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Developers and farmers intertwining interventions: the case of rainwater harvesting and food-for-work in Degua Temben, Tigray, Ethiopia

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Abstract

Understanding the objectives, strategies and actions of the different actors that play a role in the implementation of rural development programmes is a key to explaining the latter's success and sustainability. Based on in-depth anthropological fieldwork and from an actor perspective this paper shows how the Rainwater Harvesting Pond Programme (RHPP) and the public work component of the Productive Safety Net Programme (PSNP) work out in practice in one district of the Tigray region in Ethiopia. Developers and farmers turn the two essentially unrelated rural development programmes into practically intertwined interventions, which leads to an undesirable set of outcomes. The RHPP's participants, who are conceived of as willing to improve, are favoured above other candidates for employment in the PSNP, which farmers compete for. Developers' and farmers' moves and countermoves result in targeting errors in the PSNP and in farmers massively constructing rainwater harvesting ponds, the large majority of which fail because farmers do not aspire to make them succeed, but merely see them as a stepping stone to employment in the PSNP. In addition both groups' perception of each other is affected. Our observations challenge prevailing interpretations of the effects of development interventions on Tigrayan people's livelihoods.

Key words: actor-oriented approach, Ethiopia, rural development, water harvesting, Productive Safety Net Programme, development ethnography

1. Introduction

Building on earlier work deconstructing the myth of planned intervention (Long and van der Ploeg 1989) Long (2001) advocates an actor-oriented sociology of development in his "Development sociology: actor perspectives". Such a sociology considers agency - social actors' capacity to process experience, make decisions and act upon them (Giddens 1984; Long 2001) - crucial to understanding social heterogeneity in general and differential responses to and outcomes of development interventions in particular. With this actor approach as a starting point this paper unravels the roles of and interactions between farmers, as the receivers of development interventions, and the state and an NGO, as their deliverers, in two rural development programmes in Ethiopia.

'Agency', thus Long, 'crucially depends upon the emergence of a network of actors who become partially, though hardly ever completely, enrolled in the "project" of some other person or persons'. Hence, in development arenas (Bierschenk 1988) different actors' projects and life worlds interlock. Therefore, social interface analysis, exploring points of intersection, is central to understanding development interventions' intended and unintended results (Long 2001). In line with the former approach, Olivier de Sardan (2005) proposes a methodological interactionist anthropology of development to analyse different actors' entangled social logics. Despite subtle theoretical differences between actor-oriented approaches to development (see Bierschenk *et al.* 2002; Lewis and Mosse 2006; Olivier de Sardan 2005 and Rodríguez-Bilella 2006 among others) they share the premise that (strategic groups of) actors and their forms of interaction need to be empirically identified. Or as de Bruijn *et al.* (2007) state '[n]o easy assumptions can be made about what agency is or about whose hands it is vested in. This can only be demonstrated through detailed empirical research and can never be assumed or taken for granted.'

This paper, after a short description of the research area and methodology, therefore continues with an empirical study of developers' and farmers' "encounters at the interface" (Long 2001) in the context of a rainwater harvesting and a food-for-work programme in the Degua Temben district of the Tigray region. It goes beyond an analysis of how agency is realised in that it considers the interventions' outcomes in terms of effectiveness and sustainability and in terms of chances for future development success in the area.

2. Research area and methodology

Degua Temben is situated in the Northern Ethiopian Highlands (see Figure 1), an area with an agricultural history of over 2000 years (McCann 1995). The prevailing agricultural system is one of integrated annual crop and livestock production in which oxen provide the draught power for ploughing smallholders' fields. The main rainy season in Degua Temben extends from June to September, but is preceded by three months of dispersed, less intense and less reliable rains. Average yearly precipitation is 769 mm. High soil erosion rates characterise the area (Desta Gebremichael *et al.* 2005; Hurni 1993; Nyssen *et al.* 2007).

Degua Temben w*ereda* or district is part of the Tigray region. It covers slightly more than 1100 km² and has around 120 000 inhabitants. The district's main and in fact only town, Hagere Selam, is situated about 40 km west of Mekelle, the regional capital. An all weather road connects them. Degua Temben district is made up of 18 *tabyas* or sub-districts, the sub-district being the lowest formal administrative level. Our research has concentrated on one of these sub-districts in particular.

Data was gathered by participant observation (de Certeau 1984) and by open and semi-structured interviews with farmers and developers. On the sub-district level the latter include administrators, agricultural extension or development agents and soil and water conservation technicians. Next to these, responsible persons in the district Bureau of Agriculture and Rural Development, the district Food Security Office and the regional Food Security Coordination Office, the district and regional Bureau of Water Resources, Mines and Energy and the district branch of the Relief Society of Tigray (REST), a local NGO, have been interviewed. Fieldwork was spread over two periods, the first from March 2005 until February 2006 and the second from August 2006 until May 2007.

3. Actors behind soil and water conservation structures

a. Basics of soil and water conservation in Degua Temben

In the research area few and far between lynchets, locally called *daget*, and their remains testify of farmers' age-long efforts to protect their land against soil erosion and nutrient depletion. However, more than of traditional soil and water conservation by individual farmers, the landscape of Degua Temben bears signs of recent large scale conservation works organised by

successive governments. Hill side plantation and closure started in the 1960s under emperor Haileselase and has been expanded ever since. After the emperor's downfall in 1974, Mengistu Hailemariam's socialist dictatorial government, the Derg, took power and started to implement physical and biological soil and water conservation measures on community as well as on private land through so called food-for-work programmes. In these collective employment programmes rural people were organised to afforest hills, to build stone bunds and to fill up gullies in exchange for an in-kind equivalent of their daily food consumption.

After a short interruption during the last years of civil war, in which different parts of Degua Temben were alternately controlled by the Derg and the Tigray People's Liberation Front (TPLF), the transitional government breathed new life into state-driven soil and water conservation. In 1992 first a system of annual compulsory and unpaid community work was imposed. Farmers were enlisted for unpaid community labour during 20 days per year, the majority of which were used to build and maintain stone bunds for terracing and check dams to prevent gully erosion. Shortly after, soil and water conservation in food-for-work programmes was reintroduced and from then onwards has been systematically deployed to bridge seasonal food gaps.

Under the current Ethiopian People's Revolutionary Democratic Front (EPRDF) soil and water conservation activities are the most widespread form of agricultural intensification (Nyssen *et al.* 2004) and ample evidence exists on their contribution to land rehabilitation (Munro *et al.* 2008). Whereas unpaid community work is still a year-to-year reality in Degua Temben, nowadays the majority of bunding, terracing, trenching, check dam building and closed area planting is done within the framework of food-for-work programmes. Currently the government as well as NGOs[1] are involved in these programmes.

Over the last few years the development and implementation of household water harvesting schemes have been made a cornerstone of the Ethiopian government's food security and rural development strategies. They are the small-scale and low-cost alternatives to communal micro-dams and large-scale irrigation projects that preceded them but did not produce the desired results (Fekadu Wondumagegnehu *et al.* 2007; Rämi 2003; Yohannes Aberra 2004).

b. The Productive Safety Net Programme and the Rainwater Harvesting Pond Programme

The latest food-for-work scheme in the area is the public work component of the Productive

Safety Net Programme (PSNP). This programme was launched by the Ethiopian government at the end of 2004 and is part of its Food Security Programme. For its implementation in Tigray the regional government cooperates with REST. The PSNP's objective is to provide either cash or food transfers to the food insecure population in chronically food insecure districts in a way that prevents asset depletion at the household level and creates assets at the community level (MoARD 2004). The PSNP differs from its predecessors in that it sets itself the target to provide long-term predictable support to chronically food insecure households instead of emergency aid in cases of acute food insecurity. In May 2006 17900 of about 27000[2] households in Degua Temben were the beneficiaries of the PSNP's public work component, next to 4010 labour-poor households who received direct support through the programme[3].

In 2002 Degua Temben was one of the first twenty two districts in Tigray to be included in the Rainwater Harvesting Ponds Programme (RHPP)[4] launched by the regional government. The RHPP's objective is to decrease farmers' dependency on the highly seasonal and erratic rainfall patterns by rainwater harvesting and storage in ponds, locally called *horoyo*, in their backyards. The trapezoidal ponds (13 m x 13 m at the surface, 4 m x 4 m at the bottom and 2.5 m deep) designed for this purpose collect rainwater and run off water during showers in the rainy season. This water reserve can then be used for supplementary crop irrigation to bridge rain gaps during the rainy season or to extend the growing period after the rains have finished. In addition it serves as a domestic water supply, as drinking-water for livestock and for small-scale irrigated horticulture (Landell Mills Development Consultants 2004). Currently around 3180 out of around 27000 households in Degua Temben have a rain water harvesting pond on their land.

Rainwater Harvesting Pond Programme planning at the regional level was a joint effort of the then Bureau of Rural Development[5], the then Water Resources Development Bureau[6] and REST (Landell Mills Development Consultants 2004). We will not go into detail on the planning process itself, but highlight especially one of its outcomes, being target quotas for rainwater harvesting ponds. Based on an assessment of the number of vulnerable households, a target number of rainwater harvesting ponds to be built by September 2003 was formulated for all 22 districts in the programme. Not only was the programme expanded to include 9 additional districts in 2004, but also the district target numbers have been increased ever since the RHPP's launch. Regional plans, including an implementation manual and target numbers, were forwarded to the districts for approval and implementation.

Degua Temben accepted the target number of 600 rainwater harvesting ponds to be built by September 2003 and another 800 to be completed by September 2004[7]. Responsibilities for implementation, supervision and monitoring of the RHPP in the district were shared among the then Bureau of Agriculture and Natural Resources (BoANR)[8], the then Water Resources Development Bureau[9] and REST[10]. A district RHPP steering committee divided Degua Temben's target numbers among its eighteen sub-districts and passed the targets on to the sub-district level. In the sub-district where fieldwork was done, the sub-district legislative body approved the plans and three foremen were trained and employed by the BoANR[11], one for every *kushet* or village of the sub-district. Backed up by a sub-district RHPP steering committee, the sub-district's three development agents and the sub-district administrators, the foremen embarked on tracing potential beneficiaries and selecting sites in the beginning of 2003.

A number of incentives were used to lower barriers to adoption of rainwater harvesting ponds. In 2003, households willing to construct a pond on their land were provided with the necessary manpower through different food-for-work arrangements. Either one *gudjile*, a group of around 30 neighbouring households, was contracted to complete one rainwater harvesting pond in exchange for 2900 kg grain or individuals were employed to dig in exchange for 3 kg grain per working day. In 2004, households had to rely on their own labour to dig a pond on their land; however, they were exempted from unpaid community work in order to free up labour to do so. Interested households could obtain, on interest-free credit and at a subsidised rate, plastic to line their pond's floor and walls in order to prevent seepage.

Despite this range of adoption-encouraging measures, the number of households willing to construct a rainwater harvesting pond grew only slowly and by the end of 2004 the sub-district target quota was far from being reached. Moreover most households who entered the project early on were either relatively wealthy and less risk averse, or lived near a spring and hence were quite confident that their ponds would fill up. At the beginning of 2005 sub-district administrators, who were finally being held accountable to their superiors for carrying out decisions taken by the sub-district legislative body, found themselves faced with a tremendously difficult task. As the farmers' interest was about to reach its saturation point, they were expected to convince large numbers of households to participate in the RHPP[12].

It was around that time that the Productive Safety Net Programme (PSNP) made its entry in the study area. PSNP planning processes were similar to those of the RHPP, with the difference that

they were initiated at the national level. At the regional level planning, coordination and implementation responsibilities resided with a large number of government agencies (MoARD 2004). Of importance to our discussion is that, together with a programme implementation manual and targeting guidelines, PSNP public work quotas were passed on to the districts. The district food security task force took responsibility for their distribution to the sub-districts. One PSNP public work quota for a household entails the right for one of its adult members to participate in PSNP public work activities for eight months a year during maximum 5 days per month (MoARD 2004). The household's compensation consists of an in-kind equivalent of 6 ETB[13] per working day. In practice participating households in Degua Temben receive on a monthly basis 15 kg wheat, 1.5 kg pulses and 0.5 l oil[14] per PSNP public work quota. Out of the district's 17941 available quotas 935 were granted to the sub-district under study[15]. A sub-district and three village food security task forces were established, made up of sub-district and village administrators, development agents, members of the sub-district legislative body, teachers and health workers and representatives of the women's, men's, youth and elderly people's associations. Together they had authority to allocate quotas, in accordance with PSNP targeting guidelines, to the most vulnerable of the roughly 1050 households in the sub-district.

Let us now switch to the demand-side. In line with observations in other areas in Tigray (van den Berg and Ruben 2006; Woldeab Teshome 2003), participating in food-for-work programmes is a favoured livelihood strategy for nearly all households in the sub-district. Especially during the agricultural slack season, food-for-work wages are only slightly lower than those for unskilled labour in the nearby town of Hagere Selam; in addition, once quotas have been obtained, job security is higher. Local employment in a food-for-work programme has the advantage over seasonal labour migration to Mekelle or the lowlands in the west of Tigray in that it is more favourable to farmers' family and social life. Furthermore it is easy to combine with farm activities, especially short term migration to the lower lying grazing areas, where from the start of the rains until the harvest farmers take turns tending the cattle of a number of households. As a consequence the demand for PSNP public work quota in the sub-district greatly exceeded the supply.

c. Interventions intertwined

As they were having difficulty getting rainwater harvesting ponds adopted as well as meeting the demand for PSNP employment, for sub-district administrators, development agents and a number of others who combined offices in the sub-district RHPP steering committee and the sub-district

or village food security task forces, the solution was there for the taking. In the hope of boosting the number of rainwater harvesting ponds they decided to set farmers' willingness to dig such a pond as a PSNP selection criterion[16]. By doing so they significantly altered the programme's targeting guidelines, which prescribe the identification of PSNP beneficiaries based on chronic food insecurity.

A sub-district development agent justifies the procedure as follows:

Of course we select the poorest farmers for participation in the safety net programme. But there are so many poor people in this sub-district who are willing to work in the programme that we have to choose between them. So first we give the chance to the ones who show they want to make an effort to improve their lives[17].

According to this line of reasoning people who dig a water harvesting pond strive to escape food insecurity and hence deserve a boost by the PSNP. The actual distribution of the 935 PSNP public work quota to 481 households in the sub-district produces evidence that the measure of twinning the two interventions is effective. Of the households with a rainwater harvesting pond, almost 90 per cent received at least 1 PSNP public work quota, whereas of households without a pond less than 40 per cent did. However the large majority of early-adopters undoubtedly did not belong to the most food insecure in the sub-district, who typically have difficulties to invest in productive assets. Despite state subsidy, to install and profitably operate a pond requires substantial efforts in terms of labour and cash, which are often beyond the reach of the chronically food insecure.

With regard to winning over farmers for the RHPP, the decision to favour the programme's participants above other PSNP candidates was a lucky move. The measure was made known to the sub-district inhabitants well before the actual distribution of PSNP public work quota would take place. On the other hand farmers were well aware of the competition among them, a constant issue when it comes to employment in food-for-work programmes. Thereupon a number of households, until then reluctant to dig a pond, decided to take the plunge and embarked on the RHPP. In the course of 2005 the total number of rainwater harvesting ponds in the sub-district jumped from 56 to 163.

Nevertheless the RHPP in the sub-district can hardly be called a success. The results of a small systematic survey in the village of the sub-district where we gained people's confidence support

this thesis. The village had 65 household rainwater harvesting ponds at the end of 2006, 12 of which were built before the PSNP entered the stage in the beginning of 2005 and 53 after. On inspection 8 of the 12 ponds in the first group met the RHPP's objective of decreasing the owner's dependency on rainfall, while 4 did not. In comparison only 5 of the 53 ponds in the second group contributed to the household's water security, while 41 definitely did not; the remaining 7 were at best dubious. This high degree of failure of 2005-2006 rainwater harvesting ponds is general throughout the sub-district.

During gaps in and at the end of the rainy season, the large majority of 2005-2006 ponds hold either no water or a small and quickly diminishing supply, which farmers consider largely insufficient for supplementary crop irrigation. If water is present, during or immediately after the rainy season, households use it, if they do at all, as drinking-water for livestock or more often to irrigate miniature plots of vegetables or a few trees. However, also in these cases, pond water hardly has surplus value. As rainwater harvesting ponds empty, most households switch to fetching water from a nearby hand dug well or from springs, which are abundant during as well as in the first months after the rainy season. Actually households without a pond similarly practice small scale irrigation of vegetables and trees with spring or well water, while animals are taken to a spring to drink.

The reasons why the majority of ponds in the sub-district built after the launch of the PSNP either do not collect rainwater or do not retain the harvested water are many. Some causes are interrelated and most ponds that are malfunctioning suffer from more than one. First of all, part of the malfunctioning rainwater harvesting ponds were badly constructed. Most of them do not have the prescribed dimensions. Another common technical shortcoming is the inadequate compaction of the pond's floor and walls leading to the quick infiltration of water. In some cases the household simply gave up after digging a small shallow hole in their backyard. Secondly a considerable part of 2005-2006 ponds suffer from lack of maintenance. Farmers make no efforts to prevent sediment from entering the pond, to remove the sediment or to repair the pond's collapsed walls. Some rainwater harvesting ponds are silted up completely and leave only a gentle depression in the landscape. A third reason for failure is that households do not construct or maintain the diversion channels and inlets that are needed to harvest run-off water in a pond. Hence, these ponds depend on direct rainfall only.

Many of the above mentioned problems have to do with or are aggravated by an improper

location of the water harvesting pond. Some households for instance could not complete their pond because they bumped up against bedrock. There are ponds that fill up with sediment in one heavy shower because they are positioned directly under a steep bare slope and on the other hand ponds at the highest point in the landscape that cannot collect a single drop of run-off water. However it is clear that the unfortunate location of many rainwater harvesting ponds is neither the consequence of farmers' ignorance nor of foremen's shortcomings in site selection.

A sub-district foreman explains the farmers' perspective on site selection:

Farmers register for a rainwater harvesting pond but they are not willing to sacrifice a piece of their land to it. Hence they propose a bad piece of land they cannot use for any other purpose as a place for their pond to be dug.

Another sub-district foreman describes the developers' side:

The problem with site selection is that the sub-district administrators do not listen to us. When I as a foreman tell them a farmer does not have a proper place to dig a pond they simply say: 'anyway, you will dig one, because we need such and such number of new ponds in our sub-district'.

Whereas seemingly the failure of most 2005-2006 ponds may be caused by technical shortcomings in construction, maintenance or site selection, more often than not it is the consequence of flaws in developers' and farmers' underlying motives. Ponds that hold water all year round and are surrounded by lush gardens, which to some owners are the main source of income, establish conclusive proof that physical or technical shortcomings are not an inherent feature of rainwater harvesting ponds in the sub-district.

Two more arguments support the hypothesis that many of the RHPP joiners in 2005 and 2006 consider having a pond a priority over having a working pond. Part of the ponds that hold no water are nevertheless bordered by a narrow strip of vegetables, either rain-fed or irrigated with spring or well water. Except for home consumption, these vegetables serve to keep up the household's image of being "eager to improve" and are intended to safeguard its PSNP public work quota. A second indication lies in the difference between the pre- and post-PSNP water harvesting ponds with respect to their lining. In the case-study village for instance 10 out of 12

ponds in the first group are lined with plastic, compared with 4 out of 53 ponds in the second group. Besides two exceptions of ponds with broken linings in the first group these plastic-lined ponds are the most successful ones in the village. Whereas the lower number of plastic-lined ponds in the 2005-2006 group might be read as a sign of lower investment capacity of the households in this group, it also indicates that many of these ponds were built by their owners in the knowledge that they would inadequately retain water[18].

An additional drawback of developers' and farmers' moves and countermoves is that they affect both groups' perception of each other. When farmers in the sub-district talk about the PSNP, they use *shftenet*. *Shftenet* is Tigrinya for banditry - a corruption of the "safety net" developers use as a shorthand for the PSNP. Farmers have many grievances about the PSNP, though one of the strongest and most generally voiced, especially among non-beneficiaries, is the distribution of public work quotas between households. Farmers claim it is unfair and accuse the developers of assigning *shftenet* quotas to the people they like, the people who have everything and the people who do what they require. Though farmers who do participate in PSNP public work are more moderate in their complaints, they in most cases do not deny or hide they owe their employment to the rainwater harvesting pond in their backyard.

Among administrators, development agents and other programme responsibles in the sub-district on the other hand a tendency can be observed to attribute ponds' low performance to farmers' poverty. They typically think of farmers as lacking the capacity to invest, and consider them physically too weak to complete their pond and insufficiently understanding the benefits of development in general and rainwater harvesting in particular. In fact the argument of physical inability is repeated by farmers themselves, as loss of labour due to illness or other reasons gives them an excuse to cease working on their pond without causing suspicion about their initial good intentions.

4. Conclusion

Soil and water conservation structures do not develop of their own accord. It is clear that developers' and farmers' actions and interactions provide keys to understanding the outcomes of the PSNP and the RHPP in the study area. Empirical evidence illustrated how developers' and farmers' agendas become entangled and hence two essentially unrelated programmes are turned into practically intertwined interventions. As a consequence the outcomes of the two programmes

are understood better together than separately. Disparities in means and ends between farmers and developers and their self-made mix-up of the two programmes give rise to a set of undesirable outcomes: beneficiary targeting errors in the PSNP; large numbers of failed rainwater harvesting ponds scattered around the sub-district; and strained relations between farmers and developers.

Though not related to RHPP and PSNP objectives, the latter outcome might be more serious than the others, as it may influence the success of future development interventions in the sub-district. In this context it is important to note that our account of intertwined interventions is not an isolated case; the scenario repeats itself in different versions, both in the research area - participants in other rural development programmes were positively discriminated for inclusion in the PSNP in similar circumstances - and elsewhere in Tigray (see for example Woldeab Teshome 2003).

Different authors (Pausewang 2002 and Poluha 2002 among others) have pointed to the historical roots of farmers' distrust in the state in a country where peasant-state and within-state relations have always been hierarchic. In this sense farmers' and developers' offensive language are but the expression of their year-long experiences and frustrations with a system in which planning and implementation of soil and water conservation and rural development in general suffer from overambition, upward accountability and a top-down blanket approach (Berhanu Gebremedhin *et al.* 2006; Rämi 2003; Seleshi Bekele Awulachew *et al.* 2005; Tesfaye Lemma Tefera *et al.* 2004; Woldeamlak Bewket 2007). In the Tigrayan context, despite bureaucratic development policy making, an actor perspective to development practice showed to be particularly relevant. Indeed our research suggests farmers and local level developers have somehow accommodated themselves to "downward development pressure" and do develop strategies to cope with it.

To conclude we trust our findings add insights to existing studies on rainwater harvesting in Tigray (for example Fekadu Wondumagegnehu *et al.* 2007; Fredu Nega *et al.* 2006 and Gebreegziabher Lemma Hagos 2005) and might push the evaluation of rainwater harvesting schemes toward the inclusion of political-economic explanations for failures and their co-existence with successes. More in general our observations put a different complexion on interpretations of farmers in Tigray being in favour of soil and water conservation measures (Nyssen *et al.* 2007); on the positive feedback of public investment on private investment in conservation (Fitsum Hagos and Holden 2006); and on the inequality and food-for-work dependency mitigating effects attributed to irrigation (van den Berg and Ruben 2006).

Consciousness of farmers' and developers' capabilities to turn development programme scripts into ingenious plays is imperative for rural development planners, implementers and researchers to realistically assess the predicted and observed impacts of interventions on people's livelihoods.

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Notes

[1] In some sub-districts of Degua Temben NGOs use cash-for-work as well, but this is not the case in our case-study sub-district.

[2] 26862 households is the most recent official number available in the district, but might be an overestimation. The official number of households in the sub-district under study for instance is an overestimation of over 40 per cent of the actual number of households living in the sub-district.

[3] Households with both public work and direct support quota (e.g. an able-bodied adult who takes care of an orphan) are counted in both groups.

[4] In full the programme under discussion is the Water Harvesting Schemes Component of the 1998 and 2000 Integrated Food Security Programmes, which are funded by the European Commission and support the Comprehensive Community and Household Asset Building Approach (CCHABA) for improved food security. It is referred to as the Rainwater Harvesting Ponds Programme. However the abbreviation RHPP is the authors'.

[5] Currently Bureau of Agriculture and Rural Development.

[6] Currently Bureau of Water Resources, Mines and Energy.

[7] These target numbers are a revision of the initial target numbers set at the regional level, which were even higher (1200 ponds in 2003 and 4800 in 2004).

[8] Currently Bureau of Agriculture and Rural Development.

[9] Currently Bureau of Water Resources, Mines and Energy.

[10] Currently district level responsibilities for the RHPP are with the Bureau of Agriculture and Rural Development only.

[11] In the course of 2003 the number of foremen was reduced to one per sub-district, employed by the Water Resources Development Bureau.

[12] Out of 85 ponds planned for 2003 and 2004 56 were actually constructed in the sub-district during this period and the target for 2005 was set at 190 additional ponds.

[13] 1 ETB = € 0.087 in January 2007.

[14] Cut back to 0.45 l oil in May 2006.

[15] In the course of 2005 and 2006 additional PSNP public work quota have been allocated to the district and divided among the sub-districts. The sub-district under study at first received 132, then 351 and later 190 additional quotas.

[16] We remain unclear about whether the idea to link participation in the PSNP to participation in the RHPP originated on the sub-district or on the district level. Definitely the measure has been approved on both levels and has been applied to overcome the RHPP deadlock in other sub-districts in Degua Temben as well. However decision-making in Degua Temben is such that for any measure to be implemented in a sub-district its acceptance by the sub-district responsible bodies is a prerequisite. Therefore the decision is reasonably considered theirs.

[17] Readiness to dig a pond is not the only PSNP targeting criterion laid down at the sub-district level. Participants in other rural development programmes (microcredit programmes among others) have been positively discriminated for inclusion in the PSNP as well. However the development agent cited here was talking about the RHPP only.

[18] An analogous argument could lead to the conclusion that developers are not concerned about the quality of soil and water conservation structures built within the framework of the PSNP public work component as they are only interested in reaching rainwater harvesting pond quotas. This conclusion is obviously false, as these same people are equally responsible for achieving targets concerning the soil and water conservation activities that PSNP beneficiaries carry out under their direction. PSNP beneficiaries in general care less about the soundness of their work than about the food they get in return. However this is a known drawback of food-for-work programmes and is beyond the scope of this paper.

References

Note: names of Ethiopian authors are conventionally cited in full on first name.

Berhanu Gebremedhin, Hoekstra, D. and Azage Tegegne (2006) *Commercialization of Ethiopian agriculture: extension service from input supplier to knowledge broker and facilitator*. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project Working Paper no. 1. Nairobi: International Livestock Research Institute (ILRI).

Bierschenk, T. (1988) Development projects as arenas of negotiation for strategic groups: a case-study from Benin, *Sociologia Ruralis* 28 (2-3), 146-160.

Bierschenk, T., Chauveau, J.-P. and Olivier de Sardan, J.-P. (2002) *Local development brokers in Africa: the rise of a new social category*. Working paper no. 13. Mainz: Department of Anthropology and African Studies of the Johannes Gutenberg-Universität.

de Bruijn, M., van Dijk, R. and Gewald, J.-B. (2007) Social and historical trajectories of agency in Africa. In: Chabal, P., Engel, U. and de Haan, L. (eds) *African alternatives*. Leiden: Brill Academic Publishers.

de Certeau, M. (1984) *The practice of everyday life*. Berkeley: University of California Press.

Desta Gebremichael, Nyssen, J., Poesen, J., Deckers, J., Mitiku Haile, Govers, G. and Moeyersons, J. (2005) Effectiveness of stone bunds in controlling soil erosion on cropland in the Tigray Highlands, northern Ethiopia, *Soil Use and Management* 21, 287–297.

Fekadu Wondumagegnehu, Alemtsehay Tsegay, Dereje Ashebir, Hailemariam Tekie, Addisu Gebre, Mewael Kiros, Geerts, S., Raes, D., Nyssen, J. and Deckers, S. (2007) *Household water harvesting structures in Geba catchment*. Tigray Livelihood Paper no. 5. Mekelle: VLIR - Mekelle University IUC Programme.

Fitsum Hagos and Holden, S. (2006) Tenure security, resource poverty, public programs, and household plot-level conservation investments in the highlands of northern Ethiopia, *Agricultural Economics* 34 (2), 183-196.

Fredu Nega, Zaid Negash, Kidanemariam Gebregziabher, Abebe Ejigu, Mihret Berhanu, Nyssen, J., Bedru Babulo, Deckers, J. and Tollens, E. (2006) *Participatory Rural Appraisal report of*

494 *selected villages in Tigray*. Tigray Livelihood Paper no. 2. Mekelle: VLIR - Mekelle University
495 IUC Programme.

496 Gebreegziabher Lemma Hagos (2005) *The role of household ponds on the expansion of*
497 *homegardens in Tigray, Ethiopia*. Unpublicised M.Sc. thesis. Mekelle: Mekelle University.

498 Giddens, A. (1984) *The constitution of society: outline of a theory of structuration*. Cambridge:
499 Polity Press.

500 Hurni, H. (1993) Land degradation, famines and land resource scenarios in Ethiopia. In: Pimentel,
501 D. (ed.) *World soil erosion and conservation*. Cambridge: Cambridge University Press.

502 Landell Mills Development Consultants (2004) *Evaluation of the water harvesting schemes*
503 *component of the EC funded programmes IFSP 1998 and IFSP 2000 in Tigray regional state*.
504 Final evaluation report, updated version, 11 May 2004.

505 Lewis, D. and Mosse, D. (eds) (2006) *Development brokers and translators: the ethnography of*
506 *aid and agencies*. Bloomfield: Kumarian Press.

507 Long, N. (2001) *Development sociology: actor perspectives*. London: Routledge.

508 Long, N. and van der Ploeg, J.D. (1989) Demythologizing planned intervention: an actor
509 perspective, *Sociologia Ruralis* 29 (3-4), 226-249.

510 McCann, J. (1995) *People of the plow: an agricultural history of Ethiopia, 1800-1990*. Madison
511 & London: University of Wisconsin Press.

512 MoARD (2004) *Productive Safety Net Programme: programme implementation manual*. Addis
513 Ababa: Government of the Federal Democratic Republic of Ethiopia, Ministry of Agriculture and
514 Rural Development, Food Security Co-ordination Bureau.

515 Munro, R.N., Deckers, J., Grove, A.T., Mitiku Haile, Poesen, J. and Nyssen, J. (2008) Soil and
516 erosion features of the Central Plateau region of Tigrai: learning from photo monitoring with 30
517 years interval, *Catena* in press.

518 Nyssen, J., Poesen, J., Desta Gebremichael, Vancampenhout, K., D'Aes, M., Gebremedhin
519 Yihdego, G., Govers, G., Leirs, H., Moeyersons, J., Naudts, J., Nigussie Haregeweyn, Mitiku
520 Haile and Deckers, J. (2007) Interdisciplinary on-site evaluation of stone bunds to control soil
521 erosion on cropland in Northern Ethiopia, *Soil & Tillage Research* 94 (1), 151-163.

522 Nyssen, J., Poesen, J., Moeyersons, J., Deckers, J., Mitiku Haile and Lang, A. (2004) Human
523 impact on the environment in the Ethiopian and Eritrean highlands: a state of the art, *Earth-*
524 *science Reviews* 64, 273-320.

525 Olivier de Sardan, J.-P. (2005) *Anthropology and development: understanding contemporary*
526 *social change*. London & New York: Zed Books.

527 Pausewang, S. (2002) No environmental protection without local democracy? Why peasants
528 distrust their agricultural advisers. In: Bahru Zewde and Pausewang, S. (eds) *Ethiopia: the*
529 *challenge of democracy from below*. Uppsala: Nordiska Afrikainstitutet & Addis Ababa: Forum
530 for Social Studies.

531 Poluha, E. (2002) Learning political behaviour: peasant-state relations in Ethiopia. In: Poluha, E.
532 and Rosendahl, M. (eds) *Contesting 'good' governance: crosscultural perspectives on*
533 *representation, accountability and public space*. London: RoutledgeCurzon.

534 Rämi, H. (2003) *Ponds filled with challenges: water harvesting experiences in Amhara and*
535 *Tigray*. Addis Ababa: UN Office for the Coordination of Humanitarian Affairs (OCHA) Ethiopia.

536 Rodríguez-Bilella, P. (2006) *Knowledge generation and qualitative research methods:*
537 *perspectives in the context of development socio-anthropology*. Federico Caffè Centre Research
538 Report no. 2/2006. Roskilde: Roskilde University, Department of Social Sciences.

539 Seleshi Bekele Awulachew, Merrey, D.J., Kamara, A.B., Van Koppen, B., Penning de Vries, F.,
540 Boelee, E. and Makombe, G. (2005) *Experiences and opportunities for promoting small–*
541 *scale/micro irrigation and rainwater harvesting for food security in Ethiopia*. Working paper no.
542 98. Colombo: International Water Management Institute.

543 Tesfaye Lemma Tefera, Perret, S. and Kirsten, J.F. (2004) Diversity in livelihoods and farmers'
544 strategies in the Hararghe highlands, Eastern Ethiopia, *International Journal of Agricultural*
545 *Sustainability* 2 (2), 133-146.

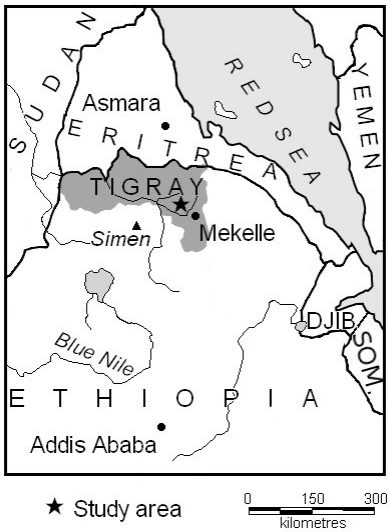
546 van den Berg, M. and Ruben, R. (2006) Small-scale irrigation and income distribution in
547 Ethiopia, *Journal of Development Studies* 42 (5), 868-880.

548 Woldeab Teshome (2003) *Irrigation practices, state intervention and farmers' life-worlds in*
549 *drought-prone Tigray, Ethiopia*. Doctoral dissertation. Wageningen: Wageningen University.

550 Woldeamlak Bewket (2007) Soil and water conservation intervention with conventional
551 technologies in northwestern highlands of Ethiopia: acceptance and adoption by farmers, *Land*
552 *Use Policy* 24 (2), 404-416.

553 Yohannes Aberra (2004) Problems of the solution: intervention into small-scale irrigation for
554 drought proofing in the Mekele Plateau of northern Ethiopia, *Geographical Journal* 170, 226-
555 237.
556

557 # Figure



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559 **Figure 1 Tigray in Ethiopia and the research area**