

DIOCESE OF EMBU CARITAS



**Uplifting the Living Standards of
Rural Communities Through
People-Led Development (PLD)
Approach**

Misereor Germany

MISEREOR
• THE HELP WORK

September 2021

Uplifting the Living Standards of Rural Communities Through People-Led Development (PLD) Approach.

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Preface

Different approaches have been used in community development processes in the past. Caritas Embu, the socio-economic Arm of the Diocese of Embu has adopted People-Led Development approach in the implementation of the agricultural projects, a factor that has proved not only successful, but also has far reaching benefits to the farmers and the society at large. The aim of writing this book is to share experiences gained and successes realized in the use of PLD approach in groups that are working with Caritas within the Diocese.

The book gives an overview of Embu County, which shares the same geographical boundaries with the Diocese of Embu in which Caritas is an entity. It explains how PLD approach works and suits in the community development journey. The book further expounds on utilization of available resources and local knowledge to address the prevailing challenges within the community.

The PLD approach addresses issues pertaining to achievement of food security; conservation and sustainable use of natural resources; value-addition as well as crop and livestock production among others. Besides, lessons learnt have been included to demonstrate Caritas Embu experiences during implementation of the project through the approach. There is a deep-seated hope that the information contained herein shall be beneficial in the realm of integral development of peoples in the Diocese of Embu and beyond.

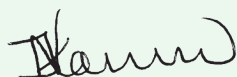


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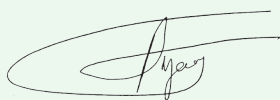
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Caritas team indeed expresses a heart-felt gratitude and appreciation to the entire Community-Based Integrated Rural Development Program staff, not only for entrenching itself in the spirit of PLD with the community from the initial stages of the project to its completion, but also for the successful writing and compilation of this book. Further, the team is grateful to the farmers and farmer-groups who fully participate in the PLD processes because without them, the information herein would not have been gotten. Indeed, a vote of thanks is extended to all those who have contributed in one way or the other to make the production of this book a success.



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ABBREVIATIONS AND ACRONYMS

ASAL	-	Arid and Semi-Arid Lands
CB-IRDP	-	Community Based Integrated Rural Development Program
D.O. E	-	Diocese of Embu
HIV/AID	-	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
ITK	-	Indigenous Technical Knowledge
MGR	-	Merry-Go-Round
PLD	-	People-Led Development
PRA	-	Participatory Rural Appraisal
SWOT	-	Strengths, Weaknesses, Opportunities, Threats

1. INTRODUCTION

The Diocese of Embu is a legal entity, registered under the Trustees of perpetual succession, Act Chapter 164 of the laws of Kenya. The Diocesan boundaries are as those of the County and lie within latitudes 20° 0' and 50° 0' South of the Equator and longitudes 37° 16' and 7° 56'. The Diocese covers five administrative sub-counties: Embu East, Embu West, Embu North, Mbeere North and Mbeere South. It covers a total area of 2,822 km² with a population of 608,599 as per 2019 National Population and Housing Census.

Agriculture is the backbone and the main source of livelihood for the people of Embu County. According to the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (Kenya), the sector currently employs 70.1 per cent of the population and 87.9 per cent of the households are engaged in agricultural activities.

The area occupied by the Diocese is characterized by three agro-ecological zones as follows:

Highland

The area receives 1500-2000mm of rainfall annually. Farmers in this area mainly rely on cash crops such as coffee, macadamia and tea. Some farmers also engage in horticultural farming whereby, they grow off-season crops such as kales, cabbages and spinach. The area is densely populated and this has led to extreme land sub divisions to the tune of an average of 1/8 of an acre, making it uneconomical for cultivation. Some farmers in this area also keep dairy cows and goats.

Midland

The zone is characterized by medium rainfall. Most farmers grow maize and beans as their main food crop for their household consumption and sale. Some farmers grow coffee, macadamia, mangoes and bananas as cash crops. In addition, dairy production is increasing especially to the well to do farmers.

Lowland

The area receives an average of 600mm amount of rainfall per year. This area experiences frequent drought. Majority of the community members in this area keep indigenous livestock and grow crops such as cowpeas, millet, sorghum and green grams.

The Diocese of Embu has a socio-economic and development Arm (Caritas Department) which was established in 1987. *Caritas* is a Latin word denoting “charity” or “God’s love for his People,” as stated in John 15: 17 “Love one another as I have loved you.” The mandate of Caritas Embu is structuring of socio-economic community action and mobilization of the means to respond to the felt needs of the people and effectively enhance holistic development of the human person in a coherent and coordinated manner.

1.1 Mission of Caritas Embu:

To holistically empower people to develop themselves towards improved life standards in collaboration with local and international partners, and in accordance with the Gospel values and the social teachings of the church.

1.2 Vision:

Caritas Embu envisions “a society where everlasting peace is shared by all God’s people.”

1.3 Core values of Caritas Embu

In the effort of fulfilling her mandate, Caritas Embu is guided by the following values:

- i. **Professionalism:** Upholding competence to ensure quality in service delivery.
- ii. **Charity/Caritas:** Love for God and neighbours
- iii. **Hope:** Our confident expectation that our strategy will bear lasting results
- iv. **Integrity:** Highest level of honesty, transparency and responsibility
- v. **Teamwork:** Working together to enhance synergy for success and common good
- vi. **Stewardship:** Taking care of and optimally utilizing the available resources
- vii. **Dedication:** The spirit of commitment

1.4 Goals of Caritas Embu

1. To uplift the living standard of poor households within the Diocese
2. To improve management of water, sanitation and hygiene for poor households within the Diocese
3. To empower poor households to adopt appropriate approaches towards sustainable food security and mitigation against climate change within the Diocese
4. To promote initiatives in prevention and integration of HIV/AIDS
5. To inculcate savings and loaning culture among poor households within the Diocese
6. To empower poor households to improve environmental conservation and sustainably manage natural resources
7. To promote value based human co-existence and social justice through civic education within the Diocese
8. To enhance technical, managerial and resource capacity of Caritas Embu for effective and efficient execution of its mandate

1.5 Development approaches

Caritas Embu has over time adopted several development approaches to achieve its goals. These approaches include:

a. Input-oriented approach

The farmers were provided with farm inputs which led to increased dependency and lack of project ownership. This resulted in project unsustainability, a factor that called for a change in the approach.

b. Cost sharing approach

The beneficiaries were partially provided with material or monetary inputs at the initial project stages. This proved to be better in terms of sustainability compared to the input-oriented approach.

c. Training and visit approach

Farmers were trained in specific areas for example, simple farm records and follow ups were conducted. This method was sustainable as long as farmers were trained on their areas of interest.

d. People-Led Development (PLD) approach

This is the approach that Caritas Embu is currently employing under the agriculture project (CB-IRDP) to uplift the living standards of the target community. It starts with situational analysis through use of social mobilization tools such as Participatory Rural Appraisal (PRA). This culminates in community action plans and their implementation. Monitoring and Evaluation are carried out to assess the progress and impact of the planned activities. The interventions planned are thus owned by people, an aspect that ensures ownership and sustainability of not only the projects but also the results gotten. This is based on peoples' specific priorities and available resources.

1.6 How People-Led Development Approach Works

PLD is an approach in which farmers reflect on their past farming experiences, analyze the present, identify gaps and opportunities and come up with their own possible solutions to address the problems. Farmers within the same locality and facing similar challenges organize themselves into Self-Help Groups. The facilitator provides technical advice during the project implementation process. The key aspects of the approach are:

I. Bottom-up approach

PLD approach encourages absorption of ideas originating from group members, hence tailoring decisions made at the project level based on those ideas. This encourages project ownership by the farmers. Principles that the bottom-up approach takes into consideration are:

- i. Engaging the community at all stages of the project cycle.** Effective community work is about doing WITH the community, not about doing FOR the community. Analyzing and mapping community needs and challenges, defining measures to address them, planning, facilitating and monitoring the interventions is done by the organization together with the community. The community plays an active role from the start to the completion of the project.
- ii. Local solutions.** Development agents are neither the specialists of people's challenges nor the solution. The agent is only a facilitator in guiding people to analyze their own development needs and come up with the possible measures to address them. In this regard, the PLD orientation tool box comprises of reflection forums with the target community and carrying-out of SWOT analysis to come up with area-specific strategic plans.
- iii. Valuing local knowledge and mechanisms.** The appropriate knowledge does not come exclusively from development agents to the target community, but rather springs from survival strategies which prove to be valuable. Although development agents may possess a lot of academic knowledge in rural development, the resource poor have much better knowledge of their own livelihoods than the agents. New ideas that may be imposed on the people and therefore do not come from them take a lot of time to be adopted. Success and sustainability of these new ideas is not guaranteed. Enhancement of existing community-based coping mechanisms has proved to be successful and sustainable since ownership is ensured.
- iv. Farmers as community facilitators.** Development interventions cannot be solely facilitated by development agents. Successful farmers take lead in peer to peer learning, field days, exhibitions and other learning platforms. This helps in sharing of experiences and practical knowledge to other farmers/communities for further trials. These farmers act as a point of reference from where other community members learn.

I. Project ownership

Project ownership and sustainability is ensured when all stakeholders at all levels of the project implementation are involved. Experiences gained from previous approaches have shown that free gifts/handouts are hard to sustain since the beneficiaries do not own them, but rather associate them with the source. The PLD approach encourages farmers to look at alternative solutions to address their needs using the locally available resources. Besides, initiatives that are not resource intensive are easily replicable.

II. Active participation of community members

Community members are encouraged to become active actors in reflection processes pertaining to their needs, priorities and come up with own viable solutions. The PLD process starts WITH the people, is led BY the people and is FOR the people. Therefore, everyone is resourceful in the community through passing on knowledge, sharing experience and mobilizing others for action. Members' farms act as platforms for knowledge and experience sharing at group level. Traditional and indigenous knowledge are also a great source of inspiration in enhancing survival and coping mechanisms.

PLD is based on peer learning and sharing. It builds on endogenous and agro-ecological systems that are tailored on traditional knowledge and practices.

PLD approach entails:

- i. Reflection and analysis sessions by the community members and development agents to identify problems they face and ways of solving them
- ii. Development of action plans at individual and group level to facilitate timely implementation of initiatives.
- iii. Peer learning: Learning takes place through farmer to farmer and group to group visits on farms where successful practices have been carried out. They then replicate these practices in their individual farms/households.
- iv. Field days, exhibitions and agricultural shows: These are organized by the community members where successful practices are show-cased to farmers. Farmers participation in agricultural shows within and outside the region enhances their knowledge and skills. This leads to increased adoption of incoming viable farming technologies, techniques and farming practices among the farmers.

- v. Demonstration sites: These are sites where farmers test different crop varieties and techniques/practices before adoption in their farms
- vi. Bulking sites: These are sites where group members plant specified crops with an aim of multiplying it for on-ward distribution to other members
- vii. Development agents play the role of facilitators and provide technical guidance to the farmers
- viii. Group formation: To ease the process of reflection, knowledge sharing and implementation of planned activities, individuals come together and form action groups
- ix. Physical household visits: Development agents visit farmers at their households for in-depth reflection and analysis on different aspects
- x. Participatory planning, implementation, monitoring and evaluation: This ensures that farmers carry out the intended activity/activities as per the agreed schedule

APPLICATION OF PLD IN DIFFERENT CONTEXTS WITHIN THE DIOCESE OF EMBU BY CARITAS:

2. REVIVAL OF TRADITIONAL CROPS

Smallholder farmers take lead in reviving traditional crops within their respective agro-ecological zones. These crops include yams, arrowroots, cow peas, sweet potatoes, millet, *dolichos lablab* and cassava among others. These crops are drought tolerant hence farmers are assured of getting some harvest even when rainfall is below the expected amount. Some of these crops were on the verge of extinction due to use of hybrid and exotic varieties. With the current weather fluctuations, farmers have been experiencing low harvest from the newly introduced crop varieties hence food insecurity. However, those that are growing traditional crops often have grains in their stores.



Farmers evaluate a sweet potato bulking plot



Growing of Arrow roots

3. KITCHEN GARDENING

To enhance food security, farmers have embraced different kitchen gardening techniques where they grow vegetables (kales, spinach, *amaranthus* and black night shade) as well as herbs for household consumption. Techniques adopted include: multi-storey gardening, sunken beds, raised beds and potted gardens. The kitchen gardens improve the family's livelihoods by:

- i. Better diet through regular supply of vegetables
- ii. Saving money that would have been used to buy vegetables for other household expenses
- iii. Recycling of waste water from the kitchen



Multi storey garden



Sunken bed garden



Potted gardens

4. GRAIN STORAGE

Proper grain storage ensures that the farmers have food throughout the year. Sun drying is key before grains are stored. Grains are extracted by use of hands and threshing. They are then winnowed and sorted before storing. Farmers use different storage techniques which include;

- a) Raised granaries (made with interwoven sticks and smeared with cow dung). Rat /rodent proves are also put in place
- b) Hanging over the fire place (smoking)
- c) Storing in air tight containers
- d) Use of Hermitic bags: Farmers stores grains inside sealed bags to avoid gas exchanges with the environment in order to deplete the oxygen and accumulate carbon dioxide gas. This suffocates any existing pests.
- e) Use of metal silos. Farmers store grains such as maize, beans and sorghum in metal silos. This ensures that grains are in an air-tight environment where no pests can survive.

4.1 Seed treatment before storage

- i. Drying in an open place under the sun
- ii. Application of wood ash. Wood ash causes loss of water on the insects' body leading to death. It also fills the spaces in-between the grains restricting the movement of the insects thus resulting to suffocation
- iii. Application of ground pepper to the grains causing irritation to the pest

4.2 Role of indigenous knowledge in genetic resource/ seed conservation

It is important to gather farmers' knowledge in seed conservation. This is because;

- i. Farmers have been involved in seed conservation for a long time hence they are able to classify seeds by colour, size, cooking quality, storage life, ecological adaptation, market price, drought tolerance, disease and pest resistance. Information about seed is gotten by farmers during social gatherings, field days and exhibitions, participation in Agricultural shows and “seed exchange activity” during farmers learning exchange visits. Farmers understand their environment better and are aware of the best seed varieties in their respective areas.



Farmers demonstrate different methods of grain and seed storage

4.3 Seed selection

Criteria for seed selection

- ii. High germination percentage
- iii. Genetic purity
- iv. Seeds from healthy, high producing and mature plants
- v. Seeds free from physical damage

Quality seeds are undamaged, pest and pathogen free. Gourds are used to store seeds and are smeared with cow dung at the opening to ensure that they are airtight.

5. ASSET BUILDING

After reflection and analysis sessions farmers come up with different strategies for acquiring productive assets. Assets acquired include livestock, farm tools and water storage facilities. Acquisition of these assets has been made possible through initiatives such as Merry-Go-Round and table banking activities.



Acquired assets through group MGR initiative

6. LIVESTOCK REARING

Unpredictable and fluctuating weather patterns calls for farmers to diversify their farming systems. Under the PLD approach farmers keep livestock species which are suitable for their respective agro-ecological zones. Animals kept include, cattle, sheep, goats, poultry, rabbits and donkey. Bee keeping and fish rearing is also practiced. Benefits associated with livestock rearing are:

- i. Meat, milk and honey, which serve as food
- ii. Source of income when sold
- iii. Investing in livestock and arable crops at the same time provide diversification and balances on the farm thus buffering investment in case of crop failure
- iv. The number of animals a farmer has is seen as an element of social prestige. Animals are also used to fulfil social obligations such as payment of dowry during marriage
- v. Animals are a source of power in some households. For instance, the donkey is used to carry loads
- vi. Animals act as a source of manure for use in the farm

Through PLD approach, farmers have increased knowledge in livestock rearing and management such as proper housing, feeding and use of appropriate pest and diseases control methods.



Improved poultry house



Improved goat shelter

6.1 Indigenous Technical Knowledge in livestock treatment

Knowledge and practice of use of herbs in livestock treatment has been passed on over generations and is still being practiced. This knowledge has proved to be sustainable since the preparation is easy and materials used are locally available. For instance, some farmers use Mexican Marigold leaves to repel fleas and ticks in livestock.

7. CROP PRODUCTION

In an effort to achieve food security, group members have devised various ways of maximizing their crop yields which include;

7.1 Timely land operations; this has been made possible through carrying out farm operations (land preparation, planting, weeding and harvesting) communally on rotational basis.

7.2 Revival of indigenous crops; group members revive crops that were traditionally grown in their respective agro-ecological zones. These crops are highly valued due to their nutritive aspect. These crops include yams in the highlands and sweet potatoes in the midlands. In lowlands, farmers grow drought tolerant crop varieties such as sorghum, cow peas, finger millet and pigeon peas. During learning exchanges, farmers share planting materials and this plays a great role in reviving the indigenous crops.



Exchange of planting materials during farmers' learning exchange visits

7.3 Acquisition of farm tools; Farm tools are necessities in sustainable food production. Farmer groups/individuals use table banking and MGR to acquire tools such as *pangas*, *jembes*, knapsack sprayers and wheelbarrows.

7.4 Soil fertility management; this is done through proper handling and application of manure, application of liquid manure, mulching, cover cropping and composting.



Mulching of a sweet potato bulking plot

A farmer tends to his compost manure

7.5 Diversification; farmers practice mixed cropping in their farms. This helps farmers spread the risk in case one crop fails.

7.6 Use of ITK in pest and disease control; farmers utilize different herbs to make concoctions which are used to either prevent or control crop pests and diseases. Some of the herbs used are Neem extract, Aloe, hot pepper and *Tithonia* among others. The remedies used are easy to prepare and the ingredients are locally available.

8. VALUE-ADDITION

Over the years, some farmers produce go to waste due to inadequate knowledge in value-addition practices. As a result, some farmers sell their farm produce immediately after harvest when the supply is high thus fetching low prices. Some agricultural produce are highly perishable forcing farmers to sell them at the prevailing market prices. Middle-men take advantage of the situation and buy farm produce at low prices. This has contributed to food insecurity among the rural poor farmers in the target area. To address these issues, farmers value-add their farm produce thus prolong the shelf life and increase the prices.

Before carrying out any value-addition procedure, one must:

- i. Dress appropriately
- ii. Wash hands with clean water and soap
- iii. Ensure that the working area and all the equipments are clean
- iv. Ensure that the working area is well organised

The value-added products are:

8.1 Enriched flour

Ingredients

Cassava, bananas, sweet potatoes, arrowroots, pumpkin and yams

Procedure

- Cassava - peel off the periderm and scrap off the cortex, remove the central vascular fiber, clean and chop the starchy flesh into small pieces
- Banana - clean and without peeling, chop into small pieces
- Arrowroots - clean and peel, chop into small pieces
- Sweet potatoes - clean and chop into small pieces
- Pumpkin - clean and cut into small pieces
- Dry the different ingredients separately under a shade
- Mill the dried ingredients separately
- Pack and store in a cool dry place

8.2 Sorghum beverage

Requirements

- Sorghum
- Sugar to taste

Procedure

- Sort, clean and dry the sorghum
- Roast until golden brown
- Grind using mortar and pestle or the traditional grinding stone
- For every 1 litre of water, add 3 tablespoons of ground sorghum
- Let it boil for 5 minutes
- Add sugar to sweet-taste (optional)
- Serve the beverage

8.3 Dried vegetables

During short rains and prolonged drought farmers experience shortage of green vegetables. Therefore, they dry green vegetables while in plenty for consumption during the dry season.

Requirements

- Fresh vegetables e.g. kales or *amaranthus*
- Vegetable drier
- Cooking pot
- Salt
- Draining spoon
- Chopping board
- Knife/slicer
- Stainless steel containers
- Source of heat
- Clean storage containers

Procedure

- Choose vegetables that are at peak maturity and free from pests and diseases
- Wash with clean water
- Remove any fibrous or woody portions and core when necessary
- Chop the vegetables into small sizes
- Dip in hot water (blanch) for 1 – 2 minutes
- Dip the vegetables in cold water to stop cooking action.
- Drain the water and spread the vegetables on a drying tray
- Place the tray under a shade or in the vegetable drier
- Pack in clean containers
- Store in a cool and dry place

8.4 Yoghurt

Requirements

- Fresh milk
- Starter culture (0.02g/L of milk) or yoghurt with live culture
- Stabilizer – corn starch/milk powder (5g/L of milk)
- Permitted flavors (Optional)
- Sugar (Optional)

Equipments

- Food grade thermometer
- Cooking pot/*sufuria*
- Source of heat
- Cooking spoon
- Sieves
- Weighing scale
- Packaging material
- Fireless cooker

Procedure

- Sieve the milk to remove any foreign materials
- Heat the milk up to 65 degrees Celsius, then add sugar and starch/milk powder and stir
- Continue heating the milk up to pasteurization temperature of 85-degrees Celsius and hold it for 10 minutes to kill all microorganisms
- Cool it rapidly to 42-45 degrees Celsius using a cold bath. The temperature is optimum for starter culture
- Add starter culture/ yoghurt with live culture.
- Incubate the milk in a fireless cooker to maintain the 42-45 Degree Celsius for 6-7 hours without any agitations
- Remove the milk from the fireless cooker and cool it to stop further fermentation
- Stir the milk to break the curd and lumps
- Add flavor to the yoghurt
- Pack the yoghurt in sterilized containers
- Store appropriately

8.5 Honey

Requirements

- Comb honey
- Strainer
- Clean containers

Procedure

- Mash comb honey and strain
- Remove the scums
- Pack the liquid honey in clean containers



Farmers learn about the use of dryers



Drying of green vegetables and cassava

9. ENVIRONMENTAL CONSERVATION

Over the years, farmers have been experiencing environmental degradation due to climatic changes fueled by human activities. This has led to prolonged drought periods, famine, low harvests, land degradation and change in weather patterns. This has impacted livelihoods negatively. As a result, farmers come together through the PLD approach and devise initiatives to better their lives. To improve the situation, farmers have adopted the following practices.

9.1 On-farm soil and water conservation measures

Every farmer aims at increasing productivity which is subject to conservation measures adopted in the farm. To increase the adoption rate and ease the process of soil and water conservation, farmers utilize their groups to establish these structures together on ‘communal basis’ (several farmers working on each other’s farm on rotational basis). This reduces the labour cost and saves on time. Farmers use different structures to conserve soil and water. These include:

- i. **Terraces:** these are constructed on sloppy land meant to minimize the speed of run-off water thus improving water percolation into the soils. They also help to retain nutrients in the land thus leading to increase in crop yields. *Fanya juu* and bench terraces are the most common. To stabilize the terraces, farmers use napier grass and other fodder crops.
- ii. **Grass strips:** these are uncultivated areas left intentionally along the contours to slow down the speed of run-off water and trap eroded soil. Some farmers plant grass along a contour to act as grass strips.
- iii. **Stone lines:** in stony farms, farmers arrange stones along the contour. These control the flow of water as well as trap the eroded soil.
- iv. **Trash lines:** farmers arrange crop residues along the contours. Apart from slowing down the flow of water and trapping the eroded soil, they also add soil fertility after decomposition.

Other technologies/practices adopted include:

- v. **Zai pits:** they help in retaining water leading to increased microbial activities in the soil. It also increases the rate of water infiltration during the rainy season. This technique is mostly carried out in arid and semi-arid parts. *Zai pits* play a very important role in controlling run-off since the water is tapped in them for crop use.
- vi. **Retention Ditches:** these are trenches made to hold excess water that come from the buildings or the run-off water thus preventing massive destruction of farmland. This water slowly infiltrates into the soil.
- vii. **Sunken beds:** they are 1m wide beds made in arid and semi-arid areas for vegetable cultivation. Vegetables on these beds are mulched to reduce the rate of evaporation while improving the soil fertility.
- viii. **Mulching:** this helps to retain soil moisture by limiting evaporation, suppressing weed growth, enhancing soil structure, reducing runoff, protecting the soil from splash erosion and limiting the formation of crust. It releases nutrients after decomposition, thus increasing soil fertility. It releases nutrients after decomposition thus increasing soil fertility.
- ix. **Cover cropping:** farmers grow crops to cover cultivated ground thus reducing splash erosion and overland flow. The fallen leaves of the cover crop decompose and add organic matter to the soil.



Use of stone lines & interrupted terraces



Drying of green vegetables and cassava



Farmers learn on establishment of grass lines and sunken beds during exchange visits



Members from different groups establishing soil and water conservation structures through communal work

9.2 Water harvesting

Farmers have adopted various techniques of water harvesting. The harvested water is mainly for domestic use although some farmers use it for small scale irrigation. The techniques used include:

9.2.1 Roof water harvesting

Water harvested by this technique is stored in plastic tanks. To achieve this, farmer groups use the ‘Merry-Go-Round proceeds’ (this is where group members contribute an agreed amount of money which is used to purchase a water tank for every member).

9.2.2 Run-off water harvesting

Group members come together and assist each other construct water pans. This is mainly done on rotational basis to reduce labour cost. To reduce water seepage, some farmers use pond liners while others cement them. Water from the pans is mainly used for small scale irrigation purposes unlike domestic-use water that is mainly from the water tanks.



Establishment of a water pan



Water storage by use of water pan through group communal work

9.2.3 Shallow wells

Some household dig shallow wells where they draw water from.

9.3 Tree nursery establishment and management

9.3.1 Tree nurseries

Farmers/farmer groups establish tree nurseries either for commercial purposes or for onward planting in their farms. This facilitates practice of agro forestry in individual farms which improves soil fertility hence increased crop yields. Some of the varieties which farmers have in their nursery include, fruit trees, fodder trees and timber trees depending on their agro-ecological zones. With the increase in number of trees planted per season in different agro-ecological zones, the area under trees continue to increase.



Group and individual tree nurseries planted using assorted seedlings

9.3.2 Protection of trees

Farmers in the dry areas practice herding in search of pasture for their livestock. Therefore, this poses a risk to germinating or planted tree seedlings in the farms. To ensure that trees grow to maturity, farmers protect young ones by:

- i. Smearing the stems with cow dung. This prevents the livestock from feeding on the tree barks by repelling them through unpleasant smell.
- ii. Fencing around the stem. This is done by use of thorny twigs and crossed sticks. This practice prevents the trees from being stumbled or fed on by the livestock
- iii. Watering the young trees by use of bottle-irrigation system during the dry period
- iv. Mulching. This minimizes water loss through evaporation

9.3.3 Care of mature trees

Farmers practice the following management techniques with regard to the parts of a growing tree:

9.3.3.1 Pruning

Farmers remove branches from the lower part of the tree crown. During pruning, branches are always cut at their base. This is aimed at:

- Reduction of shade for crops near and around the tree
- Improving the quality of the trunk, mainly for timber and poles
- Early harvest of branch-wood for fuel or other use.

Pruning is done at least up to the height of the adjacent crops if trees are growing

in fields. This improves light penetration to the crops and eases farm operations. The best time for pruning is towards the end of the dry season when the work does not interfere with growing crops and when the workload in other agriculture tasks is not so heavy.

9.3.3.2 Lopping

Due to inadequate pastures, farmers in the ASAL areas of the Diocese use this practice in livestock production. This involves removal of lateral branches to allow sprouting/production of more branches. It is mostly done on fodder trees such as *Calliandra*. This has led to regular supply of fodder.

9.3.4 Fruit tree improvement practices

Most farmers aim at reaping maximumly from the trees they plant. To enable this, they practice the following;

9.3.4.1 Grafting

Farmers plant fruit trees which are resistant to diseases/pest and are favoured by the prevailing climatic conditions to act as stalks. They improve the stalk by using a scion from a different tree with the desired traits, such as early maturing, high production and easy propagation. Some of the trees grafted include: mangoes, *macadamia*, oranges and avocados.



Farmers learn on grafting of mango trees during an exchange visit

9.3.4.2 Budding

This technique is mostly used by farmers who grow fruit trees that have soft barks for example passion and tree varieties that cannot be propagated by use of seeds

9.4 Energy conservation

Over the years, farmers have been predominantly depending on firewood as the main source of energy. This has led to continuous cutting down of trees, leading to deforestation. To improve the situation and counteract this activity, farmers have adopted various energy saving techniques to optimally utilize the available resources. These techniques include:

9.4.1 Charcoal briquettes

Farmers compact biomass residues such as saw dust, charcoal dust, soil and cow dung by use of hands and locally fabricated equipment.



Farmers learn on making of charcoal briquettes and use of energy - saving jikos



A group member displays her charcoal briquettes

Advantages of using charcoal briquettes

- i. They produce little or no smoke
- ii. They do not produce minimal sparks as compared to wood charcoal
- iii. They produce less ash and burns for a long time because of less cracks thus better strength
- iv. They are cheap to make and buy
- v. Reduces health risks of users in that its environment friendly when used with efficient stoves like *jiko koa*

9.4.2 Energy saving jikos

Farmers have adopted use of energy saving *jikos*. These *jikos* save firewood/charcoal by retaining heat for long and also produces less smoke.

9.4.3 Bio gas

In areas where zero grazing is practiced, (mid and upper zones of the diocese) some farmers have adopted use of biogas as a source of fuel. Although the raw material which is the livestock waste is readily available, the initial cost of installation is high and only few farmers have adopted it.

Advantages of biogas

- Slurry is used in the farm to do watering and as manure
- Reliable and sustainable gas supply
- Reduced use of wood fuel
- Does not produce smoke

9.4.4 Meko gas

Famers have adopted the use of *meko* gas as an efficient source of energy. They are able to acquire them through the MGR and Table-Banking activities within the groups.

9.4.5 Solar kits

Due to increased cost of kerosene and electricity installation, farmers have adopted the use of solar kits and other solar powered equipments. Through MGR and table banking activities farmers are able to acquire them. Benefits associated with use of solar power include:

- i. No greenhouse gas emissions are released into the atmosphere.
- ii. Low operational costs compared to other forms of power generation.
- iii. Reliable source of power for lighting



Farmers learn on use of biogas



Acquired solar panel

10. LESSONS LEARNT

Through the use of PLD approach, different lessons have been learnt. These include:

Group formations: Under the PLD approach, group formation is one of the key elements for individual and community development. Community members reflect on their challenges and come up with possible solutions to address them.

They organize themselves into groups. This leads to togetherness and unity in planning, implementation and monitoring of agreed activities. Being in groups helps the community members to pull resources together to achieve set objectives, leading to ownership and consequential sustainability of the project.

It is beautiful that People are differently gifted: Embu community understands that every person has a role to play in the development journey. Under the PLD approach, people exceptionally contribute towards their development agenda in diverse ways. Basically, a community that works as a team, where no one is left behind, a lot is achieved.

Co-existence builds a community: Sustainable utilization of resources forms the foundation for a strong relationship within a community. Under the PLD approach, the Embu Community understands that it needs to utilize the resources while minding the welfare of the future generations. Thus, avoid chances of conflicts and competition especially on land and environment. An intended effort to build/nourish community cohesion is the core matter in PLD.

Networking and collaboration: Inclusivity is key in PLD as it calls upon all gender, associations, congregations, neighbours and other actors to take part in community development. Networking in PLD has helped many of the groups to gain diverse knowledge, skills and opportunities in addressing their problems. Therefore, PLD is an inclusive and sharing-oriented approach.

Motivation to act: Under the PLD approach, ownership and involvement are the motivation for action. Group sustainability has been banked on the strong will-power of the communities to develop.

Listen and converse: One-on-One dialogue or small group conversations are ways of discovering motivation and invite participation. PLD approach encourages group reflections, household and achievement analyses as ways of building relationships. Group meetings and exchange learnings as well as field days and exhibitions form platforms for questions and answers. Besides, people are able to share both personal and community issues which strengthens cohesion and reduce stress in individuals.

Peer learning: This is a powerful way in which PLD approach engages community members and invites them to address their challenges, leading to possible solutions. They scrutinize options and conduct trials to come up with the best. Thereafter, farmers' exchange learnings, field days and exhibitions form an arena for knowledge sharing. Local people or those living within the community are well versed with their problems and possible means of addressing them than any other person. Besides, leaders in the PLD groups have an essential role in community-building as role models.

Communal Work: When people work as a group, achievement of group tasks is accelerated. PLD encourages people to be in action-groups. This helps individuals especially in the Lowlands of Embu County in land preparation, weeding, harvesting, laying of soil and water conservation structures among others. People come together and help each other on rotational basis, thus saving on costs. Such acts engage and motivate people to continue caring about the development agenda as saved costs are utilized on other crucial issues.

Sharing of achievements: Under the PLD approach, each group has a beginning, progress and future. All this is set through team work as the initiatives adopted form the individual stories. All these are collected together through group slogans, songs and success stories. Such initiatives are collectively prepared, thus people's successful activities are featured, a factor that boosts their morale to uncover their gifts, skills, talents and assets within the community. Besides, what people care about and their motivation can be easily discovered through such stories and importantly, this reinforces the development root among individual members.

Lobbying: Under the PLD approach, the community has been empowered through knowledge to lobby for quality services and rights even from the government of the day. The process of lobbying is quite involving but PLD approach makes it easier due to togetherness and unity among the community members.

Conclusion

Ownership and sustainability of community initiatives is as a result of diverse factors. These factors include; involvement of community members in identifying development challenges, coming up with home grown solutions to address these challenges, prioritize solutions and developing action plans, implementation of these plans, continuous monitoring and evaluation by the community itself. Community members have the richness of indigenous knowledge which is an important resource for tackling community problems. A proverb among communities in Embu stipulates '*Kiara kimwe gitiuragaga ndaa*' (One finger does not crush a louse). The proverb emphasizes on the importance of people working together to achieve a common objective. When people with similar challenges come together and form groups, they achieve more and faster as opposed to working individually. This is because through initiatives such as MGR people are able to acquire assets they would not have otherwise acquired on their own; carry out timely farm work operations through communal work and learn from each other during interactions.

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