

AT A GLANCE



Household ponds in the Alaba region, Ethiopia

In Ethiopia, a large government program invested in household ponds, but many of these ponds have stopped functioning because they are not maintained. Farmers say that this is because most ponds were poorly constructed, but given the (visible) benefits of well-functioning ponds in the region the question remains why not more farmers invest in these ponds themselves. We will empirically assess the reasons for under investment, considering factors like risk perceptions and market constraints.

In Burkina Faso, farmers near Ouagadougou are stimulated to invest in zaï and stonelines, an indigenous practice that came from the North. Although the benefits of investment are apparent, constraints arise in terms of lack of awareness, labour availability and market access. We will analyse constraints between regions, and between villages with/out the *warrantage* system, which addresses some of the market constraints.



Zaï and stonelines in Malgretenga, Burkina Faso

WHaTeR

WP7: UPTAKE AND UPSCALING

THE CHALLENGE

Investments in water harvesting are well-known measures for improving agricultural productivity at grass root level in semi-arid regions around the world. Technical studies indicate that benefits exceed the costs of investments, but in practice spontaneous uptake of water harvesting is limited and externally financed water harvesting structures are often not maintained. This is a problem, since with a changing climate and increasing populations efficient use of scarce land and water sources is essential to secure food production and sustainable livelihoods in semi-arid zones. This work package will assess the barriers for uptake and up-scaling of water harvesting technologies in Africa and come up with policy recommendations of how these barriers may be addressed.

OBJECTIVES

This work package will contribute to the overall objective of WHaTeR by helping define criteria for:

- Transferring water harvesting technologies (WHT) in different hydrological and socio-economic conditions (upscaling);
- Integrating WHT in the context of local and regional economical development (uptake).

It will do so by addressing the following questions:

1. What are the most critical barriers to the uptake and scaling-up of WHT technologies and practices?
2. How do these barriers differ according to hydrological and socio-economic context?
3. What can be done to support the uptake and scaling-up of WHT in different African contexts?

METHODOLOGY

Different methods will be used for assessing and analysing the constraints for uptake and up-scaling.

First, a literature review has been conducted to assess the conditions under which WHT investments have the best returns. Comparing *in situ* and *ex situ* investments we assess performance under normal rainfall and drought years, focusing on returns in terms of crop yield improvement and comparing studies from Africa with studies from Asia, both in semi-arid zones.

Second, household and community level data will be collected in two of the WHaTeR case study countries (Ethiopia and Burkina Faso) to analyse the factors determining why some households invest in rainwater harvesting and others not.

RESULTS SO FAR

The results of the meta-analysis suggest that both *in situ* and *ex situ* investments in rainwater harvesting have substantial returns in terms of crop yield improvement, *in situ* investments being most effective in combination with soil fertility measures.

EXPECTED OUTCOME

With the household and community level analysis we expect to identify the conditions and constraints for uptake and upscaling of water harvesting technologies and the factors influencing farmer's willingness to invest.

The WHT studied between the two sites differ, the analysis in Ethiopia focusing on *ex situ* investments (household ponds) and the analysis in Burkina Faso focusing on *in situ* investments (zaï and stone lines). A similar household survey will be conducted in both case study sites to allow for comparison across sites.

Third, we will conduct a choice experiment in Ethiopia, to assess farmers' preferences and willingness to invest. The choice experiment will specifically address market constraint and contract design issues, e.g. under which conditions are farmers willing to invest in rainwater harvesting themselves? Fourth, the hydrological conditions for upscaling WHT in the case study sites will be assessed.

Interestingly, the analysis indicates that WHT perform best in below average rainfall years, a claim that few existing WHT studies have been able to validate but that we could evaluate by adding rainfall data to the meta- database. The baseline survey performed in the Burkina Faso case study indicated that knowledge of WHT was not a major constraint.

In addition, we expect to provide further insights into the societal costs and benefits of *in situ* and *ex situ* WHT and the potential mechanisms for promoting uptake and upscaling of WHT in semi-arid Africa.

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