



Implemented by



Business Support Facility for Resilient Agricultural Value Chains

Competitive Matching Grant Fund (MGF): Climate Smart Agribusiness



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19 July, 2024



Objective and Agenda

Help you understand the expectations regarding measures to work towards climate resilience by implementing Climate Smart Agribusiness (CSA)

Agenda:

- Common understanding: climate resilience
- Climate smart agribusiness: practises and examples
- Human capacity development for CSA

- New regulations of the European Union (EU), gender, youth, and climate change

- Q&A



What kind of impacts of climate change can you observe in your context?

How do they affect the agricultural value chain(s) and the related agribusinesses that you want to target?



Climate resilience



Negative Impacts of
Climate Change

Unsustainable
Agri-Food Systems

create &
increase

Climate Vulnerability

addresses

transforms

reduces



Climate
Action

Capacity of agricultural systems, communities, and ecosystems to **prepare for, respond to, and recover** from the impacts of climate change in a way to maintain their productivity, functionality, and sustainability and keep damages minimal. It also requires understanding climate risks and the capacity to adapt, learn, and transform accordingly. Resilience can be enhanced by implementing **short and long-term climate mitigation and adaptation strategies.**

Climate
Resilience

Enforce adaptive capacity
Decrease sensitivity
Contribute to reducing exposure

Climate Smart
Agribusiness



The likelihood or predisposition to be adversely affected by the impacts of climate change.

Climate Smart Agribusiness:

Develop and implement climate resilient strategies *along the entire value chain*, building on the climate smart agriculture approach (FAO) and its 3 interlinked objectives:

1. Sustainably increasing agricultural productivity and incomes (food security)
2. Adapting and building resilience to climate change (adaptation)
3. Reducing and/or removing greenhouse gas emissions (mitigation), where possible



[Climate-Smart Agriculture | Food and Agriculture Organization of the United Nations \(fao.org\)](https://www.fao.org/)

Soil management

Crop production

Energy

Livestock
management

Water
conservation

Practises
along the VC

Agro-forestry
practices

Adaptation: proactive adjustment measures and strategies to actual or expected climate (change) and its effects with the aim to reduce the vulnerability of ecosystems and communities.

Mitigation: efforts to prevent or reduce emissions of greenhouse gases (GHG) or to enhance their removal from the atmosphere.

Reduction: Identify, develop and apply measures and strategies along the value chain that result in minimizing the release of GHG in the atmosphere (improvement of current practices, alternative practices that do not result in release of GHG)

Removal / Storage: Identify, develop and apply measures and strategies along the value chain that contribute to absorbing GHG from the atmosphere and store them long-term in sinks (forests, soils, grassland, etc.)

CO₂: Carbon Dioxide – accounts for 75% of all GHG in the atmosphere, reference to measure all GHG
CO₂e: CO₂ equivalents – unit to measure and compare emissions of all GHG

Value chain enterprises may...

...cause negative impact on climate and the environment

- Forest destruction due to land clearing
- Emissions from production techniques, waste, by-products, and losses (e.g. storage)
- Wasteful utilization of scarce resources (especially water)

... be affected by climate change and environmental degradation

- Floods, storms, heavy rains, drought, higher temperatures
- Destruction of infrastructure, production facilities, fields harvests
- Lower productivity
- Higher production cost
- Rising prices for water, energy, raw materials, waste disposal

...contribute to compensating emissions and/or contribute to creating a „green economy“

- CO2 sequestration and sale of carbon credits
- Products and services for the green economy (environmental technology, services and investment)
- Renewable energy

Example: Climate Smart Agribusiness

Adaptation



Small-scale water harvesting and storage systems combined with drip irrigation and mulching to improve water availability



Planting hedges and shrubs to avoid/decrease surface runoff and carbon / nutrient losses due to topsoil erosion



Use of cashew improved grafted seedlings resistant to drought and new emerging diseases due to climate change

Reduction



Solar-powered drying techniques reduce reliance on methods that involve burning wood.



Reducing GHG emissions by applying manure closely to the soil surface ideally when soils are rather wet than dry and air temperature is low.



Solar dried cashew apples to save large amounts of electricity and firewood and contribute to the reduction of emission

Removal / Storage



Agroforestry on marginal lands provides additional grazing areas while removing / storing carbon through the planted trees



Combining intercropping, year-round soil cover, and minimum tillage minimizes nutrient outflow and enhances carbon removal / storage potential of the soil



Promotion of Cashew based agroforestry systems to enhance resilience of cashew smallholder farmers and generate carbon credits

Soil management

- Conservation agriculture
- Cover cropping
- Organic / green manure
- Nutrient management

Energy

- Renewable energy production
- Sustainable biomass / biofuel alternatives
- Production of cashew shell briquettes/charcoal

Crop production

- Crop rotation and intercropping
- Traditional / improved drought / pest / heat resistant & salt tolerant crop varieties
- Improved crop / nutrient / integrated pest management

Along the value chain

- Energy-efficient harvest equipment
- Improved / adapted preservation
- (Improved) processing / storage / packaging => post-harvest loss reduction
- Local cashew processing → Reducing the carbon footprint of the value chain



Agro-forestry practices

- Agri-silvicultural systems (crops + tree crops and/or trees); Silvo-pastoral systems (trees & shrubs on pastures); Agrosilvo-pastoral systems (annuals + pastures + woody perennials)
- Advantages: provision of shade; protection; crop/ food / fodder / fuel production

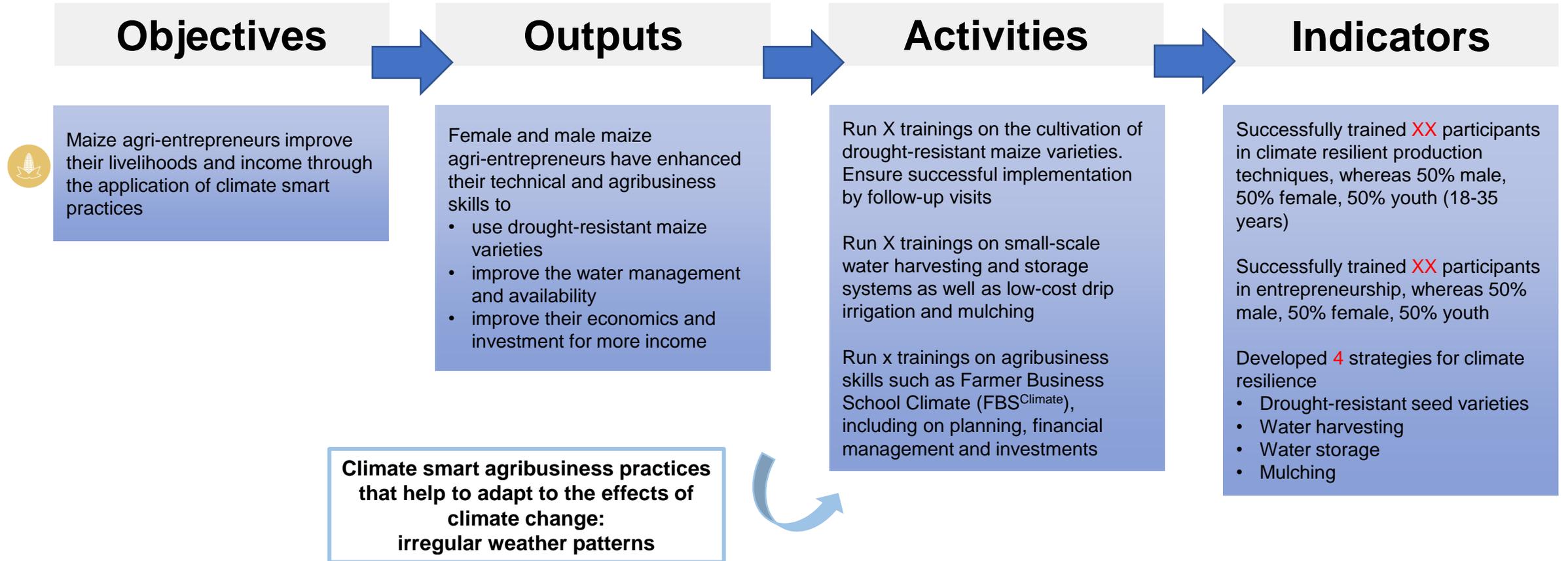
Water conservation

- Rainwater harvesting
- (Drip) Irrigation and improved watering times
- Reduction of soil moisture loss (e.g., mulching)
- Drought resistant crop varieties

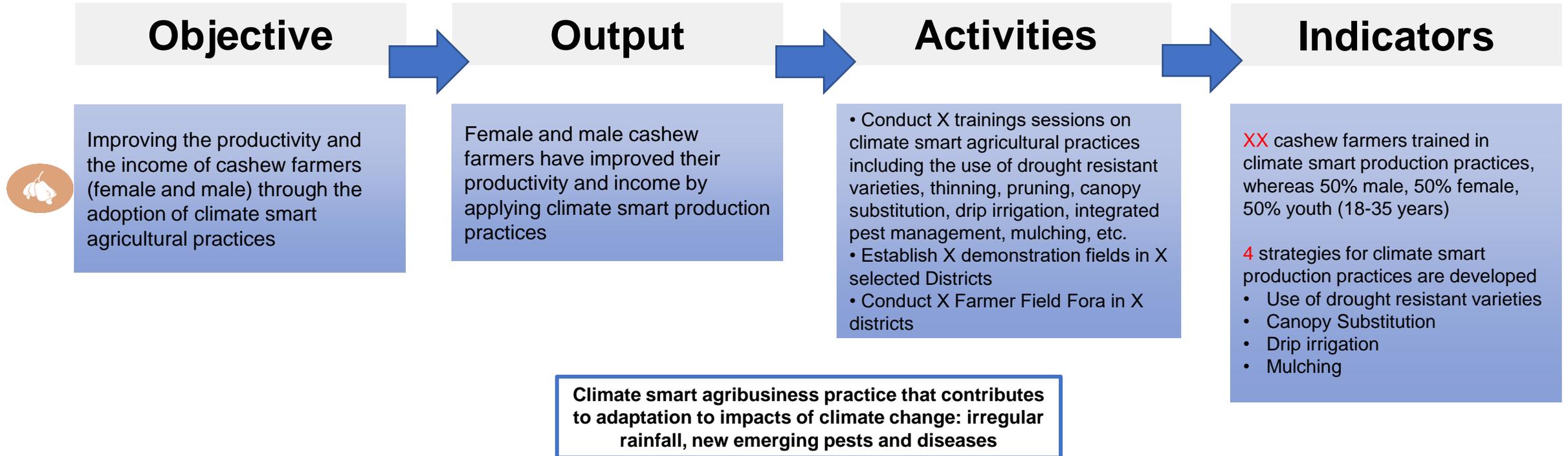
Livestock management

- Improved feed management (selection, quality, feed-water productivity)
- Data-driven practices (health monitoring, nutrient balancing)
- Improved breeding, housing, vaccination, medication management
- Enhanced manure management and grazing approaches

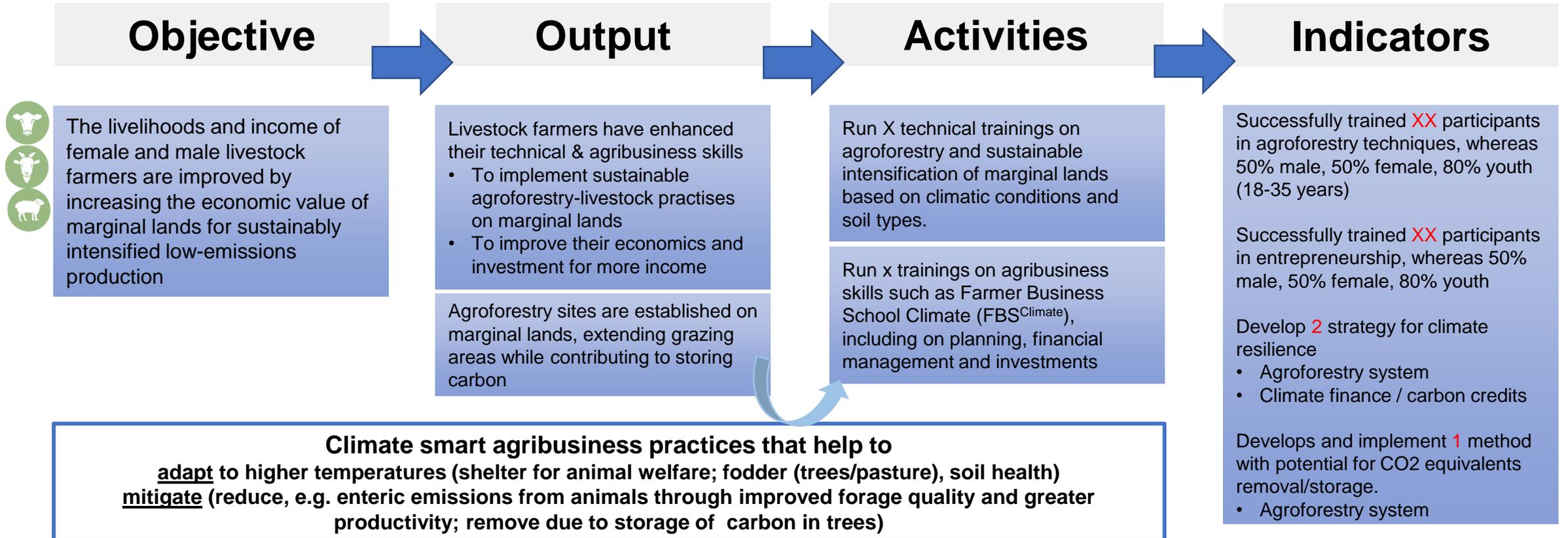
Example: Adaptation



Example: CSA in the project design Adaptation



Example: Removal

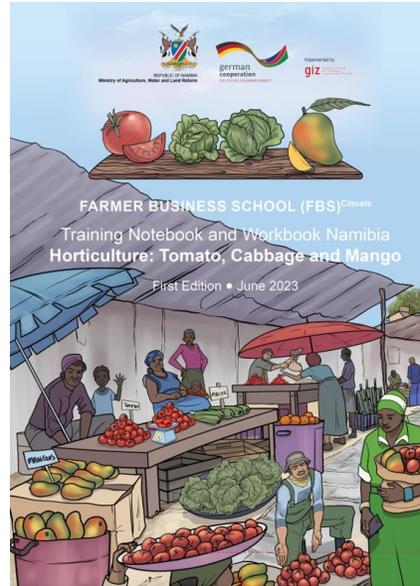


*Carbon markets: You can verify your agroforestry project as carbon credits. These credits represent the quantifiable emissions that your agroforestry site stores each year. You can sell these carbon credits on the carbon market which gives you an additional stream of income. Buyers like governments and private companies purchase carbon credits to compensate for their GHG emissions.

CSA in HCD tools, instruments, and approaches

FBS Climate

Extended version of FBS that strengthens the business skills of agricultural smallholders as well as their capacities on climate-resilient practices in an integrated manner



Climate Change Tool

Excel-based tool to identify adaptation strategies for crops and livestock produced under climatic risks in different ecozones
→ Objective: Enable efficient and holistic adaptation of training material for MSME

Did you know?
By planting trees you contribute to reducing CO₂ in the atmosphere by sequestering CO₂ in new growth. This means that trees absorb CO₂ from the atmosphere, use CO₂ for their growth, and store the CO₂, particularly in their wooden parts. This is an important mitigation strategy for climate change. Climate change mitigation means avoiding and reducing emissions of heat-trapping greenhouse gases such as CO₂ into the atmosphere, preventing the planet from warming to more extreme temperatures. The amount of CO₂ that a tree can sequester increases as the tree grows, it can store more and more CO₂.

REMEMBER: CLIMATE CHANGE

Meaning
The term "climate change" means a change in the average climatic conditions – such as temperature and rainfall – in a region over a long period of time. Scientists have observed that planet Earth's surface is warming. Many of the warmest years on record have occurred in the past 20 years.

Causes
Many factors contribute to climate change on Earth. However, scientists agree that Earth has been getting warmer in the past 50 to 100 years due to human activities. Certain gases in the planet's atmosphere block heat from escaping into space. This creates what is called the "greenhouse effect". These gases keep Earth warm like the gases in a greenhouse keep plants warm. Human activities – such as burning fuel to power factories, cars and houses – are changing the planet's natural atmosphere. The share of gases like CO₂, Methane and Nitrogen is increasing. These changes are causing the atmosphere to trap more heat than it used to, leading to a warmer Earth.

Agriculture – in particular industrial agriculture and land management practices such as deforestation and soil degradation – contributes a significant share of the greenhouse gas (GHG) emissions that are causing climate change: 17% directly through agricultural activities and an additional 7 to 14% through changes in land use. On the other hand, agriculture is particularly affected by the impacts of climate change, such as changes in rainfall or rising temperatures.

LEADING CAUSES OF CLIMATE CHANGE: burning fuel for power and cutting down trees



Calculation of CO₂ sequestration in a mango orchard

Calculating the amount of CO₂ that a tree can sequester from the atmosphere is complex, but there are existing formulas that can be used for the calculation:

- Above Ground Biomass (AGB)
- Below Ground Biomass (BGB)
- Total biomass (per tree)
- Carbon bond in biomass
- Sequestered CO₂

• Girth (cm)	x	π	=	DBH
17.2	x	3.14	=	54
• AGB	x	18.82	=	AGB
101.87	x	110.02	=	11215.3
• BGB	x	110.02	=	BGB
3.26	x	99.53	=	325.2
• AGB + BGB	=		=	Total biomass per tree
105.13	=		=	11540.5
• Total biomass per tree	x	0.5	=	Carbon bond in biomass
124.16	x	0.5	=	62.08
• Carbon bond in biomass	x	3.67	=	Sequestered CO ₂
62.08	x	3.67	=	227.83

Let us assume that the diameter at breast height (DBH) is 20 cm. The example in red shows you how to do the calculation.

The empty cells below the examples are for you to enter your own data and calculate using your data.

It is good to calculate the amount of sequestered CO₂ on your mango orchard. This might allow you to apply to other a carbon credit in the future. A carbon credit is not a loan! It is an emission reduction traded in a formalized transaction between those mitigating and those emitting CO₂. The entitlement to a carbon credit is awarded in the form of a certificate which is usually issued by a carbon standard. More concretely this means that those emitting CO₂ are investing in activities that have reduced or sequestered CO₂ at the other site by buying certified carbon credits, while those mitigating CO₂ get paid for.

Module 11 Make your agribusiness climate smart

Did you notice changing temperatures or rainfall patterns in the last years? Have you already heard of climate change? You will learn in this module the causes for these phenomenon and what climate change is, how it affects your business and what you as an agribusiness can do.

A good agribusiness understands the difference between weather and climate.

Weather describes the conditions outside in a specific moment in a specific place. For example, if you see that it is sunny outside right now, that is a way to describe today's weather. Rain, wind, storm, hurricanes, monsoons – these are all weather events.

Climate, on the other hand, is more than just one or two sunny days. Climate describes the weather conditions that are expected in a region at a particular time of year. A region's climate is determined by observing its weather over a period of many years generally about 30 years or more. The picture on the left shows a dry savanna climate zone in the north of South Sudan.




	G	H	I	Risk
1	Geographic/agricultural factors	Select your indicator	Risk 1	
2	Temperature	Above 25 Degrees	Temperatures are too high (>25°C)	
3	Precipitation	Heavy rain events	Too much precipitation at once.	
4	Seasons	Delayed	Delayed	
5	Soil type	Clay	Water logging due to heavy rainfall	
6	Surrounding vegetation	Deforested	No protection from wind erosion and loss of nutrients from bare soil	
7	Relief	Steep slope	Heavy water erosions and landslides	
8	Altitude	1000 to 2500m	Upwards shift of production systems due to rising temperature.	
9	Water resources	Rainwater	Unpredictable, too much or too little in one season.	
10	Water management	Rainfed	No optimum rainfall pattern.	
11	Production system	Annual monocrop	Soil erosion due to reduced soil organic matter.	
12	Crop	Maize		
13	Crop	Germination	Does not germinate: Delayed rainy season	
14	Crop	Seedling	Washed away: too much precipitation on slope	
15	Crop	Vegetative Growth	Does not grow well: occurrence of pests and diseases.	
16	Crop	Disease and Pest	Maize cobs do not develop well, pest and diseases occur.	
17	Crop	Harvest	Maize cobs are too small at harvest.	
18	Crop	Postharvest	Maize cobs are infected with diseases, pest or fungi.	
19	Crop	Potato		
20	Crop	Germination	Do not germinate: Delayed rainy season	
21	Crop	Seedling	Washed away: too much precipitation on slope	
22	Crop	Vegetative Growth	Does not grow well: too less potassium fertilization.	
23	Crop	Disease and Pest	Does not grow well: occurrence of pests and diseases.	
24	Crop	Harvest	Not enough tubers and only small tubers.	
25	Crop	Postharvest	Potatoes are infected with diseases, pest or fungi.	
26	Crop	Horticulture		

Read me | Get started | Desert | Dry Savanna | Summer humid tropics | Wet tropics | Humid cl... |

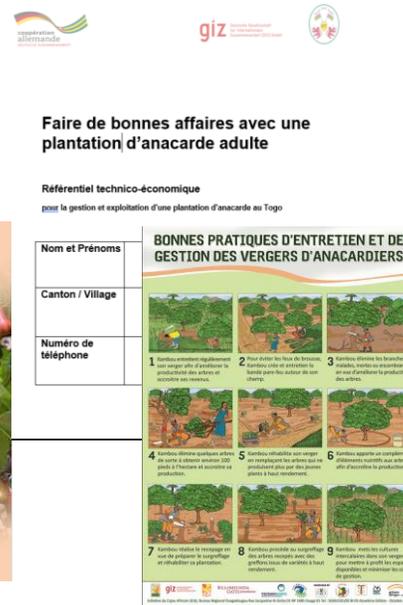
Cashew CSA training manuals and tools developed for Extension Agents and farmers

Cashew Good Agricultural Practice (GAP)

Technical-economic producer references: concise, correct and compelling documentation and illustration of GAP as well as harvest and post-harvest techniques, including CSA practices

Conservation Agriculture and Agroforestry

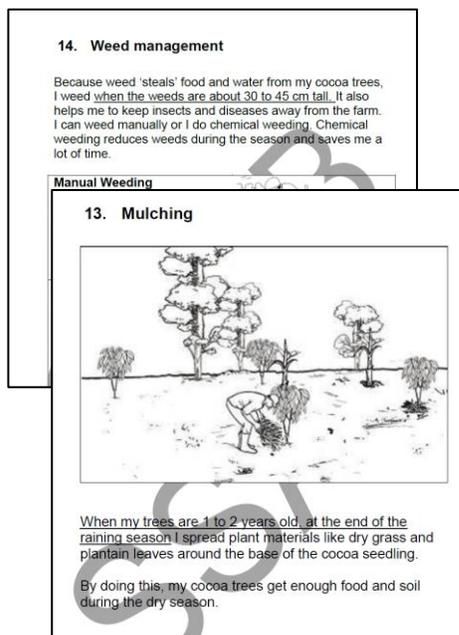
Training manual on Conservation Agriculture and its principles that constitute a major approach to climate change adaptation and tailored at building the adaptive capacity of smallholder farmers in sustainable manner.



CSA in HCD tools, instruments, and approaches

Good Agricultural Practice (GAP)

Technical-economic producer references: concise, correct and compelling documentation and illustration of GAP as well as harvest and post-harvest techniques, including CSA practices



Agribusiness e-Academy



Agribusiness E-Academy:

Self paced-learning courses on Climate Smart Agribusiness (CSA):

- Climate Smart Agribusiness Essentials (*coming soon!*)
- CSA: Adaptation
- CSA: Mitigation (reduction & removal)





New EU-regulations on sustainability will have an impact:

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Regulation on Deforestation-free products - EUDR :

- No commercialization of deforestation products on the EU market (**cattle**, wood, **cocoa**, soy, palm oil, coffee, rubber, and some of their derived products, such as leather, chocolate, tires, or furniture)
- Trades who places these commodities on the EU market or export from it must be able to prove that the products do not originate from recently deforested land or have contributed to forest degradation.
- Entry into force end of 2024.

Corporate Sustainability Due Diligence Directive – CSDDD:

- Establishes a corporate due diligence duty (identifying and addressing potential and actual adverse human rights and environmental impacts in the company's own operations, subsidiaries and business partners).

Different impacts on different people: Gender, Youth, and Climate Change

Women and girls can be particularly impacted by climate change

- 80 percent of people displaced by climate change are women.
- Women agripreneurs have a more limited access to weather forecasts and extension services, as well as to income and resources such as land and technology.

This impacts not only their agribusiness activities, but also their adaptive capacities in the context of a changing climate.

- Extreme weather events, such as storms are therefore often more dangerous and deadly for women. For instance, more than 70 percent of people who died in the 2004 Asian tsunami were women.
- An increase of the long-term temperature of 1°C is associated with a reduction of 34% of the total income compared to male-headed households.



You can maximize your impact by :

1. Integrating gender perspectives into your project design
2. Ensuring your climate resilient practises build up the asset base of women.
3. Ensuring mitigation and adaptation efforts also address sources of gender inequality and poverty.

• [UNDP Linkages Gender and CC Policy Brief 1-WEB.pdf](#)

• [GIZ-GP-\(2021\) Diving into the gap Genderdimensions of Climate RiskManagement.pdf](#)

• [FAO: 2024. The unjust climate – Measuring the impacts of climate change on rural poor, women and youth. Rome.](#)

Different impacts on different people: Gender, Youth, and Climate Change

Young women and men and climate change impacts

- Similar to women, youth (15-35 years) in agribusiness face several constraints when it comes to access to resources such as land and finance, to information, knowledge or training.
- In the context of climate change impacts, young rural households lose more on-farm income than older households but do better in compensating these losses by generating off-farm income.
- Young people are often more familiar with digital technologies which can help to access weather information & advisory services
- Young women and men are important agents of change and innovation: A survey in 15 African countries showed that 72% are concerned about climate change, 85% want their governments to be more proactive in addressing the effects of a changing climate, and almost 65% are trying to reduce their own impact

• [FAO. 2024. The unjust climate – Measuring the impacts of climate change on rural poor, women and youth. Rome.](#)

• [Ichikowitz Family Foundation. 2022. African Youth Survey.](#)



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You can maximize your impact by :

1. Building on inclusive approaches for your project design with a strong focus on both, women and youth
2. Ensuring your climate resilient practises consider the specific needs of young women and men.
3. Tapping the potential of young women and men as agents of change and innovation.

Q&A





Implemented by



Thank you!
Merci beaucoup!
Obrigado!
Gracias!