



MINISTRY OF
FOREIGN AFFAIRS
OF DENMARK
Danida

Moringa Value Chain Manual







Moringa Value Chain Manual

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Disclaimer

This training guide is for advisory use only. Users of this manual should verify details that relate to their agro-climatic zones from their area agricultural extension officers. It is also advised that this training manual should be used in conjunction with the respective value chain handbook and other relevant resource materials.

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Foreword

The Micro Enterprises Support Programme Trust (MESPT) is a local development organization founded in 2002 through a partnership between the Government of Kenya (GoK), the European Union (EU), and later, the Royal Danish Government. MESPT's main goal is to eradicate poverty by supporting the growth of micro-enterprises, including agricultural production, agribusiness, and afro-processing. This support aims to foster social, economic, and environmentally sustainable growth by increasing access to financial and business development services, creating jobs, and promoting sustainable micro-enterprises. Our vision is to build a more prosperous society, and our mission is to provide sustainable business development and financial services to smallholder farmers and agri-MSMEs in Kenya.

For over two decades, our team of professionals has been at the forefront of developing cost-effective and scalable solutions that promote financial inclusion and support the growth of sustainable agribusinesses. We accomplish this by providing tailored financial solutions that meet the specific needs of various agricultural value chains, delivered through a wholesale lending model to financial service providers such as SACCOs, MFIs, and Farmer Cooperatives. These providers, in turn, extend loans to smallholder farmers and micro agricultural enterprises.

Our approach emphasizes delivering integrated financial and business development services to smallholder farmers and MSMEs in Kenya, helping them access finance, boost agricultural productivity, improve afro-processing and connect to markets. Over the years, we have worked closely with county governments, development agencies, donors, and investors to strengthen business development capacities in the agricultural sector, using a unique tripartite model that connects farmers, SMEs, and financial institutions.

Moringa is among key value chains that have been supported by MESPT over the years through various interventions in order to enhance commercialization. MESPT appreciates the importance of documenting best practices for the value chain in facilitating effective delivery of training for farmers and Agri-preneurs. Therefore, MESPT has facilitated the development of this manual alongside the value chain trainers' guide and other resource materials through Green Employment in Agriculture Programme (GEAP) with support from DANIDA.

This manual is expected to enhance effectiveness in delivery of trainings on Good Agricultural Practices and commercialization of the value chain. I am optimistic that this manual will be helpful to partners in the value chain including county governments. I am grateful to DANIDA for the continued support to MESPT programmes. I am also thankful to the value chain experts who spearheaded compilation of this manual.

**Rebecca Amukhoye,
Chief Executive Officer, Micro-Enterprises Support Programme Trust**

Preface

The Green Employment in Agriculture Programme is a 5 years' programme (2021 to 2025) funded by DANIDA and implemented by Micro-Enterprises Support Programme Trust (MESPT). GEAP seeks to contribute directly to Kenya's vision 2030 and to one of Denmark-Kenya Strategic Framework on accelerated decent employment creation in MSMEs and improved competitiveness of targeted value chains in agriculture which will contribute to transforming the economy towards a greener and more inclusive growth.

GEAP programme targets 40,000 smallholder farmers and will be implemented in 12 counties namely, Kilifi, Kwale, Nakuru, Nyandarua, Siaya, Kisii, Kakamega, Bungoma, Trans Nzoia, Uasin Gishu, Makueni and Machakos. The programme facilitates increased commercialization, decent employment, and green transformation through targeted interventions in selected agriculture value chains that include, Cassava, Coconut, Dairy, Export Vegetables, Pineapple, Indigenous Poultry, Moringa, Pineapple, and Aquaculture.

MESPT through GEAP tasked multidisciplinary teams to develop resource materials tailored for extension service providers and farmers. This Coconut value chain manual is one of the series of the materials that were developed. MESPT further tasked value chain experts to develop a value chain trainers' guide for Coconut. This manual is to be used as a reference material for training on implementation of good agricultural practices, value addition and marketing for the value chain. Relevance of the content is based on needs identified among value chain players, actors and aligned to GEAP project objectives.

MESPT is grateful to the value chain experts who spearheaded the development and production of this manual. It is my hope that counties and other users will adopt and optimally use this resource so as to increase productivity and profitability while ensuring a greener and more inclusive growth.

Doreen Kinoti

Programme Manager, Green Employment in Agriculture Programme



Acknowledgements

The Green Employment in Agriculture Programme (GEAP) participating counties (Kilifi, Kwale, Nakuru, Nyandarua, Siaya, Kisii, Kakamega, Bungoma, Trans Nzoia, Uasin Gishu, Makueni and Machakos) are acknowledged for providing resource persons in compilation of the document. The technical support and expertise provided by Kenya Agricultural and Livestock Research Organisation in development of the document is appreciated. Thanks to the Royal Danish Government's Danish International Development Agency (DANIDA) for facilitating the development of this resource material. Micro Enterprises Support Programme Trust (MESPT) is appreciated for co-ordinating the process of development and production of this document.

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List of Abbreviations

AEZ	Agro-ecological zone
AFA	Agricultural Food Authority
APVC	Agriculture Product Value Chain
ASAL	Arid and Semi-Arid Land
CA	Conservation Agriculture
CIG	Common Interest Group
CSA	Climate Smart Agriculture
CTT	Core Team of Trainers
DANIDA	Danish International Development Agency
GAP	Good Agricultural Practices
GEAP	Green Employment in Agriculture Programme
Ha	Hectare
IDM	Integrated Disease Management
INRM	Integrated Natural Resource Management
IPM	Integrated Pest Management
ISFM	Integrated Soil Fertility Management
IWM	Integrated Weed Management
KALRO	Kenya Agricultural and Livestock Research Organization
Kg	Kilogram
LF	Lead Farmer
MESPT	Micro-Enterprises Support Programme Trust
SPs	Service providers
VMG	Vulnerable and Marginalized Group

CHAPTER I. INTRODUCTION

I.1 The Moringa tree

Moringa (*Moringa oleifera*), is a drought tolerant perennial tree which originated from India. Other common names include ‘drumstick tree’ and ‘miracle tree’. Locally in Kenya it is called “Mzungi” in Swahili, “Mzungwi” in Mijikenda. The tree is fast maturing and grows to heights ranging between 7 and 12 metres. The trunk diameter can reach 45 cm. Moringa can be propagated from seeds or cuttings. In warmer climates, moringa begins flowering within the first six months after planting. Moringa is now widely cultivated in Kenya though harvesting from the wild is still common. In cultivation, the tree is often pruned back every 1-2 years to maintain a height of up to 3 meters for ease of management and for rejuvenation.

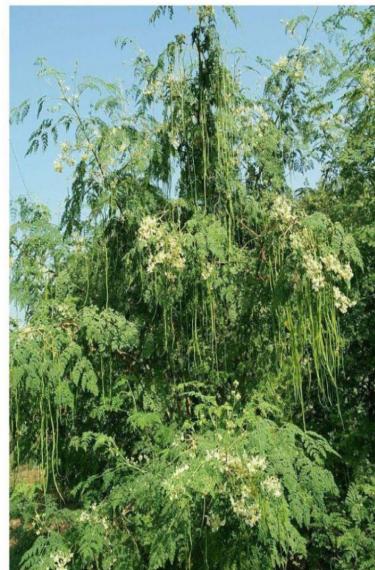


Figure 1. Moringa tree with flowers and pods

I.2 Agro-climatic requirements

Moringa can grow in diverse agro climatic conditions. It's a versatile plant that can grow at rainfalls as low as 250 mm per annum. Moringa tolerates a variety of soil conditions but it grows best in sandy loams. However, ideal conditions are well drained soils, temperatures ranging between 25 and 35°C, rainfall of 250 mm and maximum of 4,000 mm and altitudes of 0-1,300 m above sea level. Soil pH should be between 5.5 -7.5.

1.3 Economic importance and production

Moringa is cultivated for multiple purposes - as medicinal plant, its antimicrobial activities, being a source of nutrition for human food and animal feed and other environmental, industrial uses – making it a very important crop. It is a highly nutritious plant with its young leaves and pods used as vegetables, leaf powder and roots as condiments. The seeds, roots and leaves are used for medicine. Seed oil and biomass is used for bio-fuel. Its kernels are used for oil extraction and water purification (Claus Barta (2018). There is growing demand for moringa products in Kenya for culinary, nutritional supplements, medicinal and cosmetic uses. Locally, moringa is a source of a wide range of products of which leaf powder and seeds have the highest economic benefit. There is a vibrant nutritional supplement market in European countries particularly in Italy, Germany, United Kingdom and France.

In Kenya, the major producing areas are Coastal and lower Eastern regions. Yields of Moringa vary considerably depending on the season, species/variety, soil moisture, fertility and management practices. Range of spacing depending on whether production is meant for leaf or seed. On average, pure stand moringa grown on a spacing of 1m by 1m produce yields ranging between 10 and 50 tons of fresh leaves per hectare annually. This translates to 0.7 – 8.3 tons of dry matter.

Moringa is easy to grow under low to moderate input systems in arid and semi-arid areas where majority of Kenya's resource poor farmers are found. Moringa has enormous potential to improve nutrition and incomes, provide employment opportunities for women, youth, vulnerable persons. Main marketable produce of moringa are leaves and seeds. There is high and increasing demand for moringa processed products. However, business opportunities within the moringa value chain largely remain untapped. Several interventions have been directed towards development of the moringa value chain.

Development potential for Moringa products

October 29th - November 2nd, 2001, Dar es Salaam, Tanzania

Distribution of *Moringa* species in Kenya

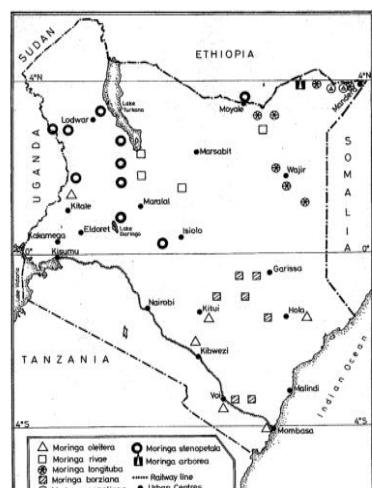


Figure 2. Distribution map for Moringa species in Kenya. Source KEFRI 2001

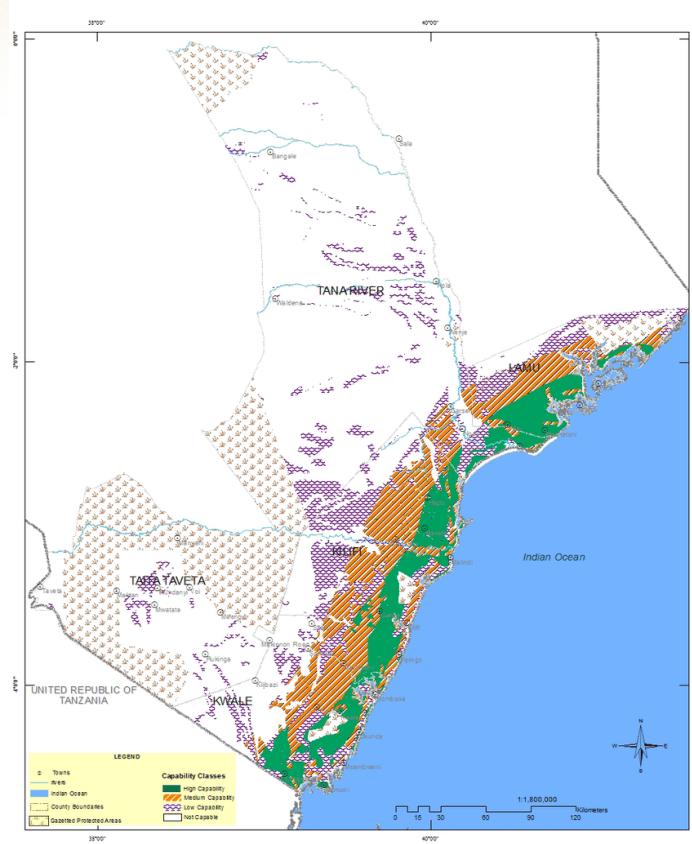


Figure 3. Capability map for growing Moringa in Coastal Kenya Kenya. Source: Musingo T. (2017)

CHAPTER 2: PLANTING MATERIALS AND PROPAGATION

2.1 Varieties

The most common commercial varieties grown in Kenya are *Moringa oleifera* that originally came from India and a Kenyan ecotype, *Moringa arborea*. (Kenya Forestry Research Institute - Kefri (2016).



Figure 4. Left: Moringa arborea leaves and right: Moringa oleifera leaves

Propagation

Moringa can be propagated using seeds, seedlings or cuttings.

Seeds

Seeds for planting should be carefully selected from mature healthy pods free of pests and diseases. Empty seed shells, damaged and deformed seeds be avoided. Mature seeds attain a darker shade of colour. Seeds should be stored under cool dry conditions. Moringa seeds do not have dormancy and therefore they can be planted as soon as they are mature and can retain good quality for up to one year. However, if stored under natural conditions, they should be planted within 4 -6 months. Advantage of using seeds is low cost and ease of handling. However, seeds will take longer to mature than those raised from seedlings by about a month. Seed treatment is not mandatory but under wet conditions and presence of plant debris that may harbor pests, seeds should be dressed with pesticides.



Figure 5. Dry moringa seeds

Seedlings

Seeds are first planted on pre-germination beds for 4-7 days. Only seeds that germinate and sprout within 7 days should be used. Alternatively, seeds can be sown directly in planting bags if quality is certain. The seeds are transferred in planting bags (potting). Fill the plastic bags with soil mixture, preferably light that is three parts to 1 part sand. Make small holes in the bags, and in each pack, plant 2 to 3 seeds. Planting bags should be made of biodegradable material. Seedlings are ready for transplanting in 4 – 6 weeks. Only healthy seedlings should be transplanted.

Maintain moisture in the bags and avoid wetness.

Two weeks after germination has occurred, remove the extra seedlings leaving only one.

Cuttings

Cuttings should be sourced from mature healthy plants that are at least 1 year old and from mature branches. Cuttings for direct planting should be 2.5 cm to 7 cm in diameter and 0.5 to 1.5 meters long. The cuttings are cut above the internodes. Plants raised from cuttings tend to be shallow rooted and therefore prone to lodging and wind damage. Preferably, cuttings should be treated with pesticides before planting. Alternatively, cuttings can also first be raised in pots. Cuttings for potting should be at least 2.5 cm thick and 30 cm long. They cuttings should be regularly watered. Cuttings raised in pots will take 4-8 weeks to root adequately and be ready for transplanting.



Figure 6. Left: Moringa cuttings prepared to be planted directly and Right: Moringa cuttings raised in pots

CHAPTER 3: CROP MANAGEMENT

3.1 Crop establishment

Land for planting moringa should be prepared well before the onset of rains. Ploughing and harrowing is recommended. For optimal yields, manure or fertilizer should be applied. Spot application of manure and fertilizer can be done in the planting holes. For intensive spacing (leaf production) 30 cm x 30 cm x 30 cm holes should be made. For wider spacing (seed production), holes of 60 cm x 60 cm x 60 cm should be made. During planting adequate soil and manure should be filled back in the holes because moringa does not tolerate water logging.

3.2 Spacing

For leaf production, recommended spacing is 1 m x 1 m (4,000 plant per acre). Plants are maintained at a height of 1-1.5 m. However under intensive management (high soil moisture and fertility), closer spacing closer spacing of up to 60 cm x 60 cm can be used. For seed production, recommended spacing is 3 m x 3 m (444 plants per acre) and plants are maintained at a height of 3 m. For animal feed production where stems and leaves are harvested, much closer spacing of up to 45 cm x 60 cm can be adopted. (*Adesina et.al 2013*)



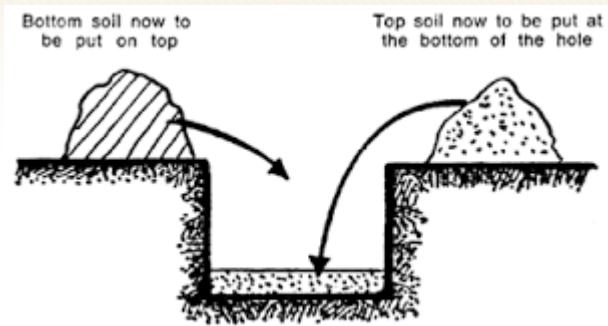
Figure 7. Left: Intensive spacing for moringa leaf production and right: wider spacing for moringa seed production

3.3 Planting seeds

Empty seed shells should be avoided. Seeds should be placed 3-5 cm deep on well prepared ground with adequate moisture and adequately covered with soil to avoid exposure to dry conditions. Heavy watering can cause rotting of seeds or damage of seedling roots.

Planting seedlings

Planting holes should be 60 x 60 cm wide and 60 cm deep. Dug out top soil should be separated from the bottom soil. Seedlings should be planted with the soil in the pot still intact.



Planting cuttings

Cuttings should be dried under the shade for 2 to 3 days before planting. When planting, one third of the length of the cutting should be beneath the surface of the soil.

Good agricultural practices

Manure

It is recommended soil testing should be done to determine soil fertility, manure and fertilizer requirements. Well prepared animal manure or compost can be used a rate of 4 tons per acre should be applied once a year. Manure should be well mixed with the soil before onset of rains. In poorer sandy soils, higher rates should be applied. Foliar fertilizer high in Nitrogen are recommended for leaf production. For pod (drumstick) and seed production, foliar fertilizers high in calcium, potassium and phosphorous are recommended.

Fertilizer

Fertilizer type and rates depend on soil analysis and intensity of production. However, in the absence of soil tests, complete fertilizer NPK (17:17:17) is recommended at a rate of 80-100 kg per acre yearly. Foliar fertilizer high in Nitrogen are recommended for leaf production. For pod and seed production, foliar fertilizers high in calcium, potassium and phosphorous are recommended.

3.4 Weeding

Moringa farm should be maintained weed free. Cover cropping can also be used to smother weeds. Mulching with pruned branches, or compost material can also be used.

3.5 Pruning

For leaf production, initial pinching of apical shoot is done at 30 cm. Thereafter, plants are pruned and maintain at 1 m height for ease of harvesting. For pod and seed production, initial pinching of apical shoot is done at 1 m height and the pruned and maintained at 3 m height. Pruning should be done above the internode. Sharp disinfected pruning tools should be used. Branches should be cut at slanting angles to avoid rotting. Spraying with fungicides is recommended after heavy pruning is recommended. After cutting back the trees, it takes approximately 30-45 days to restart harvesting.

3.6 Harvesting

With availability of adequate moisture and high soil fertility, leaf and drumsticks harvesting can be after every 2 weeks. Younger leaves less than 40 days are preferred for maximum nutritional benefits. Yield of fresh leaves, drumstick under good management averages 16 tons per year for each. Seed harvesting is seasonal, 2 times in a year. Dry seed yield averages 1.7 tons per acre per year (4 Kgs per tree per year).

CHAPTER 4: PESTS AND DISEASE MANAGEMENT

Although moringa is normally resilient to many pest and diseases common to other crops, pests and disease outbreaks that cause significant damage to moringa can occur under high density cultivation and under certain conditions.

4.1 Major pests of moringa in Kenya

The table below shows the major pests in moringa.

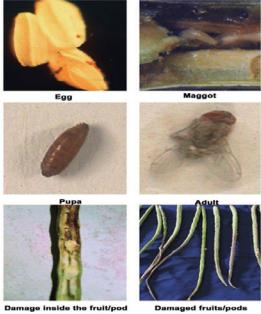
Table I

Pest	Kind of damage	Control methods
Budworm (<i>Noorda moringae</i>)  1. Bud worm of drumstick Scientific name :- <i>Noorda moringae</i> Order :- Lepidoptera Family :- Crambidae Subfamily :- Noordinae  Destructive stage is the larval (caterpillar) stage	 INSECT PESTS OF AMARANTHUS AND MORINGA  Akshay Chittora Ph.D. Horticulture Scholar	<ul style="list-style-type: none">• Plough around the plants to expose and kill cocoons• Collect and destroy plant debris where pupation occurs• Collect and destroy damaged buds along with the caterpillars• Spraying with approved insecticides such as <i>Bt</i> (<i>Bacillus thuringiensis</i>) based insecticides.• Natural enemies include birds• Pruning and proper spacing• Regular and timely harvesting of leaves

Pest	Kind of damage	Control methods
Mites. There are various species of mites but red spider mites (<i>Tetranychus urticae</i>) can occur often in moringa	  <ul style="list-style-type: none"> • Speckled bleaching of the leaves. • In extreme cases, yellowing and death of leaves and shoots will occur. 	<ul style="list-style-type: none"> • Under low infestation, spraying plants regularly with strong jets of water, making sure to get the undersides of the leaves. This will knock off the mites and their webbing from the plants. • Pruning off mite infested branches and burning them. • Use approved chemicals. Note that miticides are quite toxic chemicals and specified pre-harvest periods should be observed.
Thrips (<i>Thysanoptera spp</i>)	  <ul style="list-style-type: none"> • Thrips feed on leaves, especially on the lower surfaces, on buds, flowers, shoots and pods • They cause distortion and curling of leaves and flowers 	<ul style="list-style-type: none"> • Mulching • Irrigation • Spraying using appropriate pesticides • Avoid intercropping with alternate hosts such as tomatoes • Deep ploughing during initial land preparation

Pest	Kind of damage	Control methods
Aphids (<i>Aphis gossypii</i>)	  <ul style="list-style-type: none"> • Aphids suck sap from twigs and leaves • Exudates arising from aphid damage attract ants 	<ul style="list-style-type: none"> • Biological control by maintaining beneficial insects such as ladybird and praying mantis • Use of approved insecticides • Proper weeding and field hygiene
Termites	 <p>Termites are prevalent during drier conditions</p> <ul style="list-style-type: none"> • Tunneling of roots and trunks • Trees may dry and fall off  	<ul style="list-style-type: none"> • Use of wood ash at the plant base. • Application of castor oil at the base • Avoid unnecessary injury to the plants as this may facilitate entry of termites • Use appropriate pesticides. Imidacloprid based products such as confidor can be used. • Avoid undecomposed manure, decaying woods and plant debris • Continuous water supply • Search and destroy termite colonies

Pest	Kind of damage	Control methods
Stem girdler (<i>Paranaleptes reticulata</i>) 	  <ul style="list-style-type: none"> Adult beetles girdle stems or branches leaving a V-section cut; only a narrow, central pillar round the pith zone is left, which eventually breaks off Female beetles lay eggs in transverse slits made in the bark of the girdled branch at points above the girdle. Pupation takes place in the dead wood 	<ul style="list-style-type: none"> Collect and burn all girdled branches. Only the dead or dying part of the branch above the girdle needs to be collected. Scout for adult beetles and kill them

Pest	Kind of damage	Control methods
Whiteflies	<ul style="list-style-type: none"> Whiteflies suck plant sap and removing plant nutrients, thereby weakening the plants They produce honeydew that leads to the growth of sooty mold on the lower leaves which reduces the photosynthetic capacity of the plants. Damage caused by whiteflies can significantly reduce quality of produce Whiteflies can act as vectors for viral disease 	<ul style="list-style-type: none"> Spray with approved pesticides. Spraying should be thorough to cover underside of leaves. Preferably early in the morning when they flies are still inactive Avoid intercropping with alternate hosts Use of sticky traps Proper weeding and field hygiene. Pressure of whiteflies is lower in a cleaner field Prunning. Openning up the canopy reduces whitefly attack Timely and regular harvesting Use wind breaks around the farm Proper irrigation helps plants to withstand damage
Pod fly	 <p>The image shows the life cycle of a pod fly and the damage it causes. It includes six photographs: an egg, a maggot, a pupa, an adult fly, damage inside a fruit/pod, and damaged fruits/pods.</p>  <p>The image shows an adult pod fly resting on a green leaf.</p> <ul style="list-style-type: none"> Maggots bore into tender pods Oozing out of gummy fluid from pods Rotting and drying of pods from tip 	<ul style="list-style-type: none"> Collect and destroy egg mass Use of light trap immediately after rains to attract and kill adults Careful use of a burning torch to kill masses of larvae on trunks

Other pests include hairy caterpillar, scales and leaf miners

4.2 Major diseases of moringa in Kenya

The below highlights the major diseases in moringa.

Table 2

Disease	Symptoms	Control methods
Powdery mildew of moringa (<i>Lev- eillula taurica</i>)	<ul style="list-style-type: none">White to light grey powdery growth on the under surface of the leaves and the corresponding.Upper surfaces of affected leaves show yellow lesions with brown necrotic patchesShedding of affected leaves	<ul style="list-style-type: none">Application of appropriate fungicides
Brown leaf spot (<i>Cercospora moringicola</i>) –Blight disease 	<ul style="list-style-type: none">Blighted appearance of the leavesBrown spots appear on the leaves and then spread to cover them entirely.The leaves also turn yellow and fall off prematurelyPrevalent under high humidity and warm conditions	<ul style="list-style-type: none">Application of appropriate fungicidesUsing disease-free planting materialsCrop rotation with non-host cropsPruning and field hygieneTimely and regular harvesting of leaves
Alternaria leaf spot (<i>Altrenaria solani</i>) 	<ul style="list-style-type: none">Circular to angular, dark-brown spots with concentric circles appear on the infected leavesDrying and shedding of leavesBlack or brown marks appear on the branchesPrevalent under high humidity and warm conditions	<ul style="list-style-type: none">Clearing of weeds which are often hosts to the diseasesSpraying of pruning wounds with fungicidesPruning and field hygieneTimely and regular harvesting of leaves

Disease	Symptoms	Control methods
Damping off (<i>Rhizoctonia solani</i>) 	<ul style="list-style-type: none"> Commonly occurs in the nursery Young seedlings in the field can also be affected especially under poor drainage 	<ul style="list-style-type: none"> Proper land preparation and levelling to avoid water pools Suitable irrigation system to avoid drenching Use disease free seed
Twig canker (<i>Fusarium pallidorum</i>)	<ul style="list-style-type: none"> Clearing of veins and chlorosis of leaves Wilting and shedding of leaves Browning of vascular system Stunted growth 	

CHAPTER 5: GREEN TECHNOLOGIES AND MECHANIZATION

5.1 Green Technologies

A number of green technologies exist in Moringa production and value addition. Table below highlights some of these technologies

Table 3

Green Technology	Product	Beneficial Use
Cover Cropping	Leguminous plants	Increase fertility
Mulching	Leaves	Weed control, soil and water conservation
Solar drying	Moringa leaves	Reduce cost of operations
Composting	Leaves, stems	Fertility improvement
Charcoal Briquets	Waste moringa products	Alternative source of fuel
Livestock feed	Leaves, peels	Alternative livestock feed
Biogas	Moringa by products	Alternative fuel source
Recycled water for irrigation	Water used for washing	Extra income from irrigated crop

5.2 Mechanization

Mechanization in Moringa production exist in land preparation, harvesting and value addition. Table below highlights some of the equipment in value addition.

Table 4

Equipment	
Polythene solar drying	
Glass solar drying	

Equipment

Electric solar dryer



Simple dry moringa leaf grinder



Simple Moringa oil press machine



CHAPTER 6: POST HARVEST AND VALUE ADDITION

6.1 Post Harvest

Post-harvest management in moringa is critical in the reduction of post-harvest loses. The initial process starts with sorting, grading and drying.

6.1.1 Fresh leaves and drumsticks

Fresh moringa leaves and drumsticks should first be washed with clean water before further processing and utilization.

6.1.2 Dried leaves

For dried moringa leaves, the drying process should commence immediately after harvesting so as to retain quality. Moringa leaves should first be washed with clean water. The water is drained on wire mesh or perforated buckets before drying. Open air or sun drying is not recommended since it exposes the leaves to dust, contamination and loss of volatile vitamins. Drying should be conducted under clean environment. Drying temperatures should be 40-50°C to avoid browning. 1 kg fresh leaves on average will yield 0.13 Kgs of dried leaf which will in turn yield 0.12 Kg of leaf powder (90% of dry leaves).

Moringa leaves should be transported immediately after harvesting under aerated conditions. Siting of processing facility shouldn't be near contaminants because moringa is hygroscopic. Moringa leaves should be dried to a moisture content of 9%. Dried moringa leaves and moringa leaf powder should be packaged immediately after processing in plastic bags. Opaque food grade containers should be used to avoid exposure to direct sunlight.

6.1.3 Moringa Value added product

Moringa value added products include; moringa powder, moringa oil, moringa dry seeds and moringa animal feed pellets. Moringa can also be used for water purification, green manuring, nitrogen fixation, paper manufacture, and fodder and fibre glass. For dairy animals, moringa is high in calcium and phosphorous which boost milk production. Moringa is also rich in in vitamin C, D and A. Table below shows some of the value added products

Table 5

Moringa powder	Moringa oil	Dry moringa seed
		

Moringa peeled seeds



Moringa kernels



Moringa animal feed pellets





CHAPTER 7: BUSINESS OPPORTUNITIES IN THE VALUE CHAIN

7.1 Business Opportunity

Businesses opportunity exists where and when sellers of goods and services interact in one way or another with buyers for profit gains. It may be existing/being practiced or potential (existing but not explored yet). Value chain business and/or market opportunities are the circumstances in which the specific value chain nodes exist and are therefore influenced by time and geographic/space variation.

7.2 Factors to consider/Types of Business Opportunities

Business opportunities are diverse. They include among others the following;

- Low competition due to the commodity characteristics (natural superior attributes and utility diversity)
- Potential for expansion/growth
- Emerging Markets
- Potential for strategic alliance
- A growing population which translates to an increasing demand
- Changing trends in market demand (demand for processed and/or certification of goods)
- Internet/On-line marketing (enabling wider networking)
- Existence of free Knowledge hubs (including knowledge on business planning)
- Existence of financial enablers

7.3 Business opportunities

Table below highlights business opportunities, drivers, investment requirements and possible challenges.

Table 6

Business Opportunity	Opportunity Drivers	Investment requirements	Challenges
Production of fresh Moringa leaf	<ul style="list-style-type: none">• High demand for fresh moringa leaf for vegetable	Land, farm equipment	<ul style="list-style-type: none">• Inadequate rainfall• Limited access to adequate quality planting materials
Setting up of nursery(ies) for Provision of planting materials	<ul style="list-style-type: none">• Low Competition• Potential for expansion or growth• Emerging/New or up-coming Markets	Secured land (properly fenced), farm equipment, water source	Limited sources of planting materials

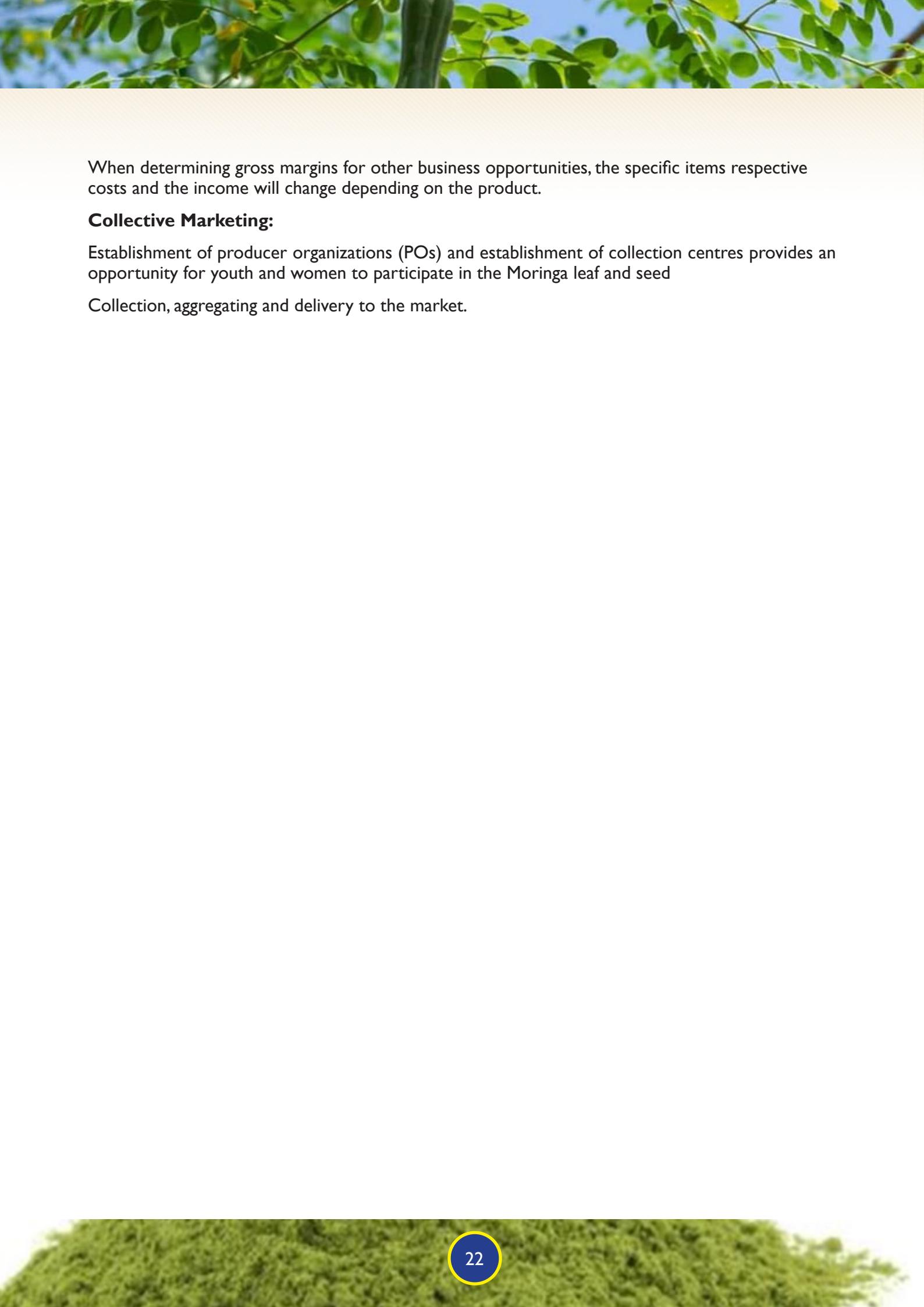
Business Opportunity	Opportunity Drivers	Investment requirements	Challenges
<ul style="list-style-type: none"> • Aggregation of the Moringa products for the market • Aggregation, drying and grinding of Moringa leaves • Seed aggregation and extraction of oil • Oil extraction by products for water purification/aquaculture 	Demand for Moringa products (leaf and seed) for industrial use	Land, collection shades, packaging facilities, Appropriate equipments i.e. Dryers, Oil extractors, Grinding machines	Few and scattered Moringa farms
Aggregation of the Moringa leaves and drumsticks for the vegetable market	Demand for Moringa products (leaf and drumstick) for vegetable (fresh market)	Land, collection shades, packaging facilities	Few and scattered Moringa farms
Production of Moringa leaf and seed	An alternative protein supplement in livestock feed formulation	Land	Not readily available (low quantities available)

A simplified example of how to determine the gross margin (total revenue minus total variable costs) for an identified business opportunity – production of moringa seedlings per cycle (6 months)

Table 7

Input Variables (Cost items)	Unit Cost (KES)	Quantity	Total Amount (KES)
Forest soil	1,000	2.5 tons	2,500.00
Seed	500.00	3 Kg	1,500.00
Planting bags	3.00	10,000	30,000.00
Water	2.00	1,500 litre	3,000.00
Potting and seeding	400.00	7 Man days	2,800.00
Nursery Management/watering	400.00	7 Man days	2,800.00
Total variable Costs			42,600.00
Revenue (gross income)	10	8,500 seedlings	85,000.00
Gross margin (gross profit) = Total revenue – Total variable costs			42,400.00

Notes: Average cost of production per Seedling = Total variable cost divide by number of Seedlings produced: $42,600 \div 8,500 = \text{Ksh } 5/-$.

A close-up photograph of Moringa leaves against a blue sky. The leaves are green with some yellowish-green ones, and the background is a clear blue.

When determining gross margins for other business opportunities, the specific items respective costs and the income will change depending on the product.

Collective Marketing:

Establishment of producer organizations (POs) and establishment of collection centres provides an opportunity for youth and women to participate in the Moringa leaf and seed

Collection, aggregating and delivery to the market.

CHAPTER 8: GENDER AND SOCIAL INCLUSION

8.1 Background

Studies conducted during implementation of the various value chains identified gender and human rights related challenges to participation. Women reported that cultural issues affected their rights to own land preventing their involvement in value chain activities as they could not make decisions on what to plant since all agricultural activities are dependent on land as a factor of production.

Gender roles ,triple roles for women -Reproductive. Productive and community management for women while Men's role is productive, and community politics were also sited as a hindrance to women's involvement in value chains .

Cultural practices like wife cleansing and inheritance, especially in some counties, denied widows an opportunity to participate in the value chain activities. Decision making at the household level relating to value chain selection were mostly done by men, though in some instances, women also participated in the process. But where men had migrated to towns, women were the sole decision makers on selection of value chain(s).in some counties, men dominated in decision making concerning value addition, grading, marketing, savings, access to agricultural and marketing information, as well as access to credit and training. Women and youth could not initiate any agriculture-based Income Generating Activities (IGAs) without permission from the husbands/fathers or the elderly men in the family due to cultural beliefs and patriarchy.

High illiteracy levels and low skills especially among women left them vulnerable in terms of technical matters in the value chain activities. Several farmer groups believed both English and Kiswahili languages be adopted during training. Trainers were said to use a lot of English when training and it confused the farmers making language and methodologies used a barrier.

Lack of markets: Exploitation by intermediaries affected the prices of most of the value chain produce. It was suggested that market linkages with potential external buyers be established and strengthened.

Gender and extension services - Extension services were provided to the farmers through group training and through telephone calls by private extension officers and county government extension officers. The youth indicated that the extension training courses were done early during the day when they had reported for other activities such as attending other fishponds, harvesting excluding them from the services. Women also complained that the time at which the extension trainings are done did not favour them as they are attending to domestic chores or farm activities denying them the opportunity to gain experience.

Youth attributed their inadequate participation in value chain production activities to lack of land ownership since the parents (fathers) were not willing to give them land on a permanent basis. As a result, there was serious conflict between the young men and their fathers in counties in some counties. The fathers felt that the sons (youth) were irresponsible people who would sell the land upon being given, and the money spent on drinking alcohol. This would render the entire family landless.

Widowhood – Women in all the sampled counties were targeted because of their status as widows, and the fight for family land and other capital assets always starts immediately after the husband died. Being a widow left them vulnerable to other families or even community members who want their land and other assets. In some cases, family members secretly alter particulars of ownership documents such as title deeds to the disadvantage of widowed women.

People with disabilities often experience discrimination in their everyday life. Discrimination describes a situation where an individual is disadvantaged in some way because of a 'protected characteristic.' Discrimination takes place in different forms. It can be direct or indirect, manifest in the form of

negative attitudes, prejudice, and/or discriminatory legislation. Indirect discrimination, for example, can be caused by physical barriers, such as stairs as the only means to get to vital locations, or using media. For example, people who are visually impaired or have difficulties hearing cannot use media without assistance.

Most of the respondents requested special training on gender mainstreaming and gender-based violence and human rights, hence this manual. The findings came from the report below and gender analysis of selected value chains conducted by the Gender Youth and Social Inclusion Advisor, MESPT in August 2024 (G.V. Masinde and C.K. Wambu, PhD November, 2021 Final draft report A Gender Equality and Human Rights Approach for The Green Employment in Agriculture Programme (GEAP), MESPT)

8.1.1 Definition and key concepts

Sex: It identifies the biological differences between men and women. Kenya recognized and counted intersex persons during the census in 2019.

Intersex: Intersexuality is an overarching term that refers to human bodies that fall outside the strict male and female binary. The term refers to the many variations—often present at birth—that can affect a person's reproductive or sexual anatomy, which may involve genitalia, hormones, reproductive organs, and chromosomes.

For example, these variations might include being born with “female” anatomy on the outside, such as a vaginal opening, but having “male” sexual organs on the inside.- [Intersex: What It Means, How It's Identified](#) accessed on 14/11/2024

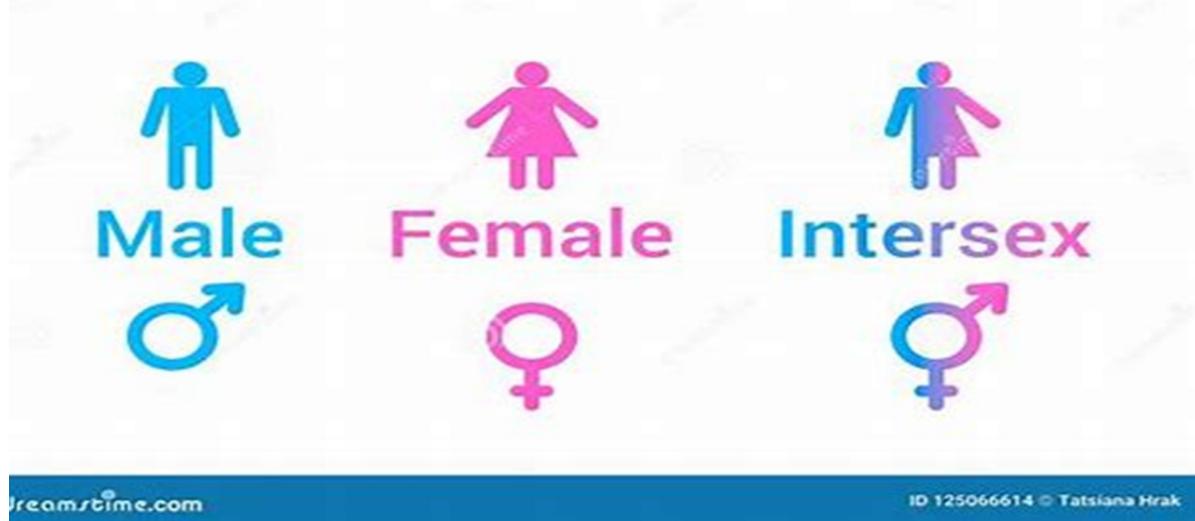


Figure 1:Kenya recognizes three genders [Two genders? No, we should recognize the three in Kenya | Nation](#) accessed on 14/11/2024.

Gender : Refers to the socio-cultural differences and relations between men and women that are learned, changeable over time, and have wide variations both within and between societies and cultures. The concept of gender also includes expectations held about the characteristics, attitudes and behavior of women and men (femininity and masculinity).

Gender equality: This is a human right that is enshrined in several declarations and conventions, including the legally binding Convention on the Elimination of All Forms of Discrimination against

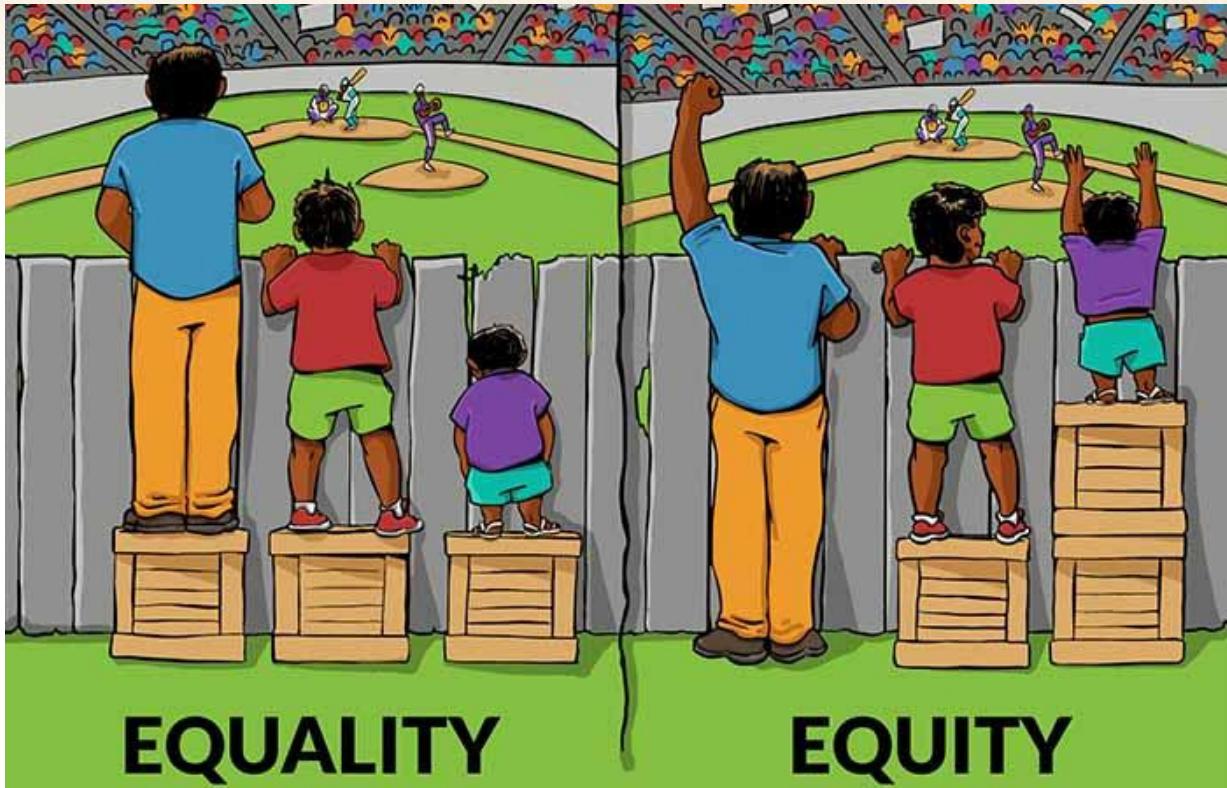


Figure 2 Equality and Equity illustrated [All You Need To Know About Gender Equity](#) Accessed on 14/11/2024

Equality does not mean that women and men are the same but that women's and men's rights, responsibilities and opportunities should not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of diverse groups of women and men(UN General Assembly, 1979). The centrality of **gender equality** to development is its establishment as a goal (goal 5) of the Sustainable Development Goals (SDGs) and included as a target in other SDGs.

Gender Equity: This is about fairness and being sensitive to the peculiarities of individuals, socio-economic groups, or communities. It is about equality of outcome or result of an intervention. Gender equity involves considering the different social, cultural, and economic situations of women, men, girls, and boys right from the design of an intervention through implementation to monitoring and evaluation.

Gender sensitivity: The ability to recognize the differences in terms of roles, contributions, needs and experiences of both women and men, and create a conducive environment for effective application of their specific knowledge, skills, and experiences in meeting their prioritized needs.

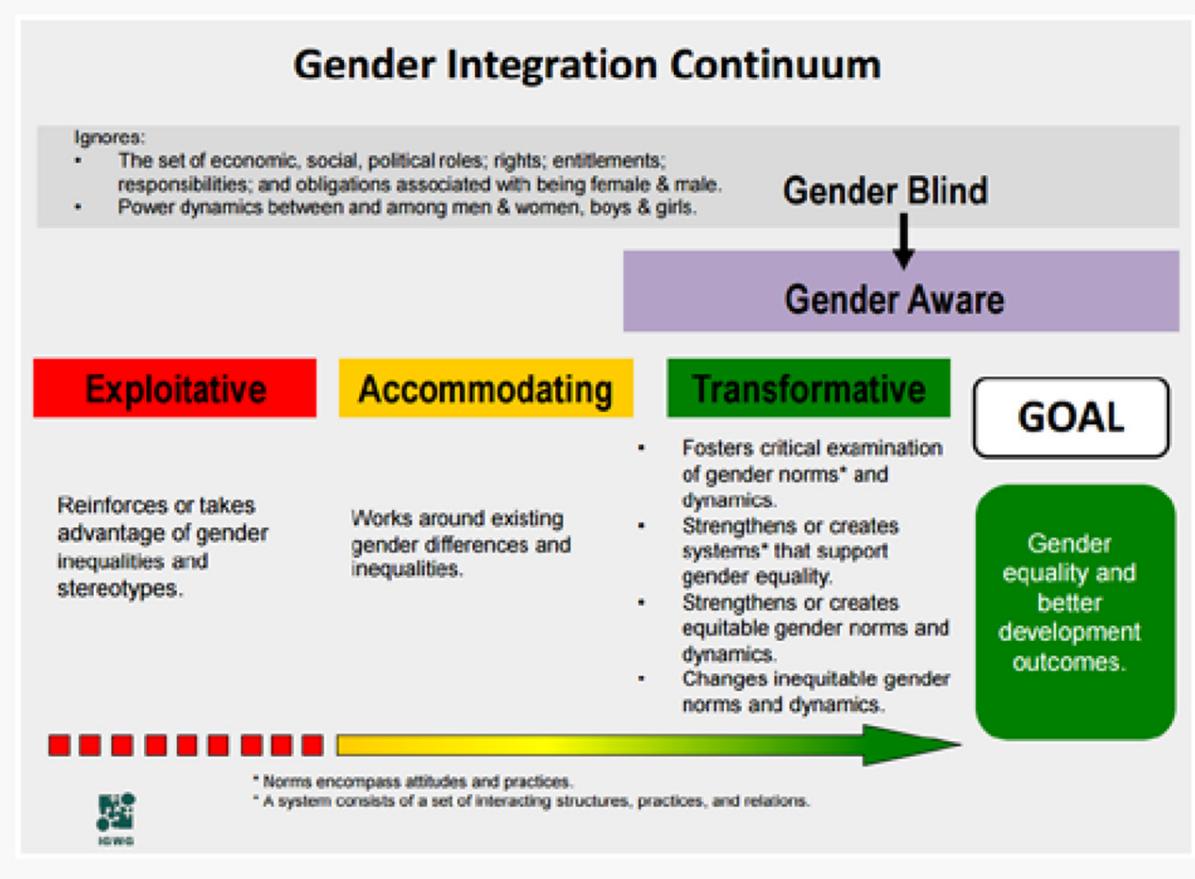


Figure 3: Gender Integration Continuum [About IGWG | IGWG](#) accessed on 14/11/2024

Gender aware: Recognizing or being aware of the existence of gender and gender differences in society; recognizing that men and women are positioned differently; that they have different experiences, different needs and interests, different strengths, and skills, and that these need to be considered while planning for any intervention.

Gender responsiveness: This describes the policies, programmes and projects that focus on transforming existing gender disparities to create a more balanced relationship between women and men in terms of power and decision-making as well as access to and control over productive resources. Gender responsiveness is key in meeting strategic gender needs (strategic gender needs are the needs women identify because of their subordinate position in society. These needs are long-term and relate to the empowerment of women. Strategic gender needs for women might include land rights, more decision-making power, equal pay, and greater access to credit. Addressing these needs allows people to have control over their lives beyond socially defined restrictive roles)

Practical gender needs are defined as: Needs that respond to immediate necessities such as adequate living conditions, water provision, health care, and employment. Gender-specific needs that do not challenge gender roles, such as access to healthcare, water availability, and employment opportunities.

Gender transformative

Addressing gender imbalances, changing gendered power relations, and actively building equitable social norms and structures. An organization is aware that women and men do not have equal opportunities in the household, at community level or at work. They may, for example, create equal working conditions for women and men, recognizing that special means may be required to increase the number of women in management positions or to achieve an environment free from gender-based violence (GBV). Gender transformative approaches are characterized by explicitly centering gender norms and are thus common for interventions that have the primary goal of addressing gender issues and transforming gender relations to promote equality.

Transformative Gender Programming includes policies and programs that seek to transform gender relations to promote equality and achieve program objectives. This approach attempts to promote gender equality by:

1. fostering critical examination of inequalities and gender roles, norms, and dynamics,
2. recognizing and strengthening positive norms that support equality and an enabling environment,
3. promoting the relative position of women, girls, and marginalized groups, and transforming the underlying social structures, policies and broadly held social norms that perpetuate gender inequalities.
4. Most importantly, program/policy planners and managers should follow two gender integration principles:
 - First, under no circumstances should programs/policies adopt an exploitative approach since one of the fundamental principles of development is to “do no harm.”
 - Second, the overall objective of gender integration is to move toward gender transformative programs/policies, thus gradually challenging existing gender inequities and promoting positive changes in gender roles, norms, and power dynamics.

Empowerment: Is about improving women's and men's status to enhance their decision making-capacity at all levels. It refers to the process in which women and men reflect upon their reality and question the reasons for their situation in society. It includes developing alternative options and taking opportunities to address existing inequalities. It enables them to live their lives to the fullest of their capabilities and their own choices in respect of their rights as human beings.

Gender Mainstreaming: **Gender equality** can be achieved by a strategy of mainstreaming which is defined by the United Nations, as ‘...the process of assessing the implications for women and men of any planned action, including legislation, policies, or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic, and societal spheres so that women and men benefit equally, and inequality is not perpetuated. The goal is to achieve gender equality.’

Gender mainstreaming aims to ensure that women and men, particularly those who are disadvantaged, equally participate in and benefit from the activities of a given organization, and that all implemented projects and programmes consider women's and men's concerns and experiences as an integral dimension of their cycles. This intervention ensures that existing democratic relations are protected, at the same time preventing the further perpetuation of inequalities and the creation of new ones.

8.1.2 The Business case for gender mainstreaming

Gender mainstreaming in Agri-enterprises is not only a matter of social equity but also makes strong business sense. Here are some key points that highlight the business case for gender mainstreaming in this sector:

Increased Productivity: Women make up a sizable portion of the agricultural workforce. By providing them with equal access to resources such as land, credit, and training, productivity can be



significantly increased. Studies have shown that closing the gender gap in agriculture could increase yields on women's farms by 20-30%

Enhanced Innovation: Diverse teams bring varied perspectives, leading to more innovative solutions. Women often bring unique insights into agricultural practices and market needs, which can drive innovation and improve business outcomes.

Market Expansion: Women are key players in local markets and value chains. By empowering women, Agri-enterprises can tap into new markets and consumer bases, enhancing their market reach and profitability.

Improved Financial Performance: Companies that invest in gender equality tend to perform better financially. Gender-diverse companies are more likely to have higher returns on equity and better financial performance overall.

Risk Mitigation: Gender mainstreaming can help mitigate risks associated with labor shortages and community relations. Empowering women can lead to more stable and resilient communities, which in turn supports sustainable business operations.

Compliance and Reputation: Increasingly, investors and consumers are looking for companies that adhere to social responsibility standards. Gender mainstreaming can enhance a company's reputation and compliance with international standards, attracting more investment and customer loyalty.

By integrating gender mainstreaming into their operations, Agri-enterprises can not only contribute to social equity but also enhance their competitiveness and sustainability.

8.1.3 Steps to mainstream Gender

Gender mainstreaming in Agri-enterprises involves several strategic steps to ensure that gender considerations are integrated into all aspects of the business. Here are some specific strategies:

1. **Conduct Gender Analysis:** Start with a thorough gender analysis to understand the distinct roles, needs, and challenges faced by men and women in the agricultural sector. This analysis should inform all stages of project planning and implementation.
2. **Develop Gender-Responsive Policies:** Create policies that promote gender equality and address specific barriers faced by women and youth. This includes policies on equal access to resources, decision-making, and opportunities for training and development.
3. **Capacity Building:** Provide training and capacity-building programs for both men and women to enhance their skills and knowledge. This can include technical training, leadership development, and financial literacy.
4. **Gender-Responsive Budgeting:** Allocate budget specifically for gender mainstreaming activities. This ensures that there are sufficient resources to support gender equality initiatives.
5. **Participatory Planning:** Involve both men and women in the planning and decision-making processes. This ensures that the perspectives and needs of both genders are considered and addressed.
6. **Monitoring and Evaluation:** Establish gender-sensitive indicators and regularly monitor and evaluate the impact of gender mainstreaming activities. This helps in assessing progress and making necessary adjustments.
7. **Promote Women's Leadership:** Encourage and support women to take on leadership roles within the enterprise. This can be achieved through mentorship programs, leadership training, and creating an enabling environment for women leaders.
8. **Address Social Norms:** Work on changing discriminatory social norms and practices that hinder gender equality. This can be done through community engagement, gender transformative approaches including Gender action learning systems(GALS), community conversations, model families, among others that seek to address root causes of discrimination.

8.2 Human rights

Human Rights: These are rights inherent to all human beings, independent of nationality, place of residence, sex, national or ethnic origin, race, religion, language, or any other status. All human beings are equally entitled to human rights without discrimination. These include the right to life, equality before the law, the right to work, social security, education, and the right to development. These rights are all interrelated, interdependent and indivisible (Access the comprehensive text here [30 articles on the 30 Articles of the Universal Declaration of Human Rights | OHCHR](#))

UN Universal Declaration of Human Rights

Adopted: December 10, 1948

- | | |
|---|--|
| 1. We are all born free and equal | 16. All may marry and establish families |
| 2. Everyone has rights despite differences | 17. All may own property |
| 3. All have the right to live, and live in safety | 18. All may think freely, including religion |
| 4. No one may enslave you | 19. All may freely express opinions |
| 5. No one may torture you | 20. All may assemble peacefully |
| 6. You have rights no matter where you travel | 21. All may participate in governing |
| 7. All are equal before the law | 22. All have rights to dignity and social protections |
| 8. Human rights are protected by law | 23. All have free choices of employment |
| 9. No one should be unfairly detained | 24. All have rights to rest and leisure |
| 10. All have a right to a fair trial | 25. All have the right to an adequate standard of living |
| 11. All accused are innocent until proven guilty | 26. All have a right to education |
| 12. All have a right to privacy | 27. All have rights to intellectual property |
| 13. All have the right to move freely | 28. All have the right to a world that enables and protects rights |
| 14. All may enjoy asylum from persecution | 29. All rights have responsibilities and can only be limited when infringing on others' rights |
| 15. All have a right to nationality | 30. No one can take away your human rights |

Figure 4: 30 articles of Huma rights <https://rvalibrary.org/shelf-respect/law-library/national-human-rights-month/> Accessed on 14/11/2024

Children rights are also enshrined in the convention on the rights of the child (1989). Kenya enacted this into a children's act 2022.



[convention-rights-child-text-child-friendly-version.pdf](#) accessed on 13/11/2024.

Access the full text here [file](#)

A human rights-based approach (HRBA): This is a conceptual framework based on international human rights standards and directed towards promoting and protecting human rights. HRBA seeks to analyze the inequalities which lie at the heart of development problems and redress discriminatory practices and unjust distributions of power that impede development progress.

HRBA is concerned with empowering people to know and claim their rights and increasing the ability and accountability of individuals and institutions who are responsible for respecting, protecting, and fulfilling rights. The HRBA approach aims to eliminate or at least diminish the impediments of existing exclusion and discrimination within the implementation of any programme or project. HRBA gives equal attention to both achieving development goals and to the processes that are chosen to achieve these goals. So, within HRBA, the processes that enable the participation and inclusion of all stakeholders are important.

8.2.1 About Hrba and Pant Principles

The HRBA builds on the norms and principles outlined in the Universal Declaration of Human Rights, and the subsequent legally binding UN treaties, which form the basis for all development cooperation. Application of the HRBA contributes to effective development cooperation processes and sustainable development outcomes. It challenges unequal power relations and social exclusion that deny people their human rights and often keep them in poverty and oppression. Microenterprise support Programme Trust (MESPT) is committed to the HRBA in all interventions.

HRBA places people living in poverty and oppression (rights holders) at the center. It is about:

- Empowering rights-holders to enable them to take action to address their situation and to claim their rights individually and collectively.
- Developing capacities and interests of duty-bearers to fulfil their obligations to respect, protect and fulfil human rights.

PANT is a tool that guides staff on the practical application of the HRBA.

It has four elements:

Participation : Do all stakeholders engage actively, in a way which allows rights-holders to contribute meaningfully and influence processes and outcomes?

Everyone has a right to freely participate in decision making that affects them and their environment. People of power have an obligation to offer meaningful participation and consultations to people affected. Everyone has the right to organize and hold opinions without any interference, and to seek, receive and impart information and ideas through any media regardless of frontiers. Promoting participation is essential for the outcome of projects and programmes. It is stated in international treaties that women, men, girls, and boys have a right to participate in decision-making that affects them. Social and cultural roles that are prescribed women and men have impact on their possibilities of choices, economic independence, access to natural resources, access to land tenure, access to clean and safe water, and decisiveness on housing, education, and livelihood.

Guiding questions are:

- Are fair and effective platforms for public-private dialogue in place, and do they give space to representatives of women and men with less power and status?
- Are measures taken to include and enhance the capacity of those with less knowledge and power so that they can participate meaningfully in the consultative processes? For example, do all stakeholders have sufficient and accessible information on the issues being addressed? Are they invited to truly participatory processes? Are barriers removed, e.g., no expensive travelling, not during busy seasons, not inaccessible for women or persons with disabilities?
- Are stakeholders actively engaged at all stages of the programming process?
- Do initiatives make space for vulnerable people to take actions of their own choosing to manage perceived risks? This is especially important in ‘transformative’ efforts that encourage profound changes in livelihood systems in response to climate change or market upheavals.



Accountability :Who are the duty bearers on various levels, and do they have sufficient capacity and interest to be accountable to rights holders?

The state has an obligation to respect, fulfil and protect the rights of its population. It entails a functional regulatory system for climate and environmental issues, labour law, land systems ; concrete plans for disaster risk reduction and response; rule of law including a justice system providing legal aid to poor and marginalized people and their organisations; and functional and accessible complaints mechanisms. Emphasizing the accountability of all actors (both state and non-state), whose actions impact the environment and natural resources, is a central element of HRBA. Asserting human rights without supporting effective and precise frameworks to hold duty bearers accountable is of little practical use. Strengthening the governance of natural resource management and securing natural resources tenure while also taking rights of local people, women and men, ethnic minorities, nomadic or other marginalized groups into account, can

- i. minimize corruption.
- ii. have positive effects on conflict management.
- iii. be a key step towards alleviating tensions in society and consolidating peace in post-conflict societies.

Guiding questions are:

- Are the duty bearers and other actors with power identified?
- Does the initiative contribute to ensuring that public and private sector actors have systems in place to monitor and disclose social and environmental impacts according to national and international standards?
- Do monitoring and evaluation arrangements involve civil society organisations representing the concerned population?
- Are there consequences (legal, financial, or moral) for non-compliance with human rights objectives and principles?
- Has the contribution established accessible and effective mechanisms for redress and complaints?
- Does the contribution facilitate access to networks, organisations and other sources of information that may assist duty bearers to enhance their accountability and rights holders to claim their rights?

Non-discrimination :Are rights holders and the root causes of their lack of human rights identified and considered, particularly those most subjected to discrimination, marginalization, and vulnerability?

All women, men, girls, and boys are, without any discrimination, entitled to equal access to ecosystem services , market systems and natural resources as well as resilience for a standard of living adequate for their health and well-being. Discrimination may be expressed in law (explicit discrimination) and hence be part of official policy such as lack of land rights; or it may be found in practice and behavior (implicit discrimination)such as where a remote group cannot access water services because drinking wells provided by the state are too far away.

Key questions are:

- Are vulnerable groups specifically identified and targeted?
- Is there a proper analysis of the consequences of the contribution for these women, men, girls, and boys?

- Is there a plan for their inclusion and benefit including disaggregated data and indicators?
- Are tariffs and fees also adjusted to accommodate poor and marginalized groups?
- Are land and property rights addressed to ensure that women, minorities, and poor people are protected or compensated?
- Are the livelihoods supported resilient to risks related to climate and market volatility and uncertainty, and therefore relevant for vulnerable populations that cannot afford to shoulder uncertain risks?

Transparency :What measures are put in place to ensure that all stakeholders can access relevant information and knowledge regarding the contribution?

Transparency All people have the right to obtain information in an accessible and timely manner, e.g., about pollution levels, water quality, environmental health risks, exploitation plans, land use plans and disaster preparedness plans. Granting sufficient and accessible information to affected women and men in planning and policy making processes is of key importance to their ability to influence and monitor developments. It is also important to consider local traditions, survival strategies and indigenous people's dependence on natural resources, and ensuring that separate views are documented. It is also essential to consider access to natural resources for people living in poverty and that a long-term sustainable development can be promoted, to avoid future opposition and conflicts.

Guiding questions are:

- Are the plans and goals of the contribution made public and explicit in an accessible manner to all stakeholders concerned, including the most marginalized groups so that they understand benefits and risks?
- Will affected women, men, girls, and boys receive sufficient, timely and accessible information, including separate views on the plans, and will they be able to take meaningful part in and influence the process?
- Will access to information regarding the local risk situation be improved and will early warning systems be developed so that the ability of vulnerable groups to protect themselves and quickly recover after disasters is strengthened?
- Does the initiative contribute to capacities and commitments for greater transparency in policies and practice affecting land and natural resource tenure, particularly in new forms of land acquisitions and concessions?

8.3 Social inclusion

Social inclusion is the process of improving the terms on which individuals and groups take part in society—improving the ability, opportunity, and dignity of those disadvantaged based on their identity.

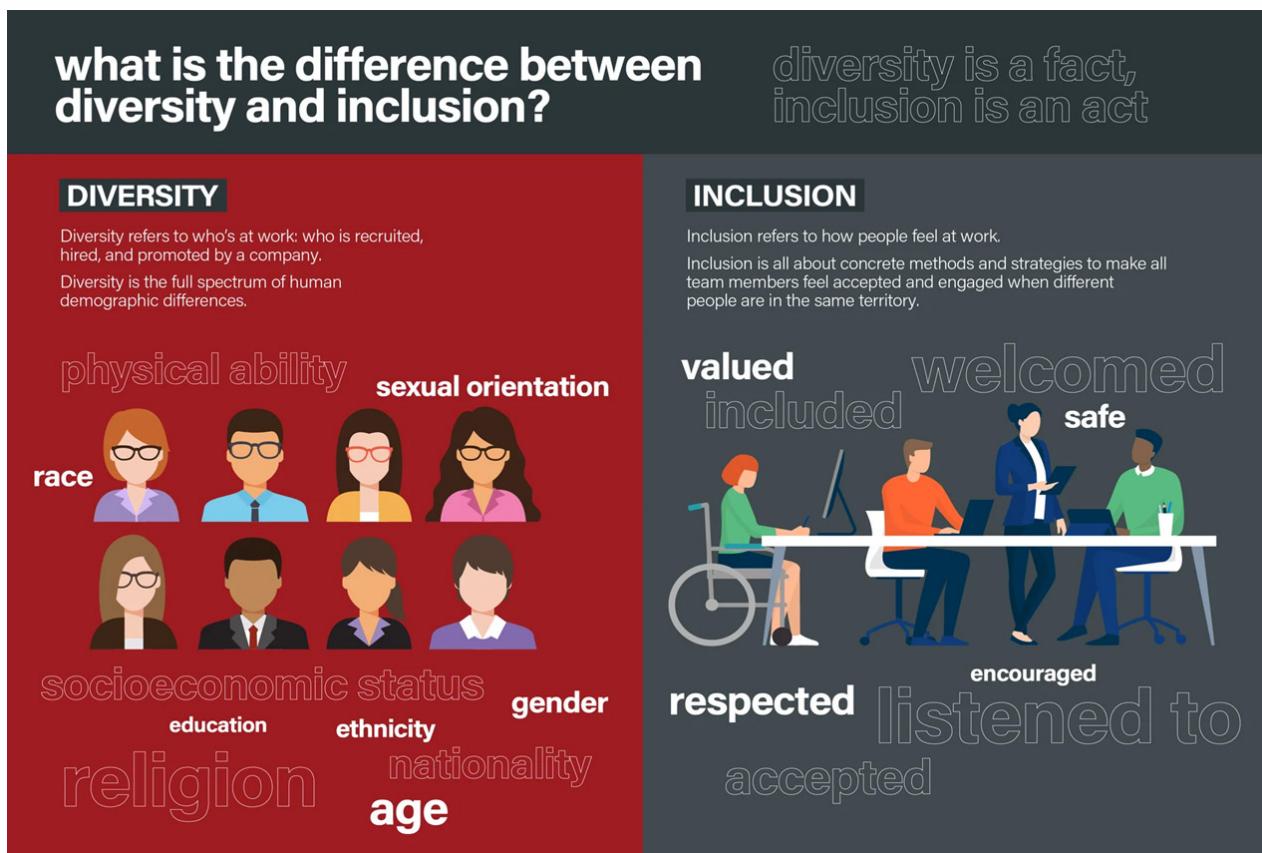


Figure 5 Diversity vs Inclusion DRP Group. (n.d.). *What is the difference between diversity and inclusion?* DRP Group. Retrieved November 14, 2024, from <https://www.drpgroup.com/en/blog/what-is-the-difference-between-diversity-and-inclusion>.

In every country, some groups confront barriers that prevent them from fully participating in political, economic, and social life. These groups may be excluded not only through legal systems, land, and labor markets, but also discriminatory or stigmatizing attitudes, beliefs, or perceptions. Disadvantages are often based on gender, age, location, occupation, race, ethnicity, religion, citizenship status, disability, and sexual orientation and gender identity (SOGI), among other factors. This kind of social exclusion robs individuals of dignity, security, and the opportunity to lead a better life. Unless the root causes of structural exclusion and discrimination are addressed, it will be challenging to support sustainable inclusive growth and rapid poverty reduction.

Social inclusion is the right thing to do, and it also makes good economic sense. Left unaddressed, the exclusion of disadvantaged groups can be costly. At the individual level, the most measured impacts include the loss of wages, lifetime earnings, poor education, and employment outcomes. Racism and discrimination also have physical and mental health costs. At the national level, the economic cost of social exclusion can be captured by foregone gross domestic product (GDP) and human capital wealth. Exclusion, or the perception of exclusion, may cause certain groups to opt out of markets, services, and spaces, with costs to both individuals and the economy.

Ensuring inclusivity means no one is left behind (leave no one behind-LNOB). The following steps make this possible.

8.3.1 Leave no one Behind

STEP 1: Who is being left behind? Gather data.

Identify who is being left behind and in what ways, and who among them is the furthest behind.

- Gather and analyze all data and information on who in the community is left behind in group activities and project interventions-sub populations and geographic localities among others with due attention to the human rights-based approach and gender considerations.
- Include and analyze data and information from a range of sources, including from national statistical offices, national human rights institutions, international human rights mechanisms, ILO supervisory bodies, civil society organizations, particularly organizations of marginalized communities as well as women's organizations, and/or community-level data, citizen science initiatives and scientific journals.
- Seek feedback and input from diverse stakeholders, including groups and populations left behind, throughout the process, from initial gathering of data to review and analysis.
- Identify data gaps.
- Complement existing data where needed, to further understand which subpopulations may be left behind, and which ones are furthest behind, using participatory approaches to gathering data.
- Combine relevant national and UN development, human rights, conflict, inequalities, political, risk and humanitarian analysis for more joined up assessment of who is left behind and why – with a view to identifying the furthest behind.
- Triangulate the data from the above sources through a consultative analytical process to develop a mutual understanding across all interventions that consider the voices and experiences of communities together with other data sources.

STEP 2: Why? Prioritization and analysis

- Frame as problems the LNOB assessment's main findings are about the ways in which people are left behind. Identify the relevant human rights and international labour standards.
- Conduct a root cause analysis to identify why people are being left behind and to enable responses to the root and underlying causes of inequalities, including gender inequalities, vulnerability, deprivation, discrimination, displacement, and exclusion.
- Conduct a role pattern analysis.
- Conduct a capacity gap analysis.
- Questions to be asked at each step: Causal analysis WHY? Which rights are implicated that explain why there is a problem? Role pattern analysis WHO? Who is the duty-bearers? Who are the rights holders? Who must do something about it? Capacity gap analysis WHAT? What capacity gaps are preventing duty-bearers from fulfilling their duties? What capacity gaps are preventing rights holders from claiming their rights? What do they (each) need to act?



STEP 3: What? What should be done?

Identifying what should be done and by whom.

- o Identify actions and interventions to address challenges, barriers, and capacity gaps. Areas include advocacy, enabling the environment, capacity development ,community empowerment, quality and accessibility of services, partnerships including civil society.
- o Prioritize, considering the commitment to address the furthest behind first.

STEP 4: How? How to measure and monitor progress

- o Help identify and contextualize LNOB indicators and targets – having a clear overview of data and data gaps and a plan for monitoring progress is an important precondition for effective follow-up and review.
Quantitative and qualitative indicators will be necessary – measuring commitments, processes, and outcomes.
- o Support innovative ways of tracking, visualizing, and sharing information.
- o Develop the stakeholder capacity to monitor inequalities, including gender inequality and discrimination, including that of governments (national, subnational) and communities.

STEP 5: Advancing accountability for LNOB.

- o Ensure accountability for LNOB within the organization and the interventions.
- o Support the integration of LNOB in interventions follow-up and review processes, including in narrative reports.
- o Support national accountability to people left behind.

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ANNEX I: Sample training programme



MURINGA VALUE CHAIN TRAINING WORKSHOP FOR XXXX

TRAINING VENUE: XXX

DATES: XXX

SAMPLE PROGRAMME

ANNEX II.: List of participants who validated this value chain manual

S/NO	NAME	INSTITUTION
1	Joseph Kairu	County Government of SIAYA
2	Winston Motanya	County Government of KISII
3	Nicholas Manyinsa	County Government of KISII
4	Cecilia Mutuku	County Government of MACHAKOS
5	Paul Busienei	County Government of NAKURU
6	David Kimera	Youth Agri-Preneur
7	Lawrence Swanya	County Government of MACHAKOS
8	Kenneth Kagai	County Government of TRANS-Nzoia
9	Benedict Khanyifu	County Government of TRANS-Nzoia
10	Mwalimu Menza	Kenya Agricultural and Livestock Research Organization
11	George Kamami	County Government of MAKUENI
12	Moses Munialo	County Government of BUGOMA
13	Agesa Eric	County Government of KAKAMEGA
14	Benard Mainga	County Government of KWALE
15	Jane M Kamamu	County Government of KILIFI
16	Teresia Ndungu	County Government of NYANDARUA
17	Wilbur Mutai	County Government of UASIN-GISHU
18	Stephen Odipo	Kenya Agricultural and Livestock Research Organization
19	Solomon Mbivya	PAPA FARMERS Limited
20	William Mwangi	County Government of MAKUENI
21	Doreen Kinoti	Micro-Enterprises Support Programme Trust
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