

## Soil and Water Conservation in Kenya-Operations, Achievements and Challenges of the National Agriculture and Livestock Extension Programme (NALEP)

<sup>1\*</sup> Titus Wambua Mutisya, <sup>2</sup> Nenkari Juma. and <sup>1</sup> Luo Zejiao

<sup>1</sup>School of Environmental Studies, China University of Geosciences (Wuhan)  
Lumo Road 388, Wuhan City, 430074 Hubei Province, P.R. China  
[tmutisya2003@yahoo.com](mailto:tmutisya2003@yahoo.com), [mutisya2003@gmail.com](mailto:mutisya2003@gmail.com)

**Abstract :** This paper gives an historical analysis of the soil and water conservation activities in Kenya, introduces the national soil and water conservation project and then gives an insight in to the National Agriculture and Livestock Extension Programme (NALEP) ,which was designed after several previous projects failed to address the sustainability of such development projects leading to progressive decline in soil fertility and agricultural output. The achievements and challenges faced while implementing the programme activities are discussed. The general project information was gathered from the various policy documents, programme documents and workshop reports while the achievements and challenges were drawn as a result of the involvement of two of the authors in the programme activities in 45 focal areas that have been implementing it since inception. The strong stakeholder involvement in all the stages of project development is the basis of the anticipated sustainability. The synergy between the key stakeholders is necessary for a sustainable development programme. Activities which involved the farmers, Government staff, and other development partners were found to be more successful than those that involved only one institution. NALEP framework is worth being replicated in any development project in the country. Scaling-up and replication of the success cases is recommended to improve the general household food security, economic empowerment and environmental conservation. This is the first paper analyzing the soil and water conservation, NALEP and its sustainability measures. The stakeholders could use the information to improve the programme.

[Titus Wambua Mutisya, Nenkari Juma. and Luo Zejiao. **Soil and Water Conservation in Kenya-Operations, Achievements and Challenges of the National Agriculture and Livestock Extension Programme (NALEP).** World Rural Observations 2010;2(2):1-9]; ISSN: 1944-6543 (Print); ISSN: 1944-6551 (Online).

<http://www.sciencepub.net/rural>

**Key words:** Soil and water conservation, NALEP, sustainability, stakeholders,

### 1. Introduction

#### 1.1 Kenya

Kenya is situated on the eastern part of Africa between latitude 4° 40'N, and 4° 30'S and between longitudes 34°E and 41°E. It is boarded by Sudan, Ethiopia and Somali to the northwest, north and east respectively. To the west is Uganda, south Tanzania and southeast is the Indian Ocean

The country covers an area of approximately 582,646 sq. km. comprising 97.8% land and 2.2% water surface. It is divided into 8 provinces and about 244 districts (Ministry of planning and national Development 2000, 2009).

Total Human Population is estimated at 30 Million (Population census 1999).The country has a diverse topography, ranging from sea level to the high altitude peaks of Mount (Mt.) Kenya at 5,199 meters above sea level, and other highlands. Climate is influenced by altitude, and annual rainfall amounts vary much across the country, from less than 200 mm

in the arid north to over 2,000 mm on the upper slopes of Mt. Kenya (Sombroek et al.1980, Mati 2005).

Agriculture is the major economic sector in Kenya, and is the main source of income for some 80 percent of the population, of which 19 percent is in wage employment. It accounts for 52 percent of the national GDP, of which 25 percent is directly and 27 percent is indirectly through linkages with manufacturing, distribution and other service-related sectors. Agriculture accounts for some 40 percent of the total export earnings, 45 percent of the government revenue and 75 percent of the industrial raw materials. There are about 3 million smallholder farm-families in Kenya, of which 80 percent have less than 2 hectares of cropland. Smallholders are responsible for 70 percent of the maize production (staple food for most of the Kenyans), 65 percent of the coffee, over 50 percent of the tea (major export cash crops), over 70 percent of beef and over 80 percent of milk and other crops (Republic of Kenya 2000; MoA&RD 2002).

## 1.2 Soil and Water Conservation in Kenya

### 1.2.1 History of Kenya's soil and water conservation

Most of the communities in Kenya were herders and gatherers until 1895 when the country was colonized by British who settled in the fertile lands, termed as white highlands. The natives were evicted from their farms to give way to the white settlers who utilized thousands of hectares for large scale agricultural production. This saw the introduction of new crops such as maize, beans, coffee, tea, cotton, tobacco and pyrethrum. Exotic dairy cattle and pigs were also introduced.

Most of the agricultural and soil conservation techniques developed during this period were effective, but the fact that they were based on enforced communal work meant that soil conservation was bitterly resented by the people, yet it was an important activity for sustainable agriculture in the country (Maher 1937, 1938).

Historically, this was the first exposure of the native Kenyans to soil conservation activities. It can therefore be stated that the first modern soil and water conservation techniques were imposed on Kenyans through coercion. The natives were not enthusiastic because they were evicted from their land and then enslaved to work for the masters in the same farms. Soil conservation structures were particularly unpopular because they were tiresome to excavate (Thomas et al 1997, Nandwa et al 2000). Large tracks of forest land were cleared to give room for large scale crop production and beef cattle ranches.

In the 1950s when the British authorities started to prepare to leave the country due to eminent independence, they sold most of the farms in the white highlands to the new Government which later sold them to native farmers through a native's settlement scheme. The government availed loans to the natives to purchase the farms and start intensive commercial agriculture. Decisions were made at the head office of the Ministry of Agriculture and communicated to the farmers by the extension officers, a typical "top down decision making process". Many farmers training activities were organized and farm inputs were readily available at subsidized costs. Programmes were implemented which involved scheduled regular individual farm visits by the extension staff. The approach was termed as "train and visit" (commonly known as T&V). The approach was therefore "supply driven". The farmers were expected to implement decisions made for them by the ministry head-quarters

After independence in 1963, the persuasive agricultural services continued, farmers were

encouraged to grow food- and cash -crops. Production of most crops such coffee; tea pyrethrum tobacco was quite high. Food crops such as maize, beans, cowpeas, pigeon peas ground nuts, millet cassava, and fruits were also widely grown. Having associated the soil conservation work with colonialism, farmers either cut down their conservation activities or abandoned them altogether. Consequently the soil erosion problem persisted up to the present moment affecting both the highlands as well as the lowland marginal areas (Barber *et al.*, 1979; National Research Council, 1993).

The human population grew and more natural forests were cleared for agricultural activities. There was no emphasis on environmental issues especially water conservation, soil erosion control or even tree planting in this period. Intensive cultivation, overgrazing and soil erosion led to decrease in soil fertility, crop yields and thus lower household incomes. The agricultural productivity could not be sustained because of lower soil fertility and general environmental deterioration.

Several projects aimed at improving crop and livestock productivity were started and implemented. One of them was the national Soil and Water conservation project

### 1.2.2 The National Soil and Water Conservation Project (NSWCP)

NSWCP was funded jointly by the Kenya Government and Swedish International Development Agency (SIDA), began in 1974 with an overall objective being "To contribute to food security and to raise the standard of living of the rural population - through suitable conservation practices", it ended in 1994.

The focus of the soil and water conservation project was on improving arable land. It was in the cropped fields where erosion had the most damaging effect on productivity and farmers' income.

The basis of the system was the development of bench terraces over a period of time. The main technique used was "fanya-juu" terracing. This literally means, "do-up" and it referred to the way that soil was thrown up the slope from a ditch to form an earth embankment or bund. Several of these terrace banks were made across a field, on the contour, and over time the land between the bunds levels off. The field then developed the characteristic "steps" of bench terraces. Soil and rainwater were conserved between the *fanya-juu* bunds (Mati 2005). The technical objective was two-fold: To keep rainfall where it fell, and to keep soil in the field. The end result was better

growing conditions for the crop, both immediately, because of an increase in the amount of moisture available, and in the long term, because the soil was conserved.

Each farm was surveyed to see whether it required a cutoff drain to protect it from surplus rainfall runoff. The cutoff drain was usually designed to hold all the runoff which flowed into it, and therefore it was sometimes known as an "infiltration ditch". The alignment of the terraces was surveyed along the contour using a simple line level. The spacing between the terraces depended on the slope of the land. Apart from terracing, other recommended activities though on a smaller scale, were grass strips along the contour, contour ploughing, simple gully control measures, tree planting, river bank protection and grazing control

In 1987, the project changed focus to catchment approach through farmers groups and agro forestry was incorporated as an activity to enhance the soil and water conservation measures. Farmers were organized into groups in each catchment area. A catchment covered an area extending from the hilltop to the riverbanks and consisted of either one or two villages sharing common hydrological water sheds therefore requiring similar soil conservation measures. Each catchment had a committee and a given number of farmers (approximately 200). Individual farmers undertook soil conservation measures in their farms with regular guidance from the extension officers. Communal activities included wet lands management, river bank protection, communal tree nursery establishment and management, gully erosion control, gabions erection etc.

A "shifting catchment approach" was adopted whereby the project would concentrate activities in one catchment area for one year then shift to another. Catchments were provided with farm tools such as shovels, hoes, pangas (machetes), mattocks, pick axes, crow bars and wheel barrows. They were also provided with free agro forestry tree seeds and seedlings, and polythene tubes. The items were given as demonstration materials and the farmers were expected to appreciate the need for these items and then purchase on their own thereafter. After one year, the catchment committee was expected to continue coordinating soil conservation activities. Regular evaluation of the project was carried out, and the results and recommendations were discussed in workshops. The necessary adjustments in the project activities were made after such evaluations.

The project was successful in development of simple extension messages which farmers easily understood, and well conserved farms were a source of

pride for the farmers. The staff and farmers were able to effectively use the participatory rural appraisal tools for project activities. They also received specialized training on various aspects of agriculture, soil and water conservation, water harvesting and agroforestry.

However the project was rated as poor because most of the community based activities were not sustainable in absence of free farm tools and inputs. The groups disintegrated and the soil and water conservation, plus the group agroforestry activities collapsed after the end of donor support. The catchment committees also stopped the coordination roles.

While formulating the subsequent development projects, the planners borrowed heavily from the soil and water conservation project and other emerging scenarios as summarized hereunder.

The government was no longer the only extension service provider, other service providers included the private service providers such as agro vets, commodity based organizations such as the sugar companies, and even the media (print and electronic). The government employees were also too few to manage to deliver extension services to the increasing number of farmers (Nambiro 2006).

Rural farmers were resource poor and therefore needed to be assisted to get financial resources in a sustainable manner while avoiding free tools and farm inputs. They were mixed farmers, meaning that they had assortment of crops and livestock. It was therefore not feasible for a project to isolate soil and water conservation only and succeed to improve the farmers' welfare.

The problems in the rural communities were diverse and there was need for a multi -sectoral approach to solving farmers' problems hence the need to build synergy with other key service providers such as education, health, local government civil society, etc Environmental conservation was multi sectoral, collaboration and networking of many stake holders was therefore a prerequisite for sustainable environmental conservation

It was also not possible to separate the environmental issues, the social equity and the economic development of the community. A compromise among the three **Es** (**E**nvironment, **E**quity and **E**conomy) was necessary for any rural development programme to succeed and remain sustainable after donor support.

## **2.0 National Agriculture and Livestock Extension Programme (NALEP)**

### **2.1. Introduction to NALEP and Focal Area Approach to Extension Services**

The programme is jointly funded by the Kenya Government and the Swedish Development Agency (SIDA). It was developed to scale up lessons learnt from the catchment approach to the whole extension system. It was a component of the larger NALEP Implementation Framework designed to implement the National Agricultural Extension Policy (NAEP). It now fits into the National Agricultural Sector Extension Policy (NASEP) under the auspices of the Agricultural Sector Co-ordination Unit (ASCU)

The 5-year NALEP Phase I started in July 2000 and ended in June 2005 after covering 267 divisions in 43 districts in 5 provinces, providing extension services to 100,000 farmers per year through the Focal Area Approach (FAA). NALEP Phase II expanded to cover 70 districts in progression and modified the approach to increase annual coverage to 2,000-6,000 farmers, pastoralists and fisher folk per focal area and bring arid and semi-arid districts on board. NALEP will have a direct outreach of 4 million clients by the end of the 6½ year 2nd Phase which is expected to end in December 2011 (M o A & LD, 2000).

The project uses the shifting focal area approach as explained hereunder.

The basis of NALEP is the focal area. Extension staffs from the Ministry of Agriculture and Livestock development concentrate their support in one focal area each financial year .Each focal area has about 2,000 – 6,000 farmers in each administrative division of the 70 districts in which the project operates. They then shift to a new focal area in the subsequent financial year. The process starts with the focal area selection two years in advance. The extension staff and local stakeholders use some criteria to choose a focal area. The main aim is to select areas where the farmers have not benefited from other development projects before. Available primary and secondary data is used to determine the agricultural production gaps existing in the area which need to be addressed. The stakeholders' inventory is also updated to include new service providers in the selected focal area. The actual extension activities start a few weeks before the beginning of a new financial year (July) with stakeholder mobilization and meeting to elect a stakeholders committee and plan for a Broad based Survey (BBS). The BBS involves the extension staff, rural service providers and the farmers. It encompasses a transect walk across the focal area, then the use of dynamic Participatory Rural Appraisal (PRA) techniques to enable the farmer to identify and prioritize their development problems. The BBS

culminates with the drawing of a Community Action Plan (CAP) to address the identified problems at community level. For ease of management, the focal area is divided into 4 blocks. A 16 member Focal Area Development Committee (FADC) is democratically elected to coordinate the community activities and link the community with the service providers. Each block is represented in the FADC by 4 farmers. During the BBS, the extension staffs identify viable agricultural enterprises with the potential of improving agricultural yields and therefore boosting household food security and economy. Interested farmers are organized into groups (Common Interest Groups). Throughout the financial year, the extension staffs provide technical and business skills to the farmers and also link the farmers with other service providers. The staffs also arrange cross-site farmers exchange visits. After concentrating in one focal area for the whole financial year, the team then move to the next identified focal area. One extension staff remains to provide technical services while the FADC continues to implement the Community Action Plan

### **2.2 Project Objectives**

The project aims to enhance the contribution of agriculture to social and economic development and poverty alleviation through institutionalization of demand driven and farmer-led extension services, increased effectiveness of pluralistic provision of extension services and increased participation of private sector in providing extension services.

It also aims at empowering the farmers to take charge of Project Cycle Management of extension projects, development of accountability mechanisms and transparency in delivering extension services and also facilitation of commercialization of some of the agricultural extension services.

### **2.3 NALEP Implementation strategy**

In order to achieve the objectives, the project will facilitate the formation of and promote local institutions needed to sustain programme initiatives and activities and support agricultural sector reforms related to the delivery of agricultural research and extension services and strengthen research-extension-farmers' linkages

NALEP will also facilitate and promote a multi-sectoral approach in the delivery of agriculture and rural development services and collective rural innovations in addressing complex problems. It will also improve monitoring and evaluation of programme

implementation (*Ministry of Agriculture and Livestock Development 2000*).

#### 2.4 Project pillars

The project is guided by 4 pillars, namely: Participatory/pluralism extension (empowerment of rural communities), demand driven and beneficiary-led extension, professionalism and, teamwork, then transparency and accountability

The above pillars are being used to attain conceptual achievements below.

#### 2.5 NALEP Conceptual achievements

**Concept of Stakeholder Forum:** NALEP facilitates the formation of and promotes Stakeholder Fora (SHF) at divisional, district and provincial levels. It is a platform for rural communities and all development agencies involved in agriculture and rural development. The stake holder fora are formed according to NALEP operation procedure (NALEP –OP). A series of meetings are held and a stake holder steering committee is formed with the chairperson being an active farmer in the area of jurisdiction, the secretariat is the agriculture and livestock office while the treasurer is from one of the local Non -Governmental Organization (NGO) or faith based organization. Stakeholder fora have evolved into instruments for community empowerment to take ownership of community projects. Once the stakeholders' fora become institutionalized, they will become instrumental in approving new development projects and regularly assessing the performance of the existing development projects.

**Concept of Community mobilization:** Through BBS, NALEP helps communities to identify their problems and proposed solutions through flagging out of opportunities that culminate in profitable activities that match with available resources. During the broad based survey, all development partners and Government service providers in the focal area are involved. The product is a CAP that forms the basis for projects formulation and resource mobilization for their implementation. The farming community therefore owns the agricultural development agenda for their focal areas. The community action plan is expected to be a bargaining tool for the focal area development committee to mobilize and access resources and also to assess their rural development progress over time.

**Concept of CIGs (common interest groups):** NALEP flags out opportunities from which activities that attract the formation of enterprise based groups tailored along commercial lines emerge. These are CIGs that form the bedrock of demand driven and

client-led extension. It is expected that these common interest groups will demand for specific advice from the relevant service providers according to their challenges.

**Targeting the poor and the vulnerable:** Using Participatory Analysis of Poverty and Livelihood Dynamics tool (PAPOLD), NALEP has been able to identify the very poor, alcoholics, drug addicts, HIV/AIDS affected, widows, child headed households and the old and handicapped and flag out opportunities that derive activities they can afford to implement individually or in groups. This is aimed at reducing the dependency syndrome which is quite common in the rural areas. The groups are also linked to the various institutions that offer help to alleviate their problems

**Professionalism and teamwork:** NALEP staffs have formed professional groups along respective disciplines at divisional, district and provincial levels. This has increased both horizontal and vertical functional relationships necessary for promoting professionalism and team building. It has provided fora for technical staff and researchers to share acquired ideas and effectively respond to emerging challenges.

**Mainstreaming cross-cutting issues:** NALEP has formed partnerships with:

KNCHR (Kenya National Commission on Human Rights) on Human Rights Based Approach to development, NEMA (National Environment Management Authority) on environmental management issues, NACADA (National Agency for the Campaign against Drug Abuse) on rehabilitation of abusers of drugs and alcohol.

It has also formed partnerships with Legal Resource Foundation (LRF) on paralegal matters that affect farmers and also with HIV/IDS and Gender units in all the ministries

#### 2.6 The Annual NALEP activity schedule

**Focal area selection:** Proposal of a focal area is done two years in advance by the Divisional extension team using a set of criteria and later discussed in the divisional Agricultural committee.

**Stakeholders Mobilization:** The divisional and District Agricultural Officers annually update their stakeholders inventory for their respective areas of jurisdiction. All the relevant stakeholders are called for a series of meetings to plan and execute the program activities. The stakeholders then elect a new committee or confirm the existing one to spearhead the project activities. This is usually done in the month of June.

**Community mobilization:** This is the most important activity in the program since it determines

the success or failure of the rest of the activities for the whole year.

The divisional extension team and the local administration hold a series of public meetings in the months of June and July to sensitize the community on the program activities. At the same time the stakeholders meet to map out the strategy of undertaking the program activities in the focal area. In the months of August and September, the broad based survey is held. By the end of the survey; a Focal Area Development Committee is democratically elected. A Community Action Plan is drawn. Within the survey period, the staff displays posters showing a menu of available opportunities for farmers to form groups and improve their agricultural production. The farmers register as members of various CIGs

The focal area development committee composed of mean women and youth representatives is trained on their role in the program, group dynamics, resource mobilization, leadership skills etc. The training is done between September and December.

**CIG:** Each agricultural officer mobilizes a manageable number of common interest groups. The various groups meet and draw their own work plans for the whole year under the guidance of the technical officer. The farmers then implement the agreed activities. It is envisaged that the groups will remain cohesive and form the basis of the program sustainability and demand- driven, farmer -led extension services

For the rest of the financial year, all as the individual farmers, CIGs and FADCs implement the agreed activities, the extension staff perform the activities summarized here under.

**Individual visits to farmers:** There may be some farmers who demand to be visited by the officers to draw farm specific action plans. The local field officer draws a program to visit the farms that demand such visit. After drawing a sketch of the farm and holding dialogue with the farmer, he/she makes recommendations for various technical officers referred to as "subject matter specialists" to visit and give their recommendations. This is termed as the "Nurse Doctor" model. The divisional office ultimately prescribes an action plan for the farmer to implement. (The technical officer has higher technical training than the field officer)

**Follow up:** The District and the provincial teams make periodic follow up visits to the focal area to assess the pace of implementation of the program and offer advice where necessary. The main focus is on the common interest group progress, the community action plan implementation and also the farm specific action

plans (for individual farmer). This makes everyone to take their responsibilities seriously. Corrective measures are taken on those whose performance is below the expected standards while good performers are recognized and motivated in various ways.

**Professional group meetings:** These are held at the district and provincial levels. Officers in various disciplines of agriculture such as the home economics, farm management, agricultural engineers, livestock production etc, plus their counterparts in the research institutions attend respective meetings. They discuss the technical challenges faced and how best to overcome them. These are usually held just before the common interest groups start their activities so that officers are armed with the necessary information.

**Monitoring and evaluation:** The activity budgeting allows the implementers and the beneficiaries to evaluate themselves as they implement the activities they set to achieve. The Programme coordinating unit at the head office also carries out monitoring and evaluation. The rolling audit also gives an indicator of the rate of fund utilization versus the achieved target. The programme also has programmed external evaluation done in the middle and at the end of the project. The post project evaluation focuses on the sustainability of the programme.

## **2.7 Challenges faced by the programme.**

The NALEP focal area approach and the use of its pillars, is faced by a few challenges which are mainly operational and beyond the control of the programme implementers due to the multi-sectoral nature of the programme

**Stakeholders' involvement:** The Broad Based Survey is an important tool of bringing together all the relevant service providers and makes the farmers to understand the roles played by each development partner. It also enables the community to draw an all inclusive Community Action Plan (CAP). The process takes up to 21 days. It is not easy to maintain the attendance of all the stakeholders for the whole period since they also have their core activities to achieve. Some stakeholders do not commit themselves to play their role to achieve the community action

**Administrative issues:** Staff changes, either due to transfers or natural attrition pose a challenge to the implementation of the programme due to disruption of the cycle of activities after staff changes.

The bureaucracy in the Government financial cycle and tendering process has led to delay in the release of funds and other resources to the working units and in the supply of goods and services

Although the programme has facilitated the purchase of computers and internet connections in all the districts and provincial offices, they are not operational due to limited capacity of the telecommunication system in the country. This leads to delay in the processing and transmission of the periodic reports

**Cultural issues:** In some communities, a number of social events take priority over development activities. Such events include circumcision ceremonies and burials. For example, circumcision may disrupt agricultural activities for about two months in a year in the areas where it is traditionally performed, while death of a member of the community can lead two to three weeks mourning period, hence causing delay in the development activities.

**Some communities still do not allow women to participate in development activities freely.** Women are the main implementers of the agricultural and environmental activities. They are however not allowed to take active roles in the participatory rural appraisal and farmers training activities.

**Political interference:** There has been tremendous fragmentation of the administrative units (Districts) by the political leaders since the start of the programme. This leads to delay in the adjustment of the personnel and financial resources allocations to these units. This process also causes delays in the programme implementation. National presidential and parliamentary elections are held every 5 years. During the electioneering period, most members of the community especially the men and youth dedicate most of their time to political rallies and abandon agricultural activities.

**HIV and AIDS:** This disease affects the most agriculturally productive part of the rural community. The sick are unable to till their land and the family resources that would have been used to boost agricultural production are diverted to medical care. The other family members are also affected because they have to leave their farming activities to nurse the sick either at home (home based care) or at the hospital wards.

## 2.8 NALEP Achievements

The programme has heavily boosted the institutional capacity by providing motorcycles and vehicles for the extension staff. Each district has a new vehicle while each division has a new motorcycle purchased for the project work. It has also provided computers and internet connections to all the District and Provincial offices for ease of data collection, processing, report compilation and communication.

The programme has improved demand driven extension and bottom up planning. The farmers have been able to identify, plan and implement their activities and demand for specific interventions from the appropriate extension service providers. Common Interest Groups have been formed and implemented enterprise specific activities successfully. The groups have been able to access clean and superior planting materials for bananas, sweet potatoes, ground nuts, beans, tomatoes, potatoes and cassava. Group marketing of the crop products has been successfully done. Since the farmers own these CIGs, then their sustainability is highly feasible. Value addition to agricultural products, both for local consumption and marketing has been undertaken by the CIGs. . Oil processing especially from simsim and sunflower has been quite a profitable group activity. The growth and marketing of new high value crops such as mushrooms, vanilla and artemisia has been made easier through the CIG approach

Transparency and accountability has improved at all the levels of programme operation. budgeting process is well organized. The divisional extension team draws their budgets for the programme activities in time (activity budgeting). These budgets are reviewed, amended and adopted at the District management team level after which they are presented at annual National budgeting and planning meeting for further review and adoption. The draft budgets are then sent to all the stations for perusal and report any errors before being sent to the treasury for release of funds. Bottom up planning enables the implementers at the local level to plan and execute the programme smoothly. All the stakeholders especially the farmer (beneficiaries) have access to the budgetary allocations for their respective areas. There are checks and balances at the district level to ensure efficiency in the use of funds. The government auditors regularly audit the programme, and then an external audit firm “pricewaterhouse and coopers” carries out a rolling audit once or twice each financial year. The audit reports are used to make any corrective measures on time to arrest any misused of the resources.

Documented success cases include the KIM tomatoes production group in Western Kenya, French beans and dairy goats’ projects in Eastern Province. All the cases involve collaborative efforts of the farmers groups, agricultural extension officers, Non Governmental Organizations and private service providers.

### 3. Conclusions and Recommendations

Soil and water conservation is a noble idea for sustainable agricultural development and food security for the country. The initial activities were introduced using a wrong approach. It has taken the country more than 50 years, but the activities are still not fully adopted by the rural communities.

Coercion (forceful) and persuasive (supply driven) approaches lead to quick but unsustainable development. Demand driven approach is one way of achieving sustainable development

The strong community and stakeholder involvement in the whole project process is likely to enable the project activities to be sustainable and lead to long term improvement in the rural folk economic welfare.

The local community should be involved in the identification, formulation, implementation and assessment of any development projects in their areas. This way the community will own and sustain the development activities.

In designing any rural development programme, it is necessary to consider sustainability. This can only be achieved if the social Equity, Economic empowerment and Environmental issues are considered on equal footing in geographical and time scale. While exploiting the current natural resources, it is also important to bear in mind the welfare of the future generations of flora and fauna.

Coordinated activities of several development partners are needed to achieve sustainable development. All the parties involved in the programme should appreciate the challenges and work towards minimizing their effects on the overall performance of the programme. The National Agriculture and Livestock Extension Programme is a model programme that brings all the development partners on board. If well managed, the programme could register even higher level of success.

Other projects funded by local and international organizations should be encouraged to use this model to improve sustainability of their activities.

### Acknowledgements

The authors would wish to thank the Chinese Scholarship Council, The Ministries of Agriculture and Livestock Development in Kenya for their support in the preparation of this paper.

### Corresponding Author:

Titus Wambua Mutisya

Telephone numbers:

+8615827164300, +862759723546

<http://www.sciencepub.net/rural>

### References

- [1] Baiya, F. M. 2000. Focal Area Extension Planning, Field Guide Notes. National Agricultural and Livestock Extension Program. Ministry of Agriculture and Rural Development, Nairobi.
- [2] Barrett, C. Mude ,A and Omiti J.,2007. *Decentralization and Social Economic Development- Lessons from Kenya*. 86- 87.
- [3] Burton, E.S. 2008. Global Review of Good Agricultural Extension Advisory Service Practices. Paper presented to the Extension and Rural Development Workshop. International Policy Research Institute (IFPRI) 12 – 15 November 2002. Washington DC.
- [4] Ellis, F., Freeman ,A.2005. Rural Livelihoods and Poverty Eradication Policies. *Studies in Development Economics*. 315.
- [5] Mackenzie, F.,Portsmouth, Heinemann, 1999. Land, Ecology and Social Resistance in Kenya 1880- 1952. *Journal of the Royal Anthropological Institute*, 5 (2) . 286 & 326.
- [6] Maddox ,G.2006. *Sub – Saharan Africa: An Environmental History ABC- CLIO*. 157
- [7] Makoha, M., Odera, H., Maritim, I. K., Okalebe, J. R. and Iruria, D, M. 1999. Farmers' perceptions and adoption of soil management technologies in Western Kenya. *African Crop Science Journal* 7 (4): 549-58.
- [8] Mati, B. M. 2005. Overview of water and soil nutrient management under smallholder rain fed agriculture in East Africa. *Working Paper 105*, Colombo, Sri Lanka: International Water Management Institute (IWMI).
- [9] MoA&RD. 2000, 2005. National Agricultural and Livestock Extension Program. Project Document. Ministry of Agriculture and Rural Development. Nairobi.
- [10] Nambiro, E., Omit, J., Mugunieri, L.2006. Decentralization and access of agricultural extension services in Kenya, A paper presented in Annual meeting, August 12 – 18 International Association of Agricultural Economics. Queensland. Australia.
- [11] Nyangena, W.2008.Social determinants of Soil and Water Conservation in Rural Kenya, *Environment, Development and Sustainability*, 10 (6) 745 – 767.
- [12] Ongwenyi ,G., Kithila, S . & Denga ,F.1993. An overview of the soil erosion and sedimentation problems in Kenya . *Sediment Problems: Strategies for Monitoring*,

[wroediter@gmail.com](mailto:wroediter@gmail.com)

- Prediction and Control* (Proceedings of the Yokohama Symposium). IAHS Publ. no. 217.
- [13] Republic of Kenya, 2001. Poverty Reduction Strategy Paper for the Period 2001-2002. Ministry of Finance.
- [14] Republic of Kenya. 1999. The 1999 Population and Housing Census. The Population Report. Central Bureau of Statistics, Ministry of Finance and Planning, Nairobi. Central Bureau of Statistics.
- [15] Republic of Kenya. 2000. Statistical Abstract. Central Bureau of Statistics, Ministry of Finance and Planning, Nairobi. Central Bureau of Statistics.
- [16] Sombroek, W. G. Braun, H. M. H., Van der Pouw, B. J. A .1980. *The explanatory soil map and agro-climatic zone map of Kenya*. Report No. E.I. Kenya Soil Survey, Nairobi.
- [17] Stichter, S.1976. Government and labour in Kenya 1895 – 1963, *Canadian Journal of African Studies*.Vol 10. 168 – 170

2/1/2010