

# Enhancing Food Security With Dryland Farming Techniques

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## ENHANCING FOOD SECURITY WITH DRYLAND FARMING TECHNIQUES.

SASOL FOUNDATION

COUNTRY KENYA

SPECIFIC LOCATIONS LOWER YATTA AND MUTOMO DISTRICTS

TOTAL PROJECT INVESTMENT KES. 307,043,750

AMOUNT REQUESTED FROM KES.185,700,000  
CFGB/MCC

EXPECTED PROJECT START DATE: JANUARY,2010

PROPOSAL SUBMISSION DATE: 16<sup>th</sup> SEPTEMBER,2010

PRESENTED BY J. MUTINDA MUNGUTI

## 2. Proposal summary sheet

PROPOSAL SUBMISSION DATE 24<sup>TH</sup> AUG 2010

ENHANCING FOOD SECURITY WITH DRYLAND FARMING TECHNIQUES.

## Enhancing Food Security With Dryland Farming Techniques

SAHELIAN SOLUTIONS (SASOL) FOUNDATION.

COUNTRY KENYA.

SPECIFIC LOCATIONS Lower Yatta and Mutomo Districts  
(Kanyongonyo, Kiseuni, Maluma,  
Kalivu and Athi Locations)

TOTAL BUDGET KES. 307,043,750

AMOUNT REQUESTED FROM KES.185,700,000  
MCC/CFGB

EXPECTED PROJECT START DATE JANUARY, 2011

EXPECTED PROJECT END DATE DECEMBER,2015

### **BRIEF DESCRIPTION OF BENEFICIARIES**

The proposed project will focus on 6250 HH as beneficiaries drawn from Marginalized Mixed Farming (MMF) livelihood zone. Mainly 80% of the population in MMF zones of Kitui and Mutomo Districts depends on subsistence agriculture hence vulnerable to food insecurity due to vagaries of weather. Self-targeting will be employed to select the beneficiaries as they will be required to contribute in terms of labour, resources and decision making.

SASOL shall play a facilitative role in guiding the selection criteria while the local government shall provide a secure enabling environment. Gender mainstreaming shall be central in all activities including beneficiary selection, project leadership and management. It suffices to say that, in the Akamba community, women and girls have more responsibilities in water and food related household chores due to communal gender roles. Therefore such a food security project shall have more pronounced impact on the lives of women and girls.

## **SUMMARY OF THE PROJECT**

The proposed project area lies within an aridity margin of 85-100% ASAL (1992 ASAL Development policy, Government of Kenya) and is classified as Marginal Mixed Farming livelihood zone by Kenya Food Security Steering Group (KFSSG). It receives bimodal rainfall with ranges between 400-700mm/annum with open pan evaporation rate exceeding 2000mm/annum. This however comes as inherently erratic and heavy showers that are lost immediately as run-off. 80% of the population in this region depends mainly on subsistence agriculture. Poor farming practises and limited structures for soil and water harvesting characterize the area. The interventions will include (1) Water harvesting through sand dam construction and terracing; (2) Food security enhancement through growing of dryland crops and fruit trees; (3) Extension services and demonstrations; (4),Enhancing the capacity of farmers on dryland farming techniques, project management skills, appropriate sanitation and Hygiene practices; and (5) Lobbying and awareness creation at community and government level.

## **MATERIAL RESOURCES REQUESTED.**

The proposed project will be accomplished with following resources: (1)Sand dam construction materials (Cement, Metal bars, timber, nails and tools); (2) Planting Materials( 6,250Kgs of green grams, Sorghum, Cassava, 6250 seedlings of Passion fruits and 31250 Paw-paw Seedlings); (3) Farm tools (hoes, pick-axes, shovels).

## **CONTACT INFORMATION.**

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## **3. Project overview**

### **3.1 Implementing Partner Information**

SASOL (Sahelian Solutions) Foundation is a legally registered non-governmental organization with the government of Kenya since

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1994(Reg No. OP 218/051/9369/238), though her involvement in development interventions dates back to 1990.

### **The vision**

To be a leading organization in enhancement of sustainable development in Africa.

### **The mission**

To empower and support communities' structures and skills relevant for sustainable utilization of resources to improve their livelihoods.

### **Experience**

Since 1995, SASOL foundation has constructed 750 sand dams with 370 off-take wells, serving 350,000 persons directly and indirectly in the wider Kitui district of Eastern province. Sand dams are masonry embankments constructed across ephemeral streams to surface flow and harvest sand for sub-surface storage. The principle aims at attenuating the rate of sub-surface water movement hence increasing lateral and horizontal stream recharge. Such impounded water is accessed and availed for both domestic and production use especially small-scale irrigation and livestock watering.

In the inception years in 1992, SASOL was involved in food security interventions both in Kenya and Somalia. Since 2006, SASOL has managed similar interventions supported by MCC and CFGF aimed supporting marginalized Kitui communities through implementation aimed at creating food security with water and trees project.

### **Management**

SASOL's programmatic approach focuses on three main thematic areas of intervention which are clearly defined in the 2009- 2020 strategic plan.

1. Land and Water Management.
2. Vocational Education
3. Enterprise Development.

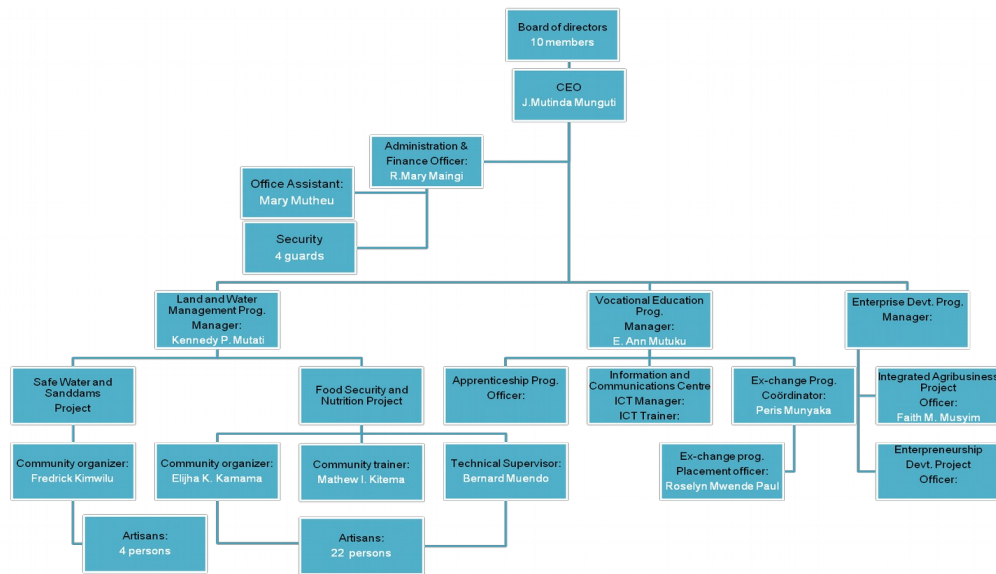
The proposed project will be under Land and Water Management programme where an integrated approach to of sand dam construction terracing, tree planting and promotion of adaptive crops will be applied. Vocational Education and Enterprise development are new independent programs and SASOL is in the process of strengthening them.

SASOL is run by a 10-member Board of Directors whose composition includes experts and community representatives drawn from the project area. At the helm of the management is the CEO supported by 2 program managers and 7 project officers with diverse

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professionalism ranging from Community Development, Land and Water management, Crop and Animal Husbandry. Currently SASOL has 34 members of staff.

## Organizational structure SASOL organogram 2010



### 3.2 Project Location Background.

The new constitution in Kenya that was promulgated on 27<sup>th</sup> August has the country divided into 9 Regions and 47 Counties. Kitui district lies under the Kitui County in the Eastern Region. However the past two years preceding the promulgation of the constitution saw immense sub-division of the original districts into smaller districts. This saw the larger Kitui district being sub-divided into 5 new districts; Kitui, Lower Yatta, Nzambani, Mutito, Mutonguni, . Previously in 2007 the district had again been sub-divided into Kitui and Mutomo Districts. Though the new districts have assumed administrative independence, they will take some time to amass enough resources especially in information database.

The proposed project will be located in Lower Yatta district (Kanyongonyo and Kiseuni locations) and Mutomo District (Maluma, Kalivu and Athi Locations). In relative terms the project shall be a southward extension and continuation of the current ongoing

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MCC/CFGB funded project. The project area is approximately 100 km west of Kitui Town and 250 km from Nairobi.

The area lies within the Arid and semi-arid (ASAL) areas of Kenya and is classified as Marginalized Mixed Farming (MMF) livelihood zone by Kenya Food Security Steering Group (KFSSG). The Arid and Semi Arid Lands (ASALs) of the world make up over 40% of the earth's surface on which over one billion people depend for their livelihoods. ASALs are home to the world's poorest and most marginalized people. In Kenya, the ASALs occupy over 80% of the country and host about 10 million people. These areas have the lowest development indicators and the highest incidence of poverty. Over 60% of ASAL inhabitants live below the poverty line (subsisting on one dollar per day) (2007 ASAL development policy-Government of Kenya).

The proposed project area receives bimodal rainfall with Short rains (November-December) and Long rains (April-May). However rainfall is characterized by inherently erratic with occasional heavy downpours, which are lost through run-off and evaporation. The rainfall ranges between 400-700mm/annum with open pan evaporation rate exceeding 2000mm/annum.

The livelihood in this area is largely dependent on subsistence farming, which is faced by the recurrent drought resulting to poor crop yields. The crops commonly grown in the area include cowpeas, sorghum, millet, cassava and maize. However, coupled with unevenly distributed rainfall the crops do not yield as per their potential due to improper land preparation, poor soil and water conservation, untimely planting and weeding, and poor post harvest storage. More often maize registers more crop failure even with the adapted drought resistant varieties due to its requirement of consistent and sufficient soil moisture.

For the last four years, SASOL, other NGOs (ADRA-Kenya) and government agencies (Decentralized Agricultural Support Structure (DASS), Arid Lands Resource Management Programme (ALRMP) have initiated similar food security interventions in the locations within the same project area. The interventions undertaken by SASOL aimed at increasing soil moisture, catchment protection and promotion of dry land farming practices. The activities included sand dam construction, terracing, fruit tree planting, and grass planting.

The proposed project area is classified as transitional ecological zone 5-6 with potential for crops such as sorghum, millet, cowpeas and green grams (1983 Farm management handbook for Kenya vol. IIB).

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However, due to a plethora of reasons the inhabitants are subjected to cyclical food insecurity.

In the past, ASAL Development policies have had a number of major inadequacies. Key among them is that the policies were not adequately supported by political goodwill and thus did not enjoy adequate funding from the government. As a result key sectors (water, education, health, transport) have suffered due to low investments. In water particularly, there has been low investments in sand dams and water pans, which harvest water for utilization during the dry season.

Inherently subsistence farmers lack the necessary skills and knowledge to optimally utilize their land for better yields. They often lack skills on seed selection, land preparation, planting timing, weed and pest control, composting/manuring, and post harvest preservation. The proposed project will add to the existing interventions; demonstration of dry land farming practices like composting, timely and appropriate farm preparation and planting, selection of adaptive seeds and proper post harvest measures. This will ensure sustainable livelihood within the area.

### **3.3 Project Rationale**

Kenya has scored low in fighting hunger. By the beginning of 2010, nearly 4 million people were still in need of food aid. According to the recently released report, "Who is really fighting hunger?" The Action Aid's Hunger FREE Scorecard gives Kenya a dismal grade "D" of 37%. With that performance Kenya ranks number 16 out of 28 developing countries assessed. MDG 1 commits countries to eradicate extreme hunger and poverty by reducing by half the proportion of people whose income is less than a dollar a day. To achieve that goal, countries are also supposed to reduce by half the proportion of people who suffer from hunger, and achieve decent and productive work for all.

In recent years, Kenya has suffered a series of food crises caused by a combination of drought, high food prices and conflict. Last year, 2009, 10 million people were in dire need of food aid forcing the government to declare famine a national disaster and launch a special kitty and extending a begging bowl to the international community.

In 2009, Paul Kagame the President of Rwanda was quoted saying, "Africa can become the world's breadbasket, but you need to work on

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it. Investing in agriculture is easier than to have millions of people starving". One of the recommendations of the report is to reverse decades of neglect of agriculture in developing countries by increasing investment in sustainable smallholder agriculture. This shall be achieved by prioritizing investment in poor farmers, especially women, with support to climate-resilient, low input agriculture as recommended by the UN's International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). The ASALs need preferential treatment due to their fragility.

The proposed project area lies within an aridity margin of 85-100% ASAL (1992 ASAL Development policy, Government of Kenya) and is classified as Marginal Mixed Farming Livelihood Zone by Kenya Food Security Steering Group (KFSSG). It receives annual rainfall ranges between 400-700mm with an open evaporation exceeding 2000mm/annum (Kenya-Belgium Water Development Programme: 1992). This zone exhibits ecological constraints which sets limit to pastoralism and settled agriculture (Salih & Ahmed, 1993). The rainfall however comes as heavy showers and is lost immediately as run-off and is inherently erratic. The high rate of potential evapotranspiration further reduces crop yields.

The cyclical drought in the ASAL zones has its impact manifested in the proposed project area through reduced livestock pasture and diminished water sources. Livestock keeping which is taken as an insurance against crop failure is also faced by challenges emanating from loss of pasture and diminished water sources. It is estimated that the average distances traversed in search for water during the dry spells is 15km one way. This contributes to poor health of livestock and forgoing other domestic chores in search of the water. The forecast for total livestock losses in the ASALs stands at 70% (Oxfam International Briefing paper, May 2006).

80% of the population living within this area depends entirely on subsistence farming. The cyclical drought and unreliable rainfall have contributed insufficient food crops and livestock losses over the past years in the proposed project area. Poor farming practises such as improper farm preparation, poor soil and water management practises in the farms, untimely weeding and growing of non-adaptive crop varieties have also contributed to crop failures. It is feared that there might be inadequate rains in the coming season (Nov-Dec 2010) according to a report from meteorological department making the situation worse.



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Limited coping mechanisms and economic opportunities within the proposed project area render access to food resources difficult. To ensure survival, men look for poorly paid casual jobs away from their homes leaving behind women and children. Other households revert to charcoal burning as a means of getting income to purchase food. This has however more devastating environmental effects that if unchecked will contribute to long-term food insecurity.

### **4. Beneficiary Selection**

The proposed project focus on 6250HH constituting 2,500 men and 3,750 women drawn from Marginalized Mixed Farming (MMF) livelihood zones of Kitui and Mutomo districts. Mainly 80% of the population in the MMF livelihood zones depends on subsistence farming. This dependency poses food insecurity vulnerability due to cyclical drought occurrence within the area. The proposed project area is faced with inadequate water and soil conservation structures amid its potential for higher production.

Self-targeting will be employed to select beneficiaries since their contribution in terms of labour, resources and decision-making will be fundamental to the success of the project. Deliberate efforts will be made by SASOL to ensure that the old and people living with HIV/AIDS contributes to the project and receives its benefits.

SASOL shall assume a facilitative role in guiding the selection criteria over the entire period of beneficiary selection. Such guidance will range from assisting the beneficiaries in forming functional groups, formulation of by-laws governing their day-to-day operations and leadership in the project. Local government at the locational will be involved to provide a secure and enabling environment. Gender mainstreaming shall be central in all project implementation activities ranging from beneficiary identification and selection, decision-making, project management and leadership to utility. In the Akamba community, the roles of water collection and food related domestic chores are bestowed on women and girls. Therefore such a food security project would be a relief and satisfaction on the lives of women and girls.

## **5. Project Description**

### **5.1 Ultimate outcome**

To ensure that all households have access to safe adequate food and water

### **5.2 Intermediate Outcomes**

1. Water availability within 3 kms.
2. Improved household water consumption.
3. Increased food varieties consumed.
4. Increased percentage of households consuming adequate food requirements.
5. Increase in number of households with surplus yield for sale.
6. Increased percentage of households with functional storage facilities

### **5.3 Immediate outcome**

1. Access to water for domestic and production use
2. Water facilities operated and maintained by community groups
3. Increase in crop yield/ production
4. Increase in number of crop varieties produced (Millet, sorghum, cow peas, cassava, green grams)
5. Increase in HH practicing composting, early farm preparation and planting, terracing, and planting of diverse drought resistant crops.
6. Increase in households planting pawpaw and passion fruit trees.
7. Increase in storage facilities built and used.

### **5.4 Outputs**

1. 250 sand dams and 150 off-take wells constructed.
2. 4,375,000 M of terraces laid
3. 2500 participants trained in Dryland Farming Techniques, PHAST and Project Management
4. 2500 model/demo farms established
5. 6,250kgs of green grams, 6,250 kgs of sorghum, and 6,250 kgs of cassava distributed.
6. 62,500 passion and 31,250 pawpaw fruit trees raised.
7. Lobby and advocacy meetings held.
8. 250 sand dam user groups, 5 Catchment protection groups 5 farmers associations formed.

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## 5.5 Inputs

### 5.5.1 Personnel

Name	Position	Responsibility
J. Mutinda Munguti	CEO	Overall project supervision Reporting to CFGB and MCC-K
R. Mary Maingi	Finance & Adminstration officer	Provide financial statements. Facilitation payment and tendering logistics. Keep financial records.
Kennedy P.Mutati	Land and Water Program Manager	Overall field operation management. Allocate duties to officers. Monitor progress.
Elijah Kamama	Project Officer/ Community Organizer	Oversee beneficiary selection and mobilization. Participate in site selection. Monitor progress Ensure efficiency and accountability in field operations. Provide monthly report.
Mathew Kitema	Project Officer/ Community Trainer	Oversee beneficiary selection. Participate in selection. Facilitate trainings and awareness meetings. Conduct follow-up exercises. Provide monthly progress report.
Bernard Muendo	Technical Supervisor	Participate in site selection and confirmation. Overall technical designs and supervision for all construction works. Provide technical progress reports.
Evalyne Mwongela	Technical Officer- Trainee	Assist in technical quality assurance.
To be recruited	Agricultural Extensionist	Oversee Dryland farming practices.
To be recruited	M & E Officer	Develop M& E tools Undertake baseline and impact surveys, Reporting
16 Masons/Artisans	Masons/Artisans	Ensure site management. Keep daily activity records. Undertake construction works. Provide technical progress reports

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## **5.5.2 Transportation**

A set of 5 motorbikes and two vehicles will facilitate implementation, co-ordination and monitoring of field activity progress.

## **5.5.3 Administration**

Administration office is based at Kitui town with an average distance of 100km from the proposed project area. The office is strategically placed to offer logistical co-ordination and allow liaison with all other stakeholders. The office is equipped with modern equipments including computers, printers and Internet.

## **5.6 Activities**

### **5.6.1 Water harvesting**

#### 1. Sand dam construction

Sand dam construction process begins with survey and site identification. At this level, SASOL project officers and the target beneficiary community are involved. Technical and socio-economic yardsticks are considered. Upon identification of a suitable site for sand dam construction, a design of the structure is produced by SASOL. The community contributes in the activity through mobilization of locally sourced materials (Stones, Sand and Water) and provision of unskilled labour (Trenching and Construction) while SASOL offers technical supervision, skilled labour and provision of materials (cement and reinforcement bars). The complete sand dam serves to impound water upstream which is accessed through off-take wells.

#### 2. Off-take wells

Off-take well provides access to the impounded water once the rain falls. It is sited upstream of a complete dam. The well is excavated to a depth of at least 20ft and shaft constructed with concrete blocks. It is then fitted with Afridev hand pump.

#### 3. Terracing

This will involve assessment of the areas to be terraced (plots and catchment area). SASOL artisans will lay the terraces depending on the general slope of the farms. Retention ditches will be laid at the upper points of the farms to harvest all run-off water. SASOL shall provide the farmers with shovel and pick-axes for making the terraces. The

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terracing will be undertaken during the dry months of the year (July-October).

#### 4. Bank protection

As a means of enhancing the positive impacts of the project, bank protection will involve growing of grasses (Vetiver, Bamboo and Napier) along the banks of the streams on which sand dams will be constructed. Propagation centres will be established in model farms.

### **5.6.2 Trainings**

#### **1. Dry-land Farming Techniques**

This will be undertaken through 5-day workshops and demonstration events.

Emphasis will be on the following topics

- Land preparation
- Seed selection and sourcing
- Timely planting
- Composting and Manuring
- Weeding, pests and disease control
- Harvesting
- Food budget, Storage and Seed banks
- Marketing

#### **2. Project management**

This will be undertaken through a workshop.

The training will impart management and leadership skills to the participants hence ensuring sustainability of their projects.

Topics include:

- Resource identification and mobilization
- Leadership roles and responsibilities
- Monitoring and evaluation of projects

#### **3. PHAST (Participatory Hygiene and Sanitation Transformation)**

This will be facilitated through a workshop. Hygiene and sanitation practices highlighted will include; safe disposal of human waste, Prevention of water and food contamination. Pictorial charts will be used to enhance the understanding of the community members.

Topics include:

- Sanitation and Water Ladder
- Faecal oral route and its barriers

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- Malaria oral route and its barriers
- Aids routes and its barriers

### **5.6.3. Food security enhancement**

#### **1. Model/demonstration farms**

The farmers who receive training shall select representative farms as model farms.

The model farms will:

- Provide training on Dryland farming techniques
- Demonstrate best practices on Dryland farming
- Carryout farming in a sustainable way.

#### **2. Extension services**

SASOL project officers will be conducting regular follow up exercises to monitor on-farm activities and offer guidance to the farmers. This will ensure that farm operations such as preparation, terracing, weed and pest control and post-harvest are done accordingly to realize the benefits.

#### **3. Seed distribution co-ordination**

In the effort to support and promote Dryland farming, SASOL will source drought resistant seeds from KARI (Kenya Agricultural Research Institute) such as Sorghum, green grams and cassava cuttings and distribute to farmers.

#### **4. Fruit trees growing**

The activities shall include:

- Seed collection and sourcing by each group
- Nursery establishment by each group on their own site/farm
- Distribution of potting polythene bags
- Potting and seedlings care
- Planting holes preparation
- Planting and protection

#### **5. Livestock restocking**

This will involve chicken restocking and upgrading of goats breeds, which are adaptive to the climatic condition of the project area.

### **5.6.4 Group Formation and linkage to stake holders.**

Sand dam, farmers and catchment protection groups will be established. The project officers will facilitate this. The officers will

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ensure that relevant actors in the specific groups are linked to the groups.

The process includes:

- Mobilization of target population
- Community meetings to discuss the process and importance of groups.
- Formation of water user groups, Catchment protection groups and Farmers Associations
- Drafting of constitutions and bylaws
- Registration of groups

### **5.6.5 Exposure visits and meetings**

Exchange visits for the beneficiaries will be organized.

This will entail taking the beneficiaries to:

- Sand dam communities/farmers Kamale and Wingoo Farmers Associations in Nzambani Location who have benefitted from sand dams for over 10 years and now utilizing drip irrigation systems effectively.
- Self Help Groups in Kola organized by Utooni Development Organization to learn group modalities and dynamics.
- KARI Katumani, Machakos to learn from a Dryland research station on best practices.

### **5.6.2 Time line.**

Annual timeline

The timeline given below will be adopted in every project year. This is because all proposed activities will be replicated over the five year period.

<b>Activities</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>Baseline survey</b>												
<b>Construction</b>												
<b>Terracing</b>												
<b>Training</b>												
<b>Food enhancement</b>												
<b>Coordination &amp; collaboration</b>												
<b>Exposure visits and meetings.</b>												
<b>Impact survey</b>												
<b>Monitoring.</b>												

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<b>Report writing.</b>										
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## Enhancing Food Security With Dryland Farming Techniques

### 5.7 Logic Model Summary

<b>Inputs</b>	<b>Activities</b>	<b>Outputs</b>	<b>Immediate outcomes</b>	<b>Intermediate outcomes</b>	<b>Ultimate outcome</b>
Personnel Transport Building materials Tools Seeds and seedlings	Sand dam & off-take wells construction. Terracing. Trainings Food security enhancement Seed distribution Coordination, Awareness and collaboration Monitoring and Evaluation	250 sand dams and 150 off-take wells constructed. 4,375,000 M of terraces laid 2500 participants trained in Dryland Farming Techniques, PHAST and Project Management 2500 model/demo farms established 6,250kgs of green grams, 6,250 kgs of sorghum, and 6,250 kgs of cassava distributed. 62,500 passion and 31,250 pawpaw fruit trees raised. 6 lobby and advocacy meetings held 250 sand dam user groups, 5 Catchment protection groups, 5 farmers associations formed.	Access to water for domestic and production use Water facilities operated and maintained by community groups Increase in crop yield/production Increase in number of crop varieties produced (Millet, sorghum, cow peas, cassava, green grams) Increase in HH practicing composting, early farm preparation and planting, terracing, and planting of diverse drought resistant crops. Increase in households planting pawpaw and passion fruit trees. Increase in storage facilities built and used.	Water availability within 3 kms Improved household water consumption Increased food varieties consumed Increased percentage of households consuming adequate food requirements Increase in number of households with surplus for sale. Increased percentage of households with functional storage facilities	All households living in the marginalized mixed farming livelihood zones of Kitui and Mutomo districts having access to adequate safe food and water.

### **5.8 Risks and mitigation strategies.**

#### **1. Effect of drought.**

The recurring droughts are evident in the dry parts of Kitui. The proposed project area lies under the same region. This adversely lowers the production from the farms. It also increases distances from water sources, which consequently reduces the efficiency of water demanding activities and availability of water for small scale irrigation and livestock use. Should the situation occur a food for work initiative may deem viable to support the community to undertake the project activities.

The increased distance from water sources may demand for attention to seek alternative means of getting water for construction during the early stages of the project.

#### **2. Price fluctuations**

The aftermath of the 2007 post election violence has witnessed a peaceful coexistence of the Kenyan people. This peace coupled with the smooth August referendum and promulgation of the new constitution has stimulated investor confidence and economic growth. Currently the country is witnessing a lot of infrastructural development especially in road networks and construction industry. Also Kenya has become the main supplier of building materials especially cement to the growing Southern Sudanese economy. This will imply possible sudden increase in prices for hardware materials. As a result, the proposed budget for hardware materials might fluctuate unexpectedly.

To ensure that all activities are implemented, consultation between SASOL and MCC/CFGB will be made at the beginning of every year for necessary budgetary adjustments if any.

#### **3. Dependency on community participation.**

Reduced community participation may impact the project negatively since it is estimated at 40% of the overall project input in the implementation. This might be caused by persistent drought and famine or existence of other implementers in the project area with an approach of paying the beneficiary.

In cases of famine situation, food for work is initiated. In addition, SASOL maintains a good relationship with the beneficiaries and ensures that they are aware of the outcomes of the project.

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### 6. Monitoring and Evaluation

#### 6.1 Monitoring and evaluation plan

Expected results	Indicator	Baseline Data	Targets	Data sources	Data collection Methodology	Frequency of Data collection	Population covered	Responsible
Ultimate outcome: All households living in the marginalized mixed farming(MMF) livelihood zones of Kitui and Mutomo districts having access to adequate safe food and water								
Intermediate outcomes								
Water availability within 3 kms.	Sand dams and off-take wells being utilized.	To be collected	75% of the dams being utilized.	Follow up reports	Questionnaires and interviews.	Annually	6250	3 Project officers.
Improved household water consumption	Increased safe water for domestic consumption.	To be collected	75% of the off-take wells being utilized.	Follow up reports	Questionnaires and interviews	Annually	6250	3 Project officers
Increased food varieties consumed.	Adopted diverse food varieties.	To be collected	100% of farms with diverse variety of crops.	Field monitoring reports.	Interviews and questionnaire.	Quarterly	6250	3 Project officers
Increased percentage of households consuming adequate food	Households improved health.	To be collected	75% of households consuming at least 2 full balanced meals per	Field monitoring reports.	Interviews and questionnaire	Annually.	6250	3 Project officers

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requirements			day.					
Increase in number of households with surplus for sale.	Farmers with enough produce for own consumption and surplus for sale.	To be collected	50% increase in income from sale of surplus.	Field monitoring reports.	Interviews and questionnaire	Annually.	6250	3 Project officers
Increased percentage of households with functional storage facilities.	Safe storage of production.	To be collected	75% of households with safe storage facilities.	Field monitoring reports.	Interviews and questionnaire	Annually.	6250	3 Project officers
Outputs								
Sand dams and off-take wells constructed .	250 and 150 off-take wells constructed respectively .	To be collected	100 % construction	Field monitoring reports.	Questionnaires.	Monthly	6250	3 Project officers
Soil conservation.	4,375,000 M of terraces laid	To be collected	100% terracing.	Field and training reports.	Interviews	Quarterly	6250	3 Project officers
Training and demonstration	2500 participants trained in Dryland	To be collected	100% participants trained.	Field and training reports.	Interviews	Quarterly	6250	3 Project officers.

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dryland farming.	Farming Techniques, PHAST and Project Management 2500 model/demo farms established							
Dry land seed supplementing.	6,250kgs of green grams, 6,250 kgs of sorghum, and 6,250 kgs of cassava distributed.	To be collected	100% seed supplemented.	Field and training reports.	Interviews	Quarterly	6250	3 Project officers
Supplementing on fruit trees.	62,500 passion and 31,250 pawpaw fruit trees raised.	To be collected	75% fruit tree survival to production.	Field and training reports.	Interviews	Quarterly	6250	3 Project officers
Advocacy and group formation.	6 lobby and advocacy meetings held 250 sand dam user groups, 5 Catchment	To be collected	x	Field and training reports.	Interviews	Quarterly	6250	3 Project officers

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	protection groups, 5 farmers associations formed.							
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*Project officers: Community organizer, Trainer, Extensionist, M&E and Technical supervisor.*

## 6.2 Baseline Survey

- A study will be conducted upon the approval of the proposal. It will take precedence over all other activities in the proposed project area. In its checklist, the survey will seek to find: -
- The demographic dynamics in the proposed project area.
- Existing water sources, their reliability in terms of duration and quality and distance from the community members.
- Farming practices existing and their appropriateness.
- Variety and quantities of the commodities produced and feeding habits.
- Sources of Income.
- Existing soil and water harvesting structures in the farms.
- Varieties of storage facilities.

## 6.3 Project Evaluation

The proposed project will be evaluated on its outcomes towards the close of the implementation period. It will seek to gauge the proposed outcomes versus the achieved. The methodology employed will include: -

- a) Review of quarter, mid and end year reports.
- b) Data sheets with all details related to the Community members and the proposed activities.
- c) Interviews conducted during the evaluation. These will assist to provide information such as the skills gained through trainings and gauge level of appreciation of the project activities.
- d) Mid-term evaluation reports will also be used to provide information for recommendations on future projects.

The assessment of outcomes and outputs will assist to measure their relevance towards attainment of the ultimate outcome.

## 7. Cross-cutting themes and principles

### 7.1 Gender

The proposed project will address the plight of the youth. This will be through the awareness meetings and income generation opportunities created. Gender mainstreaming will be central in all activities including beneficiary selection, decision-making and project leadership. Safe working environment for women, girls and boys shall be ensured during implementation of the project activities. It would suffice to say that the responsibility of water collection and household food related chores is vested on women and girls. Their involvement towards the projects' success will be an achievement.

## **7.2 Participant involvement.**

The proposed project will take in to consideration full engagement of the beneficiaries. SASOL strongly believes that local communities should be agents of their own development. They have a wealth of their homegrown development dynamics, which are fundamental to the projects success. Their opinions and ideas are highly honoured and put into consideration during planning and at site specific meetings the overall participant contribution amounts to 40% of the total project cost.

Participation in decision making and contribution of local materials and material accountability at the stores enhances ensures continued maintenance hence assured sustainability after SASOL quits to be an active partner.

## **7.3 Environment**

In January 2010 SASOL sub-contracted 2 specialists from the National Environmental Management Authority to conduct an audit of the existing food security project. This was in response to the need to ensure environmental conservation and sustainability of SASOL-supported projects in Lower Yatta district that are aimed at creating food security, availability of water and enhancing the environment. The main objective is to assess compliance to the national development goals and to the existing environmental framework in Kenya, which includes, among others, the Environment Management and Coordination Act 1999(EMCA), and the associated Environment Impact Assessment and Audit regulations, 2003.

According to the report, the scale and nature of the sand dams in this case does not fall within the mandatory Environmental Impact Assessment and Audit required under EMCA. It is however important to subject the projects to an environmental screening process, impact assessment and monitoring in order to adequately address any environmental concerns that may arise thereof.

One of the most significant findings of the assessment is that there was found to have been improved food and water availability as well as enhanced the environment in the project areas. The other positive aspect of the projects entails the socio-economic values and benefits that the communities have gained from the success of these projects. This has markedly improved the well being and livelihoods of the target 6 communities, which is in line with Kenya's Vision 2030 and the Millennium Development Goals (MDGs). There are however some important environmental concerns that have been identified

### **7.3.1 Positive impacts**

1. Construction of sand dams has increased water points in the sub-locations.



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2. Increased vegetation and grass cover in the catchment areas and along the recharged channels.
3. Reduced distance to water points for the domestic and livestock consumption.
4. Reduced water-borne disease prevalence due to improved water quality and awareness from PHAST training.
5. Improved community cohesion upon organization and mobilization.
6. Promotion of infrastructural development as the obstructed sand is harvested for construction.
7. The sand dams constructed attenuate the gradient of the channel thus reducing the impact of erosion.
8. Controlled soil erosion and increased farm yield.

### **7.3.2 Negative Impacts**

1. Open water in new dams increases mosquito-breeding places thus increasing the risk of spreading malaria. This problem diminishes as dams fill up with sand.
2. Possible contamination of sand dams' water by human, animal and agricultural activities may cause health risk to the community.
3. Clearing of sand dam sites for intensive agriculture.
4. In cases of poor site selection, there are possibilities of change of river course and dam failures resulting to big environmental and economic losses.
5. Spread of water borne diseases such as bilharzias to children as a result of swimming in the stagnant water pools.

### **7.3.4 Mitigation of Negative Impacts**

1. Education to preserve and enhance vegetative cover at dam site to preserve water source.
2. Hygiene and sanitation practices institution to maintain clean water.
3. Strict engineering principles must be adhered to.
4. Campaign on precautionary land clearing at the sand sites.
5. Educating the parents on the dangers of allowing their children to swim in the stagnant waters.

### **7.3.5 Enhancing of positive aspects**

1. Training on the tree seedling and grass cultivars production for re-vegetation.
2. Promotion of on-farm water harvesting to secure food production and stability.
3. Sensitization to invoke sound environmental management principles.

### 7.3.6 Impact of sand dams

#### Short Term Impacts

1. The impacts of sand dams are observed shortly upon the onset of rains and longer after the aquifer stabilization due to recharge.
2. The short-term impacts are such as availability of water in off-take wells which considerably reduces the distance people used to walk in search of water for domestic and livestock use.

#### Long-term Effects

1. Ground water stabilization after full aquifer recharge. This diversifies water resources within the area. Additionally, the ground recharge mitigates against possible landslides/subsidence, which occur as a result of ground imbalance due to water depletion.
2. Colonization of new flora consequently attracting new animal species from surrounding. This enhances the richness in terms of natural resources.
3. Improved livelihood of the community members upon practicing small-scale irrigation. This ensures food sufficiency all year round and income generation from the sale of the produce.
4. The moisture retention within the sand reservoir enhances the hydrologic cycle hence solution to climate change.

## 7.4 Capacity building

### 7.4.1 Staffing

In her human resource policy, SASOL is guided by the principle of “growing rather than hiring staff”. SASOL hires strategically staff that have the capacity and right attitude towards grassroots development. Incentives like internal promotions are encouraged to motivate staff to aim higher. The current CEO joined SASOL in 2002 as a community organizer and rose to be a Programme Coordinator. He was encouraged by the board to join a postgraduate study on Development Studies in the Netherlands where upon completion came back in January 2009 as the CEO. Anne and Kennedy who are now Programme Managers joined SASOL as student interns during their college days. Peris is currently pursuing a post-graduate degree on Animal nutrition at Manitoba University, Canada. Mary, our Finance and Administration Officer is pursuing part-time a Kenya Accounting Technicians Certificate course. Fredrick is a registered Environmental Expert and is currently pursuing a postgraduate degree in Msc. Land and Water Management.

In April 2009 the entire management team actively participated in a one-week exercise in drafting the 2009-2020 SASOL Strategic Plan.

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Our masons receive a one-week refresher training workshop every year to keep them abreast with new developments in construction.

### **7.4.2 Core Values**

SASOL is distinctively shaped by her system of core values that include:

1. Integrity
2. Professionalism
3. Client first
4. Equity and equality

### **7.4.3 Mandates and responsibilities**

Whereas the details of the mandates and responsibilities change as plans are achieved or abandoned, as environment and focus changes, SASOL has permanent auto generated mandates and responsibilities. These are:

1. That all projects be done in a participatory manner with respect to target communities.
2. That programme activities be planned with the partners.
3. That the overhead and operating costs be kept at a minimum so as to support activities, which are of benefit to target communities.
4. Those activities are based on knowledge not development whims.
5. That local and external knowledge be utilized to solve problems.
6. Protect humanity and ecosystems with impartiality.

### **7.4.4 Community Capacity**

SASOL has a commitment to enhance the capacity of the target population by empowering them in the following skills:

1. Leadership skills, Group formation and Conflict resolution skills.
2. Environmental management and protection skills.
3. Dry-land farming practices
4. Hygiene and sanitation practices.

## **7.5 Sustainability**

The implementation strategy in the proposed project would be through participatory processes. SASOL shall play a facilitative role in order to create room for the target population to take full responsibility and ownership of their own affairs.

The first step will involve organizing the community into user groups/ farmers associations guided by committees and laid down rules and regulations.

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Participant's involvement will cut across from planning and decision making to implementation and maintenance and utility.

The local government administration will be involved from the project inception to ensure a secure favourable environment for project implementation and sustainability.

Training on project management will foster management skills on the participants to ensure that the established projects are managed accordingly. Participants will be able to run the project with select committees. Upon completion of the structures, the community members will assume full ownership of the project. This will be guided by by-laws formulated and will ensure continued maintenance and utility.

Further SASOL shall look forward for follow-up programmes either financed by MCC/CFGB or other donors. This will ensure that the new skills are entrenched within the farming practices of the community and also provide opportunities to review and upgrade to new technologies.

### 7. Detailed Budget

Activities	Unit	Quantity	Cost Unit	Per	Budgeted.
<b>1. CONSTRUCTION</b>					
a) Sand dams					
-Materials	Sand dam	250	285,900		71,475,000
-Artisan labour (sand dam)	Sand dam	250	54,000		13,500,000
-Site management	Sand dam	250	115,000		28,750,000
b) Wells	well	150	29,250		4,387,500
-Materials	well	150	13,500		2,025,000
-Labour	Pump	150	40,000		6,000,000
-Pumps					
c) Terraces	H/hold	6,250	900		5,625,000
-Tools	100m	43,750	50		2,187,500
-Laying	H/hold farm	6,250	450		2,812,500
-Supervision					
d) Bank Protection	Sand Dam				
-Grasses		250	2000		500,000
<b>2. TRAININGS</b>					
a) Natural Resource	Training	25	65,000		1,625,000

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Management	Training	25	65,000	1,625,000
b) Project Management	Training	25	65,000	1,625,000
c) Participatory Hygiene & Sanitation Transformation	Meeting	10	17,500	175,000
d) Awareness				
3. Food security enhancement	H/hold	2,500	400	1,000,000
a) Model/Demonstration farms	month	60	60000	3,600,000
b) Extension services				
4. Seed distribution				
a) Green Grams	kg	6,250	100	625,000
b) Sorghum	kg	6,250	100	625,000
c) Cassava	kg	6,250	10	62,500
5. Fruits trees.				
a) Passion	Seedlings	62,500	30	1,875,000
b) Paw paw	Seedlings	31,250	30	937,500
6. Livestock				
a) Chicken restocking	chicken	12,500	500	6,250,000
b) Goats breed upgrading	bucks	20	10,000	200,000
7. Post harvesting preservation	W/shop	10	65,000	650,000
a) Drying produce				
8. Co-ordination & collaboration	groups	260	5000	1,300,000
a) Linkages to stakeholders	groups	260	5000	1,300,000
b) Exposure visits and meetings				
9. Monitoring & Evaluation				
a) Baseline survey	year	5	100,000	500,000
b) Impact survey	year	5	100,000	500,000
c) Monitoring	Month	60	60,000	3,600,000
10. Transport				
a) Motor vehicles	km	60,000	50	3,000,000
b) Motorbikes	km	480,000	10	4,800,000
11. Administration	year	5	240,000	12,000,000
Total				
Ksh: 185,700,000		Amount		Requested

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### YEARLY BUDGET (in Kes.)

ITEM	YR 1	YR 2	YR 3	YR 4	YR 5	TOTALS
1.Construction Materials & tools.	17,597,500	17,597,500	17,597,500	17,597,500	17,597,500	87,987,500
2.Artisan labour	3,105,000	3,105,000	3,105,000	3,105,000	3,105,000	15,525,000
3.Site Management & Supervision	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	33,750,000
4.Trainings & Awareness	1,010,000	1,010,000	1,010,000	1,010,000	1,010,000	5,050,000
5.Food security enhancement	3,277,500	3,277,500	3,277,500	3,277,500	3,277,500	16,387,500
6.Co-ordination & collaboration	520,000	520,000	520,000	520,000	520,000	2,600,000
7.Monitoring & Evaluation	920,000	920,000	920,000	920,000	920,000	4,600,000
8.Transport	1,560,000	1,560,000	1,560,000	1,560,000	1,560,000	7,800,000
9.Adminstration cost	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	12,000,000
<b>Total project cost MCC-K/CFGB</b>	<b>36,990,000</b>	<b>36,990,000</b>	<b>36,990,000</b>	<b>36,990,000</b>	<b>36,990,000</b>	<b>185,700,000</b>
<b>COMMUNITY CONTRIBUTION.</b>						
Labour	16,556,250	16,556,250	16,556,250	16,556,250	16,556,250	82,781,250
Materials	5,862,500	5,862,500	5,862,500	5,862,500	5,862,500	29,312,500
Cash	500,000	500,000	500,000	500,000	500,000	2,500,000
Food	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	7,500,000
<b>Total community input</b>	<b>24,418,750</b>	<b>24,418,750</b>	<b>24,418,750</b>	<b>24,418,750</b>	<b>24,418,750</b>	<b>122,093,750</b>
Total Project Investment.	61,408,750	61,408,750	61,408,750	61,408,750	61,408,750	307,793,750

## Enhancing Food Security With Dryland Farming Techniques

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**Amount requested from MCC-K/CFGB----- Kshs.185, 700,000**