater use and rural livelihoods in sub-Saharan Africa: a first-cut assessment. *Hydrogeology Journal* 14: 310-318.
- Masbout R. and van Staveren I. (2010) Disentangling bargaining power from individual and household level to institutions: Evidence on Women's position in Ethiopia *World Development* 38 (5) 783-796.
- Molden D (2007) *Water for Food, Water for Life: a comprehensive assessment of water management in agriculture*. London: Earthscan.
- Oughton E. and Wheelock J. (2003) The household as a focus of research, in *Women and the Economy: A Reader* Mutari E. and Figart D.M. (eds.) M.E.Sharpe, New York. (Reprinted from Wheelock, J and E.A. Oughton (1996) The household as a focus of research.)
- Robeyns I.(2006) The Capability Approach in Practice *The Journal of Political Philosophy: Volume 14, Number 3, 2006, pp. 351–376.*
- Robeyns, I. (2005) The Capability Approach: a theoretical survey. *Journal of Human Development* 6: 93-117
- Sokile, C.S., van Koppen, B. (2004) Local water rights and local water user entities: The unsung heroines of water resource management in Tanzania. *Physics and Chemistry of the Earth Volume 29, Issue 15-18, 1349-1356.*
- Van Koppen B., Hope L. and Collebrander W. (2013) Gender aspects of smallholder private groundwater in Ghana and Zambia, *Water International* 38(6) 840-851