FUTURE PROOFING KENYA'S FOOD SYSTEM

Building a business ecosystem to enable small holder farmers to transition to regenerative farming

FOOD FLOW

A PROGRAM BY: enviu

IKEA Foundation


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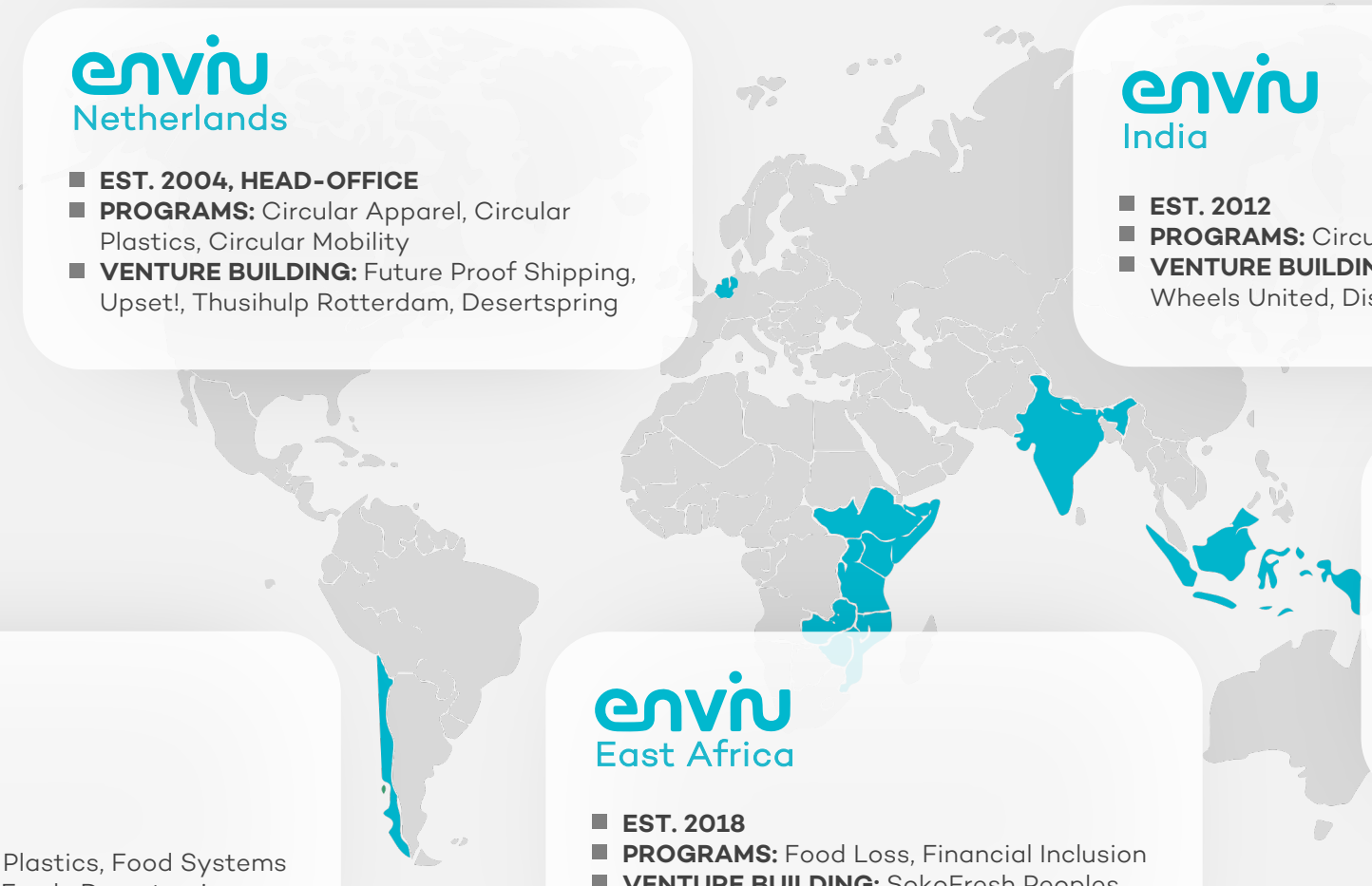
We build
world changing
companies

ENVIU IS A GLOBAL VENTURE BUILDING STUDIO IN THAT BUILDS SOCIAL VENTURES IN CIRCULAR ECONOMY, FOOD SYSTEMS AND FINANCIAL INCLUSION

Contributing to most SDGs Core: 1|3|8|12|13|14|15



enviu Netherlands

- **EST. 2004, HEAD-OFFICE**
- **PROGRAMS:** Circular Apparel, Circular Plastics, Circular Mobility
- **VENTURE BUILDING:** Future Proof Shipping, Upset!, Thusihulp Rotterdam, Desertspring

enviu India

- **EST. 2012**
- **PROGRAMS:** Circular Apparel, Financial Inlcusion
- **VENTURE BUILDING:** Lakshya, Khaloom, Three Wheels United, Discovered, Homeals, Puraloop

enviu Southeast Asia

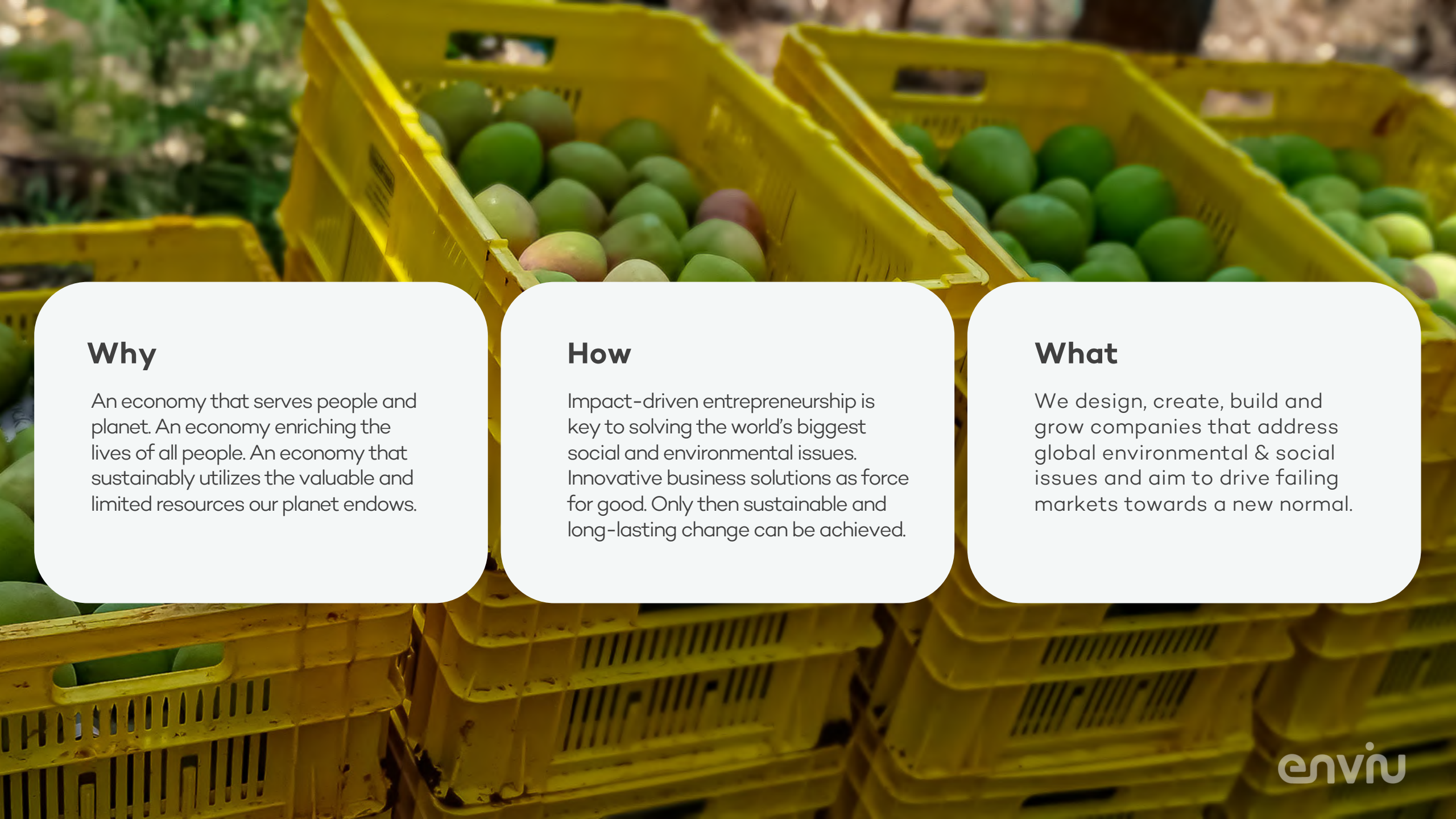
- **EST. 2019**
- **PROGRAMS:** Zero Waste - Plastics
- **VENTURE BUILDING:** Kecipir, Econesia, Muuse Indonesia, Alner

enviu Chile

- **EST. 2019**
- **PROGRAMS:** Circular Plastics, Food Systems
- **VENTURE BUILDING:** Fresh, Desertspring

enviu East Africa

- **EST. 2018**
- **PROGRAMS:** Food Loss, Financial Inclusion
- **VENTURE BUILDING:** SokoFresh Peoples Pension Ghana, Peoples Pension Rwanda, MloZone, Shambani Pro



Why

An economy that serves people and planet. An economy enriching the lives of all people. An economy that sustainably utilizes the valuable and limited resources our planet endows.

How

Impact-driven entrepreneurship is key to solving the world's biggest social and environmental issues. Innovative business solutions as force for good. Only then sustainable and long-lasting change can be achieved.

What

We design, create, build and grow companies that address global environmental & social issues and aim to drive failing markets towards a new normal.

A case for systemic change

01

A VIEW OF THE GLOBAL FOOD CRISIS

Examining global food production trends and how the world's agriculture sector is falling short of 2050 food production targets.

02

KENYA'S UNSUSTAINABLE FOOD PRODUCTION SYSTEM

Studying the difficulties confronting Kenya's food production system and determining where long-term solutions are required.

03

CLIMATE PROOFING FOOD PRODUCTION

Understanding regenerative agriculture and how its principles, once applied, grow resilient farms and strengthen farmers' livelihoods.

04

THE REGENERATIVE AGRICULTURE ECOSYSTEM IN KENYA

A look at ecosystem efforts to transtition smallholder farmers to regenerative agriculture at scale and challenges encountered.

05

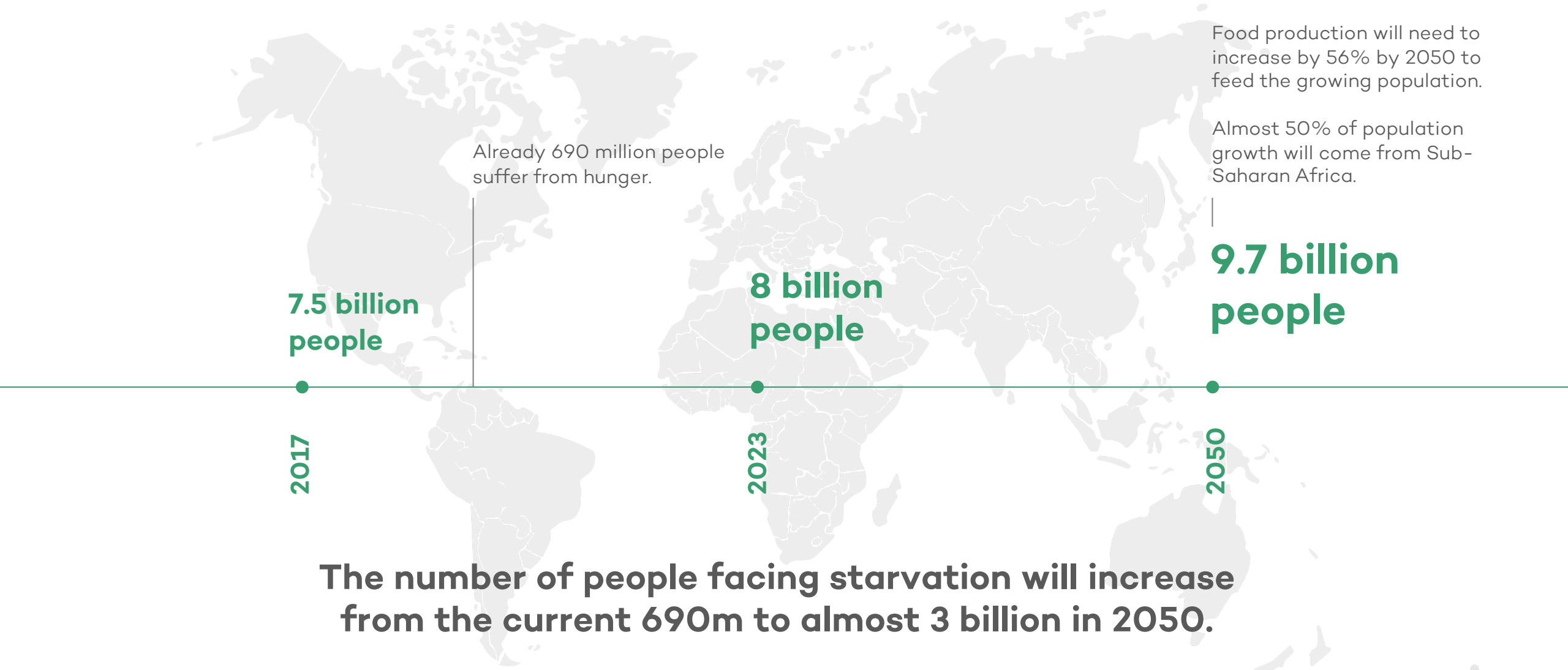
DRIVING TOWARDS TRANSITIONING AT SCALE

Why are farmers slow to adopt regenerative agriculture, and what can be done to unlock transition at scale?

A view of the global food crisis

1

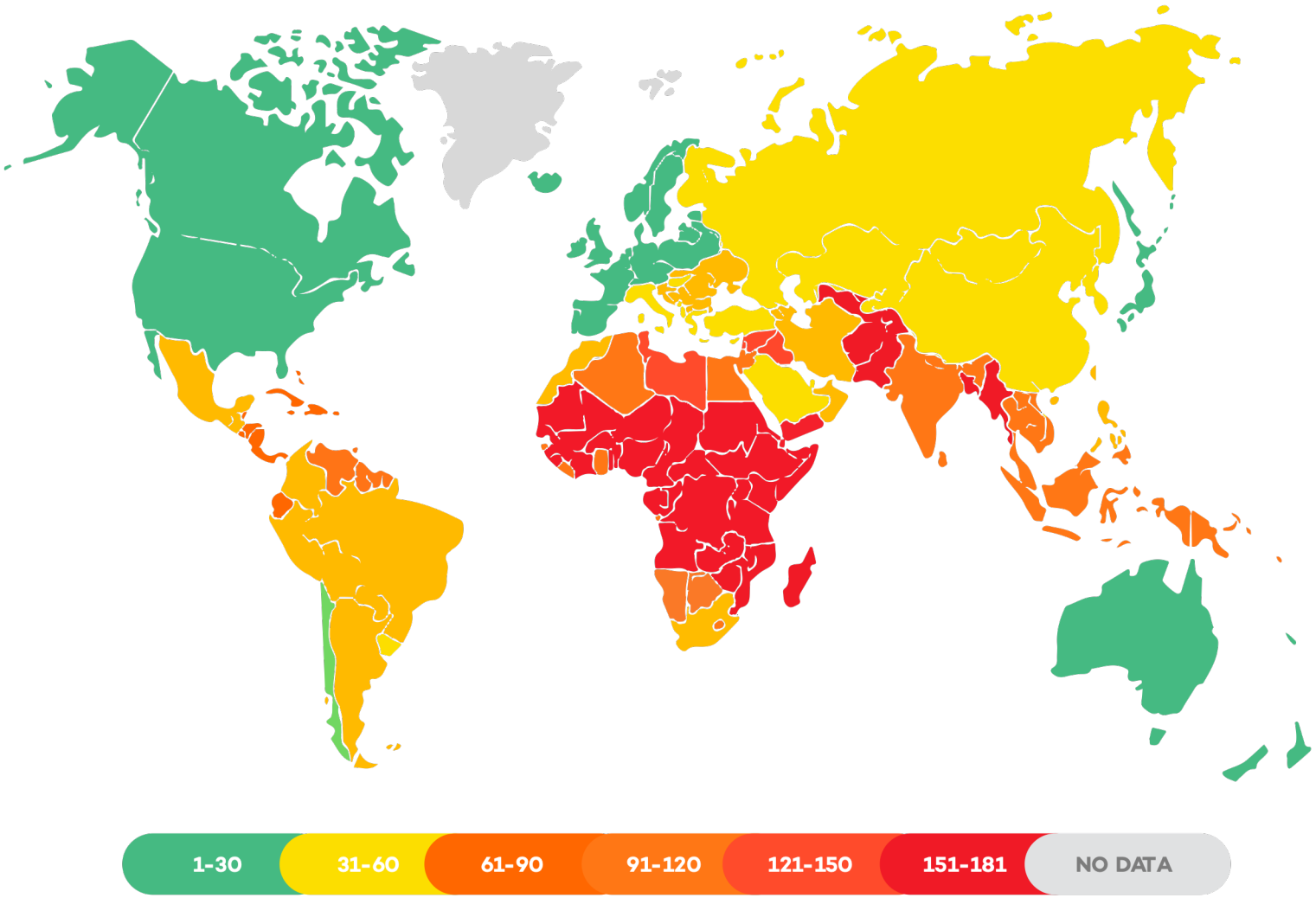
THE GLOBAL POPULATION IS EXPECTED TO GROW BY 30% IN THE NEXT 30 YEARS, WHICH WILL PUT CURRENTLY STRAINED FOOD SYSTEMS AT ADDITIONAL RISK



The number of people facing starvation will increase from the current 690m to almost 3 billion in 2050.

Source: UN Foundation; FAO; Economic Research Service

SUB-SAHARAN AFRICA IS PROJECTED TO GROW THE FASTEST BUT WILL BE DISPROPORTIONATELY AFFECTED BY CLIMATE CHANGE, MAKING IT THE HARDEST HIT



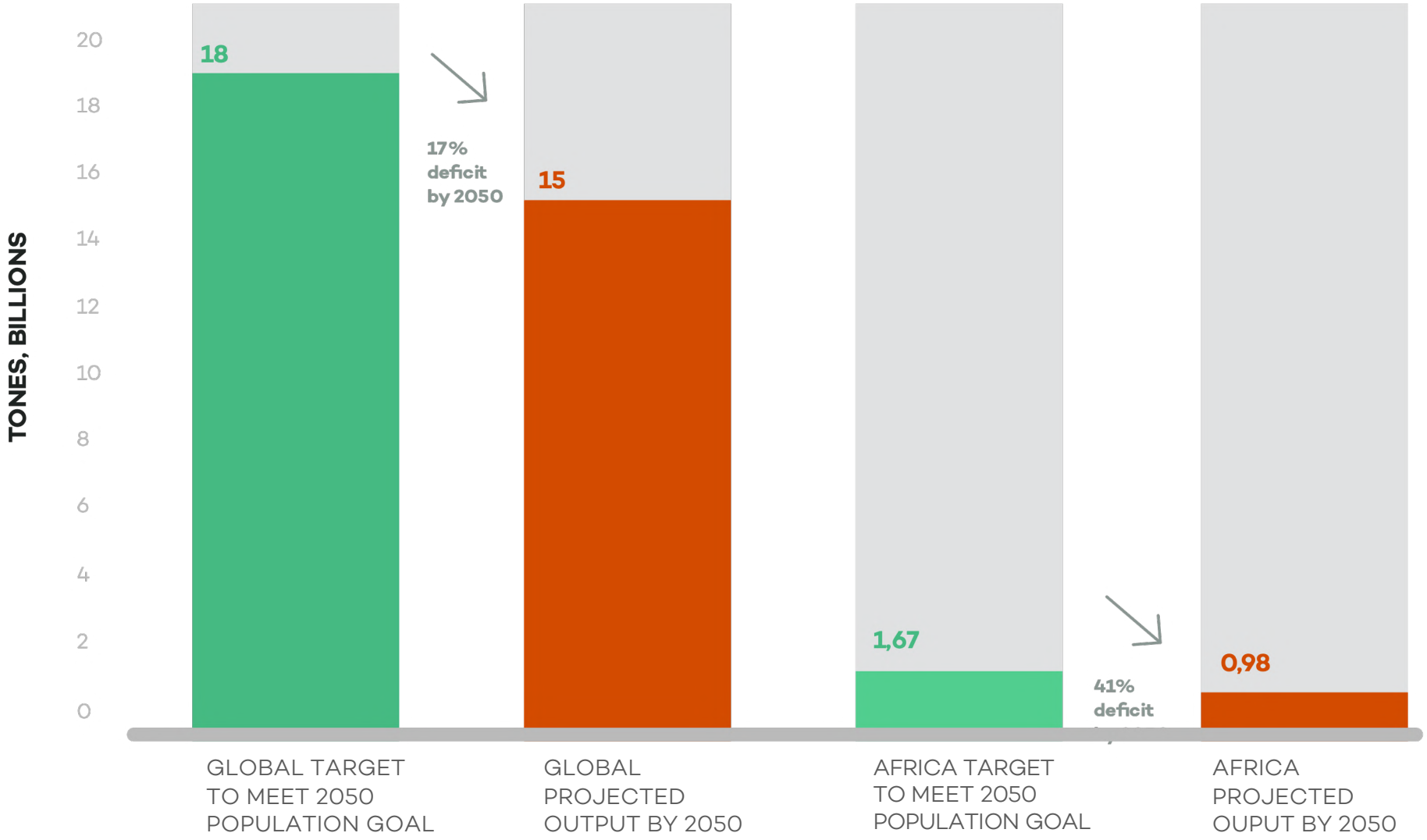
Source: The Eco Experts

As climate change worsens, it is Africa that will be hardest hit.

- Temperatures in Africa are projected to rise faster than the global average.
- Since the 1970s, sub-Saharan Africa has experienced a 10x increase in extreme weather events.
- Many crops foundational to African diets, will struggle to survive the rising temperatures.
- Up to 95% of the continent's farmers are entirely reliant on rain, which is unpredictable.
- Yet almost 50% of world population growth will be driven by Sub-Saharan Africa.

Africa's food production systems will experience the most significant disruptions and will therefore need to focus on climate resilience and adaptability.

THE OVERALL OUTPUT GROWTH OF THE AGRICULTURAL SECTOR IS NOT KEEPING UP WITH THE RATE REQUIRED TO FEED THE POPULATION IN 2050

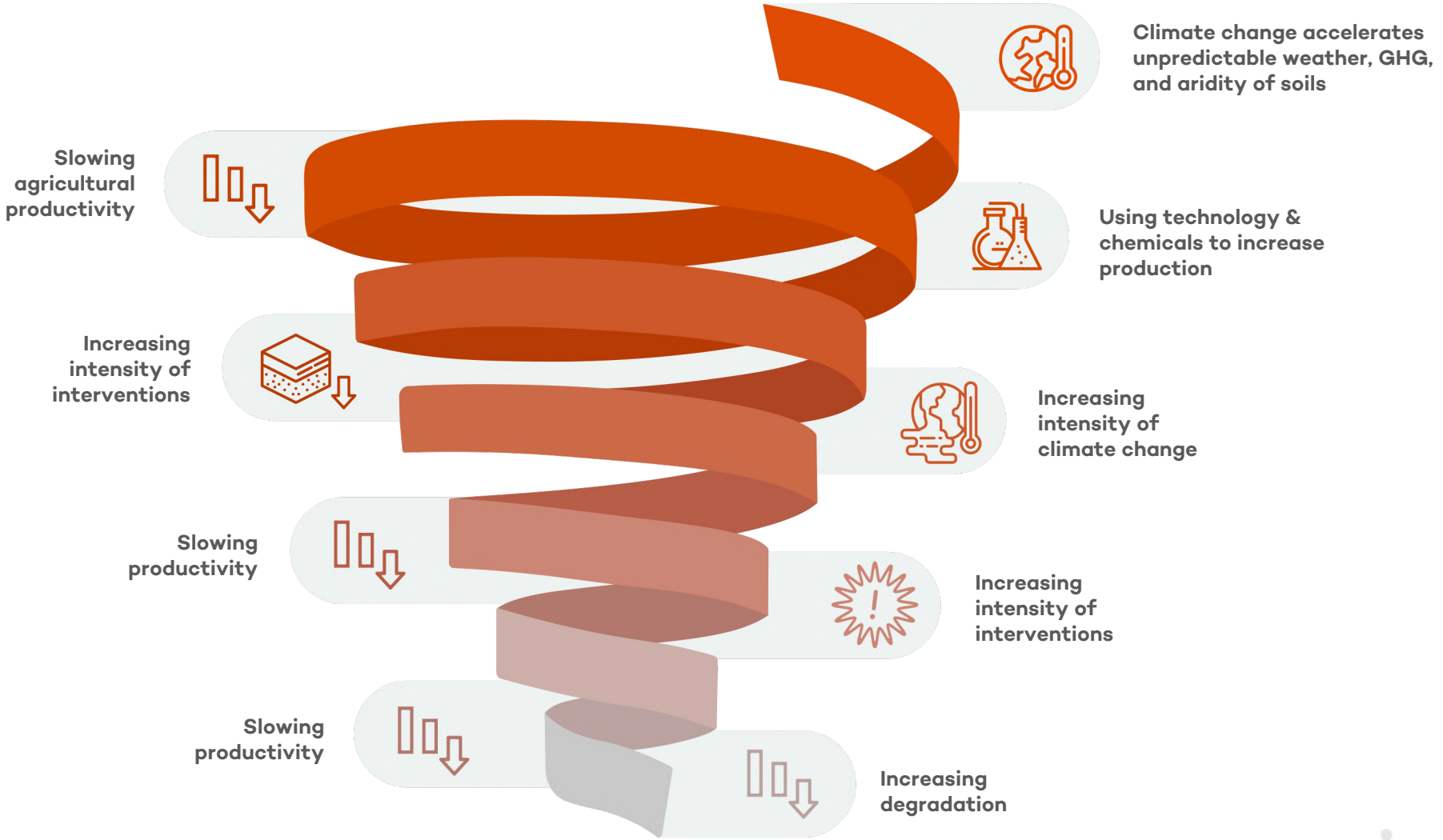


Source: Gap; FAO

THE DESIRE FOR HIGHER PRODUCTIVITY HAS CREATED A NEGATIVE FEEDBACK LOOP BETWEEN UNSUSTAINABLE PRACTICES AND DECLINING OUTPUT IN THE AGRICULTURAL SECTOR

As agricultural techniques become more aggressive, natural resources degrade, exacerbating climate change and lowering production.

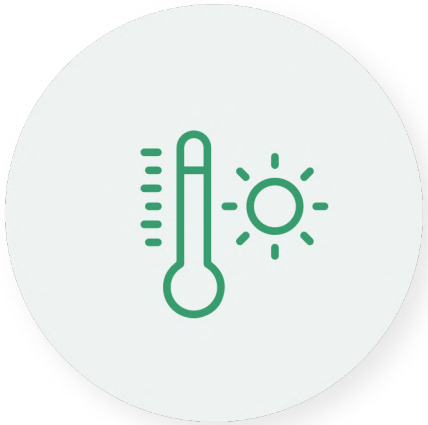
- In the previous 50 years, agriculture has been responsible for 70% of global biodiversity loss and 50% of forest cover reduction.
- Because of aggressive tilling practices and excessive use of farm chemicals, 75% of the world's soils are degraded.
- Agriculture currently accounts for around 20% of global greenhouse gas emissions.
- Adverse climatic conditions further reduce productivity, demanding harsher measures.
- This is gradually leading to poorer yields and degraded ecosystems.



Source: WHO; National Geographic; Economic Research Service; UN; Living Planet Report 2022

A PERFECT STORM IS FORMING FOR A PERIOD OF UNPRECEDENTED GLOBAL STARVATION; COUNTRIES MUST ACT IMMEDIATELY

The world population is expanding at a 1.1% annual rate and is predicted to peak only around 2100.



Even with existing measures, the number of extreme weather occurrences is anticipated to increase by 2050.

While agricultural production growth has trailed by 0.5% year on year since 2010.

As a result, food supply is projected to be exceedingly low, with a resultant breakdown of social order.

Source: UN Population projections; The Guardian

Kenya's unsustainable food production system

2

In Kenya

80%

of land is undergoing desertification due to climate change and aggressive farming activity.

While 1/3 of the population is food insecure.

...With smallholder farmers barely making a living.

envu

KENYA'S CURRENT FOOD SYSTEM IS UNSUSTAINABLE ON MULTIPLE FRONTS AND UNPREPARED FOR THE UPCOMING IMPACTS OF CLIMATE CHANGE

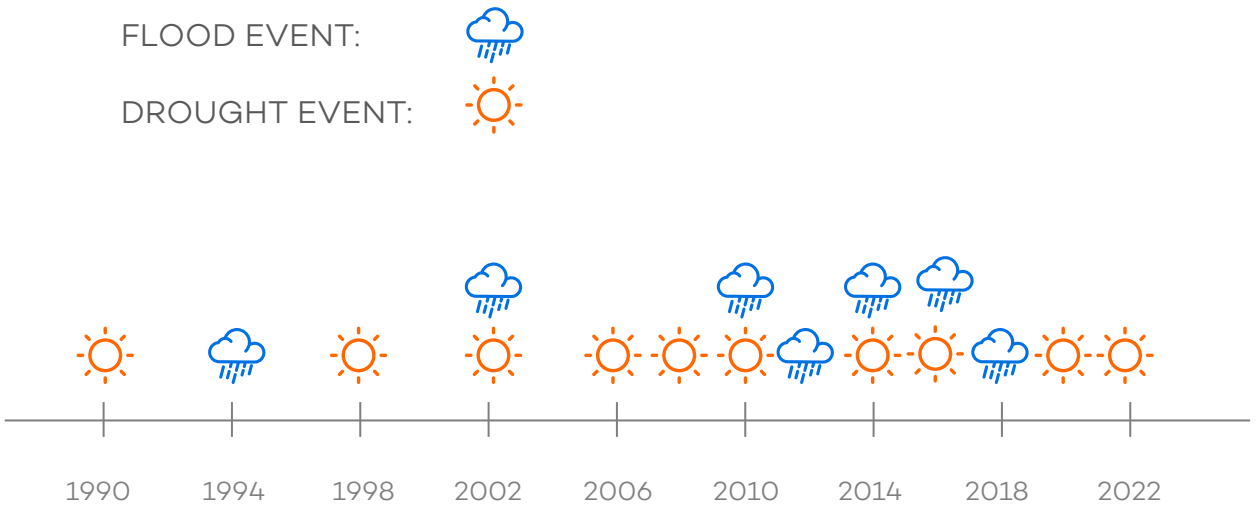
	INPUTS SUPPLIERS	Seeds, fertilizer and pesticides	FARMER	Produce	2-4 MIDDLEMEN	Produce	WHOLESALE MARKET	Produce	MAMA MBOGA (MICRO-RETAILERS)	Produce	CONSUMERS
CURRENT SYSTEM	Agriculture input imports total more than USD 500 million annually.		75% of food is produced by 8.6 million smallholder farmers. 69% of smallholder farmers live on less than $2/day.		95% of trades move through informal channels. Average 2-3 middlemen involved.		More than 70% of produce aggregated through open-air markets.		93% of food is purchased through micro-retailers.		Kenyans spend 30–55% of their incomes on food
UNSUSTAINABLE GAPS	In the last year, fertilizer prices increased by more than 100%. 76% of pesticides on the market are harmful.		Farmers are abandoning food crops in favor of cash crops, creating food insecurity. Unpredictable weather has resulted in a 34% decrease in agricultural productivity over the last decade.		Middlemen raise market prices by 40% with no profit to the farmer. 20-50% of food is lost in the value chain		Wholesale markets act as 'tiny cartels' in which prices are determined by supply crunches or gluts. There is insufficient storage infrastructure and sanitary conditions for open-air markets.		Mama Mbogas have limited access to finance . 1/3 of the businesses fail when they face minor disruptions.		There is insufficient supply, as 3 million households are food insecure. Food inflation is currently around 15%, which is the highest it has been in 5 years.

Source: Kilimo News; Ministry of Environment Climate Change and Forestry; KNBS — Economic Survey 2022; Business Daily Africa; The East African; Cytonn; Mercy Crops; BFA Global; **Wholesale and Retail of Food in Kenya - 2016 - Full Report**

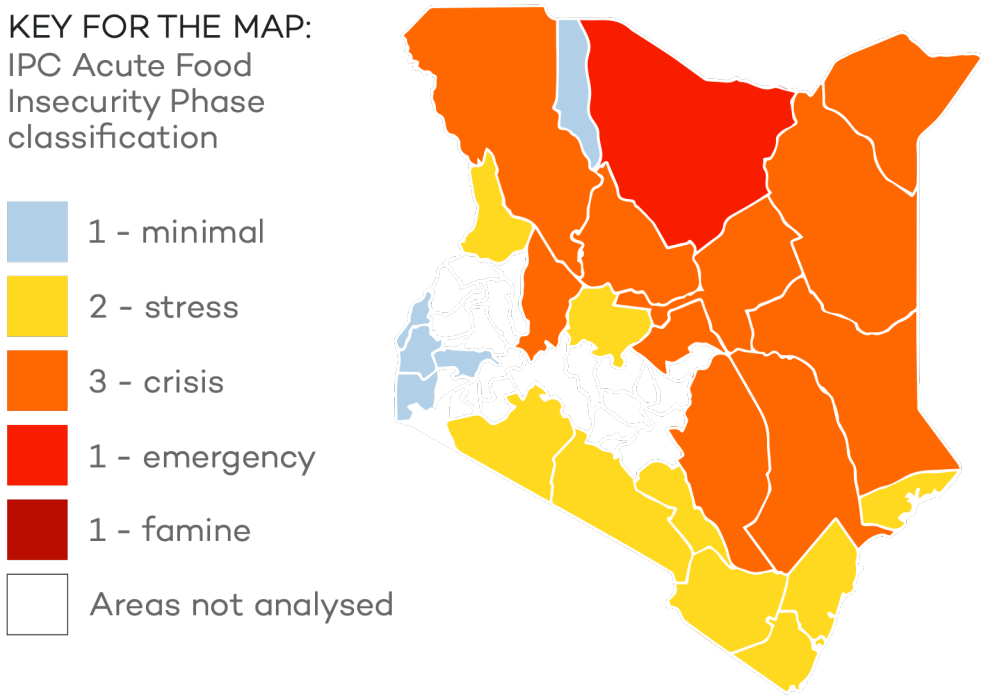
FOOD PRODUCTION IN THIS SYSTEM IS EXPECTED TO BE INCREASINGLY DIFFICULT DUE TO THE IMPACTS OF CLIMATE CHANGE [6]

Over the last three decades, the frequency of extreme weather occurrences in Kenya has increased dramatically.

Extreme weather occurrences have become more often over time, increasing from every ten years to every 2-3 years and now every year. According to Kenya Meteorological Department data, each year is now marked by a dry spell, flood, or numerous incidents.



As a result, 3.5 million Kenyans and more are at risk of permanent food insecurity.



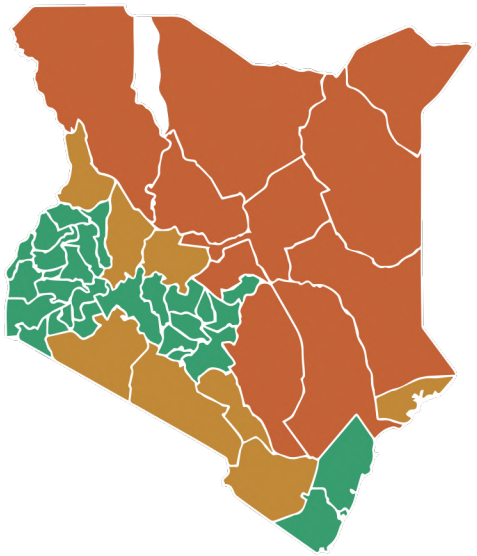
Currently, rain is responsible for 98% of food production, and with the weather becoming increasingly unpredictable, there is a need for ongoing innovation in environmentally friendly farming practices to ensure Kenya can feed future populations.

Source: Kenya Meteorological Department; University of Nairobi – Kenya Natural Disaster Profile; KENYA: IPC Food Security & Nutrition Snapshot

KENYA'S AGRO-CLIMATIC ZONES REPRESENT LARGE TRACTS OF LAND IN DRY AND HOT AREAS, WITH FARMERS FACING HARDER PRODUCTION CHALLENGES

AGRO-CLIMATIC ZONES

humid zone
semi-arid zone
arid zone



	ZONE I.-III. — humid	ZONE IV.-V. —semi-arid	ZONE VI.-VII. — arid
% OF TOTAL LAND COVER	12%	20%	68%
ANNUAL RAINFALL (MM)	800-2700	400-1100	150-550
MOISTURE CONTENT	>50%	26-50%	<25%
AVERAGE TEMPERATURE	<18˚	18-30˚	<30˚
COMMON VALUE CHAINS	tea, coffee, dairy farming, vegetables, fruits	grains, cereals, tubers, fruits	livestock farming
AVERAGE PER CAPITA INCOME	$800	$600	$350
CURRENT FOOD INSECURITY LEVEL	minimal: households meet food needs	stressed: households are strained in meeting needs	crisis: households require assistance to meet food needs
AVERAGE TREE COVER	21%	12%	6%

Source: The British Empire – Kenya climate map; ResearchGate; World Bank Group;

FARMER PROFILE

Meet George from Kiambu
HUMID ZONE

AGE: Over 40

GENDER: Male

GETS INFORMATION FROM: Fellow farmers and avocado buyers

WANT & NEEDS: Income for the family

FARMER'S CONSENT RECEIVED TO SHARE PHOTO & GROWING DETAILS

CURRENT VALUE CHAINS AND PRODUCTIVITY

COMMON VALUE CHAINS:	Avocado
AVERAGE LAND SIZE:	4 acres
SOIL TYPE:	Red volcanic soil

PRODUCTION

INPUTS USED:	Organic manure, NPK, Lime, and Pheromone traps
YIELD TRENDS:	Yield has increased by 75% between 2020 to 2022
THE AVERAGE COST OF PRODUCTION:	KES 190,000 /year
KEY COST DRIVER:	Fertilizers and pesticides account for 90% of costs

TOP CHALLENGES

1. High cost of inputs.
2. Irrigation is very expensive to build due to the farm's remote location from the river.
3. Lack of knowledge of sustainable farm practices.

FUTURE TRENDS

Farmers will switch to organic certification since it appears to pay twice as much as conventional farming.

FARMER PROFILE

Meet Phylis from Makueni
SEMI-ARID ZONE

AGE: Over 70

GENDER: Female

GETS INFORMATION FROM: Farmer networks and capacity building by Development Agencies

WANT & NEEDS: Is a fully commercial farmer and wants to expand and grow her farming enterprise

FARMER'S CONSENT RECEIVED TO SHARE PHOTO & GROWING DETAILS

CURRENT VALUE CHAINS AND PRODUCTIVITY

COMMON VALUE CHAINS:	Mangoes and Oranges
AVERAGE LAND SIZE:	20 acres
SOIL TYPE:	Red soil

PRODUCTION

INPUTS USED:	Organic manure, fertilizer, and insect traps
YIELD TRENDS:	A decline in farm productivity by 20-30% for mango over 10 years
THE AVERAGE COST OF PRODUCTION:	KES 150,000 /year.
KEY COST DRIVER:	Fuel for irrigation pumps takes more than 90% of the costs.

TOP CHALLENGES

1. Water is scarce, so pumps are used, but the fuel costs are high.
2. Pests and weeds are a major problem and current products on the market seem ineffective.
3. Labor shortages.

FUTURE TRENDS

Farmers in this area will be unable to continue farming unless alternate water sources are supported, as rain will become increasingly erratic.

FARMER PROFILE

Meet Martin Kinyua from Isiolo
ARID ZONE

AGE: 27

GENDER: Male

GETS INFORMATION FROM: Online research, peer to peer

WANT & NEEDS: Pay college fees

FARMER'S CONSENT RECEIVED TO SHARE PHOTO & GROWING DETAILS

CURRENT VALUE CHAINS AND PRODUCTIVITY

COMMON VALUE CHAINS:	Chillies, Onions
AVERAGE LAND SIZE:	0.25 acres
SOIL TYPE:	Black cotton, loose loam

PRODUCTION

INPUTS USED:	Uses manure & composting; using water from the main river.
YIELD TRENDS:	With the same size of land, in 2015 revenue was KES 300 /week with conventional. With sustainable farming, revenue was KES 1500 /week in 2019 and KES 2000 /week in 2022.
THE AVERAGE COST OF PRODUCTION:	Only pays for water KES 1000/month.
KEY COST DRIVER:	Buys water every month as it is a dry place.

TOP CHALLENGES

1. Needs knowledge on how to practice organic farming.
2. Access to water.
3. Is not convinced that organic farming will yield better produce in quantity and quality.

FUTURE TRENDS

Farmers need lower costs of inputs if they are to continue farming.

CURRENT INDUSTRIAL FARMING PRACTICES HAVE RENDERED FARM SYSTEMS VULNERABLE TO CLIMATE AND MARKET SHOCKS

UNSUSTAINABLE FARMING PRACTICES	EFFECTS ON THE FARM ECOSYSTEM
The focus on cash crops causes the removal of otherwise thriving forests for mono-cropping, resulting in a nearly 50% decrease in tree cover between 1963 and 2010.	Drought conditions are wreaking havoc on farms since forests capture 75% of the groundwater used by farmers.
Overuse of inorganic fertilizers produces high yields in the near term but increases soil acidity in the long term.	Soil acidification reduces the availability of some minerals to plants, such as phosphorus and magnesium, and can reduce agricultural yields by up to 40%.
Over-tilling and a lack of cover crops expose the soil to erosion and the sun's heat.	Soil acidification reduces the availability of some minerals to plants, such as phosphorus and magnesium, and can reduce agricultural yields by up to 40%.
Synthetic pesticides kill pests quickly, therefore farmers prefer to employ them as a quick and easy remedy.	76% of products on the Kenyan market include hazardous residuals that are dangerous to humans as well as useful farm insects like bees.
Laws are gradually giving seed businesses dominance over the market, leaving farmers with few and expensive seed sources.	90% of farmers rely on informal and village-based seed markets, and without them, local richness of crop varieties that maintain farm ecosystems will be lost.

An unbalanced farm ecosystem that degrades natural capital and cannot survive without intensive human intervention

Source: African crop yield reductions due to increasingly unbalanced Nitrogen and Phosphorus consumption; The Conversation; Cropwatch; Smithsonian Magazine;

OUR INTERVIEWS ACROSS THE COUNTRY SHOW THAT FARMERS ARE SUFFERING FROM PESTS AND A LACK OF WATER

SOURCE: FARMER INTERVIEWS

We met with farmers across the country, and these were the most pressing issues they raised. There was a general consensus that farming was becoming more difficult and less appealing to many people, particularly young people.

PESTS

"I lost more than half of my harvest due to pests."

"We suspect the pesticides on the market are fake as they no longer have an effect on the pests. "

LACK OF WATER

"In the last 3 years, we have seen almost no rain, yet this place used to have a lot of rain."

"All our water sources including water pans and boreholes have dried up."

MARKET ACCESS

"The market has become very in-consistent with what crops it demands, we can't keep up."

"Brokers offer very poor prices but are the only ones who offer us a reliable offtake."

EXPENSIVE INPUTS

"Fertilizer prices increased from KES 3,500 to KES 6,000 in just three months."

"I cannot afford the required number of insect traps, so my pest management is usually ineffective."

LACK OF LABOR

"Finding the right labor is a challenge as most young people have moved to the city."

"My yield declined significantly because I was not available to supervise during the planting season."


“In the last 3 years, there has been almost no rain. Things used to better than this.”
PETER, SMALLHOLDER FARMER, KENYA

FARMERS IN MAKUENI, KENYA, SAY THAT KENYAN FARMLANDS AND PRODUCTIVITY HAVE DECREASED AT A RAPID RATE IN THE LAST 30 YEARS

MAKUENI COUNTY SNAPSHOT

BEFORE THE 1990'S

- The rain had "specific times."
- "We had trees that predicted rain was coming."
- Used to grow a variety of indigenous food.
- Used plants for herbal medicine.
- Seeds were available locally.
- There was plenty of food being produced.
- The land had cover crops, and the soil was fertile.
- Used local seed varieties that were less susceptible to pests.

POST 1990'S

- "Every plant needs pesticides & fertilizers."
- Unreliable rain, unreliable climate.
- Many trees are cut/cleared.
- Water tables are dry, shortage of water.
- Increase in diseases.
- Yields have dropped.
- Farmers don't know how to deal with new challenges.

FARMERS DREAM FOR THE FUTURE

- No drought.
- More water sources like ponds.
- "Stop using poisonous chemicals so food is safe."
- More productivity.

Source: Farmer Focus group in Makueni, 2022 – 48 small holder farmers participated

FARMERS REQUIRE APPROACHES THAT WILL INCREASE PRODUCTIVITY WHILE ALSO INCREASING CLIMATE RESILIENCE AND ADAPTABILITY

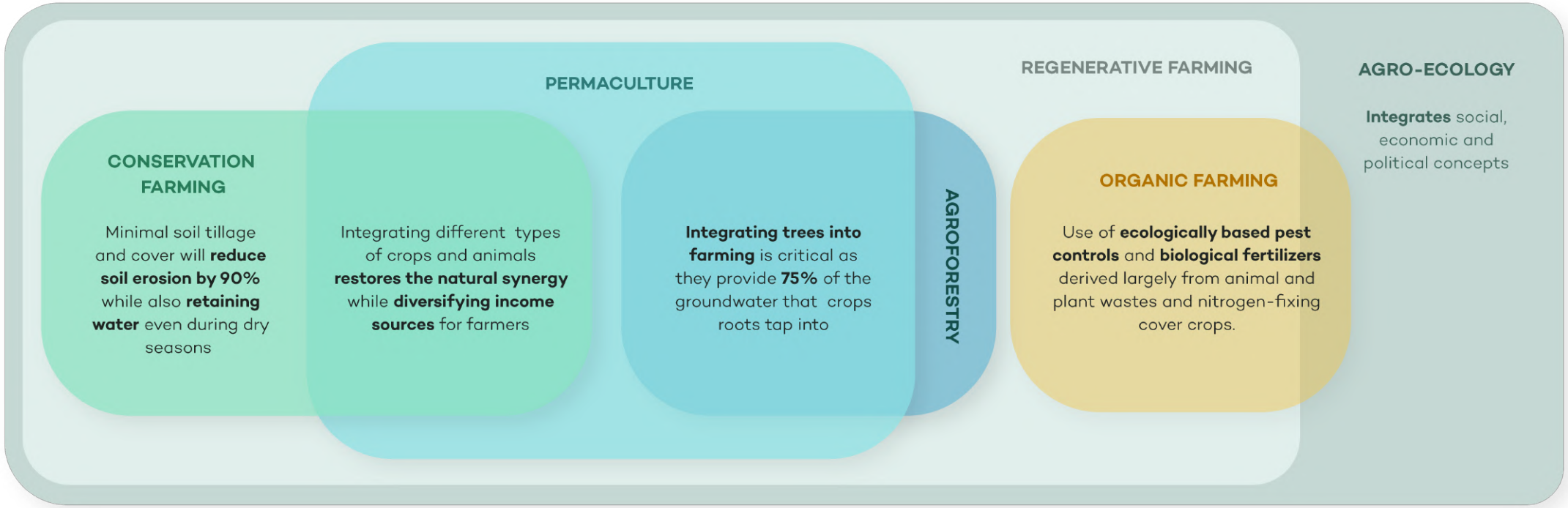
UNSUSTAINABLE FARMING

An imbalanced farm ecosystem degrades natural capital and cannot survive without intensive human intervention.

- Aggressive tilling of land with no ground cover
- Focusing on single value chains for maximum returns
- Clearing forests and natural vegetation resulting in loss of global forest cover
- Over reliance on chemical inputs such as fertilizer and pesticides

SUSTAINABLE FARMING

A self-sustaining agriculture system that recovers and depends on natural capital.



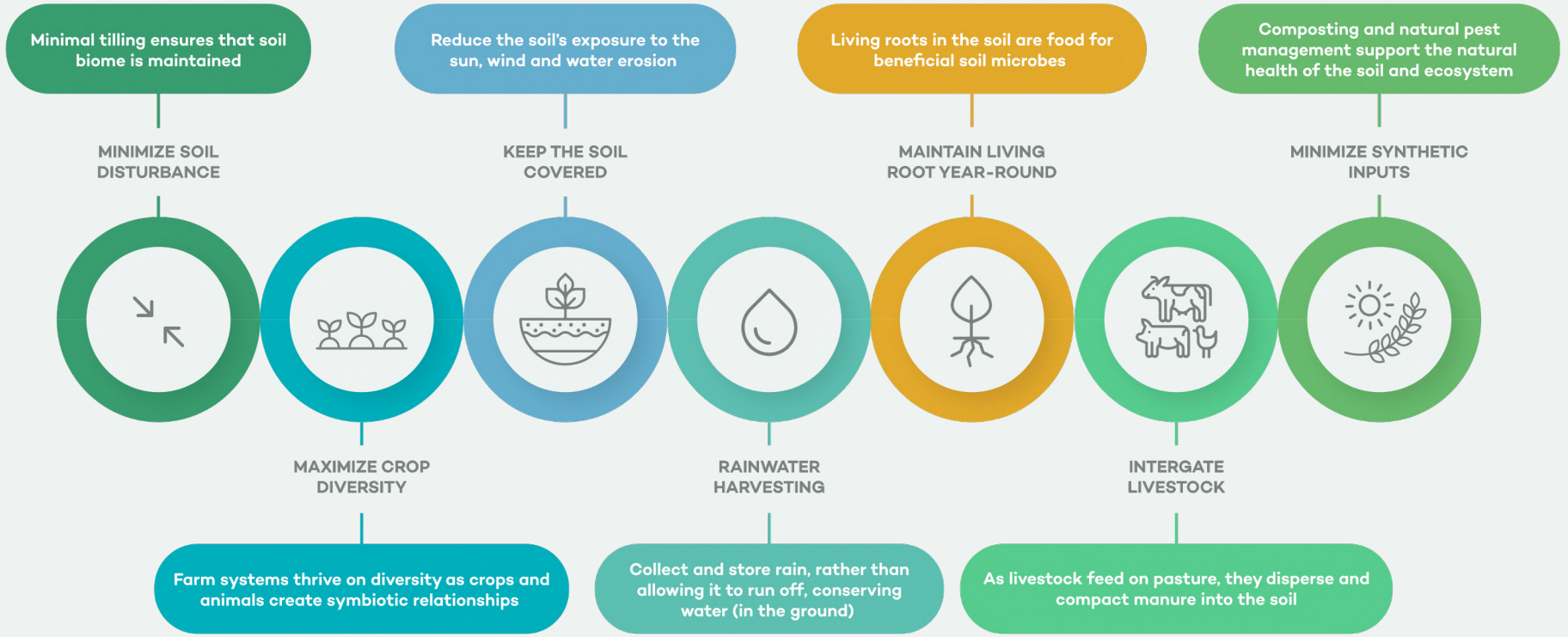
Climate-proofing food production

3

REGENERATIVE AGRICULTURE IS AN INCLUSIVE APPROACH TO IMPROVING PRODUCTION & ENSURING SUSTAINABLE GROWTH OF THE AGRICULTURAL SECTOR

> Regenerative agriculture describes a system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. There are two clear and complementary outcomes: producing high-quality food and improving the surrounding natural ecosystem. Using regenerative agriculture, the overall ambition shifts from extractive, linear thinking that prioritizes high yields above all else, to establishing regeneration cycles."
>
> ELLEN MACARTHUR FOUNDATION & TERRA GENESIS INTERNATIONAL

CORE PRINCIPLES OF REGENERATIVE AGRICULTURE



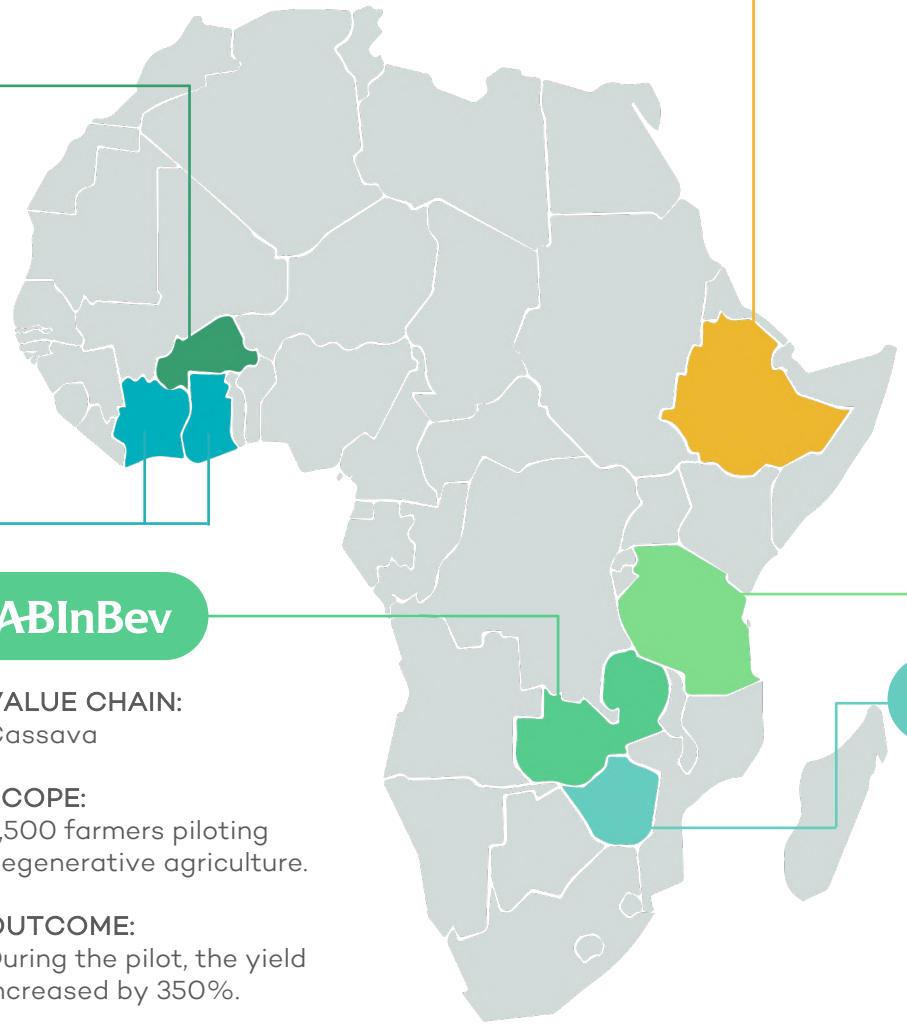
3 key outcomes

1. IMPROVE SOIL HEALTH
2. FOSTER BIODIVERSITY
3. PROMOTE ECONOMIC RESILIENCE IN FARMING COMMUNITIES

MOVING FROM CONVENTIONAL TO REGENERATIVE FARMING PRACTICES HAS PROVEN BENEFITS TO THE FARM & ECOLOGICAL SURROUNDINGS

CONVENTIONAL FARMING	Reactive pest management with synthetic pest controls. Synthetic fertilizers. Conventional tillage.	Isolated, monocrop production systems with carbon emission effect.	Deplete soil carbon. Open exposed soils.	Clearing land for cultivation has led to an 86% loss in biodiversity.	Reliance on inorganic fertilizers leads to soil acidification which may reduce crop yields by more than 40%.	Focuses on a linear model of extraction that favors short-term productivity gains over the long-term negative effects on the system.	The current food production system produces almost 20% of global GHG emissions.
EFFECT ON:	**PRACTICES**	**CARBON MODERATION**	**SOIL HEALTH & MOISTURE**	**BIO-DIVERSITY**	**LONG TERM VIABILITY**	**CIRCULARITY**	**CLIMATE & EMISSIONS**
REGENERATIVE FARMING	**Minimal/zero tillage.** **Farm compost manure & organic fertilizer.** **Integrated pest management with biological controls.**	**Integrated, multi-crop production systems with carbon sequestration effect.**	**Organic mulching of soil to conserve >25% more moisture.** **Increase soil carbon content.**	**RegenAg is centered on biodiversity restoration within farming systems.**	**RegenAg not only reduces reliance on expensive chemical fertilizers and pesticides but also increases resilience to climate shocks.** **This can increase future earnings by as much as 78%.**	**Goes beyond 'reversing the damage' and looks at enhancing the natural systems' ability to create value for society in a sustainable way.**	**RegenAg increases the resilience and adaptability of farm systems to climate change while also reducing GHG emissions by 50%.**

INCREASES IN CROP YIELD HAVE BEEN OBSERVED IN SEVERAL REGENERATIVE AGRICULTURE INITIATIVES ACROSS SUB-SAHARA AFRICA



Olam

VALUE CHAIN:
Cotton

SCOPE:
Transitioned 17,000 farmers to regenerative agriculture since 2008

OUTCOME:
Within 5 years, yields increased by 80%.

The Howard G. Buffett Foundation

VALUE CHAIN:
Multiple

SCOPE:
Training farmers across Ghana using demo sites located across the country.

OUTCOME:
Farmers who were trained and implemented the program saw a 35-75% increase in yield.

ABInBev

VALUE CHAIN:
Cassava

SCOPE:
2,500 farmers piloting Regenerative agriculture.

OUTCOME:
During the pilot, the yield increased by 350%.

Nespresso

VALUE CHAIN:
Coffee

SCOPE:
37,000 farmers trained in regenerative agriculture since 2013.

OUTCOME:
Farmers participating in the program saw a 300% boost in yield.

Pathfinder International

VALUE CHAIN:
Maize

SCOPE:
18,5000 farmers trained on regenerative agriculture since 2016.

OUTCOME:
Farmers have observed a 35% increase in production since implementation.

Savory

VALUE CHAIN:
Livestock farming

SCOPE:
Set up a 3,200-hectare ranch in Zimbabwe as a demonstration site for regenerative agriculture.

OUTCOME:
The grass density at the demonstration site is 42% higher than at surrounding ranches.

Source: IUCN

“ Restoring land, soils, forests, and other ecosystems would contribute more than One-third of the cost-effective climate change mitigation needed to limit global warming to 1.5°C while supporting biodiversity conservation, poverty reduction, human health, and other key sustainable development goals. ”

UN CONVENTION TO COMBAT DESERTIFICATION

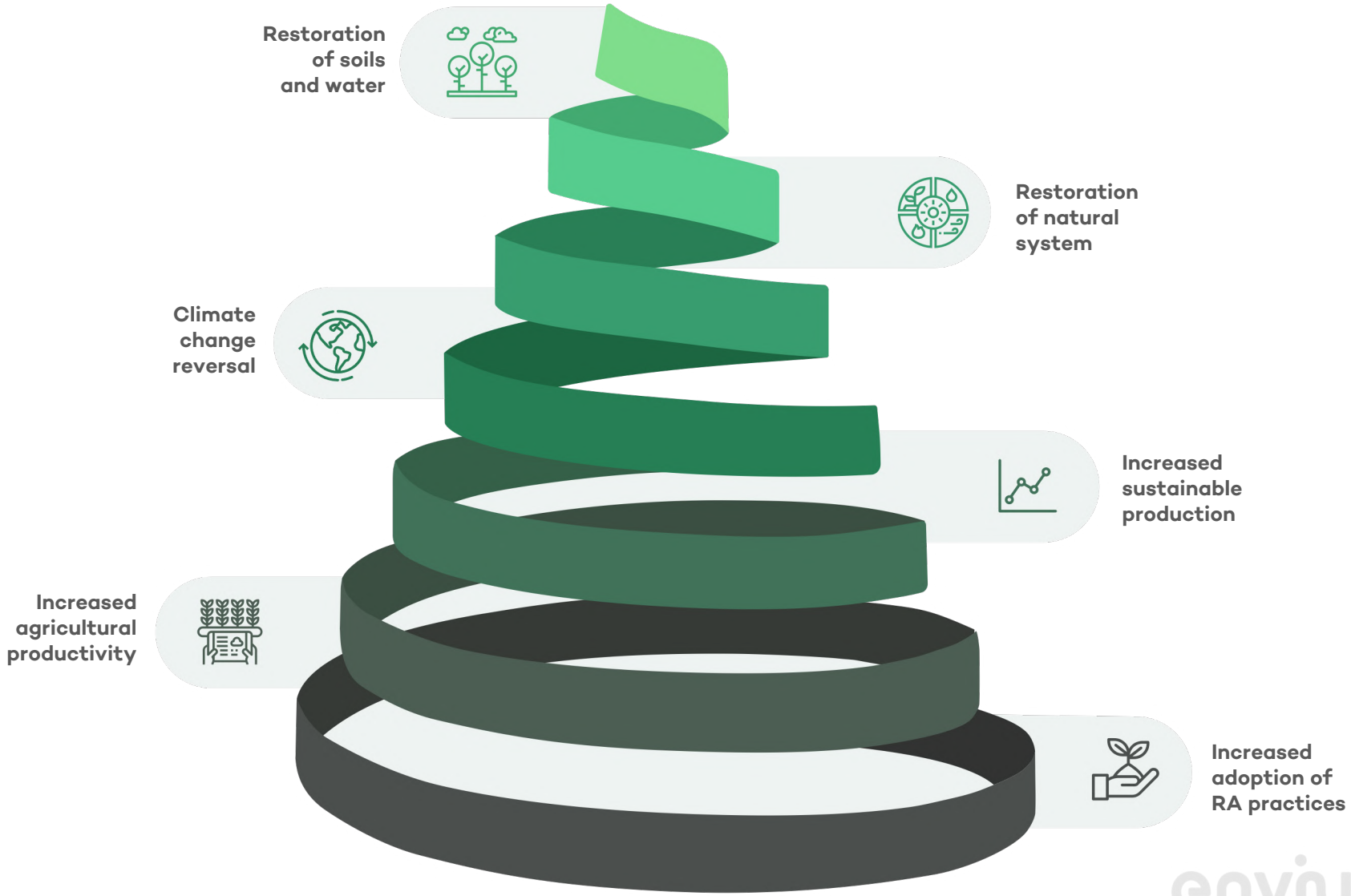
REGENERATIVE FARMING IS ONE OF THE FEW METHODS THAT ALLOW FARMERS TO INCREASE PRODUCTIVITY WHILE ADAPTING TO, AND EVEN REVERSING, THE IMPACTS OF CLIMATE CHANGE

Resources are being replenished as farming practices grow more restorative/regenerative.

- Biodiversity is flourishing, and soil health is improving, resulting in soil regeneration.
- Farm output is becoming more consistent and productive, reducing dependence on aggressive and unsustainable practices.

The restoration of natural systems within communities improves climate resilience and increases farmer production.

- This will encourage farmers to continue using regenerative practices, which will help to restore the ecosystem and improve the climate.
- Starting an upward spiral, regenerating landscapes, and reversing climate change!



The regenerative agriculture ecosystem in Kenya

4

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KENYA'S CURRENT ECOSYSTEM FOR REGENERATIVE PRODUCTION IS EXTREMELY LIMITED DUE TO A LACK OF SUPPLY CHAINS, MARKET DEVELOPMENT, AND COMMERCIAL FINANCING

* Regenerative Agriculture

CURRENT SYSTEM

Interested farmer finds a knowledge source e.g.: organization, fellow farmer.

0.17% of farmers in Kenya are currently connected to RA* production support.

Transition mostly provided through donor programs.

Farmer self-funds the investment in RA* farming.

Certain off-takers are providing transition support and recouping from sales.

No commercial financing instrument in Kenya to help farmers transition (seeds, inputs, tech).

Farmer purchases organic inputs (manure, pesticides, animal feed).

Agrovets focus on brands that can incentivize sales.

Indigenous seeds are more resistant to pests and climate shocks, but seed laws make them hard to find.

Farming yields sustain farm, feed family & sells remaining to markets.

Farmers do not keep any record of yields, so it is all based on estimates.

Farmers engage directly with buyers to sell their crop.

100% of sustainable farmers interviewed sold directly to markets.

Farmers interviewed get on average 100% premium for organic produce.

Produce markets are fragmented and offer similar prices to conventional produce.

Current produce is targeted for a niche local market.

4-5 organic only markets in Nairobi & 2-3 in other towns in Kenya.

3-5 retail outlets for fresh organic in Kenya.

CHALLENGES

Regenerative agriculture is not well defined, and it is sometimes confused with other approaches such as organic farming.

There is no one regulatory policy governing sustainable production.

100% of farmers interviewed invested their own funds in productive assets for transition.

Limited access (price, distribution) to organic inputs.

Lack of enforcement capacity for organic inputs in Kenya.

Government incentives increase the use of chemical fertilizer.

A farmer produces 15 products in small quantities, making it difficult to find markets.

Farmers rely on people who buy straight from the farm in the absence of market logistics.

Lack of value addition capacity (frozen, dried).

Consumer awareness In regenerative agriculture, production is limited.

DATA ARE BASED ON INTERVIEWS WITH FARMERS & ECOSYSTEM EXPERTS

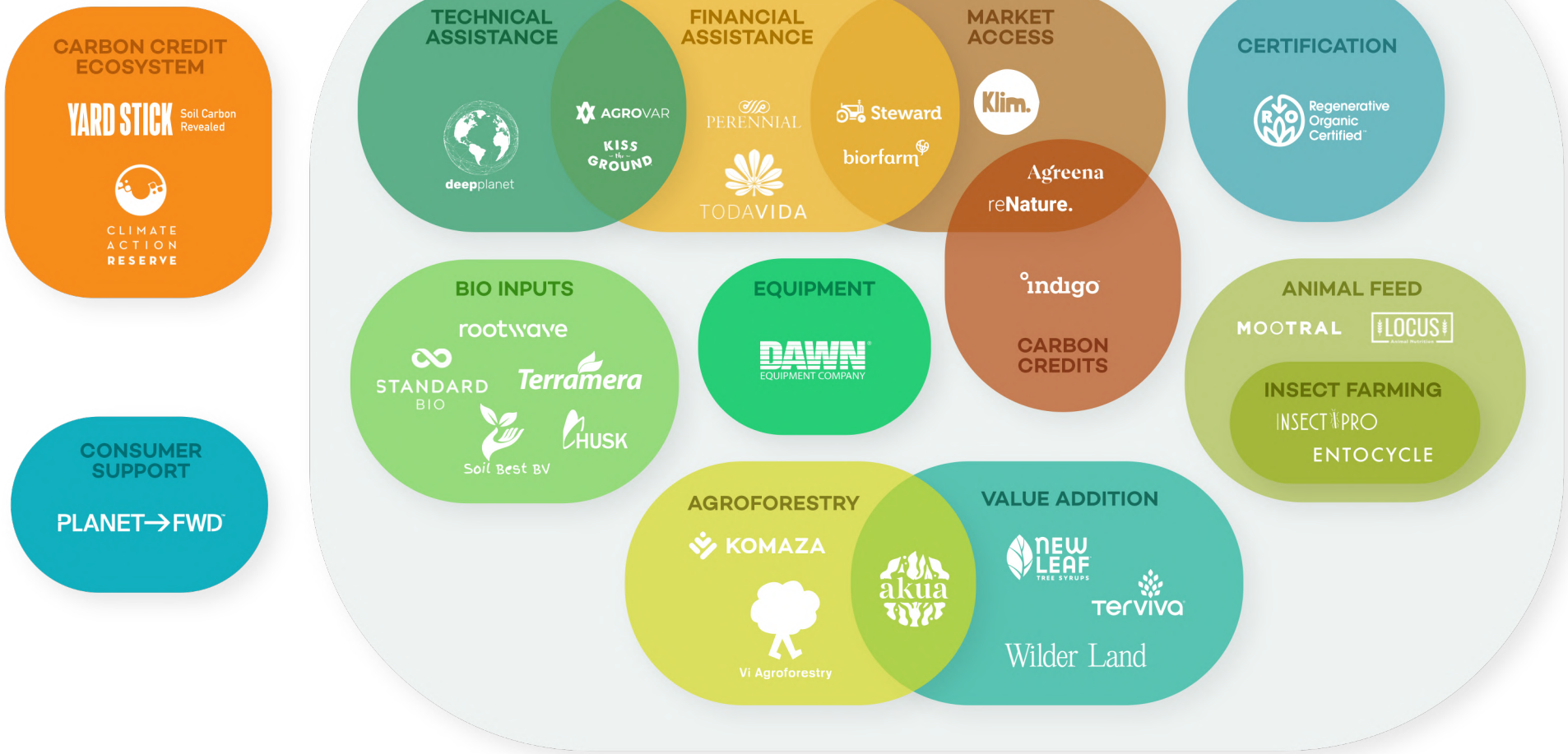
THE REGENERATIVE AGRICULTURE ECOSYSTEM OFFERS DIRECT SERVICES TO FARMERS WORLDWIDE, CREATING A SUPPORTIVE BUSINESS ENVIRONMENT

Most support services in the global ecosystem are aimed directly towards large scale farmers.

The diagram depicts how solutions are bundled to provide comprehensive services.

OBSERVATIONS

- Bio inputs, financial support, and market access are the most popular services.
- Technical assistance is not provided in isolation.
- Financial support is coupled with market access or technical assistance.



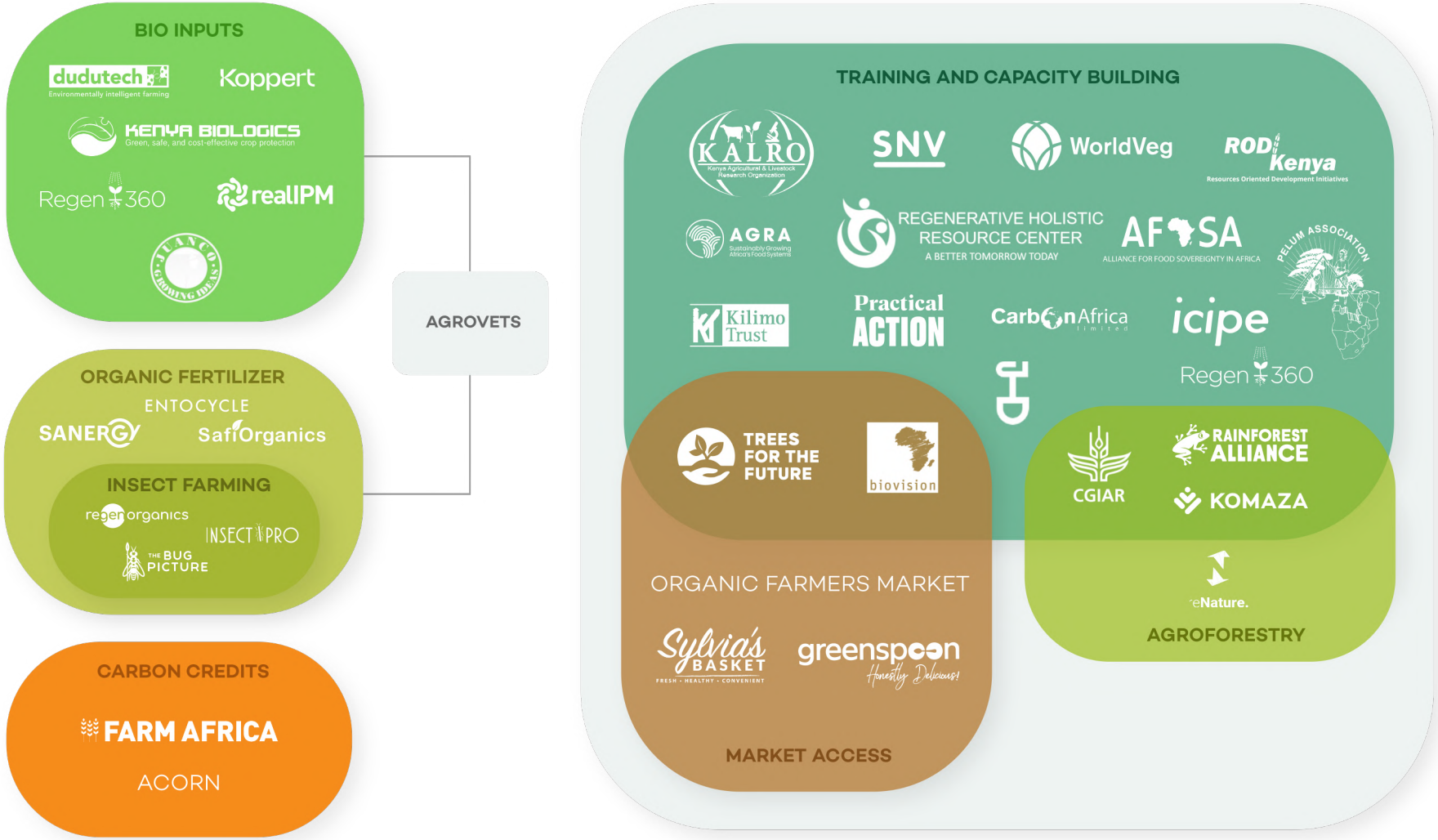
HOWEVER, KENYA'S REGENERATIVE SUPPORT ECOSYSTEM IS PRIORITIZED ON TECHNICAL ASSISTANCE AND LACKS CRITICAL INFRASTRUCTURE SERVICES

IN CONTRAST TO LARGE SCALE FARMERS IN THE GLOBAL NORTH, KENYAN FARMERS LACK ACCESS TO CRITICAL SERVICES

Technical assistance from non-governmental organizations (NGOs) dominates Kenya's RA support system.

Companies that sell business products rely on agrovets to deliver them to farmers.

This leaves gaps for numerous critical interventions required by farmers.



EQUIPMENT FINANCE VALUE ADDITION FARM ANALYTICS FARM MANAGEMENT TOOLS

KENYA ORGANIZATIONS ARE HELPING SMALLHOLDER FARMER TRANSITION TO REGENERATIVE AGRICULTURE PRODUCTION, BUT THE DEFINITION OF TRANSITION VARIES AS SUPPORT SERVICES CONVERGE INTO MOSTLY AGRONOMY SUPPORT

	PROGRAM SNAPSHOT	RA TRANSITION STATUS	SERVICES TO RA FARMERS
Practical ACTION	REGION: Kisumu & Homabay PERIOD: 2019–2024 VALUE CHAIN: tomato, peanuts, poultry, ALV	TRANSITIONED: 3000 farmers TRANSITIONING: 3000 farmers TRANSITION DEFINITION: Farmers that are part of the programs	Technology Assistance, Market Access
KF@15 YEARS	REGION: Kisumu, East PERIOD: 2018–2023 VALUE CHAIN: rice	TRANSITIONING: 2000 farmers TRANSITION DEFINITION: Diversify, efficient water use, integrate animals, compost & IPM. (includes health & safety, labor use, and rice growing standards)	Agronomy support
WorldVeg SNV	REGION: West & Central PERIOD: 2020–2025 VALUE CHAIN: TLV, onion, bell pepper	TRANSITIONING: 2000 farmers TRANSITION DEFINITION: Diversify, efficient water use, integrate animals, compost & IPM. (includes health & safety, labor use, and rice growing standards)	Business support, agronomy support, seeds
biovision	REGION: Makueni, Nakuru PERIOD: 2020–ongoing VALUE CHAIN: all	TRANSITIONED: 1200 farmers TRANSITIONING: 600 farmers TRANSITION DEFINITION: Farmers that have adopted at least 5 of the 18 RA practices	Agronomy support
TREES FOR THE FUTURE	REGION: Kisumu & Homabay PERIOD: 2019 – 2024 VALUE CHAIN: fruit trees	TRANSITIONED: 300 farmers TRANSITIONING: 500 farmers TRANSITION DEFINITION: 5 key practices (organic fertilizer/ composting, biodiversity & circularity	Agronomy support
FARM AFRICA	REGION: Tharaka and Makueni County PERIOD: 2020 – 2025 VALUE CHAIN: cereals	TRANSITIONING: 10000 farmers TRANSITION DEFINITION: 8 practices that include, minimum till, organic fertilizer, agroforestry, soil cover, water harvesting, crop rotation, intercropping	Agronomy support, input access

WHILE THERE IS A SMALL GROUP OF FARMERS TRAINING IN REGENERATIVE PRACTICES, WE NEED SCALABLE SOLUTIONS TO ACHIEVE REAL SUSTAINABILITY IN FOOD SYSTEMS.

Farmers not practicing any aspect of regenerative agriculture farming

PRACTICES

- Monocropping
- Inorganic inputs
- Heavy tilling

Farmers practicing aspects of regenerative agriculture farming but unaware of the concept

PRACTICES

- Intercropping
- Organic fertilizer
- Inorganic pesticides
- Heavy tilling

Farmers are aware of the concept and are practicing aspects of regenerative agriculture farming

PRACTICES

- Organic-inputs
- Rainwater harvesting
- Cover crops
- Plant diversity

Aware of concept and fully practicing regenerative agriculture farming

PRACTICES

- Optimize for soil health and farm resilience
- No till
- Cover crops
- Diversify crops (>15 value chains)
- Rainwater harvesting
- Livestock integration
- Minimal inorganic inputs use, natural pest management

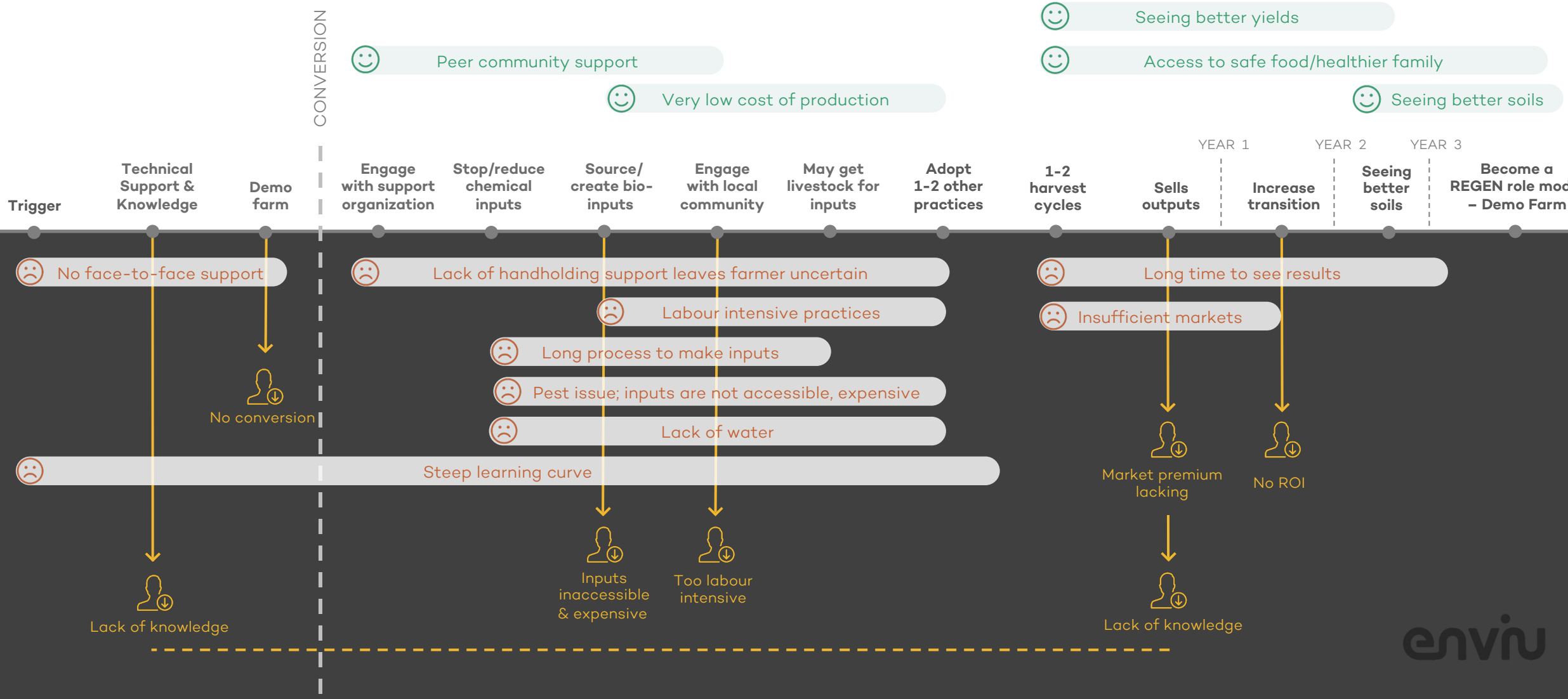
NOTE: Successful transition is based on the Regenerative Organic Certified (ROC) standard

Driving towards transitioning at scale

5

THE TRANSITION JOURNEY OF A FARMER

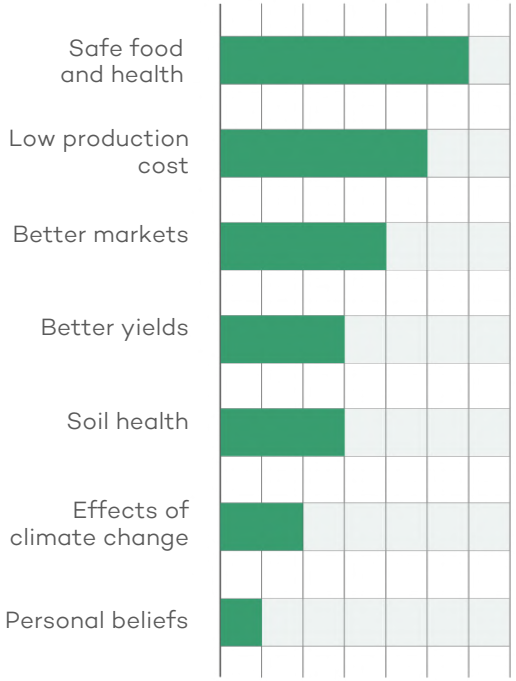
LEGEND FOR THE GRAPHIC: DROPOFF | MOMENTS OF DELIGHT | MOMENTS OF PAIN



THE TRANSITION JOURNEY INSIGHTS

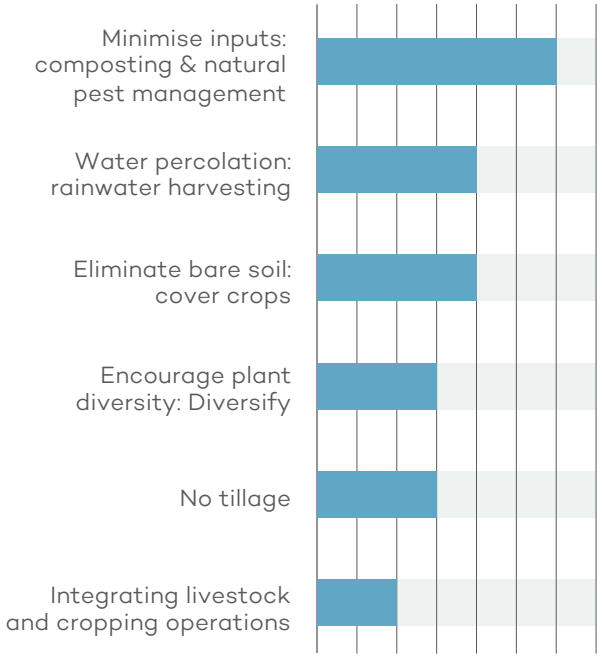
Having safe food to eat is a powerful motivator for adopting regenerative farming practices.

MOTIVATION TO TRANSITION



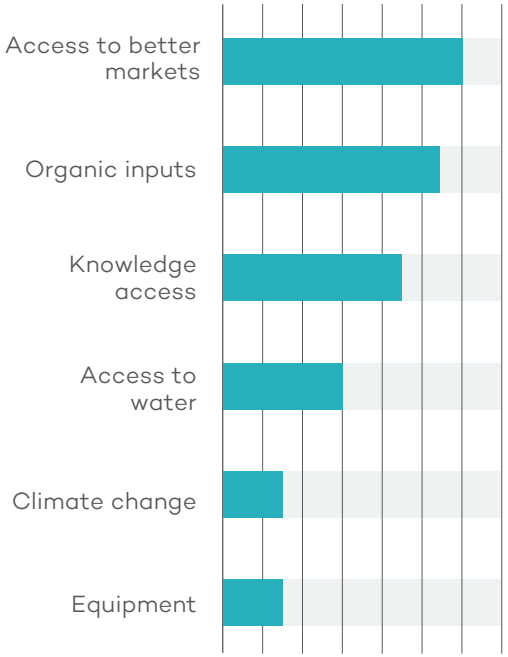
Farmers typically begin by reducing their use of inorganic inputs.

TRANSITIONING FARMERS PRACTICE 2-5 OF BELOW



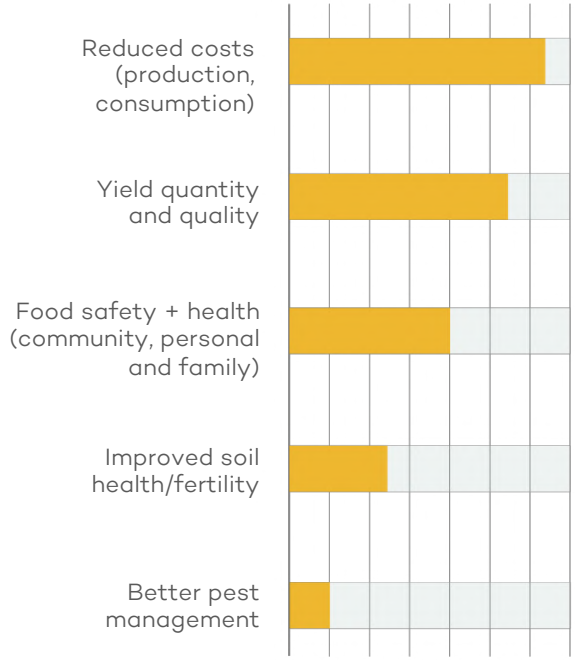
However, accessing the correct expertise, resources, and market to sell to will be difficult.

CURRENT CHALLENGES FACED IN TRANSITION



The major advantage they perceive is lower manufacturing costs and increased yields.

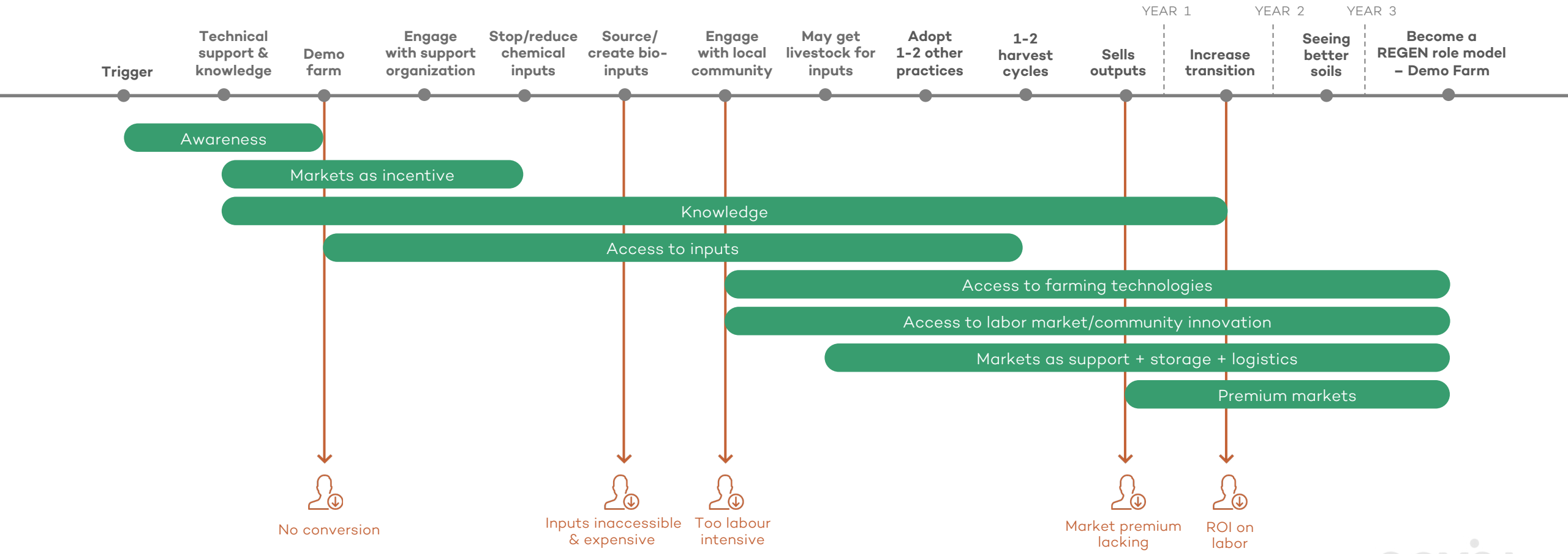
OBSERVED BENEFITS OF RA PRACTICES



Enviu Study of transitioning & transitioned smallholder farmers, & support organizations in Kenya, 2022

SUPPORT SERVICES NEEDED FOR TRANSITION, WHICH WILL FORM THE INSPIRATION FOR ENVIU TO BUILD ITS VENTURES

= DROPOFF



ENVIU ENVISIONS REPLICATING THE PROCESS FOR TRANSITIONING SMALL SCALE FARMERS TO REGENERATIVE FARMING

Productivity is declining as a result of unsustainable farming practices.

ISSUE ANALYSIS

GAPS ANALYSIS

→ Standardized transitional knowledge
→ Access to markets
→ Access to inputs

VENTURES IN PIPELINE

1. Regenerative training & safe inputs bundle

2. Market offtake for regeneratively grown produce at premium prices

Several business concepts are prioritized based on gaps.

IDEATION

CONCEPT VALIDATION

→ Test the concept hypothesis
→ Develop a business model
→ Develop a prototype plan

Develop a Minimum Viable Product for market testing.

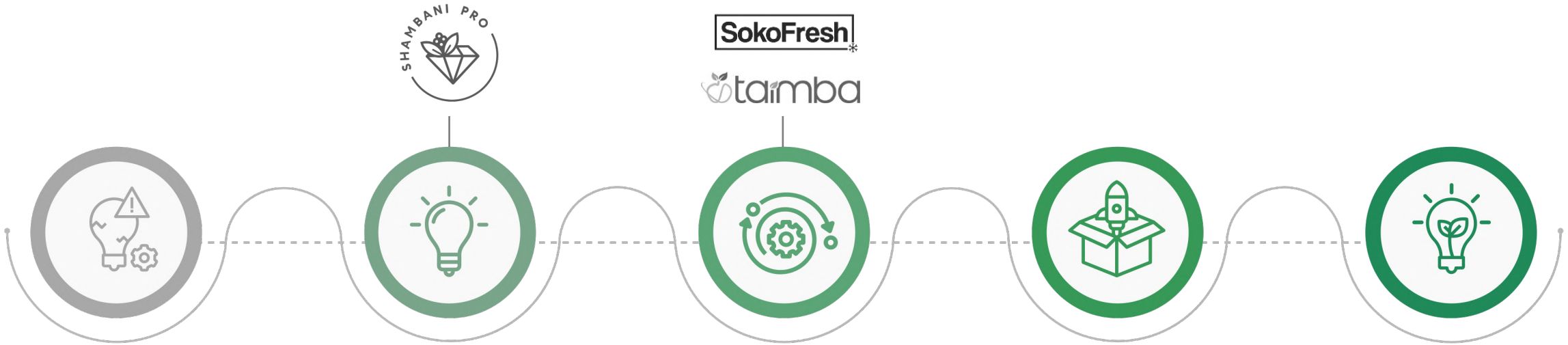
PROTOTYPE

TEST

Test, iterate and test again.

SCALE

ENVIU'S METHODOLOGY IS TO CREATE SUSTAINABLE BUSINESS MODELS TO SOLVE SYSTEMIC ISSUES, AS EVIDENT IN THE BELOW WORK IN ELIMINATING FOOD LOSS & IMPROVING FARMER INCOME



SYSTEM FAILURE | NEW BUSINESS MODELS | IMPACT-DRIVEN COMPANIES | MARKET CHANGE | SUSTAINABLE SYSTEM

IMPACT-DRIVEN COMPANIES: FARM TO FEED, AVOMERU, HDI Human Development International, Rabobank, IKEA, giz, TruTrade Africa, STICHTING DOEN

MARKET CHANGE: PERSEA OILS & ORCHARDS, EAST AFRICAN GROWERS, ONE ACRE FUND, Safaricom, ecozen

SUSTAINABLE SYSTEM:
- Income increase for farmers
- Elimination of post-harvest loss
- Job creation
- Market transparency

WILL YOU PARTNER WITH US TO REALISE THIS VISION?

SYSTEM FAILURE | NEW BUSINESS MODELS | IMPACT-DRIVEN COMPANIES | MARKET CHANGE | SUSTAINABLE SYSTEM

Regenerative training & safe inputs supply chain.

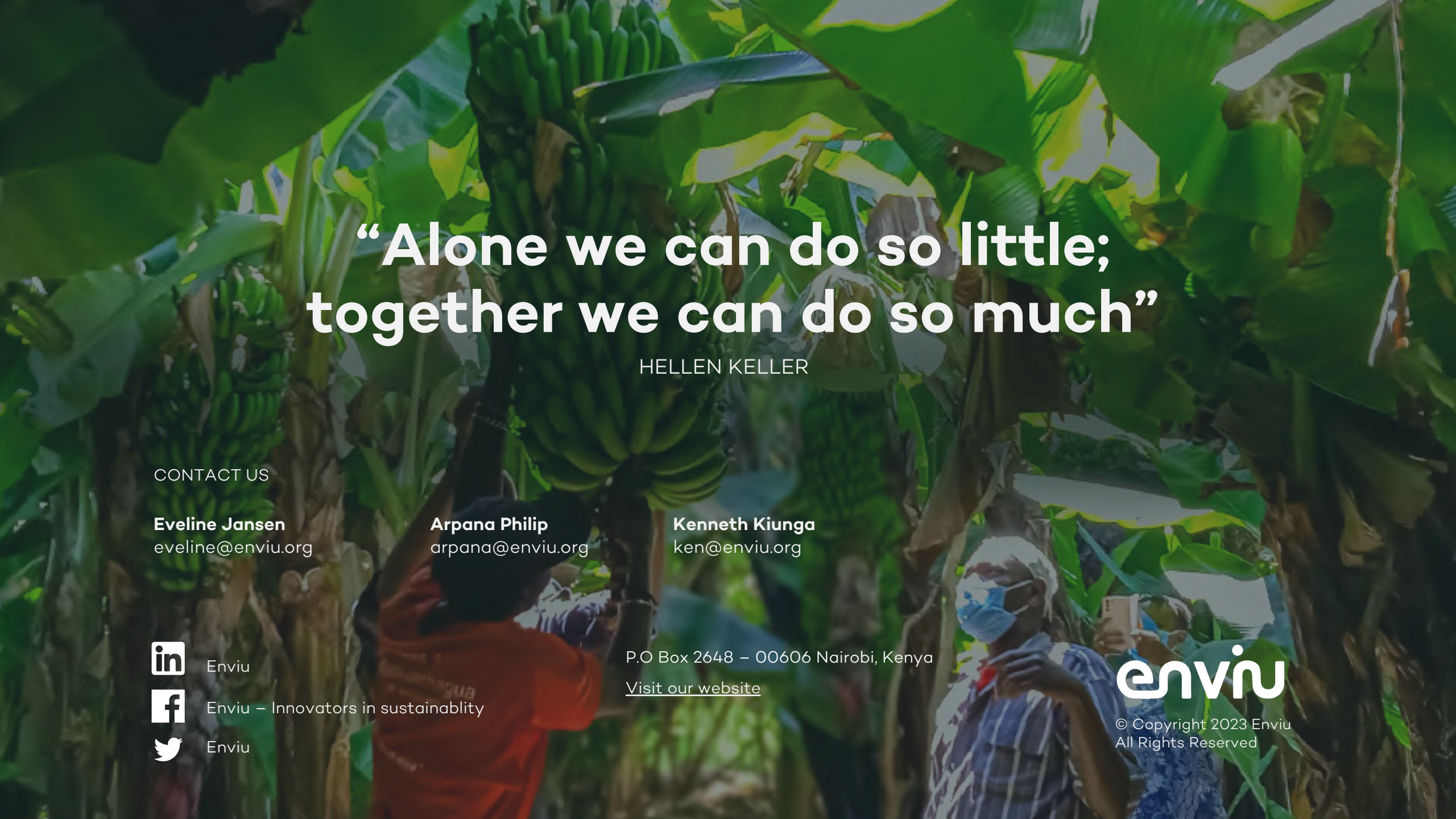
Market solution & supply chain for regenerative produce.

Restored soils.

Climate resilient food system.

Improved farmer livelihoods.

Restored food security.



“Alone we can do so little; together we can do so much”

HELLEN KELLER

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