Sustainable Watershed Management

The 'Process' of Interventions in Watershed Management: The Case of National Agricultural Advisory Services (NAADS) in Ngenge Watershed, Kapchorwa District, Uganda.

M.Sc. Thesis by Allan Mugabi

May 2009

Irrigation and Water Engineering Group

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[1] Cover photos

[1] LHS: Landslide occurrences upstream the watershed (Photo by: Fiona Mutekanga).
RHS: River Ngenge downstream the watershed (Photo by: Horacio Narvaez Mena)

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The 'process' of Interventions in Watershed Management: The case of National Agricultural Advisory Services (NAADS) in Ngenge Watershed, Kapchorwa District, Uganda.

Master thesis Irrigation and Water Engineering submitted in partial fulfillment for the award of a Master of Science degree in International Land and Water Management at Wageningen University, The Netherlands

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"In passing our judgements, we must make a clear distinction between 'failure', which is difficult to discern clearly, and 'time to succeed'- that development takes time and that it is a process which is characterised by as many unanticipated as anticipated consequences"

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I appreciate the grant by the Environmental Management Capacity Building project-Uganda that enabled me to pursue my Masters degree at Wageningen University. This thesis research coupled with the acquired knowledge would never have been possible without a grant such as this.

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Dad, Mum and Alex thanks for being supportive throughout my studies, I really appreciate.

Lastly, and more importantly, I give all the glory to God for the Bible says "*Except the LORD build the house, they labour in vain that build it*" Psalm 127:1.

Summary

Time and again, scientists define ‘what is bad’ and ‘what is good’. In addition, the scientists also devise ‘solutions’ to make good and acceptable ‘what is bad’. These solutions just never seem to work quite well in making ‘what is bad’ good and acceptable. Actually so far, it seems that, the questions arising out of the ‘solutions’ have instead generated more and more questions. As a land and water manager in the making, the ‘solutions’ that I would make sense of are those designed to deal with land and water management problems. While reading conservation literature one can not help notice that a lot of intervention have been aimed at enabling farmers sustainably manage their natural resources. Undesirably, the natural resource base has continued to decline over the years despite this effort. In Ngenge watershed, Eastern Uganda – the effort has been in vain, at least, as far as soil and water conservation are concerned. Inspired by how interventions operate to get the conservation message to farmers; this study explored the design and implementation of the National Agricultural Advisory Services within the watershed. Of particular interest was the intervention’s dissemination process. The findings reveal that farmers are aware of the creeping processes of soil erosion and have their own conservation practices. The promoted conservation practices are considered very costly and technical in nature by the farmers. In addition, there were two categories of farmers: those who interact directly with intervention officials and those who do not. Interestingly, farmers find themselves in either category by both choice and chance. This report presents possible answers as to why it is still very ‘complex’ to make ‘what is bad’ good and acceptable

Acronyms

AGILE	African Grassroots Initiative for Livelihood and Environment
AHI	African Highlands Initiative
CBO	Community Based Organization
CEW	Community Extension Worker
DAT	District Assessment Team
FGD	Focus Group Discussions
FHI	Food for the Hungry International
GoU	Government of Uganda
ICRAF	World Agroforestry Centre
ISFG	Integrated Support to Farmer Groups
KACODA	Kapchorwa Community Development Association
KADLACC	Kapchorwa Land Care Chapter
KDLG	Kapchorwa District Local Government
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MERECP	Mount Elgon Ecosystem Regional Program
MFPED	Ministry of Finance, Planning and Economic Development
NAADS	National Agricultural Advisory Services
NGOs	Non-Governmental Organizations
NRM	Natural Resource Management
NUSAF	Northern Uganda Social Action Fund
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernisation of Agriculture
RDS	Rural Development Strategy
SMS	Subject Matter Specialist
SP	Service Provider
UNDP	United Nations Development Program
UWA	Uganda Wildlife Authority

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1 Introduction

Natural resource management ranks high on the agenda of most countries in Africa (AGILE, 2007). Regrettably, the natural resource base has been declining despite concerted efforts (for the case of Kapchorwa district, Mount Elgon Ecosystem Regional Program (MERECP), National Agricultural Advisory Services (NAADS), Kapchorwa Land Care Chapter (KADLACC), to mention a few) over the past decade (AGILE, 2007; KADLACC, 2006; Larsen, Kamugasha, & Karani, 2008). The social, economic and political dimensions of the natural resource issues, and more specifically land issues, have resulted in the search for urgent solutions to a critical problem. So far, it seems that people have ended up addressing the symptoms and not the causes (AGILE, 2007).

As time has evolved, the failure of interventions has been attributed to structural constraints namely: A) lack of local (community, groups, individuals) level ownership, B) lack of a clear process for inclusion and/or involvement of various community(ies) and community categories and C) lack of integration of environmental considerations in especially agricultural programs (AGILE, 2007; Babikwa, 2004; GoU, 2008; UNDP, 2008).

Exploring the watershed in question, land and water degradation have become visible through sedimentation loads in river Ngenge, instances of land slides within the catchment, soil erosion leading to loss of top soil layers, loss of soil fertility consequently leading to a decline in crop yield(s), cultivation on steep slopes with limited investment in terraces, deforestation, and, less fallow periods, to mention a few (Tanui, 2005; Woelcke, Berger, & Park, 2006). This has been adequate to justify an intervention in the area such as promotion of conservation practices and/or offering different livelihood[2] options to decrease the pressure on natural resources. Indeed, all attempts have been targeting to get farmers[3] to practice soil and water conservation measures to sustainably[4] use and manage land and water resources in the watershed.

Looking back, it appears that generalisation of terms such as degradation[5] to include "instances of land slides, sedimentation loads, deforestation" also has far reaching implications such as treating symptoms and not the underlying causes of these problems.

[2] The definition of livelihood here is adopted from GoU (2000b: 5) and defined as, "the way in which a household or community supports its life on a regular basis"

[3] Farmers here as a term is used to refer to users of land and water, for agricultural production. In Uganda, the farmers are broadly referred to as those engaged in forest, fish, livestock and crop production (GoU, 2000a, 2000b).

[4] According to WCED (1987 cited in Vishnudas, 2006, p. 29), sustainably is the ability to "meet the needs of the present generation without compromising the ability of future generations to meet their own needs". Consequently sustainable watershed management is "management of a watershed system with sustainable technological options, which may ensure the sustainability of land, agriculture and forestry or its combinations to conserve natural resources, with adequate institutional and economic options" (Vishnudas, 2006, p. 30).

[5] See Chapter 2 of the book "Critical Political Ecology: The Politics of Environmental Science" by Tim Forsyth for a detailed explanation of the myths behind environmental degradation with the related misconceptions therein (Forsyth, 2003)

The concept of "degradation" is dealt with in chapter 2. Generally, the problem of degradation has been acknowledged, and intervention programs are (and have been) going on to reverse this with the intention of promoting conservation practices and/or offering different livelihood options to decrease the pressure on natural resources. As noted, AGILE (2007: 1) "*…the natural resource base has been on the decline…despite the effort*".

Inspired by the 'how programs[6] operate and function' to get 'solutions' adopted by communities as a quest for why degradation continues to occur despite intervention efforts, this report describes program design and implementation. Of particular attention are the contractual obligations of the players[7] involved, aided by the Principal Agent theory (Huppert, 2005) in a decentralised[8] system of governance; and quite a number of questions arise at both design and implementation phases that directly affect land and water management of the farmers.

This report is structured as follows: Chapter 1 introduces the thesis subject, the problem and a background of the research objects; Chapter 2 presents the conceptual framework showing the theoretical approach and relevant concepts used in this thesis; Chapter 3 provides the methodological approach used in data collection; Chapter 4 presents the results and therein analysis of the same, Chapter 5 discusses the results, methodological approach and links the results back to theory and Chapter 6 presents concluding remarks of this thesis.

1.1 Background

Poverty eradication has been the focus of Uganda's government development effort. Among the avenues deemed fit for poverty eradication agriculture was included, as documented in the Plan for Modernisation of Agriculture (PMA), and consequently operationalised in the National Agricultural Advisory Service (NAADS) (GoU, 2000a, 2000b, 2008). The goal of this was to transform[9] subsistence into commercial farming: The "philosophical underpinning of NAADS' design has been to empower farmers-particularly the poor[10] and women - to demand and control agricultural advisory services"

[6] Design or program design refers to the systematic prioritisation of activities to achieve a desired goal programs are normally to the rural poor who depend solely on agriculture for their livelihoods.
[7] People, groups, communities, and institutions with a stake or say in the watershed as regards sustainable use and management of natural resources specifically land and water.
[8] Local governments were created to devolve power to lower levels of government. "The decentralisation process involved substantial transfer of political, financial and planning responsibilities from central government to local governments-districts and sub counties" (GoU, 2000b, pp. 3, 36). This was to "empower the local governments to take increasing responsibility for the delivery of services and promotion of popular participation and empowerment of local people in development planning" (ibid, p. 36).
[9] Transformation implies agricultural production shift from predominantly household to market oriented (GoU, 2000b; MAAIF, 2005).
[10] Poverty from a poor person's perspective is the "lack of means to satisfy basic, social needs as well as a feeling of powerlessness to break out of the cycle of poverty and insecurity of person and property" (GoU, 2000b, p. 2).

(GoU, 2000a, p. 1). This was because the conventional[11] agricultural extension system (has over the years) been labelled as "non-participatory, uncoordinated, and less responsive to farmers' needs" (MAAIF, 2005, p. 16).
The Government of Uganda (GoU) then aligned its priorities to fit the subsistence[12] farmers' characteristics and concerns as shown in Table 1. Of particular interest to this thesis is the GoU's priority in soil and water conservation. This is because soil and water degradation continue to occur in the study area.

Table 1: Subsistence farmers characteristics and concerns viz a viz government's priorities

Characteristics	Concerns	Government priorities[13]
1. Have low literacy, skills and knowledge levels 2. Produce mainly for domestic consumption 3. Engage in a multiplicity of enterprises 4. Rely on low input technologies 5. Depend on family labour 6. Use small land holding 7. Often forced to sell produce to meet basic domestic needs such as education and health 8. Highly exposed to risks such as price and weather	1. Soil fertility and soil erosion 2. Water for livestock 3. Drought 4. Lack of land 5. Deforestation 6. Pests and diseases 7. Women do not own land	1. Irrigation 2. Soil and water conservation 3. Implementation of land reform 4. Control of epidemic pests and diseases

Source: (GoU, 2000b, pp. 30,31)

To be further specific, GoU grouped the subsistence farmers as the "destitute[14] and the poor[15]" (GoU, 2000b, p. 8), with a focus on the poor in the short term and the destitute in the medium to long term. Based on GoU's priorities under the PMA on natural capital, five programs were identified for development and implementation, principal of these was NAADS (GoU, 2000a, p. vi). We will revert to this in Chapter 2.

[11] The one originally existing under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) executed through the local governments' agricultural and, to some extent, production departments.
[12] "Farmers engaged in crop, forestry, livestock and fish" (GoU, 2000b, p. 1) approximately 70% of farmers population.
[13] Besides natural capital, GoUs had other priorities with regard to physical, financial, human and social capital (GoU, 2000b). Natural capital includes "land, water, forests, wildlife and bio-diversity" (ibid., p. 31).
[14] The destitute are those without hope, and assets. The destitute would benefit from more general interventions through improved local well-being and existing social networks" (GoU, 2000b, p. 8)
[15] The poor category was defined as those with the will and desire to improve and sustain their livelihoods, but express frustration in their attempts to do so because of limited assets, skills and knowledge; restricted access to services, infrastructure and information; or social disadvantage (GoU, 2000b, p. 8)

1.2 Ngenge watershed

Ngenge watershed is in Kapchorwa district, Eastern Uganda. My choice of using a watershed (and not) administrative boundaries as a delineation mechanism is to approach it as a hydrological unit. However, due to the decentralised form of implementation, the process is analysed through the local government structures.

1.2.1 Location

The location of Ngenge watershed in Kapchorwa district is shown in Figure 1. Kapchorwa district lies between "latitude 1.7'N and 1.36'N, and longitudes, 34.48'[16] in eastern Uganda" (MFPED, 2000, p. 2). The total area of the district is 1738.7 sq. km, with a perimeter of 245km. Of this area 105.2 sq. km (6%) is taken up by wetlands. It is bordered by the Republic of Kenya to the East and South, to the west and South West by Mbale District, and to the North by Moroto District (ibid., p. 2). Ngenge watershed stretches through the sub counties of Benet, Binyiny and Ngenge from the Southern towards the Northern part of the district and is shown in Figure 1.

Table 2: Kapchorwa sub counties participating in the NAADS program

District	Participating sub counties[17]						
	2002/03	2003/04	2004/05	05/06	06/07	07/08	08/09[18]
Kapchorwa		Binyiny		Tegeres	Kwanyiny	Benet	
		Kaproron			Sipi	Chema	
		Kaptanya				Kaserem	
		Kawowo				Ngenge	

Source: (NAADS, 2009a, p. 4)

[16] East of Greenwich

[17] A sub-county continues to participate in the program in the consequent years for example Binyiny started participating in 2002/2003 financial year. It is considered a participating sub-county there after.

[18] Data for 2008/2009 not available.

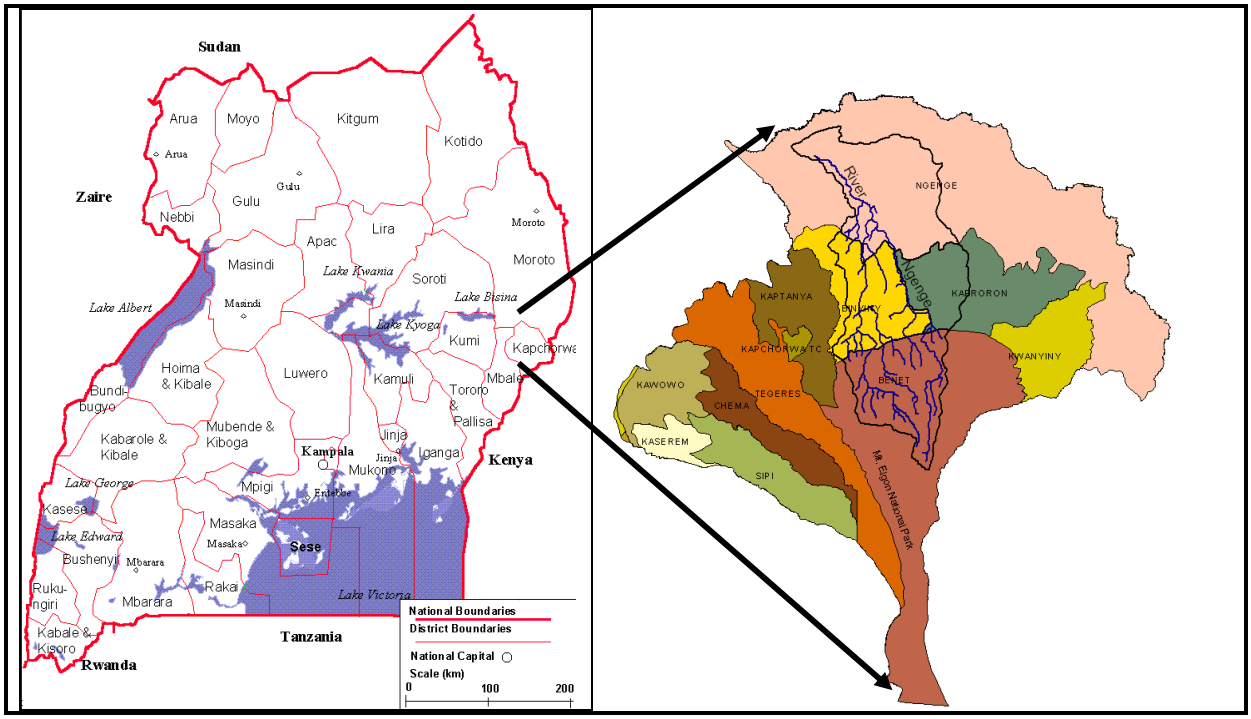


Figure 1: Map showing the location of Ngenge watershed in Kapchorwa district
Source: (Kapchorwa, 2004; Mutekanga, 2006)

1.2.2 Climate

The average monthly rainfall across the watershed is shown in Table 3. Ngenge watershed experiences dry windy conditions during December up to February and occasional storms in July and August (Kapchorwa, 2004; Mutekanga, 2006). The altitudinal difference ranges between approximately 1000-2800masl as shown in Table 4 and Figure 5.

Table 3: Average monthly rainfall across the sub counties in the watershed (mm/month)

Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Benet	42	65	114	196	201	123	135	154	117	132	112	59
Binyiny	26	43	79	152	170	112	142	149	97	102	75	59
Ngenge	14	24	58	119	129	95	131	133	83	70	48	28

Source:(Kapchorwa, 2004, p. 9)

Table 4: Altitude range and annual rainfall range

Area	Altitude (masl)	Annual Rainfall (millimetres)
Benet (Upstream)	2200-2800	1450
Binyiny (Midstream)	1500-2200	1186
Ngenge (Downstream)	1000	932

Source: (Kapchorwa, 2004, p. 9)

1.2.3 Administrative characteristics

The watershed can be broken down into formal administrative structures i.e. sub-counties, parishes and villages.

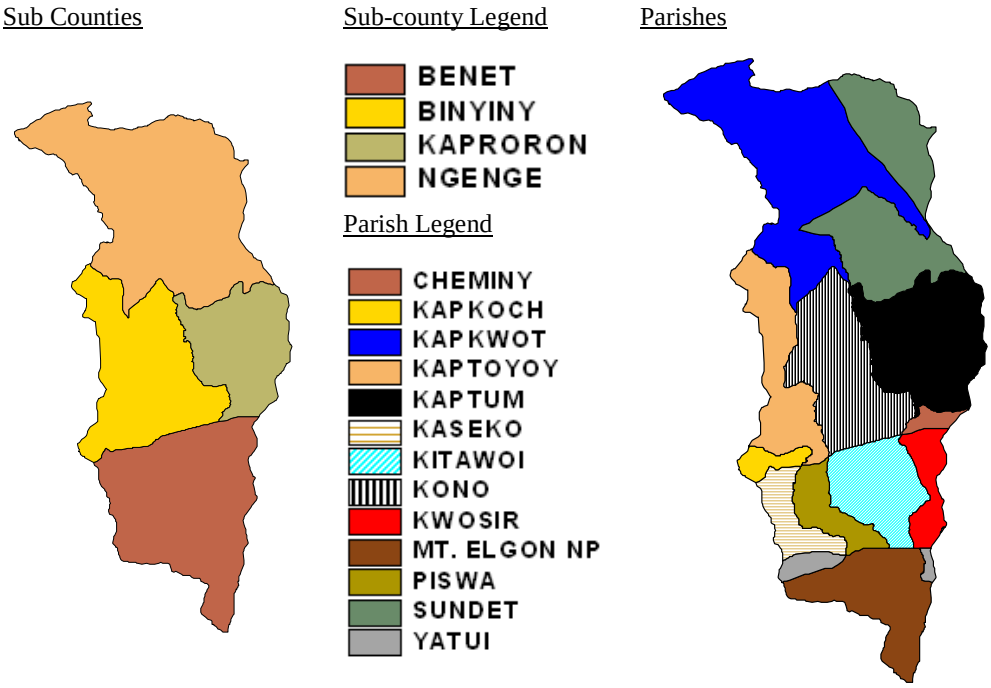


Figure 2: Showing the sub counties and parishes within Ngenge watershed
(Mutekanga, 2006)

Figure 2[19] shows the sub counties and parishes within Ngenge watershed.

1.3 NAADS Framework

In the following paragraphs, I describe GoU's NAADS approach to intervention. The PMA used the decentralised mechanism of implementation; the local governments were tasked with the implementation and delivery of agricultural services. The local governments had the liberty to "choose the different ways of implementing the programs based on their client (in this case residents of sub counties and districts) needs of their districts while central governments' role would be to offer policy guidance and define expected outputs" (GoU, 2000b, p. 36).

[19] Only a small part of the watershed < 4% lies in Kaproron sub-county. Kaproron is newly formed and where Binyiny is mentioned it includes this 4% part of Kaproron sub-county.

Figure 3: Flooding instances further downstream

The National Agricultural Advisory Service (NAADS) was then created to co-ordinate service provision to subsistence farmers. In addition to soil conservation and productivity enhancing technologies, knowledge and skills development, marketing, storage and agro processing would feature highly as part of the content of the advisory services (GoU, 2000b, pp. xi, 39). NAADS approach involved an attempt to increase farmers' (especially the poor) involvement in technology development and consequently improve their linkages with markets for their produce (GoU, 2000a), this type of intervention is related to what Rondinelli (1979, p. 389) refers to as "seeking to increase agricultural productivity, expand employment opportunities, and meet the human needs of poor groups in society."

The implementation is mapped in terms of the sub counties within the watershed; these would include Benet, Binyiny and Ngenge[20]. This also implies that implementation is done through the decentralised form of governance where each sub-county is required to effect the advisory service.
To understand the process of NAADS intervention, Figure 4 is essential to demonstrate. The figure shows, though not exhaustive, how NAADS perceived its implementation with the various institutions from central government down to parish and village level.

[20] Ngenge is also a name for a sub-county within the Ngenge watershed. Ngenge watershed is named after River Ngenge the longest river in the watershed.

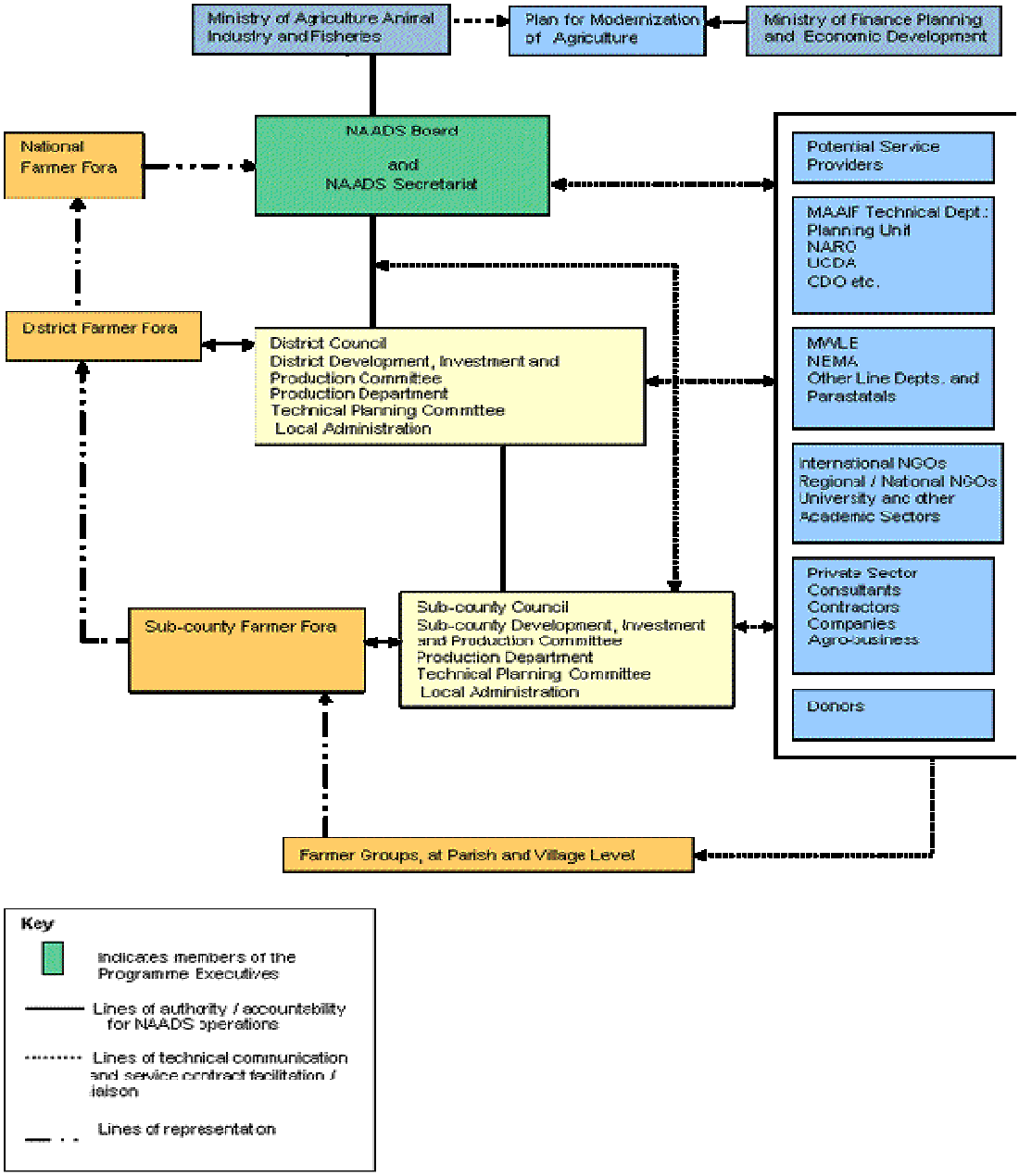


Figure 4: NAADS organisational structure
Source: (NAADS, 2009b)

1.4 Point of Departure

In the preceding section(s), a detailed background of the area, and to a great deal the evolution (and reasons as to why) GoU intervened through the NAADS program. The coherence in GoU's priorities with the subsistence farmers' concerns and characteristics has been matched in Table 1. To match the research direction, extract concern no. 1 of the subsistence farmers and link it to GoU priority no. 2 in Table 1; this would mean that the subsistence farmers actually would have had a desire to improve their soil

conditions – and that GoU was willing to meet this demand. This translates to the idea that a *sort of* demand of the technologies that deal with soil fertility and erosion was present that was supplied by GoU. Having outlined the demand-supply relationship, there is something else in Table 1 that is of importance to add; i.e. characteristics of subsistence farmers. On careful scrutiny of characteristics no. 1 and no. 2, we can conclude that GoU perceived subsistence farmers, apart from being producers for domestic consumption, also as people with low literacy, skills and knowledge levels. In the NAADS program aiming at modernising agriculture, improving the agricultural extension service would increase (at least) farmers' knowledge and skills level. So why did such a coherent[21] plan, all matched to suit the subsistence farmer fail to produce the desired effects in sustainable watershed management in the Ngenge watershed? Having become familiar NAADS framework and mode of operation, what could have gone wrong or what could have been avoided with this approach?

But what were the reasons of choosing Ngenge watershed and not any other watershed for an analysis of a nationwide program? When inquiring into conservation practices, the best area to scrutinize is an area that is highly prone to soil erosion. Ngenge watershed lies along the slopes (see Figure 5) of Mountain Elgon; this makes it highly susceptible to soil erosion. In addition the program in question i.e. NAADS, started in 2000, some of the pioneer sub counties were in Kapchorwa district (see Table 2)[22]. In addition to this program, there have been other projects[23] such as MERECP, KADLACC, and more recently United Nations Development Program's (UNDP) River Atari Management project that have defined solutions to deal with natural resource degradation in the

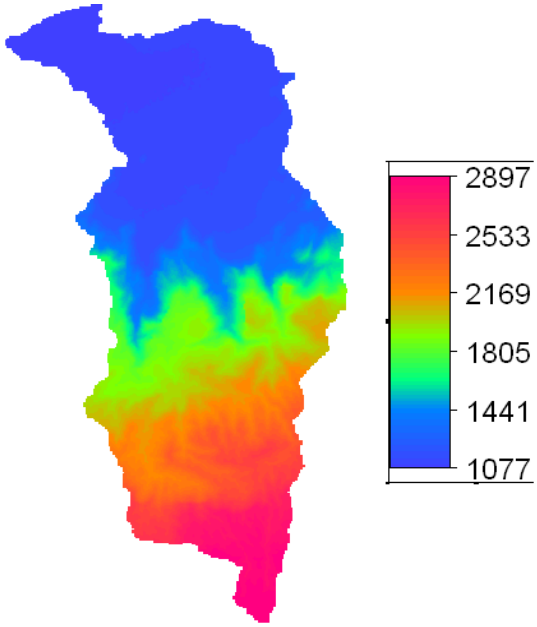


Figure 5: Showing the altitudinal difference across the watershed (masl)
Source: (Mutekanga, 2006)

[21] That captured the major concerns and characteristics of the subsistence farmers.
[22] Ngenge watershed falls within the administrative boundaries of Kapchorwa district local government.
[23] Projects are similar in nature to programs, the major difference is the time span - projects are short, usually less than 5years whereas, programs span up to even 25years. In order to avoid the confusion in the remainder of the report, we are talking about programs and more specifically agricultural development programs but considering their impact and influence on peoples conservation practices to reverse soil erosion. Given that the projects presented above have been dealing with conservation, they are presented here just as examples to show that a lot has been done in the area in this aspect. The question is: why if so many programs/projects have attempted, do we still have the same problem? In addition to this, the program/project mode of operation in a district or sub-county will not differ majorly.

district. Though the entry points of these projects are different, their intention has been the same - prevent and cure soil erosion - in word and sense.

Was the approach really the problem as to why soil erosion and its effects are still visible in the Ngenge watershed? Were the 'new' technologies irrelevant with the constant changing external and internal conditions? Or better still; are the 'old' still technically better than the new? Was it mixes of a few 'new' and 'old' that made it inappropriate? Could the decentralised method of advisory have been the one that was not good enough? Or is it just natural[24] for soil erosion to occur along a steep slope? Or was the design of the process the misleading concept of the overall goal? These questions are broad, and to effectively answer it requires some more focus. Among the many possibilities of approach to such a study, the element that provides a better indication of "why things are the way they are" is understanding the intervention process. The intervention process is wide as well, so I choose to focus on the watershed and the conservation approach with emphasis to dissemination. In this light, the relevant research questions are:

1. How was NAADS designed to be implemented?
2. How is NAADS implemented?
3. How does the NAADS design and implementation affect conservation practices?

[24] Natural here refers to the physical processes (friction, fluid mechanics, acceleration due to gravity and weight) that involve carrying run off within it sediment soil particles to the bottom of the slope without human activity such as agricultural practices or population growth.

2 Conceptual framework

2.1 Theoretical background

Different approaches to the design of agricultural development programs

The basic principle behind agricultural development programs is usually to increase the incomes of those involved in agricultural production. The emphasis of these programs is normally on the rural poor who depend solely on agriculture for their livelihoods. These programs are designed with an implementation procedure, which if followed accurately, are expected to yield positive results according to the design expectations. To some, design has been defined as the art of making a convincing argument and developing a casual model (relating inputs, outputs and impacts) oriented to justify the allocation of resources (Mosse, 2004). Similarly, Rondinelli (1976) sees the design of development programs as linking 'productive activities' with 'markets for produce'.

Others, for example Henderson (1980 cited in Rondinelli, 1982, p. 46) have criticised, the idea behind designs by questioning whether "it makes sense to think of solutions of social and economic life [..] as though they were like the entries of a crossword puzzle for which there can be found a recognised uniquely correct and permanent sense of responses." Rondinelli (1982, p. 48) argues that sometimes there seems to be much focus on "objectives and procedures that planners over- or under-estimate the resources available to meet these demands. In addition, the coherence in bringing together diverse and even incompatible interests in design further makes it complex (Mosse, 2004).

Nevertheless, designs have been developed with three categories of approaches i.e. "paternalist[25], populist and neo-liberal" approaches Biot et al. (1995 cited in Mazzucato, Niemeijer, Stroosnijder, & Roling, 2001, p. 4). The characteristics of these approaches to land degradation are summarised in Table 5.

Table 5: Characteristics of the several approaches to Land degradation

Variable	Classic	Populist	Neo-liberal
Peasant behaviour	Ignorant, irrational traditional	Virtuous, rational community minded	Rational, egocentric
Diagnosis of environmental problem	Environmental solutions	Socio-political solutions	Economic solutions
Immediate causes of environmental problems	Mismanagement by users	Mismanagement by state, capitalists, big business	Poor government policies and bureaucratic rules and regulations
Structural causes of degradation	Overpopulation, lack of foresight, ignorance, backwardness	Resource distribution, inappropriate technologies	Inappropriate property rights, institutions, prices and rapid population growth
Institutional	Top down centralised	Bottom up participation	Market policies,

[25] Also sometimes referred to as "classic" (Biot, Blaikie, Jackson, & Palmer-Jones, 1995, p. 1).

prescription	decision making		property rights, resource pricing, safety nets
Academic discipline, profession	Science, bureaucratic	Sociology, activist, NGOs	Economics, development professional
Gender orientation	Gender blind	Virtuous but victimised women	Gender myopia
Research framework	Systematic empiricism	Rapid/participant rural appraisal	Methodological individualism
Orientation to market	Not considered	Exploitation	Pareto optimality & externalities
Modes of peasant society	Conservative, paternalistic	Egalitarian	Democratic/ liberal
Views of collective action	Deficient	Essential and unproblematic	Conditional rationality/political entrepreneurs
Technology	Soil conservation works particularly terracing	Agronomic techniques of conservation	Not specified

Source: (Biot, et al., 1995, p. 2)

The approaches above, especially the populist and neo-liberal ones have attempted to capture elements that earlier designs overlooked such as bottom up, participation, and the role of institutions. However, these inclusions too have not yielded much in straightforward implementations of programs. Rondinelli, (1982) suggests that the difficulty to plan and manage in prescribed ways is caused by, - difficulty in: defining the objectives, understanding of local social and cultural conditions, weak controls in guiding the behaviour of people during implementation and the dynamics of political interaction and intervention. This argument seems still to detriment designs regardless of the vast approaches all-inclusive to deal with the issues of social and economic life. Regardless of the approach, and additions or subtractions in process, the intention has been to better suit program design to implementation and finally to the adoption of 'new[26]' in preference to 'old' by the communities to indeed raise outputs, incomes etc.

The role of 'registered successes' in intervention design

Along the way some "registered successes" have shown that the location specific development of technologies indeed suits higher probabilities of technology adoption. These "registered successes" have now lately been referred to as 'mirroring' by Mosse (1996 cited in Mosse, 2004: 652) and referred to as a process "where local people now shape their needs to match schemes and administrative systems-requesting what is most easily delivered". This "mirroring" has led to the GoU's assumption that, "farmers have demonstrated that they are prepared to adopt new technology, provided it is economically viable and risk acceptable" (GoU, 2000b, p. 20).

The question is not whether the promoted soil and conservation practices are effective in sustainable watershed management, as they have proved to be successful elsewhere.

[26] 'new' refers to the promoted technologies to match the production for markets while maintaining sustainable natural resource base where as 'old' refers to the practices that are currently being employed by the people.

Some authors for example Pretty and Shah have argued that a technology's usefulness is affected by the "changing external and internal circumstances, for example markets, droughts, insect pests, land tenure, labour availability and political disruptions to mention a few" (Pretty & Shah, 1997, p. 51). Research has so far shown that "it is only reforestation as a tool to combat soil erosion that has shown to increase lowland sedimentation by overlooking the relationship between sheet and gully erosion, and the influence of farmers' activities on reducing runoff" (Forsyth, 2003, p. 32).

The role of 'sensitisation' in intervention design

Moreover, GoU has the assumption that subsistence farmers (See Table 1, section 1.1) have low literacy, skills and knowledge levels. Some authors for example Sampson (1930 cited in Pretty & Shah, 1997, p. 42) have suggested that actually contrary to this assumption, "local farmers are fully aware of the losses caused by soil erosion and consequent soil exhaustion, and their conservation methods are well worth studying not only for themselves, but as a guide to those who seek to improve them". The reasoning behind this is that it is more expensive to monitor 'new' mechanised conservation practices to ensure compliance than to improve farmers' already existing 'old' conservation methods (ibid.). The inclusion of teaching, training, and demonstration during implementation of program activities has now been well packaged and is referred to as sensitisation[27]. The underlying assumption being that local land users are unaware of the creeping processes of land degradation and their causes or do not know what to do about them (Mazzucato, et al., 2001). Lately, the notion[28] has changed a bit, arguing for competency development of the farmers to ask for what they need to know, while implementing institutions should be able to adjust and learn from the farmers (Kibwika, et al., 2009; Watts, et al., 2003). This notion though seemingly new is still knitted in the low literacy, knowledge and skills-and therefore would differ less from earlier approaches of sensitisation.

[27] Sensitisation is the art of teaching or training, showing by demonstration the advantages of the 'new' promoted conservation techniques over the old.

[28] See "Competence Challenges of Demand-Led Agricultural Research and Extension in Uganda." (Kibwika, Wals, & Nassuna-Musoke, 2009)

Specifically of importance to soil and water conservation interventions

Figure 6: Silted river downstream

Figure 3, Figure 6 and Figure 7 give an impression of what (Tanui, 2005; Woelcke, et al., 2006) refer to as land and water degradation. However, soil erosion in basic terms refers to "the physical removal of soil-primarily by wind or water-and commonly impedes agriculture because it removes nutrients contained in the top soil" (Forsyth, 2003, p. 29). If soil erosion is seen and consequently treated as land and water degradation, it can/may lead to policies and consequently programs that are inappropriate to address erosion. Therefore, treating the problem in the watershed as purely soil erosion which may have the undesirable effects of loss of top soils and consequently probable loss of fertility (Tanui, 2005; Woelcke, et al., 2006); let us inquire into the processes that interventions use to reverse this.

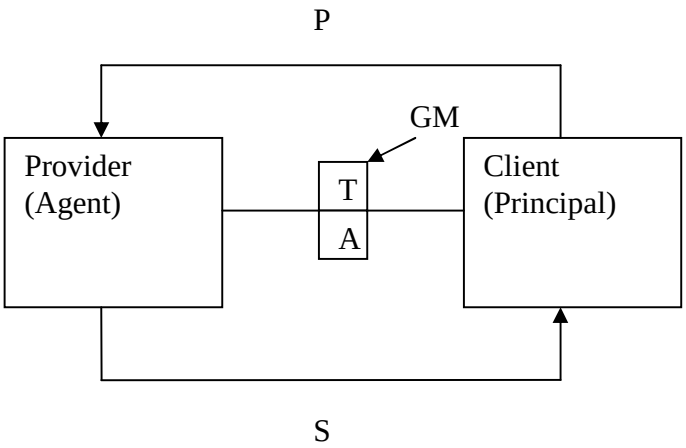
The challenge for the scientist[29] is to keep the soil where it belongs (on the land) but also keep the water sources with as low sediment as possible. In a big area like the Ngenge watershed, this effort is more challenging due to heavy reliance on manual labour of the people living in the area. It is now common knowledge that "any situation in which human beings try to act together will be complex simply because individuals are autonomous" as argued by Checkland (1989) cited in Halsema, 2002, p. 12). Young, (1993) while evaluating people's conservation behaviour suggests that actually what is equally important is also the ability to sustain long term behaviour and therefore to avoid the need for repeated interventions. These two requirements of making people work together and sustaining it makes soil and water conservation interventions complex.

Figure 7: Forest land converted to arable land upstream

2.2 Concepts

This research focussed on the process of NAADS implementation at sub-county level in the sub counties of Ngenge, Binyiny and Benet; and uses principles of the Principal Agent theory (Huppert, 2005) in analysis of the process.

[29] People who usually see the problems and suggest solutions to approach to the problem to achieve equilibrium. They are equipped with technical or social solutions (sometimes models) for the problems they intend to address.



T=Transparency, S=Service, P=Payment,
A=Accountability, GM=Governance mode /mechanism
Figure 8: Illustration of a "complete" contract relationship
Source: (Huppert, 2005)

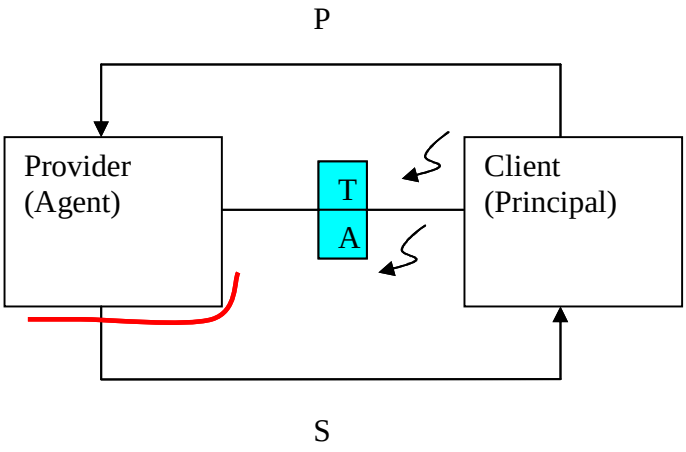
Figure 8 is an illustration of the principal agent theory showing a complete [30] contract relationship. Complete contract transactions in the case of a subsistence farmer could be for example a situation where the farmer buys fertiliser from a shop attendant; the amount, quality and quantity are known beforehand by both parties and therefore as (Huppert, 2005) says, "the contractual exchange will work, no matter who the buyer is [..] all contractual provisions can be specified in advance, monitored, verified, and enforced" (p. 5).

Figure 8 describes the nature of a complete contractual relationship between a provider and a client. The nature of the service provided to the principal by the agent is known in detail represented by the **S**, and the payment represented by **P** of the provided service is known by both the principal and the agent. The knowledge, by both parties, of the nature of the transaction is adequate and therefore there is transparency on both parts represented by the **T**. The transparency shows that it is possible for both the principal and the agent to account to each other based on the nature of service and payment thereof in return; this is represented by the **A**. In addition, there are clear and enforceable rules and laws that govern the relationship indicated by **GM –** governance modes and mechanisms**.** (Adapted from (Huppert, 2005))

In a nutshell, for complete contract relationships, everything is known beforehand and there are enforceable rules that govern the relationships. But what would be the case if the contractual relationship was incomplete or, better still, what factors could make a contractual relationship incomplete? Figure 9, adapted from (Huppert, 2005) shows a situation where the contractual relationship is no longer complete, the red line shows information asymmetry between the principal and the agent, this situation breeds in-transparency (shown by the shaded T). In addition, because there are external factors the agent can blame for sub optimal performance, the agent is no longer accountable (represented with the shaded A) to the principal.

[30] By complete, implies that the "exchange relationship can easily be described, for example the goods or services that are exchanged are truly determinable and it is possible ex ante to specify which services and returns will be provided. There is complete transparency for both parties about the contents of the exchange. Also it is possible to verify the goods or services ex post by third parties and there are clear and enforceable rules that govern the relationship thus making it easy to check and ensure mutual accountability" (Huppert, 2005, p. 5).

As an example, let us consider that NAADS (the principal) hires a service provider (agent) to carry out farmer institutional development – whereby farmers form groups. The success or failure of the provision of such a service (facilitating formation of farmer groups) is dependant on as many external as internal conditions. For example the farmers in the area could have already formed groups with a patron head in order to access credit and market, this would be regarded as a success to the principal. However, this success is not because of the expertise of the agent but on the farmers. The agent may hide this information from the principal to increase his credibility. On the other hand, in case the farmers do not form groups, the agent can, and is able to, give other reasons to the principal as to why it was not possible to form the number of groups such as the lack of cooperation on the part of the farmers.



T = Transparency, S = Service, P = Payment, A=Accountability, Symbol for external influences
Symbol for information asymmetry

Figure 9: An incomplete contractual relationship

To operationalise the principal agent theory in NAADS implementation process in the respective sub counties of Benet, Binyiny and Ngenge we would need to understand the "levels and directions"[31] through which events and activities are carried out in the decentralised system (Figure 4). In the decentralised Kapchorwa District Local Government (KDLG), NAADS is overseen directly by the District Coordinator. The operations, especially field operations are carried out by NAADS staff, commonly referred to as service providers (SP). These service providers meet with representatives of the various selected farmer groups to train and demonstrate technologies[32], the representatives of the farmer groups in attendance of the trainings and demonstrations are then supposed to meet their respective groups and share the information to the individual farmers within the group. Then finally, this advisory information spreads to the other community members in the village through informal social networks (GoU, 2005a). In addition, according to the PMA's communication plan, wider community actors[33] and

31 This is in relation to the bureaucratic tiers from central government down to the local governments, however, in this case we are looking at the point from the Kapchorwa district local government to the respective sub counties and finally to the subsistence farmer.

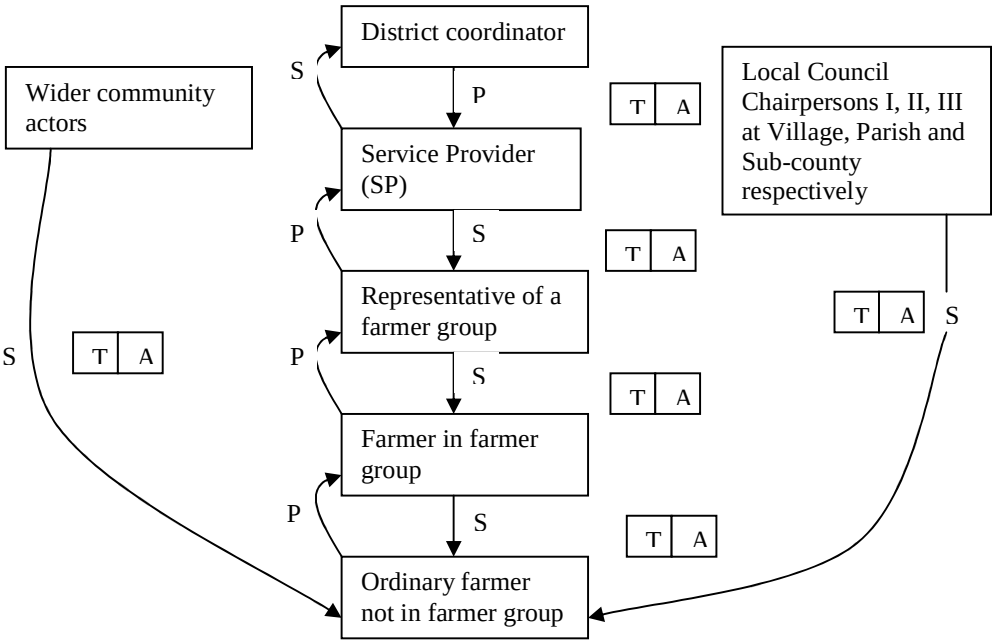
32 Technologies refer to both production and conservation technologies, in addition, as mentioned earlier knowledge and skills development, marketing and agro processing also feature as prime technologies and information (GoU, 2000b).

33 Opinion leaders, retired civil service officials, headmasters of schools in the villages, generally speaking people with high social value in society/community/village/sub-county.

Local council chairpersons I, II, and III are expected to convey information, at least about group formation[34] and the associated benefits to the other residents of the village (GoU, 2005a, pp. 2,3). These forms of complete contractual[35] relationships between the several actors in the Ngenge watershed are illustrated in Figure 10. This can be referred to as the ideal state of payments and services for transparent and accountable transactions. For a farmer who is not in a farmer group, the payment P is not stipulated and therefore that level of service provision can not be analysed using this theory. I will come back to this in Chapter 5. At sub-county level, what has been extracted and shown for analysis is from the district level together with potential service providers in Figure 4; together with document analysis portray the contractual relationships as shown in Figure 10.

[34] Group formation is sort of a reform in which farmers are expected to "organise and more effectively manage their own resources" (GoU, 2000b, p. 5). In the short to long run, farmers in groups can easily get their voices heard in the decision making processes (GoU, 2000b).

[35] "Contract here are described in a wide sense and relate to formal or informal contracts, mutual agreements, common practices, laws, rules, regulations or to a mixture of such governance mechanisms" (Huppert, 2005, p. 6).



T=Transparency, S=Service, P=Payment, A=Accountability,

Figure 10: Illustration of the contractual relationships between the players in the NAADS implementation process

3 Methodology

3.1 Literature Review

It is acknowledged by authors for example Babikwa that literature review serves to provide two data sets that he describes as primary and secondary depending on the source and the study (Babikwa, 2004). I used literature review to understand the design operation of NAADS, the channel of information flow and the feedback process the program uses. The literature review involved document analysis of the program design, design reviews, implementation process, achieved indicators, and program progress reports[36]. The documents served as a basic entry for this type of research because they helped me understand the implementation lines with respect to the watershed and how 'successful implementation' was viewed in the "eyes" of the designers. The literature about NAADS program would enable me to answer my research questions 1) How was NAADS designed to be implemented? 2) How is NAADS implemented? As Babikwa notes, "while documents are a valuable source of information, it is true that they can be unreliable as they are subject to the biases and limitations of the authors" (Babikwa, 2004, p. 57). I was aware of the potential value-laden, and employed other methods of data collection to triangulate the results.

3.2 Focus Group Discussions

I used focus group discussions[37] to supplement my literature review. The sharing of similar experiences, and, similar age as well as gender, made me group the individuals with the help of key informant(s) as men, women and youth. In addition, I grouped these as participating[38] or non-participating in the program. So in order to further structure the groups, I grouped those who had participated in NAADS and those who had not.

The reason for grouping on the age and gender basis was to facilitate the discussions with trust on the part of the respondents'. The further grouping into participating and non-participating NAADS individuals was to enable me to understand why some of participating individuals had been chosen from their view and those not chosen (i.e. non-participating) see as the reason for being left out, or whether they would have been willing to take part in the first place. This would help me answer research questions 2) How is NAADS implemented? and 3) How does the NAADS design and implementation affect conservation practices?

The samples of the participants for focus group discussions were drawn from all the parishes in the watershed for upstream and midstream, and only one parish from the downstream area i.e. Kapkwot parish. The justifications for the choice of only parish in

[36] These though focussed on work plans in monetary terms and not much about the implementation process

[37] A focus group discussion is a general term given to a research interview conducted with people in a group. The people must share a similar type of experience and socio-economic, ethnic, age and gender backgrounds. Kelly, (1999) and Madriz, (2000 cited in Babikwa, 2004 : 59) further argue that "the kinds of issues discussed are those mutually interesting to the researcher and the people themselves".

[38] Participating in the NAADS program is associated with farmers who are part of groups, these groups are selected at the sub-county level. What is important to note at this stage is that being part of a group does not guarantee (at least directly) participating in/benefitting from the advisory services.

the downstream areas are two fold: firstly - downstream is majorly "suffering"[39] from the effects of resource use upstream and midstream of the watershed and secondly, the majority of the people downstream live and work within Kapkwot parish.

3.3 Interviews

I mainly used semi-structured[40] interviews in my data collection. The flexibility of semi structured interviews suited the respondents in the watershed. These semi structured interviews were carried out with mainly administrative individuals at village, sub-county and district levels. Having noted that the local governments were crucial in the implementation activities of NAADS program, I sought to understand what these officials thought of the program process given their role(s) and administrative portfolios in the district. The interviews answer research questions 2) How is NAADS implemented? and 3) How does the NAADS design and implementation affect conservation practices?

3.4 Informal Discussions

This seemed the most suitable method to obtain information from most of the research respondents. Most persons at administrative, village, parish, sub-county and the Ngenge[41] people provided more information compared to interviews without hesitation during informal discussions[42]; they gave their opinions more freely. The difficulty with informal discussions is as a researcher to maintain the line of inquiry. The discussion can shift from conservation practices, children, family planning, or even politics, because it is based on both what the researcher and the respondent feel is worth "putting on the discussion agenda". This requires several visits to the same person in informal settings to continue data gathering. Informal discussions were very useful because the respondents gave detailed explanations. This method helped me answer research questions 2) How is NAADS implemented? and 3) How does the NAADS design and implementation affect conservation practices?

[39] This is in relation to the effects of soil erosion, but more especially flooding, silted abstraction points for water. However, for the people downstream, there is a single advantage of the erosion effects i.e. the soils washed down from upstream are volcanic fertile soils with high nutrients and therefore boosts their agricultural productivity especially if the rains are adequate.

[40] Semi structured interviews are defined as "… the interviewer has worked out a set of questions in advance, but is free to modify their order based on her perception of what seems most appropriate in the context of the conversation, can change the way they are worded, give explanations, and leave out particular questions which seem inappropriate with a particular interviewee or include additional ones" Robson, (1993, p. 233) cited in (Babikwa, 2004, p. 57).

[41] Watershed residents

[42] With regard to civil servants, the GoU code of conduct only permits government spokespersons to speak to non-civil servants with regard to government interventions. This implies that interviewees or discussants are more open when their answers are off the record. Even for the case of village residents, especially farmers, it would be better not to speak negative about a process lest you are left out in the next financial year.

3.5 Observations

Using observations[43] as a technique enabled me to understand what the Ngenge people do with respect to agricultural conservation practices. In addition, observations during focus group discussions enabled me to identify and samples/respondents [44] for informal discussions and semi-structured interviews.

3.6 Field notebook

I used a field notebook[45] for writing down data, I tried as much as possible to separate "what I observed and what was said" from my interpretation of the same. This in my opinion was to avoid my influence of the data and present the findings just as they were and later on my analysis of the data. The use of a field notebook though useful in focus group discussions and interviews, has limitations to application in informal discussions. This is because writing down notes during an informal discussion is not exactly polite and may influence results.

The field data collecting period was from mid August 2008 to mid November 2008 as partly shown in Table 6.

[43] Observations were done because as Robson (1993 cited in Babikwa, 2004:56) states "..the actions and behaviour of people are a central aspect in virtually any inquiry, a natural and obvious technique is to watch what they do, to record this in some way and then to describe, analyse and interpret that we have observed".
[44] Those who accepted especially for semi structured interviews still preferred not to be quoted in case it diminishes their little hopes of soon benefiting from the program or consequent projects-as they prefer to refer to them as. As a researcher, ethically, such requests have to be respected and indeed they are.
[45] McNiff (1988 cited in Babikwa, 2004:62) "discusses the research diary as one of the most effective methods of monitoring one's action research. Its essential purpose being to keep track of events taking place during the research period".

4 Results and Analysis

4.1 NAADS: The Design Story

In order to understand how NAADS was designed to be implemented, we go back and re-visit the design document(s); of particular interest will be the interacting mechanisms of the players in the watershed. Given the national design for the NAADS program but also with consideration of the montane farming system as practised in Ngenge watershed, it is imperative to see how these process issues were presented therein. This section presents how the NAADS program was designed to be implemented, how the targets would be reached, the different individuals/groups/organisations and their roles in the Ngenge watershed.

4.1.1 Introduction

As stated in the introductory section of this report, NAADS was designed out of the overarching goal of Uganda's plan for modernisation of agriculture. This approach was believed to generally increase the incomes of the rural poor[46] who relied on agriculture for their livelihoods (GoU, 2000a, 2000b, 2005a, 2005b, 2008). The immediate need of the PMA was to provide agricultural extension through NAADS that would be more responsive to farmer needs, participatory[47] in nature and have strong research-extension linkages (GoU, 2000a, 2000b, 2005b). This new program would then be a solution to the problems faced with the conventional agricultural extension system executed by the Ministry of Agriculture, Animal, Industry and Fisheries (MAAIF). As mentioned earlier, from Table 1 the coherence in GoUs' priorities with the characteristics and concerns of subsistence farmers seems accurate. In questioning what could have gone wrong, the approach has been to first analyse what the design documents bore within.

4.1.2 Process

In the design, GoU relied on local Non Governmental Organisations (NGOs), Civil society and Community Based Organisations (CBOs) and service providers (SP) for the implementation of NAADS (GoU, 2000a). The local NGOs, civil society and CBOs were thought to be more "in touch[48]" with the local communities and had thus developed a close relationship with the same (ibid.).

The process[49] that the design focussed on in order to achieve this big goal of modernising the agricultural sector through transforming the poor subsistence farmer into a

[46] Ngenge watershed would qualify as a rural area. However, the distinctions between rural and urban apart from infrastructural services and population densities are not explicitly mentioned.

[47] Participatory in this context is used to refer to farmers being able to decide and demand for 'new' technologies. It thus has a great part to do with being empowered to demand and participate in the program decision making processes (GoU, 2000a, p. 1, 2000b). The basis was that this approach of group formation has been successful universally, as GoU, (2000a:5) argues, " indeed all over the world, farmers organize, to more effectively manage their natural resources".

[48] Can also mean that they are better placed in the field realities that farmers live and survive in.

[49] What is presented here is the design process as per the design documents, later in the implementation process, the process will again be analysed according to actual implementation.

commercial farmer was dissemination of information on 'new' technologies, productivity enhancing techniques and methods of soil and water conservation, to consequently increase agricultural output (GoU, 2000a, 2000b). In order to successfully achieve this dissemination exercise, one of the requirements of the poor subsistence farmer was that they should be in groups[50]. In that way, it would be easier for a service provider[51] (SP) to meet the farmer representatives of various groups whom he/she would sensitise, train, and demonstrate the new technologies (GoU, 2000a, 2000b). It was then expected of these group representatives to go back and demonstrate to the fellow members of their group. Then finally the farmers who were not part of farmer groups would then receive this knowledge and information through informal social networks.

To foster the formation of farmer groups, GoUs' strategy included communication to communities through wider community actors[52], and local governments[53]. It was envisaged that if the wider community actors have accurate information about PMA[54] then it would raise overall discussion in the community. Further more community development assistants, NGOs, and CBOs were to act as PMA communication agents at sub-county and lower levels[55] (GoU, 2005a). However, in order to also take care of those not included in the preceding categories, radio[56] and other forms of print media were to be used (ibid.).

Farmers were to form groups according to their various interests or preferences for example livestock farmers, crop and cash crop farmers. They would then register their respective groups at the sub counties. It was also assumed that some of the subsistence farmers already had their own groups, and with the introduction of the NAADS program, these groups would be strengthened. As NAADS progressed, there was a realisation that the formation of farmer groups as anticipated and projected was not according to schedule. In this light, a backup plan was set up through the Integrated Support to Farmer Groups (ISFG). ISFGs' role was to stimulate and support capacity development of farmer groups to higher level farmer organisations such as associations and co-operatives (GoU,

[50] This was termed as Farmer Institutional Development, it is similar to the formation of Water Users Association in the water sector.
[51] A term for an agricultural extension worker in the NAADS design. However, the NGOs, CBOs and civil society would also fall in this category during implementation .
[52] "The wider community actors are those who despite not having formal positions are important as opinion leaders and channels through which information comes through. They may include elders, head teachers, retired civil servants-the assumption being that they are more likely than their neighbours to have access to newspapers, telephone and television as well as having personal connections with local and central government structures" (GoU, 2005a, p. 3).
[53] The local government on the other hand is a central communication line from the very local LC1 to the district LC5 and beyond into central government line ministries and the Ministry of local government. The target at local government was the LC1 to LC3 levels-which are precisely the levels at which the ordinary citizen is expected to find out about the PMA (GoU, 2005a).
[54] Much as the PMA is used here, all government programs under this plan are supposed to follow this strategy-sometimes referred to as the "trickling down" or "spill over" strategy.
[55] Parish, Village and household levels.
[56] The radio was seen as a cost effective means of rural people accessing information outside their communities, by so doing it would enable direct communication for general awareness and indirect communication by enhancing the overall level of accuracy of the program that will then circulate within informal social networks (GoU, 2005a).

2005b). Basically, ISFGs' targeted the already established strong farmer groups and to increase the capacity of NGOs to support farmer group growth (GoU, 2005b). Thus ISFG was entirely a mechanism to strengthen and compliment (some of) the activities already being carried out by NAADS.

Finally, in order to improve the service delivery, assessment mechanisms both internal and external were set up. These would be carried out by a District Assessment Team (DAT). The composition of DAT included Subject Matter Specialists (SMS) who are usually – district heads of departments and middle level officers. DATs' objectives were to, among others; help understand whether NAADS was making impact whose indicators would be based mainly on quality/frequency of reporting, specific trainings and sensitisations.

This section has shown how the overall goal of transformation of subsistence farmers would be achieved. Herein, the dissemination of 'new' has been described - as was designed. The mechanisms for assessment have also been described. The next section presents how the implementation process was done.

4.2 NAADS: The Implementation Story

This section presents how implementation of NAADS activities takes place at district and sub-county to parish and village levels.

4.2.1 Introduction

As one moves through the watershed, you come across many signposts labelled NAADS. They appear at almost every demonstration and training ground. The high number of these signposts along the road may make you think that NAADS is successful in reaching everybody. However, not every one has benefitted from these agricultural advisory services, and even others do not know what NAADS is. How did such a implementation strategy meant to involve all categories of subsistence farmers leave out some? The implementation of the activities of NAADS has been close to how the design envisaged them. However, the implementation addressed other issues that had not been included in the design and left out some in the design.

A starting point for a subsistence farmer to be able to effectively participate in the advisory program is that he/she will be in a farmer group. The farmer group formation and registration is facilitated by a service provider. The group is then registered with the sub-county NAADS committee. Thereafter, a service provider meets the representatives of these groups and provides them with 'new' technologies. Later, on these representatives of farmers convey the same to their group members and lastly everyone is implementing the 'new' instead of the old.

The above paragraph contains the statements you will commonly hear from administrative officers at the district headquarters. However, that is a very different story when you speak with a subsistence farmer at the village level. Is it because this farmer is not enlightened about the complete process? Or is it because this farmer is not aware of his rights and obligations? Why would this farmer not be aware and his/her neighbour farmer be aware? Is it easy to believe that one neighbour has contours and produces for the market and not the other? In the following and consequently section 4.3, the farmers' side of the story will be un-veiled.

4.2.2 Process

Participating farmers

The farmers benefiting from the program are referred to as participating farmers in the NAADS program. This category of farmers is aware of the obligations and consequent rights they have out of being a participating farmer. They are organised in groups as expected and their representatives promptly attend meetings when invited by the service provider. The farmers in participating group regard themselves as lucky to be benefitting from the program. When you ask them how was your group chosen to benefit from the advisory services? "We were lucky" (pers. comm.; FGD, 25/08/08; Interview, 2/10/08).

A sub-county official said it is not easy to choose every group in one financial year" (pers. comm., interview, official Z, 5/09/08). Official Z argues that some groups are selected this financial year[57], other groups for the next financial year and so on.

Official Zs line of argument is that the funds are not sufficient to meet the demands of all the groups within a financial year. This argument is consistent at sub counties and district level (pers. comm., interview, official Y, 3/09/08).

The participating farmers have been participating for two or three years (pers. comm., FGD, 19/08/08). So one wonders if different groups are chosen every financial year, then why a group would be participating for more than a year. There is an answer to this: officials claim that, "non-participating farmers are unserious and therefore can not be chosen because they will misuse the inputs and not use the information in the same way the participating farmers do" (pers. comm., interviews, officials X, 2/09/08; Y, 3/09/08; P, 16/09/08). Official Y just like his/her colleagues X and P, argues that over the years local council chairpersons have mastered the art of differentiating and identifying the serious over the unserious farmers (pers. comm., interview, official X, 2/09/08). Though obviously not much of the criteria can be detailed.

According to non-participating farmers (pers. comm., Interview, 3/10/08; FGD, 24/08/08; FGD, 15/09/08), at least one member of a participating group usually has 'connections' to the selection committees. This has led many farmers in non-participating groups to think that whoever is responsible for the selection of groups does it with favour.

However, one may be tempted to think that all participating famers carry out the 'new' conservation practices. On the contrary, not all participating farmers adopt the 'new' technologies at least in the conservation trajectory. "We do receive inputs such as seedlings of high value crops, and, fertilisers but it is a bit hard to build terraces" (pers. comm., FGD, 21/08/08; 20/10/08; 7/11/08). As some farmers eloquently stated, instead of building terraces, they look for the point at which the runoff flows into their gardens and dig ridges to divert the runoff from their gardens (pers. comm., FGD 20/08/08).

Figure 11: Participants at a sensitisation workshop

Generally, these farmers do not effect the 'new' side of conservation. They argue, 'new' conservation practices are technical and sophisticated; this in the long run translates to higher cost (ibid.). The high cost and labour is not the only thing that scares this fraction of farmers, these farmers say that the class work [58] is

[57] Financial year begins and ends in June.
[58] In relation to trainings and teachings in class.

apparently too complicated (see Figure 11). “Maybe I am past the classroom stage, but honestly it is hard to understand maps and drawings” (pers. comm., informal discussion, 3/09/08).

The class work, though a major stumble to some participating farmers, is not sufficient to justify non application of ‘new’ conservation practices. It probably is an easy answer to give as an excuse, but not sufficient as an excuse for ‘new’ conservation practice. If class work was really the problem then these farmers would also not adopt the high value crops. The explanation to the adoption of high value crops and not ‘new’ conservation practices could be that the crops are known to bring higher incomes. In addition, these farmers have not been convinced yet on how the new conservation practices will increase yield and consequently their incomes.

The class work aside, these farmers actually understand the promoted ‘new’ conservation practices which actually prove that “class work” is just an excuse. For example, some farmers acknowledge that “terracing is good and actually reduces soil erosion but it is expensive” (pers. comm., informal discussion, 20/08/08; FGD, 24/09/08). This implies that if the technology had been cheaper, then *maybe* they would apply and adopt it. However, terracing is also not the only ‘new’ promoted technology; contour bands and agro-forestry are some of the other alternatives. In fact, agro-forestry is a mainstream conservation activity promoted by NAADS (GoU, 2000a, 2000b). So what did the participating farmers have to say about agro-forestry and contour bands? Generally, whenever agro-forestry is promoted, it goes hand in hand with bee keeping. The principle is that when you plant trees then you also have space and a place to put a bee hive. This means that the incentives for applying agro-forestry are bee hives. For those along the river banks, in addition to bee hives, the groups receive cows. “We are planting tree seedlings to demarcate the area along the river bank and we provide beehives and cows for those who forego their land” (pers. comm., interview, official Z, 5/09/08). However, most participating farmers have not been convinced with regard to tree planting. They have nurseries where to put the tree seedlings, when received, but rarely will you find the full grown trees on a farmers land. In Benet and Binyiny sub counties, the farmers present a number of reasons as to why they have not grown the trees on their land, major among them are: trees take a long time to grow and reduce the productivity of their lands (pers. comm., FGD, 25/08/08; 1/09/08; 7/11/08). In the case of Ngenge sub-county, the major reasons are: they have not (yet) received trees, or that the trees species they are provided with die while young given the weather conditions[59] (pers. comm., FGD, 19/08/08; 16/09/08).

Non-participating farmers

When you see the word “non-participating”, the first thing that comes to one’s mind is that these farmers are not in farmer groups. At least, that is what came to my mind the first time, I read about the non-participating farmers. However, contrary to my thought, not all non-participating farmers were not in farmer groups. Some of these farmers have met the requirements of group formation and they have registered their respective groups with the sub counties (pers. comm., FGD, 15/09/08/; 24/08/08, 28/08/08). They do pay

[59] Recall Table 3 and Table 4.

their annual subscription fees as required hoping that their group will be availed an opportunity in the next financial year. As mentioned in the previous section, according to official X, Y and P, this group of farmers *maybe* the "unserious type" (pers. comm., interviews, officials X, 2/09/08; Y, 3/09/08; P, 16/09/08).

Some non-participating farmers are not in groups. These farmers see no added advantage of being in groups or even in participating in programs. They argue these programs are time consuming and teach the same things day in - day out (pers. comm., FGD, 7/10/08; 3/11/08, 16/11/08). Others for example (pers. comm., informal discussion, 7/10/08) say the intervention process is so politicised[60] with respective political patrons channelling activities to area(s) where they hope to get more votes.

Some of the farmers who are not in groups especially in Benet sub-county, say they do not know about NAADS (pers. comm., FGD, 12/11/08). It is possible because the activities of NAADS in Benet started during the financial year 2007/2008 and as such has not had so many activities within the sub-county.

Administration

Per sub-county only one service provider is present. This means that in the Ngenge watershed there are in total 3 service providers. "These are very few for the whole watershed according to officials Y and P (pers. comm., interviews, officials Y, 3/09/08; P, 16/09/08). This translates to limited interface between the service providers and the communities (ibid.) and as such, to achieve the assessment criteria, one off sensitisations are carried out to reach a bigger number of people. In their study, (Kafeero & Namirembe, 2003) argue that the one off sensitisation activities will not be enough in ensuring appreciation by communities of NAADS intentions and approaches.

NAADS as a long term program i.e. 25years was supposed to be integrated into the local government structures according to Ministry of Agriculture, Animal Industries and Fisheries (MAAIF). However, other line ministries and parastatal (see Figure 4) for example Ministry of Public service saw no more than a project in NAADS (MAAIF, 2005). For systematic policy implementation as portrayed Figure 4, the issue of non-integration should not have come to pass.

ISFG, while carrying out its activities to beef up the process, already started by NAADS was interpreted by the communities as a parallel program (pers. comm., interviews, officials Q, 16/09/08; P, 16/09/08). This created an element of misunderstanding of the people (ibid.). Consequently there was formation of other groups instead of strengthening those that had already been formed as part of NAADS implementation (MAAIF, 2005). As such, some community members ended up having allegiance to two types of groups because each program was seen as having different benefits (pers. comm., official Z, 5/09/08). Official P advises that what would work best during program implementation is to have the big stakeholders participating in natural resource conservation to combine their efforts and work together – especially as far as promotion and sensitisation of

[60] Area representatives of the people at the sub-county and district councils respectively.

technologies (pers. comm., interview, official P). If official Ps advice is adhered too, then there will be less need for constant and multiple interventions.

Some district officials think that there has not been proper communication of NAADS activities especially as far as conservation practices are concerned. As official Q notes "information flow has greatly hindered implementation and this has had a direct toll on behaviour. If local people have not been informed or in the case that implementation starts taking place before the people's minds have been prepared for the same, then it is likely to hit futile ground" (pers. comm., interview, 16/09/08). Others think that the role of local council chairpersons is crucial during the implementation at sub-county, parish and village levels respectively. "If politicians could encourage people to participate, in the same way NAADS does, then it would be much easier because people will in many instances listen keenly to the political persons, because of the trust they have in them" (pers. comm., interview, official X, 2/09/08).

Apart from being involved in a participating group, there is more to the implementation process with regard to delivery of the advisory services. These include: sensitisations, specific trainings and demonstrations as mentioned earlier. But how exactly are these organised to involve a great percentage of the subsistence farmer population[61]? These sensitisations, which cover most of the masses, had a few issues worth pondering about. It is important to recall why NAADS was set up, apart from the transformation from subsistence into commercial farming. NAADS design would: empower farmers to demand and control agricultural services (GoU, 2000a, 2000b), be participatory, coordinated and more responsive to farmers needs (GoU, 2000b; MAAIF, 2005). Using these as a benchmark during implementation, let us understand how these were effected in the watershed. Major points of scrutiny include: inclusions of the local people's ideas in the dissemination, the dissemination method, and how applicable these are to a subsistence farmer.

When a general sensitisation is planned, announcements of the day and time are communicated to the sub-county headquarters. The sub-county leaders then contact and pass on the information to parish leaders who eventually pass on the information to the village leaders. It is expected that the village leaders together with their respective executives publicise the forthcoming sensitisation. The publicising of the sensitisation can take many forms such as informal conversations, posters at trading centres, during ceremonies, and in places of worship to mention a few (pers. comm., FGD, 24/09/08). Then, when the sensitisation date and time are due, farmers gather at the sub counties to listen to advisory information. Whereas, this sounds smooth in operation and execution, there are questions about the communication and conduct of general sensitisation that may suggest that NAADS is not meeting its goal.

The greater part of the subsistence farmers not participating in groups who would benefit from such general sensitisations, complain about issues such as: distance to the sub-

[61] At this point it is important to note that there are some general sensitisations for all including those who are not involved in groups. These usually take place at the sub-county headquarters.

county headquarters, not teaching the farmers in their gardens, too much ineffective delegation to the sub-county, and, communication of the sensitisation dates and venues to mention a few.

Some farmers I interviewed say, the sensitisations only take place at the sub-county headquarters which are far from their homes (pers. comm., FGD, 1/09/08). This implies that it might have to be worthwhile information for one to attend. However, from past experience, there have not been allowances for these people and yet they are required to sign attendance sheets for accountability purposes of the trainers (ibid.). The farmers say that at sensitisation meetings, there is practically nothing new they learn. They state that, "it is always the same things presented at sensitisation after sensitisation" (pers. comm., FGD, 7/11/08). The officials argue that as long as they have not noticed a change in practices, they still believe there is need to continue sensitising the farmers so that they can change their practices. These are the words official Z used to express his disappointment in farmers who do not apply the promoted conservation practices, "we have to keep drumming the same message a number of times into the farmers head before he/she understands" (pers. comm., interview, official Z, 5/09/08).

For those farmers who do not have a problem with distance to the sub-county, their major worry is how to apply the taught practices in their gardens. They argue that no one comes to show them how to actually do what they are being taught. They suggest that if they were being shown instead of being told, then it would be easier to effect the conservation practices (pers. comm., FGD, 1/09/08). This may confirm official Z's line of argument because the farmers have not yet applied the things they are told to do. And also justifies, the repeated sensitisations on the same topic(s). What though official Z has not understood is why the farmers do not apply and adopt these practices?

Official X on the other hand thinks that sensitisation is good, but not good enough to effect changes in farmers' practices. X insists that the biggest huddle is instead supervision and monitoring of farmers conservation activities. X argues that without human resource, conservation efforts will be in vain (pers. comm., interview, official X, 2/09/08). Another official argues that actually what farmers consider more important are the productivity enhancing technologies. He states that the sort of questions he is asked by farmer representatives or even farmers themselves have to do with how to increase yield of their produce. Generally, he concludes that farmers in Benet and to some extent Binyiny are a bit slow in applying conservation practices, however, when they notice a decrease in yields they then start applying manure or requesting for artificial fertilisers (pers. comm., interview, official A, 12/11/08).

4.3 NAADS: The Impact Story

This section presents an interpretation of what the people had to say with respect to NAADS and the unsustainable natural resource use.

The plan to use local NGOS, CBOs and civil society had unintended effects. Major of these was that these organisations and institutions are viewed as relief organisations by the majority of the poor living in rural areas (pers. comm., interview, official A, 13/10/08). To the people this meant that, they expected to receive among others free inputs, and allowances at teachings and trainings. However, NAADS was only offering teachings trainings, and demonstrations. Since NAADS was not offering allowances which NGOs normally give after sessions, it became hard for local NGOs to offer trainings and not give allowances. With time, this weighed on their time and resource budgets. The NGOs had to combine theirs and NAADS' activities so as to give allowances for both. As "the going got tough", NGOs had to prioritise between theirs and NAADS activities. Consequently, posters for organised trainings of NAADS' activities by NGOs bore the phrase "this is a NAADS' training – there will not be lunch and/or transport allowance" (ibid.). In addition, there would be considerable length of time for the local NGOs to stream line their activities to include those of NAADS.

This situation left only the service providers actively implementing NAADS' activities. Due to the reduced labour force during service provision, it has become harder to massively implement and to reach the farmers living in the watershed. Whereas it is true that you will find signposts of NAADS in a big part of the watershed, it is also true that (some) people residing in the watershed do know about the NAADS program. However, this alone has not been enough to direct people's conservation practices from 'old' to 'new'.

Even most of the participating farmers have not (yet) been convinced to apply terraces, contour bands or agro-forestry. In the watershed, you also see a number of tree nurseries; however, it is only in very few instances that you find trees planted along the slopes. These 'new' promoted conservation technologies, the farmers argue, are labour intensive. For example, aligning a contour band is a hard job that requires technical expertise; it is also not possible for the service provider to carry out this throughout a sub-county (pers. comm., interview, official Z, 5/09/08). So probably, one can imagine that if labour was sufficient, then maybe farmers would use contours as a means of conservation. But then on the other hand, tree planting does not require specialised efforts of a service provider, so then why do the farmers not plant these 'new' trees one would ask. "The answer is that the trees reduce the productivity of the land, and reduce their crop production" (pers. comm., FGD, 21/08/08; 20/10/08; 7/11/08). The farmers readiness to answer some of the questions to do with conservation practices (according to me) show that these farmers actually have probably tried and tested these 'new' practices and do not see them as useful as the implementers do. They have thus filtered the 'new' plant breeds and adopted them, but left out the conservation practices.

The farmers do know the causes, prevention and cure of soil erosion. They thus have their own methods of conservation – 'old' which include: use of ridges, and leaving strips of land between gardens (pers. comm., FGD, 21/08/08; 20/10/08; 7/11/08). The practices aside, arise the 'criteria for selection' issue of participating groups. The criterion for participating i.e. formation of groups is known by most of the farmers but not the selection criteria. As noted in the previous section, it appears the selection committee with the advice of the local leaders have mastered the type of farmers to front for group participation. This information did not circulate to the community members of other groups and therefore not everyone was aware of what they need to do to prove that they can effectively participate in program implementation.

People are reliant on political leaders to receive information or actively participate in the selection of participating groups. The reason is that they are more informed about what transpires in their constituencies. Much as this is true these leaders will promote individuals whom they are more affiliated to and in the long run, it will be the people in the same groups year after year participating in the program activities. With time, these active participants *may* adopt more and more of the 'new' as it becomes convincingly clear to them of the pros and the cons. However, the larger proportion of farmers who constitute the non-participating groups will not implement any of the program activities – due to accumulated frustration. This implies at the end, there will be no uniform application of 'new' and thus continued or increased sediment load in the water streams.

5 Discussion

The previous chapter showed how the intervention process of NAADS has been carried out, as already noticed, the 'solutions' have not worked especially as far as agricultural conservation practices are concerned. It is now time to make theoretical sense as to 'why things are the way they are'.

The PMA and consequent intervention by NAADS has indeed generated more questions about the problem it was intended to solve. The design of NAADS would suit to a great extent the classic approach (Biot, et al., 1995) whose variables were presented in Table 5. The design process was characterised by a top down centralised decision making and users were considered ignorant, traditional and mis – users and managers of resources. The nationwide design was based on a number of assumptions of the categories and blue print solutions for the farmers. As has been shown, the farmers have indeed extracted what they considered useful and left out what they have considered useless.

The reliance on local governments to carry out the implementation process was a good cause and shows the devolution of power to the districts and sub counties. However, central government still defined the expected outputs (GoU, 2000b), which stripped local governments power to implement according to the desires of their clients. The local NGOs, CBOs and civil society, were never involved in the design phase despite the fact that they were influential during the implementation phase. In addition, the local NGOs, CBOs and civil society do have primary interests of parent organisations thus streamlining NAADS activities with their own would take more time than anticipated. Lastly, in relation to local NGOs, these are usually seen as relief organisations in society. This implies that their mode of operation usually involves or starts with 'help'[62]. This makes society expect goodwill activities on the part of the local NGOs. Contrary, NAADS was for information provision and technology demonstration, as such did not have the goodwill aspect of motivating farmers with incentives – if anything they actually required fees from the people. These two approaches of service delivery would not go hand in hand. Thus the local NGOs would not be willing to carry out NAADS activities.

GoUs' assumption that farmers "are prepared to adopt a new technology provided that it is risk acceptable and economically viable" (GoU, 2000b, p. 20) is almost accurate. As has been shown the participating farmers have indeed adopted the advisory information about high value crops given the acceptable levels of risk and economic viability. In their economic analysis, (Pender, Jagger, Nkonya, & Sserunkuuma, 2004) also found that participation in NAADS was associated with a 15% increase in value of crop production per acre – they attributed this to promotion of high value crops since no significant differences were found on land management practices and input use.

Instances of 'mirroring' (Mosse, 2004) can not be ignored in the watershed; with regard to agro-forestry, farmers have indeed continued to prepare land for tree nurseries, but

[62] Normal support for whatever the communities need.

rarely have they transferred and planted these trees. Because of the emphasis of afforestation and reforestation, the communities have prepared themselves to demand what the programs can easily offer even if they are not intending on using them. NAADS promoted agro-forestry as a mainstream conservation activity (GoU, 2000a), the basis for this choice was never explained. What now will require further analysis is whether there was consideration of the relationship between sheet and gully erosion as well as farmers own activities to reduce soil erosion. Forsyth citing a couple of authors explains how research on "reforestation has shown to instead increase lowland sedimentation" (Forsyth, 2003, p. 32).

The data have shown that farmers are aware of the preventive and curative mechanisms of dealing with soil erosion contrary to GoUs' assumptions in Table 1 that subsistence farmers' rely on low input technologies and have low literacy, skills and knowledge levels (GoU, 2000b). This is not to suggest that the literacy levels are high because farmers have hardships with the scientific interpretation of class work for example maps but they do have high skills and knowledge levels. The low technology input suggests that farmers attempt to live within their means, as Shaxson (1997) cited in (Bergsma, 2000, p. 48) argues – "a farmer's view is very important in the approach to land and water management and must be understood and taken into full consideration if assisting programs are to succeed." To an ordinary subsistence farmer in Ngenge watershed, what is primary would be to produce enough to take care of the family during both the sowing and harvest season; in the case of excess produce, the farmer may sell or trade in his/her excess for other commodities. Tobisson (1993, p. 61) in (Bergsma, 2000) has also argued that, "[..] risk minimisation and family subsistence, rather than profit maximisation, constitutes a fundamental principle for a peasant farmer" (p. 48). This would imply that it is harder to get a farmer to produce for market as his priori concern. This though does not suggest that subsistence farmers are not economically rational beings, on the contrary they are "but the values attached to commodities and money are different" Stocking (1988, p. 382) in (Bergsma, 2000, p. 48)[63].

The whole service delivery process can be explained and/or linked to by Huppert's principal agent theory (Huppert, 2005). The process of group formation and consequent beneficiary selection seems to have had more unintended than intended impacts. Referring to Figure 10, the earlier illustration of contractual relationships between the actors in the Ngenge watershed, one realises that wider community actors and local council chairpersons were supposed to be involved in the advisory services such as to stimulate group formation (GoU, 2000a, 2000b, 2005a). The reliance on the wider community actors would generate communal discussion of NAADS, the service **S** of the wider community actors to the ordinary subsistence farmer was not specified and as such there was no accountability to the farmer by the actor. However, it would be too fast to conclude that the wider community actor was irresponsible because for the nature of service he/she provides receives no payment from ordinary farmer. Therefore, the nature of the wider community actors' service is not described which may create room for

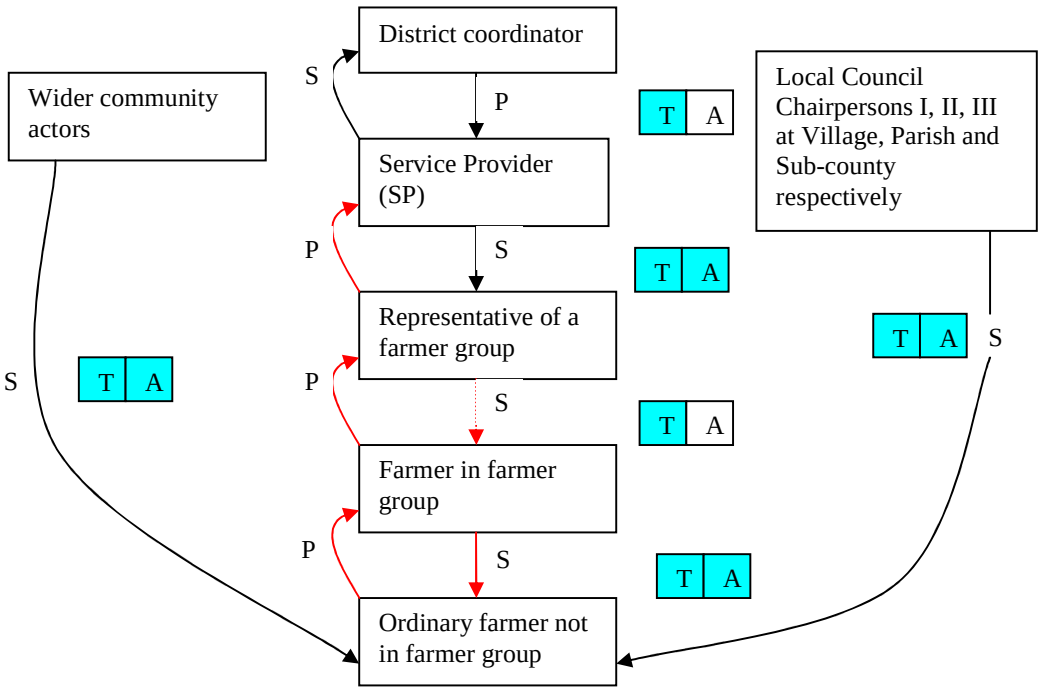
[63] The arguments by Stocking and Tobisson are similar to what renown author Goran Hyden calls the "economies of affection". See Chapter 1 of "Beyond Ujama in Tanzania: Underdevelopment and an Uncaptured Peasantry" (Hyden, 1980).

opportunistic behaviour of the wider community actor depending on his/her moral degree(s) (Huppert, 2005). If the wider community actor holds this information valuable, he will treasure it and pass it on to people within his circles. The result will be that the ordinary farmers will not form groups, the basic pre-requisite for participating in program activities. So which people formed the groups? Logically, the people who formed the groups would be those who knew the requirements for benefitting from program activities, these as shown in Figure 10 would be the wider community actors and the local council chairpersons. Whereas the type of service provided by both the wider community actors and the local council chairpersons can be neglected given that it is not stipulated and is typically based on speculation that of the service providers is not.

So what is the role of the service provider? The service provider is hired and employed by the district coordinator of NAADS. Usually every sub-county is assigned one service provider per year. The service provider meets representatives of farmer groups whom he advises on 'new' technologies. The service **S** by service provider to the representatives of farmer groups is dependent on many factors that are not in the control of the provider such as presence of the representatives at meetings and demonstrations. Figure 10 shows that the service provider provides two services and in turn receives two payments indicated by the **S** and **P**, one is to the district coordinator which is usually in form of reports and accountability and the other is the advisory service to the farmers.

The modified illustration is shown in Figure 12 that shows the contractual relationships between the players in the watershed in affecting program performance. As can be seen, there is no transparency between the service provider and the district coordinator because the service provider can choose to hold information that would detriment his performance indicators. Again, there is accountability of the service provider to the district coordinator in terms of reporting frequency and progress, which is also hard to verify in the field. The assessment criteria of NAADS impact by the district team is based on quality/frequency or reporting, trainings and number of sensitisations carried out (NAADS, 2000).

The links between both wider community actors and local council chairpersons has no transparency and accountability shown by the shaded **T** and **A.** As such, these persons can not be held accountable to the ordinary subsistence farmer. The red lines representing **P**s show that there is no payment mechanism between the respective actors for the services they receive. On scrutiny of the contractual arrangement between the service provider and a representative of a farmer group, there is a service shown by **S.** This service however receives no payment from the representative. This service is paid for by the district coordinator, as such the burden of the service provider's accountability is more to the district coordinator than to the representative of the farmers group. In addition, the representative of the farmer group is not aware of what to expect from the service provider before hand, this creates room for the service provider to willingly filter what to and what not to present.



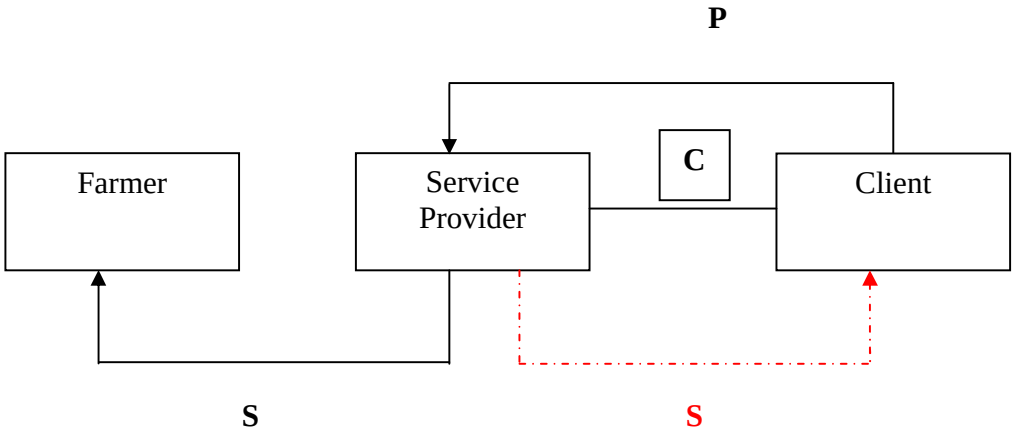
T=Transparency, S=Service, P=Payment, A=Accountability,

Figure 12: Illustration of actual contractual relationships between the players in the NAADS implementation process

The red dashed line showing **S** between the representative in the farmer group and a farmer group member implies that the representative is not bound to pass on the teachings and trainings he has received from the service provider, this is indicated by the shaded T.

Limitations of the Principal agent

There are some limitations of the application of the principal agent theory because there is no contract between the service provider and a farmer who is not in a group. Additionally there may not exist a formal enforceable contract between the service provider and a farmer in a group. This reduces the reliability of the principal agent application. Nevertheless there is an enforceable contract with the district coordinator (in this case a representative of NAADS at this level). Figure 13 shows the modified version of the contractual obligations.



S - Contract service, reports for example
C – Contract between service provider and client; e.g. District coordinator

Figure 13: Illustration of the contractual obligations between the provider, farmer and client

6 Conclusion

This report has described how the implementation process was designed, how it was implemented and the impact on the community and use of conservation practices. As has been shown, the strategy employed in dissemination together with the 'new' conservation technologies, have not yet been effective. The beginning of this research and report questioned why the natural resource base was declining despite intervention processes. It was also noted that there are a couple of things which if combined may and can affect the application, by the subsistence farmer of 'new' instead of 'old'. However, the research focused on the 'trickling' of advisory information from the central government to the local governments and finally to subsistence farmer in Ngenge watershed.

As has been shown, NAADS was entirely a development program and therefore an inquiry into the soil and water conservation program was (and is) relevant. With time the land and possibly water resources will continue to be used and managed to achieve more output produce and consequently income. To an environmentalist, land and water manager or better stated a scientist, the use and management of natural resources is a key element in sustainable environmental management. This reason coupled with the need to rely on farmers or users of land to carry out the manual labour of conservation works on their land are things to be well understood if 'proper' management according to the scientist is to succeed. Therefore by inquiring into the activities of NAADS – particularly the dissemination of 'new' conservation practices, there are many things that influence a farmer's choice on the use of a particular conservation practice. In addition, the several bureaucratic tiers reduce the time, use and (to an extent) reliability of the information and consequently the trust.

The whole research was an inquiry into what, among others, could be reason for explaining 'why things are the way they are'. In so far, the principal agent theory as described in Chapter 2, despite its limitations, provides an undoubtedly justifiable reason with regard to - transparency and accountability - of the service provider to the farmer. That moves us a step or two closer to 'why things are the way they are'. This alone is not justification enough, as one noticed the characteristics of the approaches to land degradation shown in section 2.1 present some valid and invalid assumptions with relation to the variable. These assumptions – especially the invalid ones depending on the location, may and can lead to unrealistic design(s) followed by inconsistent implementation. Furthermore, it is not easy to know can and can not work therefore it is imperative to test what is being used to see whether it works. As shown in this report, conservation considerations are indeed on agendas of both scientist and farmer. But the methods promoted by the intervention are not the same ones farmers prefer to use. Looking at Ngenge watershed, most of what has been promoted as 'new' is far from the field realities of most farmers.

The lack of participation of (various) communities in design in itself does not imply that farmers were not consulted during the process. Indeed some farmers were consulted and (to some extent) involved in the design. However, what will need further understanding is

what degree(s) and how the subsistence farmers influenced the design outcome and/or implementation strategy. And still, whether this is sufficient to explain the non application of ‘new’ conservation practices and also whether the non abidance of these is reason for soil erosion and consequently unsustainable watershed management.

Annex

Table 6: Dates of major field data collection points

Date	Type	Parish	Sub-county
19/08/08	FGD	Kapkwot	Ngenge
20/08/08	Interview	Kaptum	Binyiny
21/08/08	FGD	Tabagon	Benet
24/08/08	FGD	Kaptoyoy	Binyiny
24/08/08	Interview	Kono	Binyiny
25/08/08	FGD	Kaptoyoy	Binyiny
28/08/08	Informal discussion	Kapkwot	Ngenge
01/09/08	FGD	Kaseko	Benet
02/09/08	Interview	KDLG	KDLG
03/09/08	Interview	KDLG	KDLG
03/09/08	Informal Discussion	Kaseko	Benet
05/09/08	Interview	KDLG	KDLG
05/09/08	Informal discussion	Kono	Binyiny
15/09/08	Informal discussion	Kapkwot	Ngenge
16/09/08	Interview I	KDLG	KDLG
16/09/08	Interview II	KDLG	KDLG
24/09/08	FGD	Kwosir	Binyiny
02/10/08	Informal Discussion	Piswa	Benet
03/10/08	Informal Discussion	Kaseko	Benet
07/10/08	FGD	Kapkwoch	Binyiny
08/10/08	FGD	Piswa	Benet
08/10/08	Interview	Kono	Binyiny
16/10/08	Interview	Kapkwot	Ngenge
20/10/08	FGD	Cheminy	Binyiny
03/11/08	FGD	Kitawoi	Benet
07/11/08	FGD	Kono	Binyiny
12/11/08	FGD	Kwosir	Benet
12/11/08	Interview	Kaseko	Benet
16/11/08	Informal Discussion	Kaptum	Binyiny

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