GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Digital Climate Advisory Services Training

To support climate resilience for smallholder agriculture in Southern Africa

27th – 28th of September 2023

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

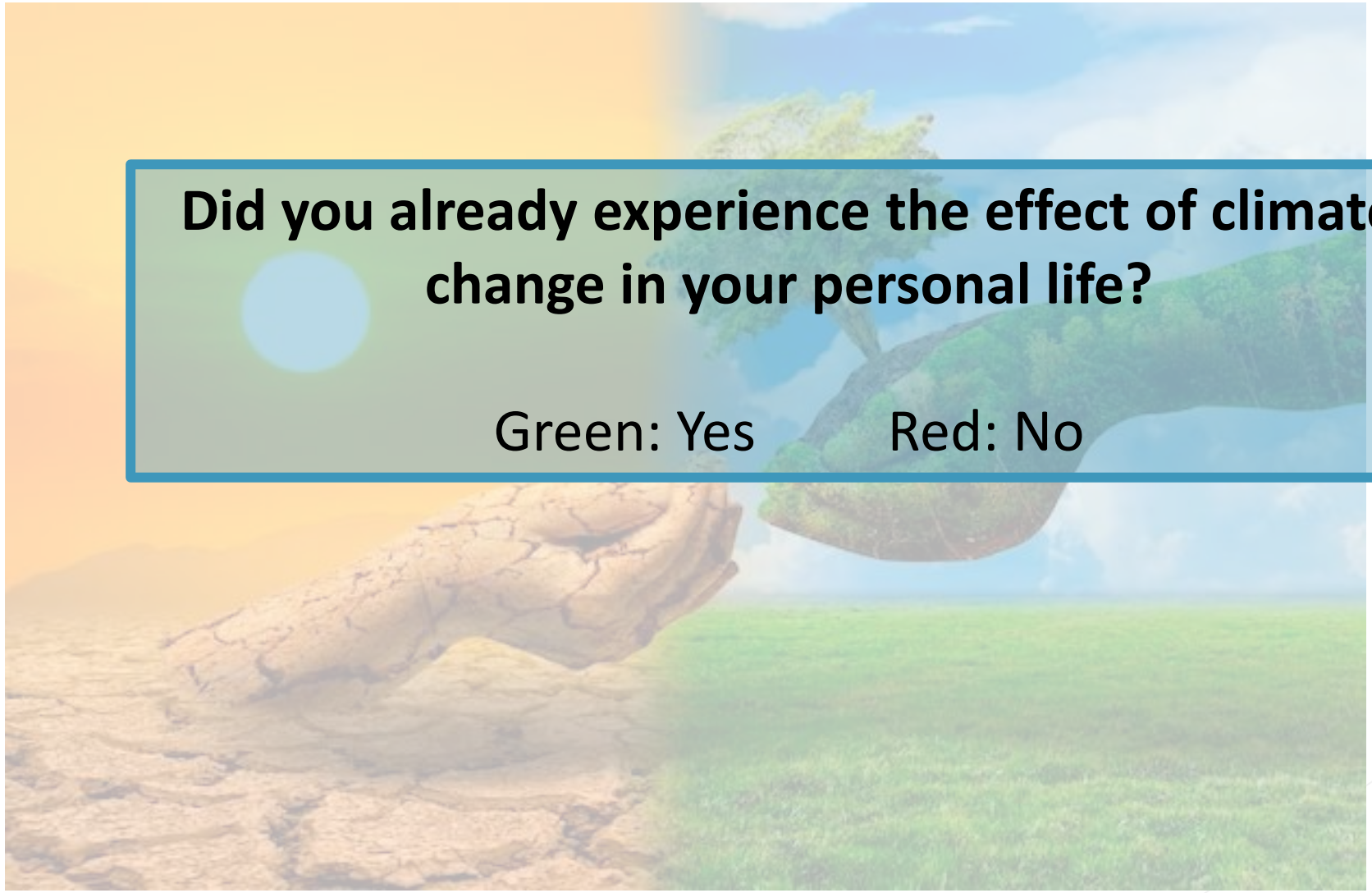
Dr. Stefan Ligtenberg

Weather Impact

- Private company based in The Netherlands
- Develop and deliver weather and climate services for agriculture, i.e. DCAS
- Working in over 10 African countries and reaching more than 500.000 farmers

“Climate change”

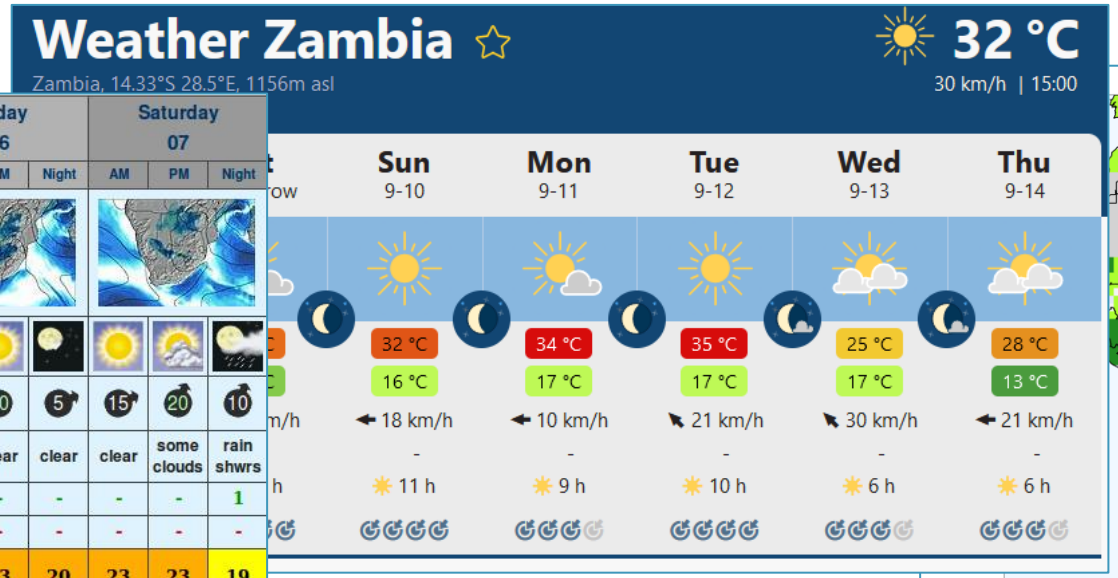
“Climate change”

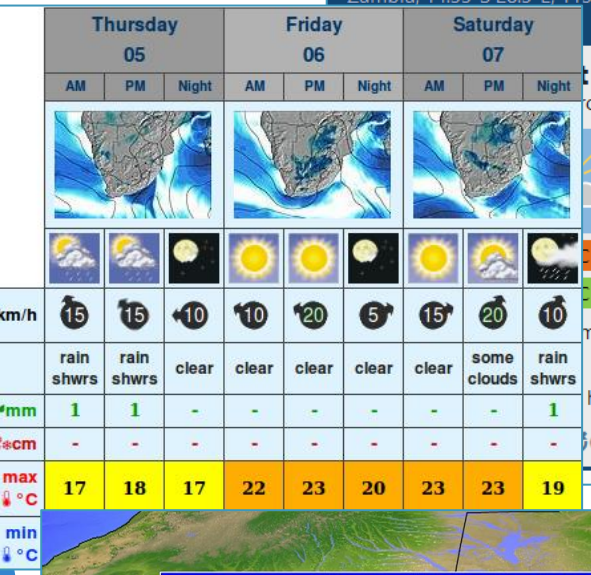


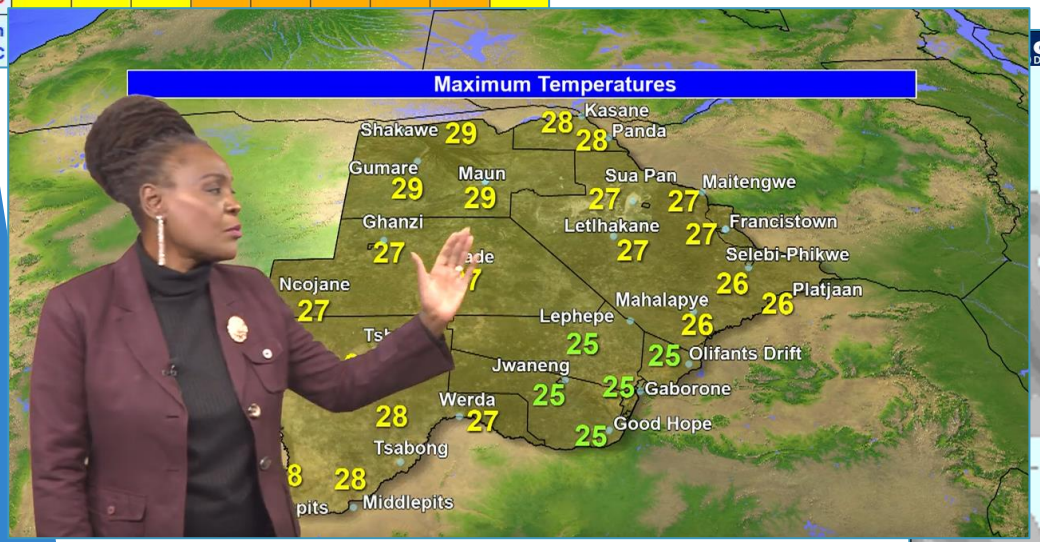
Did you already experience the effect of climate change in your personal life?

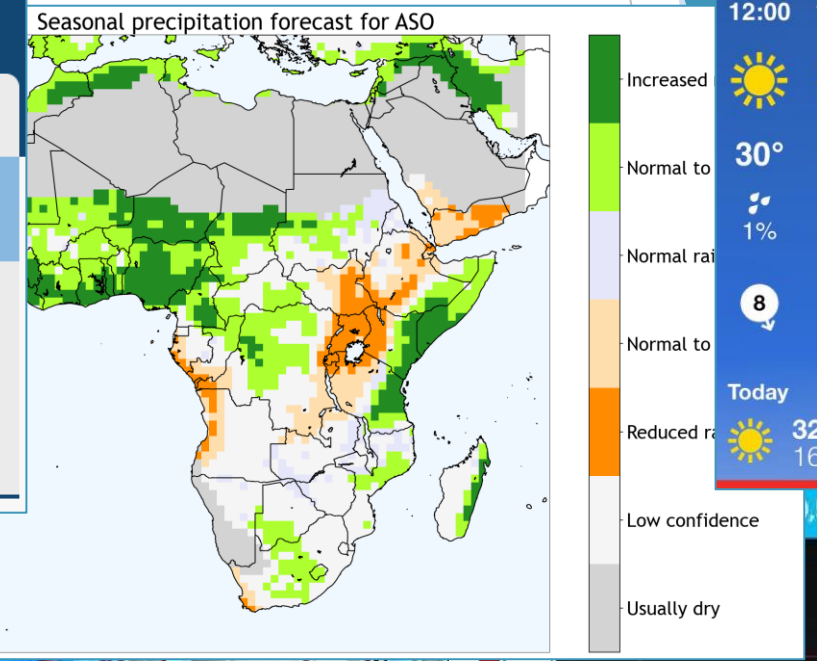
Green: Yes Red: No

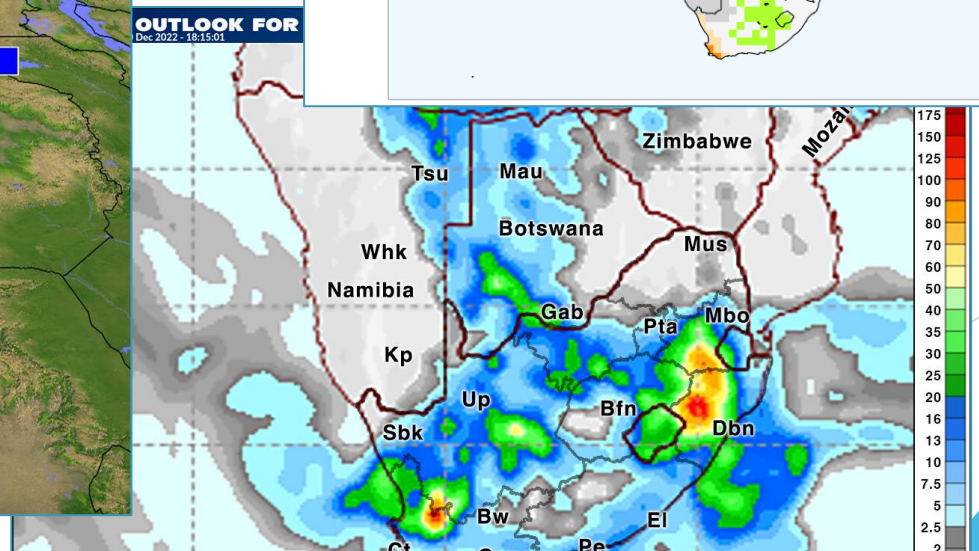
Weather information



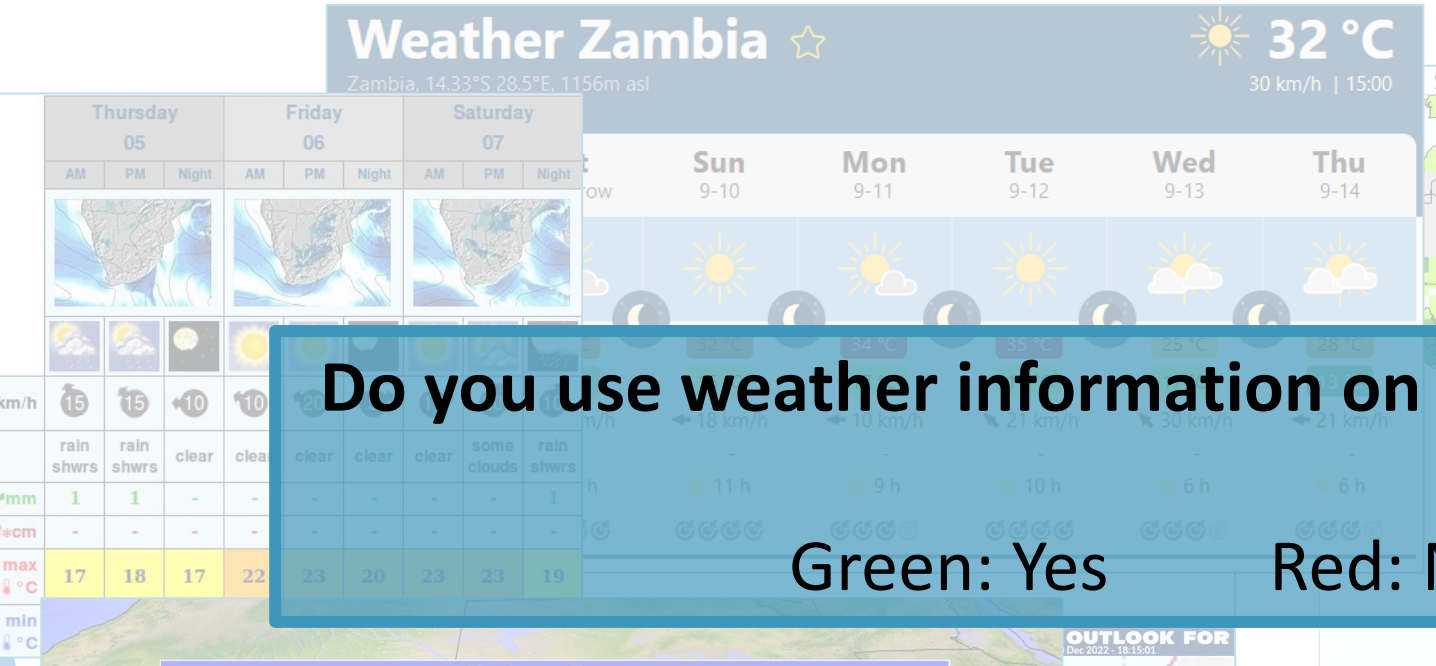


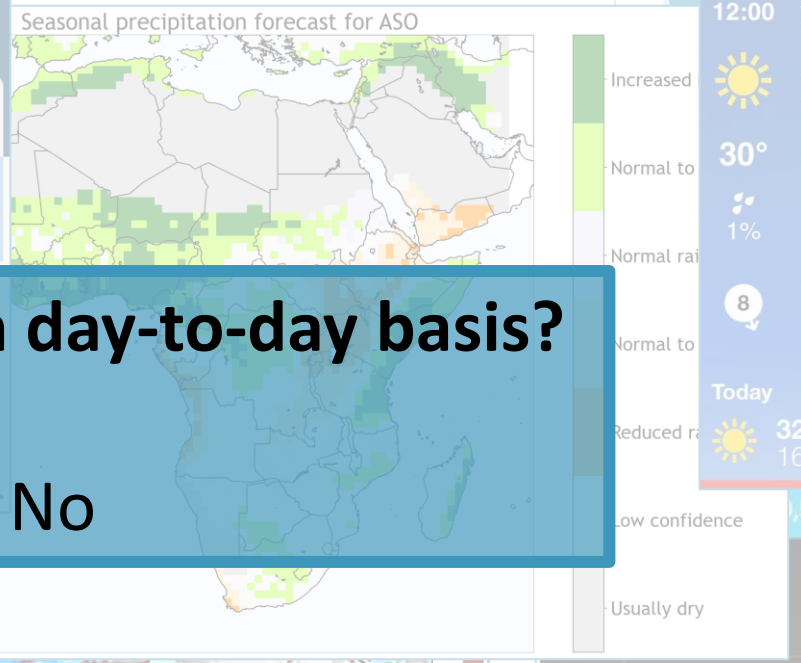






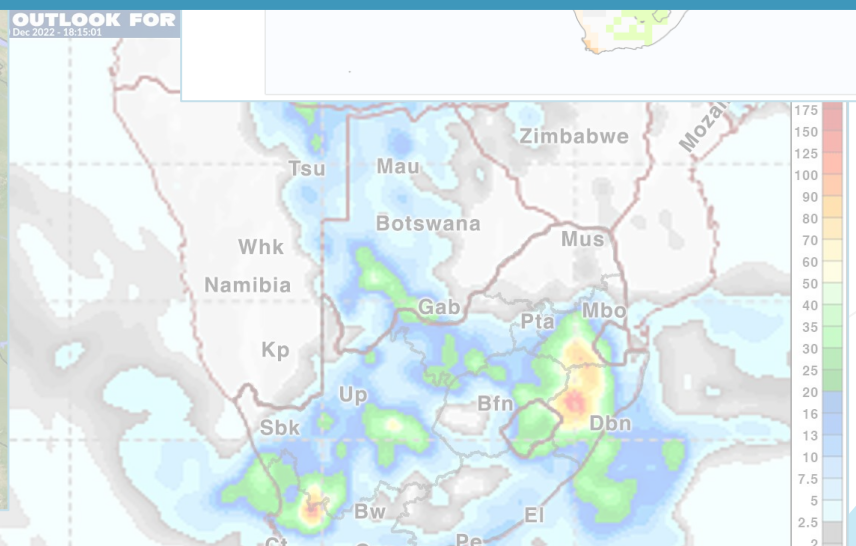
Weather information

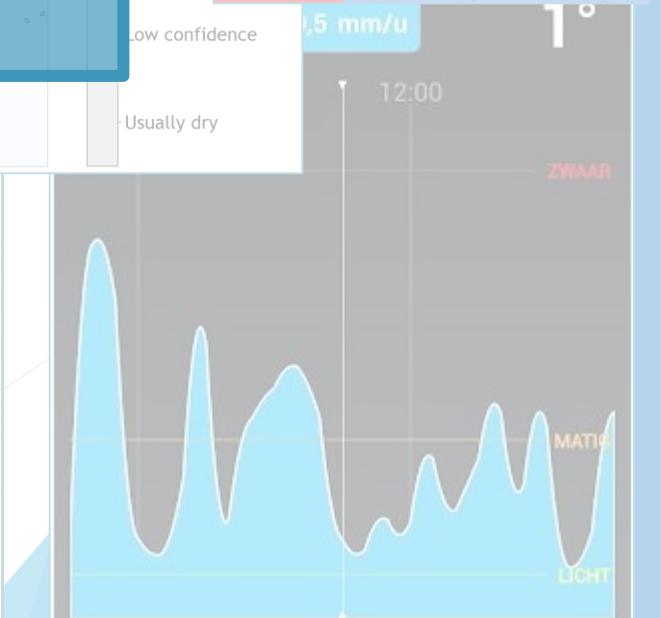




Do you use weather information on day-to-day basis?

Green: Yes Red: No





Setting the scene

"The Impact of Climate Change in Southern Africa and the Potential of DCAS for Smallholder Agriculture, incl. Panel Discussion on Farmers' Experiences"

Dr. Stefan Ligtenberg
Meteorologist & Climate scientist
Managing Director of Weather Impact

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

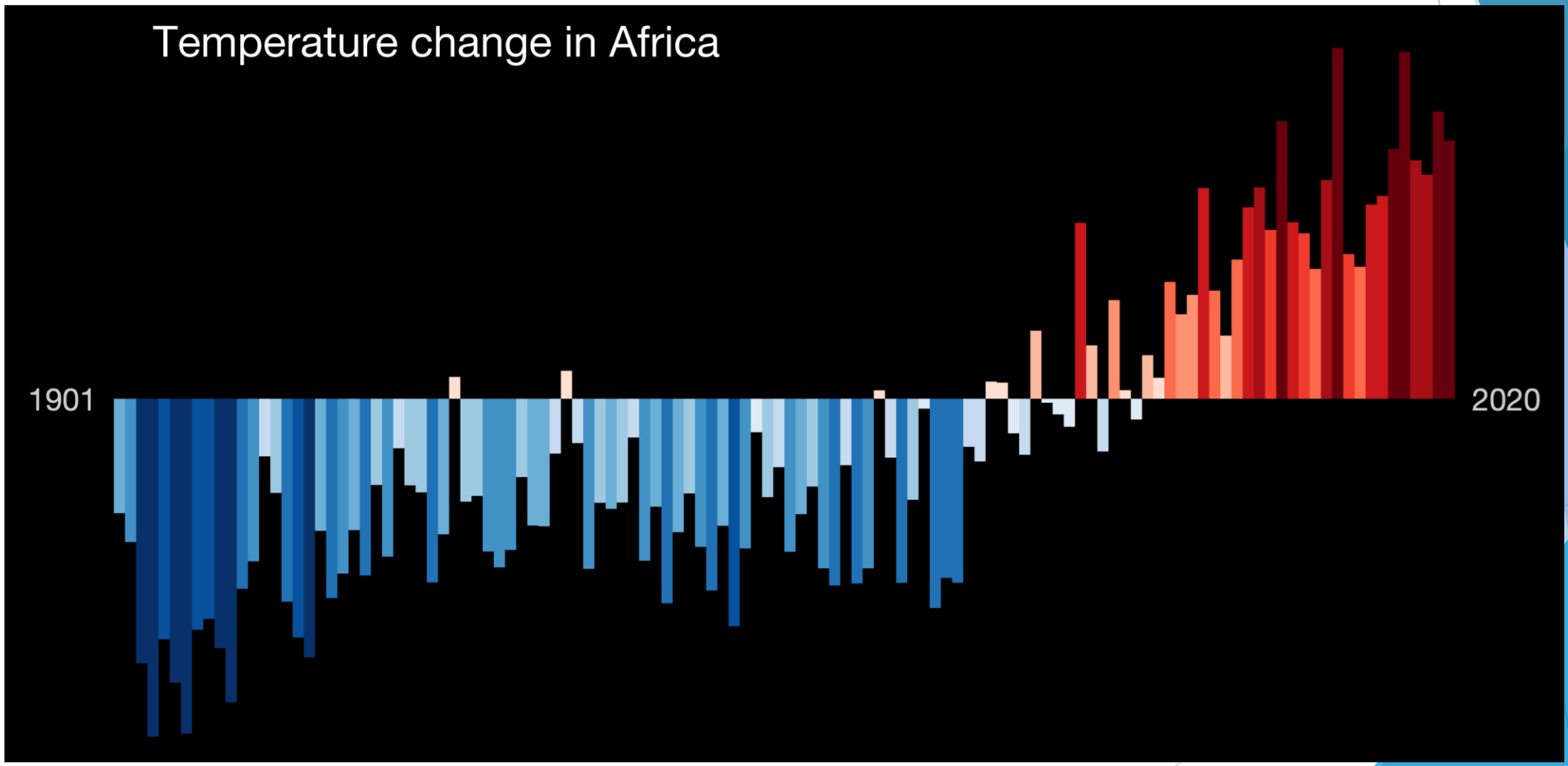
aqualinks

Weather Impact

Setting the scene

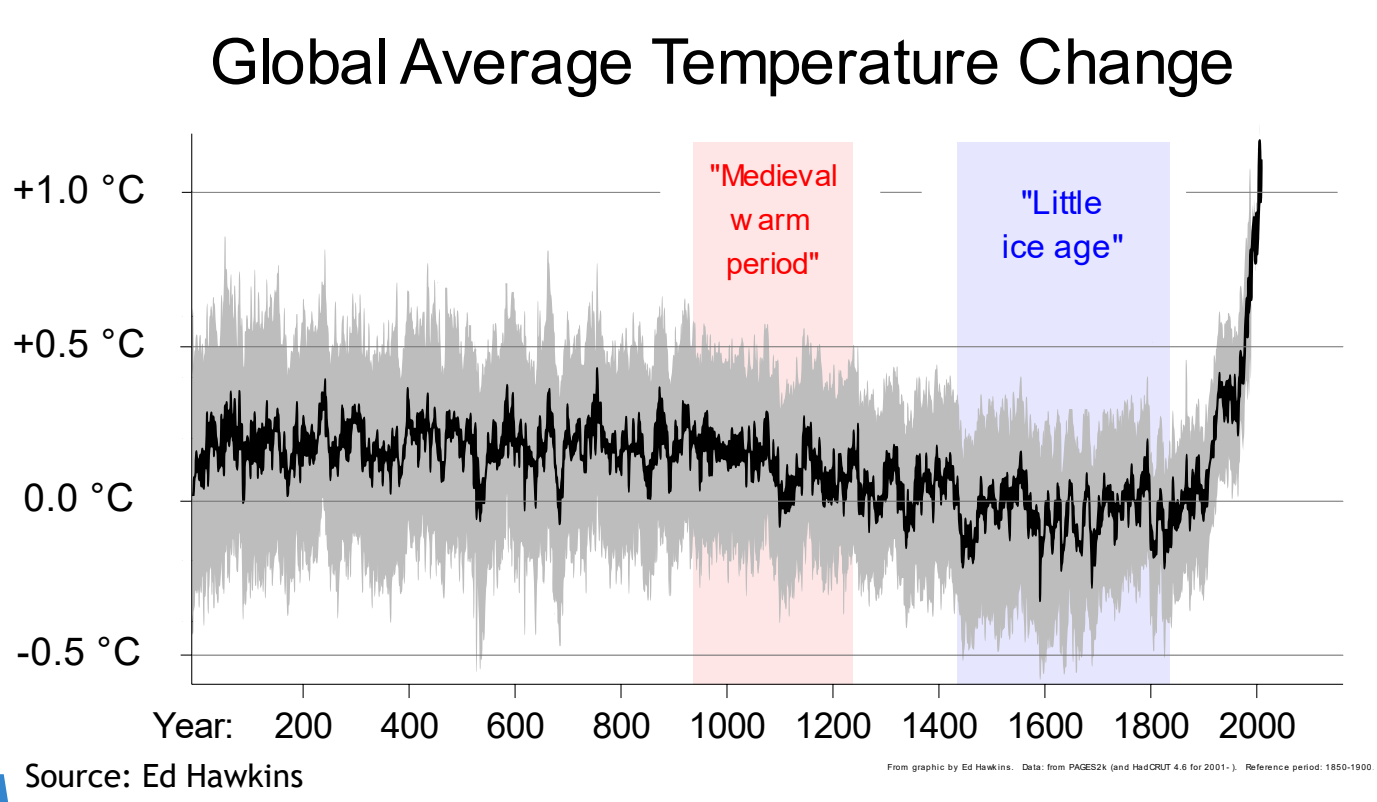
- Impact of Climate Change in Southern Africa
- Potential of DCAS for Smallholder Agriculture
- Farmer Experiences: a panel discussion

Climate change impact

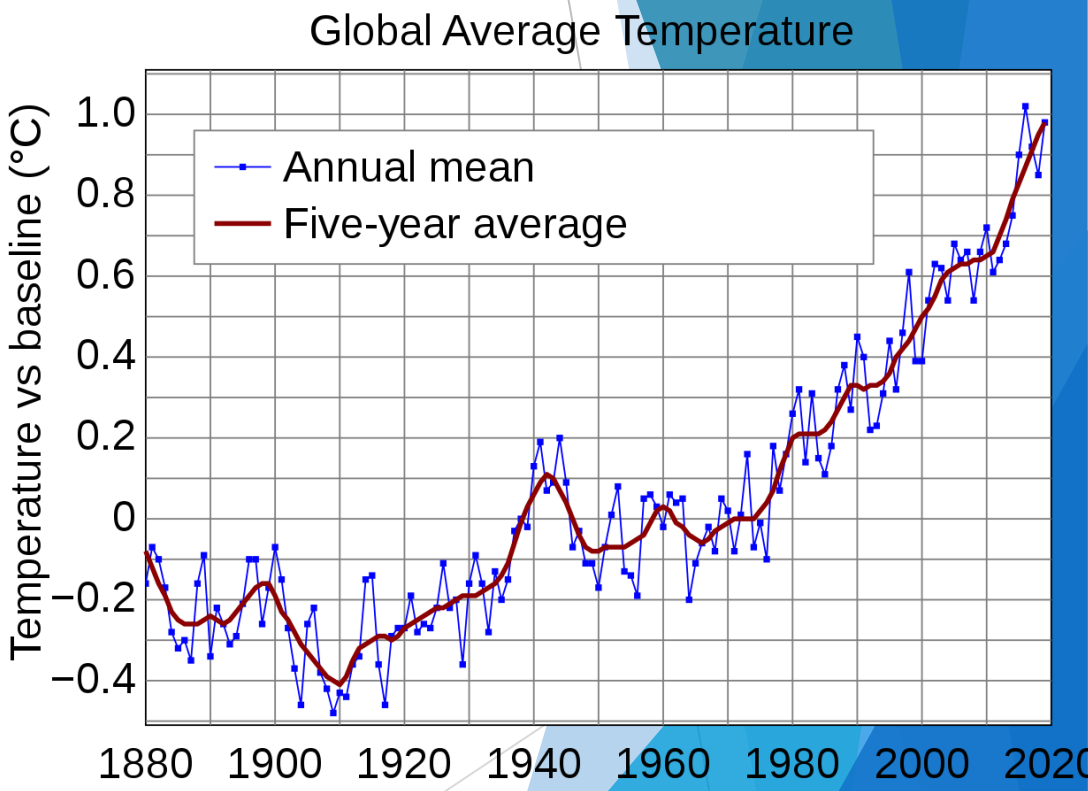


Source: Wikipedia

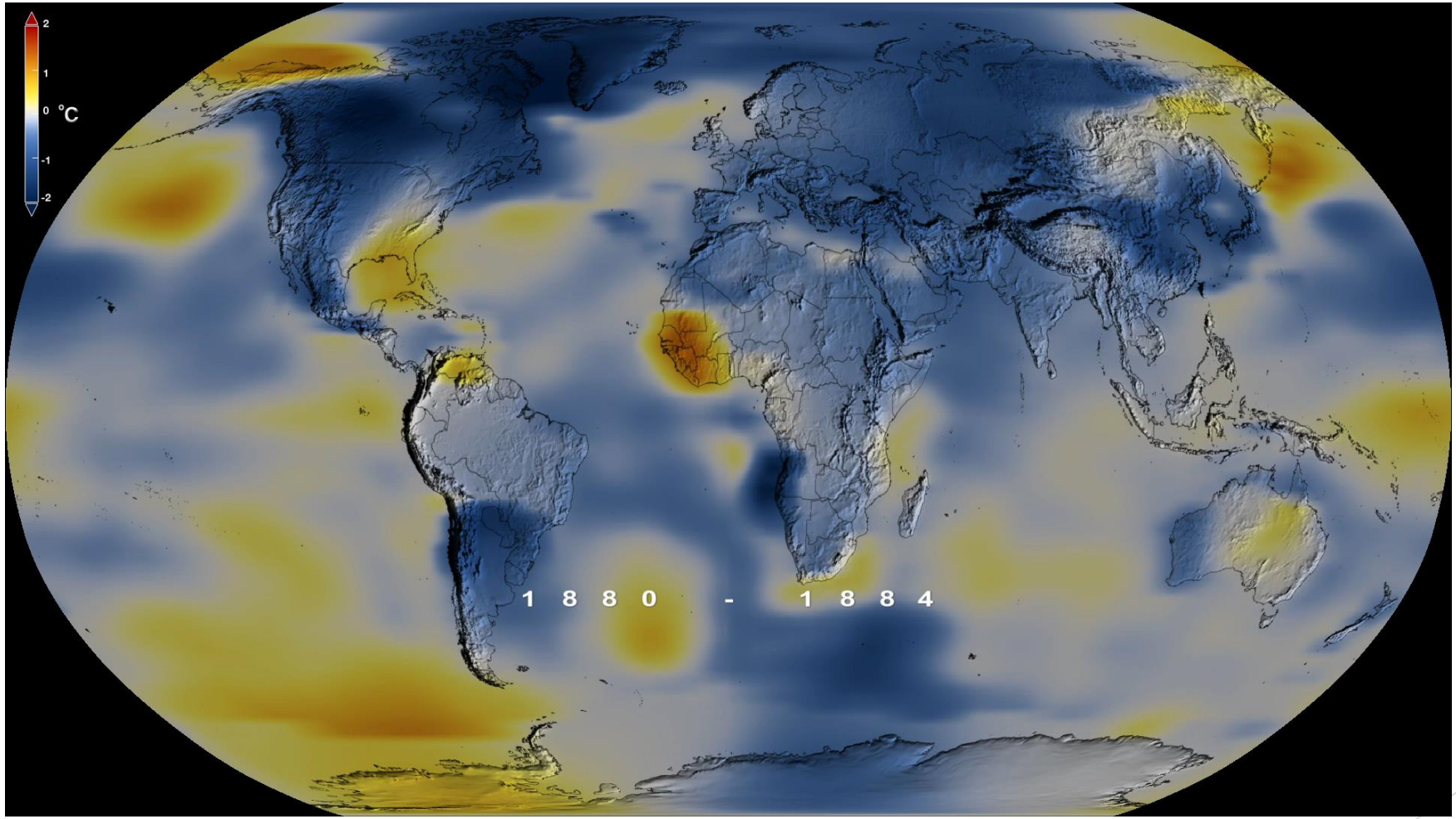
Temperature rise



Source: Ed Hawkins

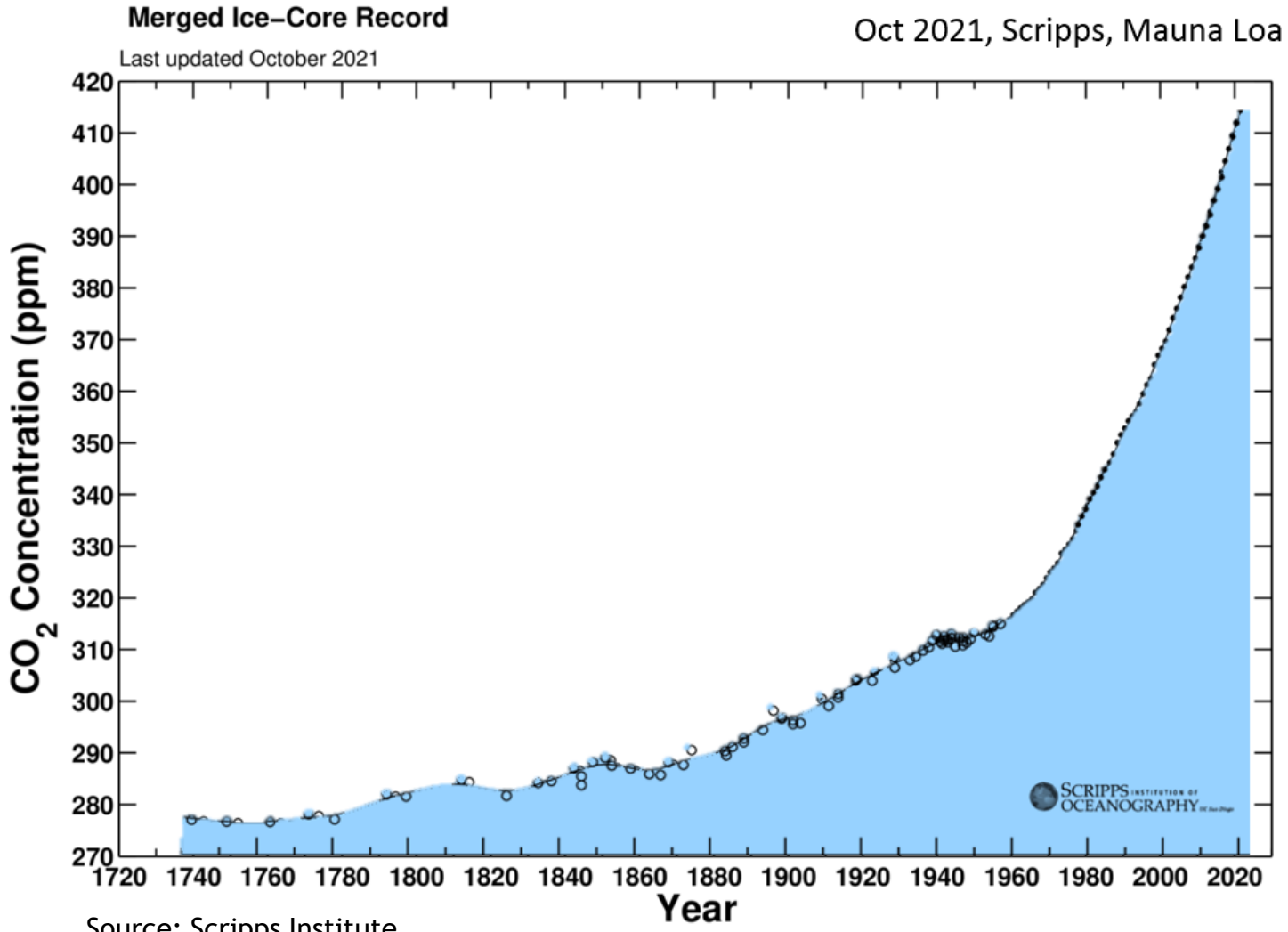


Temperature rise



Temperature change per year compared to 1951-1980. Source: NASA

CO_2 concentration

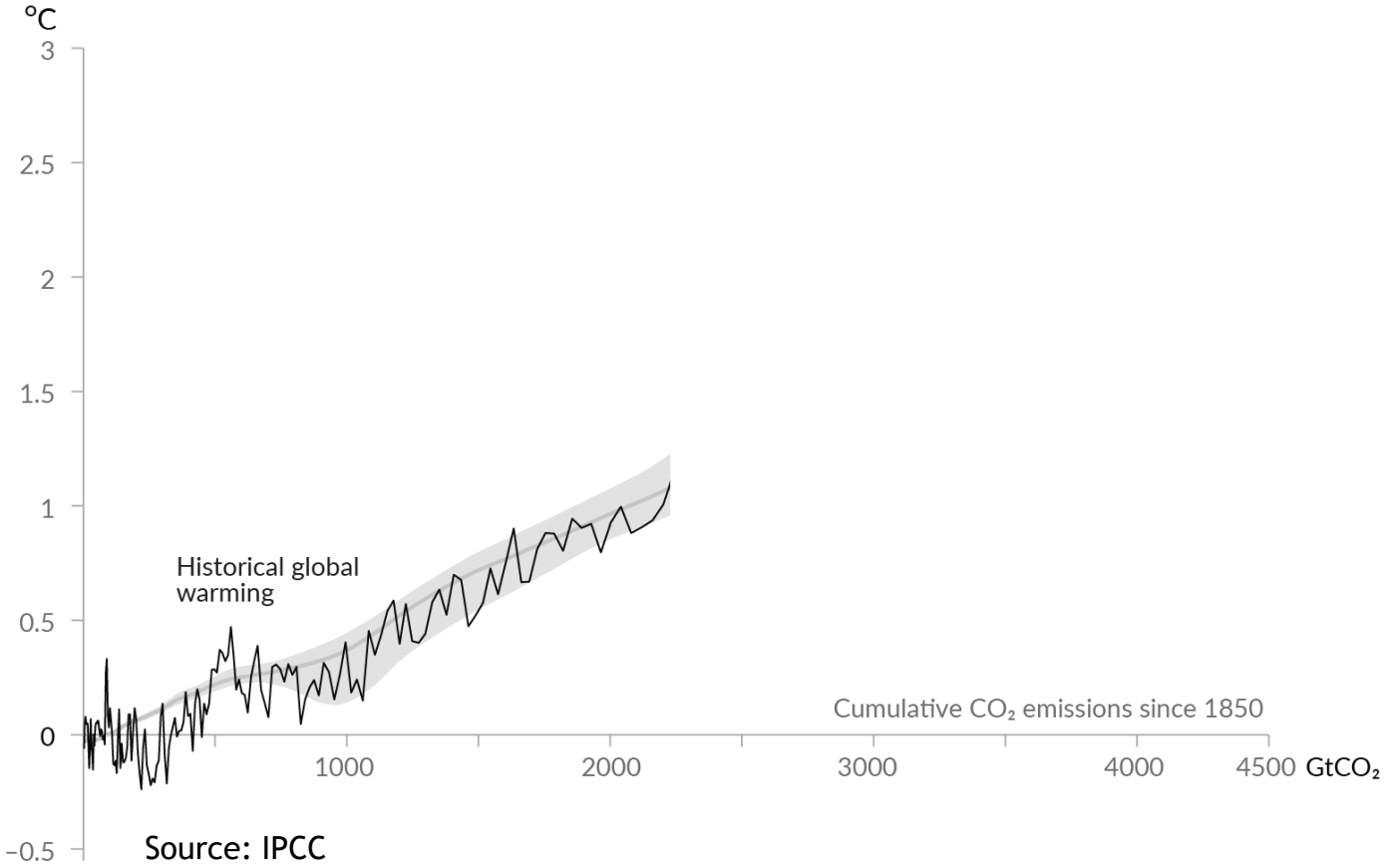


Source: Scripps Institute

Linear relation: T & CO_2

Every tonne of CO_2 emissions adds to global warming

Global surface temperature increase since 1850–1900 (°C) as a function of cumulative CO_2 emissions ($GtCO_2$)

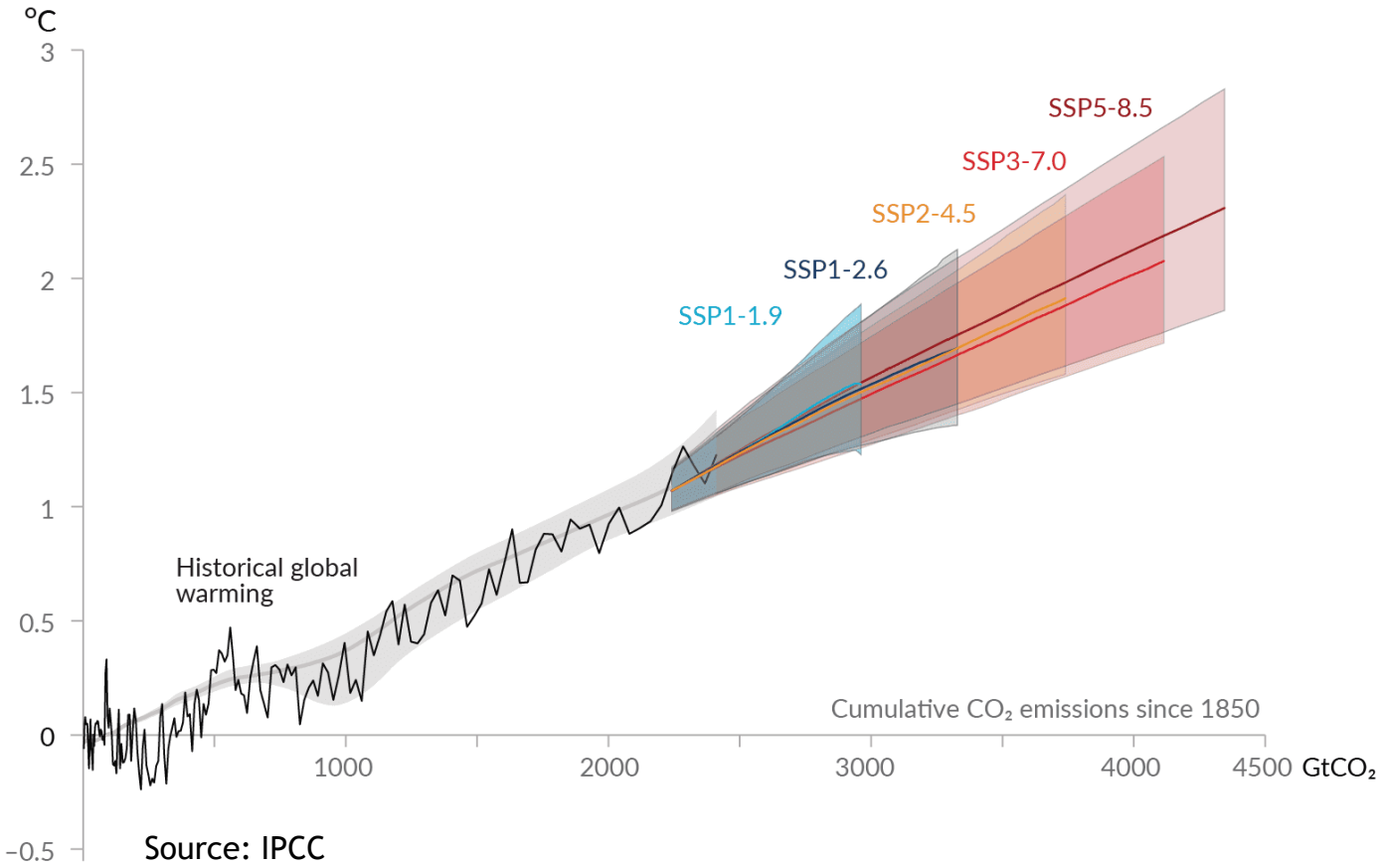


Source: IPCC

Linear relation: T & CO_2

Every tonne of CO_2 emissions adds to global warming

Global surface temperature increase since 1850–1900 (°C) as a function of cumulative CO_2 emissions ($GtCO_2$)



Source: IPCC

Climate change effects

- Increase in extreme weather!

- Temperature rise & more heat waves
  - more heat stress
- Rainfall variations
  - more flooding & more droughts
- More intense hurricanes
  - more flooding & higher damage
- Sea level rise (largest in tropical regions!)
  - more coastal erosion

Climate change effe

More than 100 killed as Storm Freddy returns to Mozambique and Malawi

One of the strongest storms recorded in the southern hemisphere hit region for second time in a month

…ts some wood on a flooded street near Quelimane, as Storm Freddy hits
…hotograph: Andre Catueira/EPA

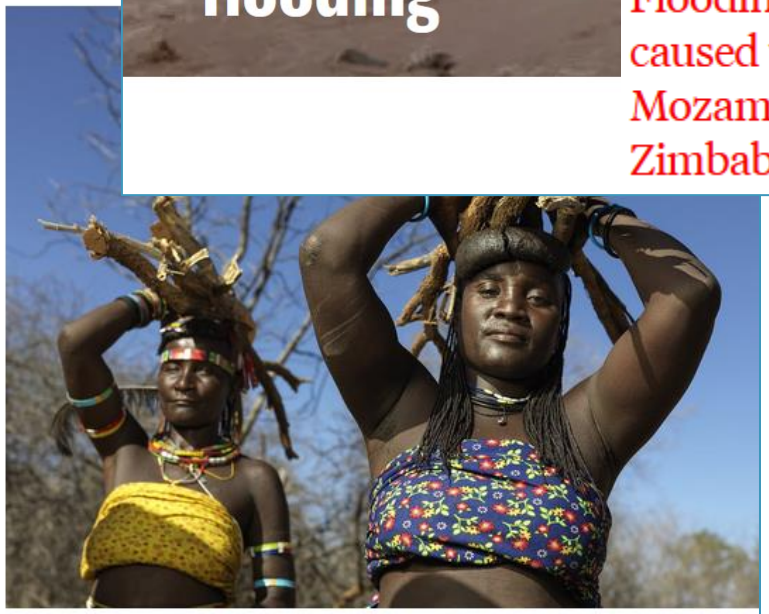
Human-driven climate cris… Horn of Africa drought - st…

Region is suffering its worst drought in 40 years aft… consecutive years of below-average rainfall

The drought has directly affected about 50 mil… 4.3 million in need of humanitarian aid. Photograp…

Ang…

« Go to nev…



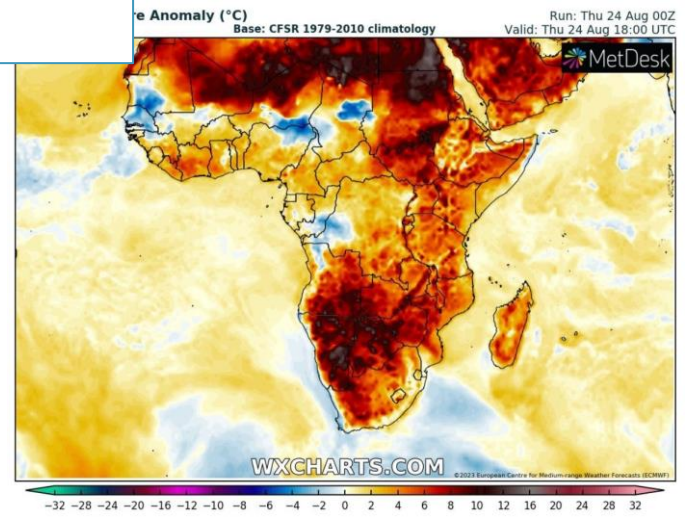
In Focus

Cyclone Idai & Southern Africa flooding

Flooding and a cyclone, Idai, caused widespread damage across Mozambique, Malawi and Zimbabwe in March 2019.

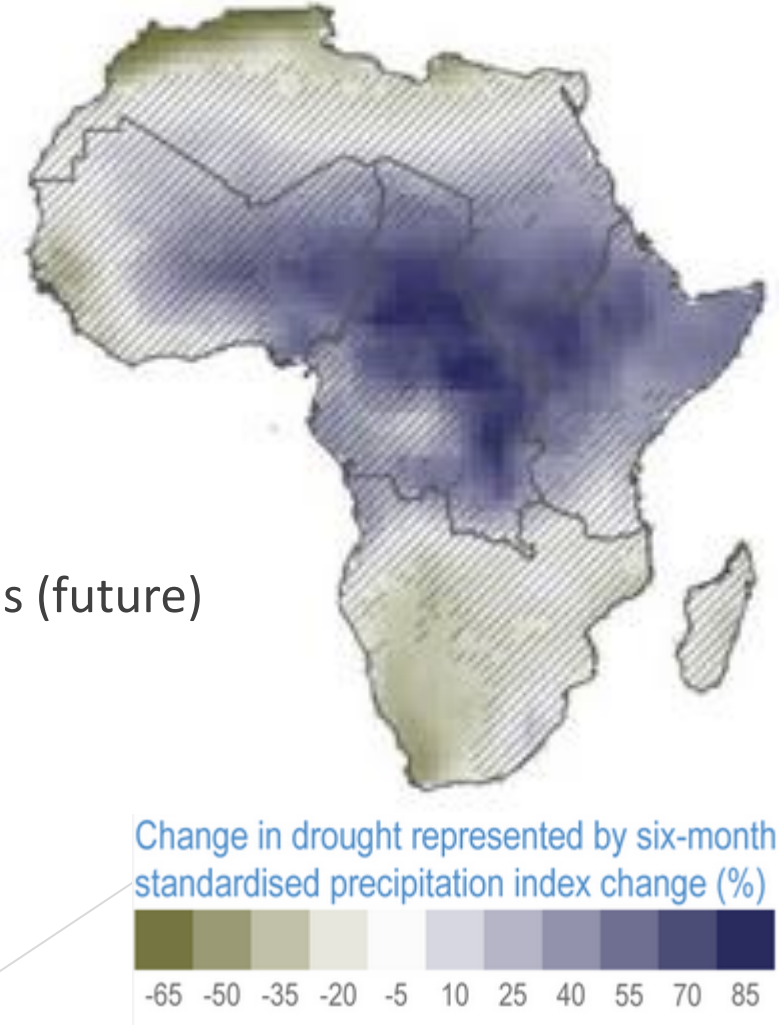
…BOTSWANA
36.5 Kasane
36.6 Selebi Phikwe
SOUTH AFRICA
38.2 Giyani
37.6 Thohoyandou
36.4 Mara
33.4 Lindlespoort
NAMIBIA
37.9 Katima Murillo

…nern Africa, more records fell yesterday



Climate change in SADC

- Temperatures in SADC rise faster than global average
  - Largest increase in Angola
  - Number of heatwaves increase 3-6 times
- Most of SADC becomes drier with increased drought frequency
  - 10-20% less rainfall on average
  - More consecutive dry days: longer droughts
  - Drought duration increase from 2 months (now) to possibly 4 months (future)
  - Decreased overall soil moisture content
- When it rains, intensity and amount will increase
  - Especially in eastern part of SADC
- Cyclones: decrease in number, increase in strength



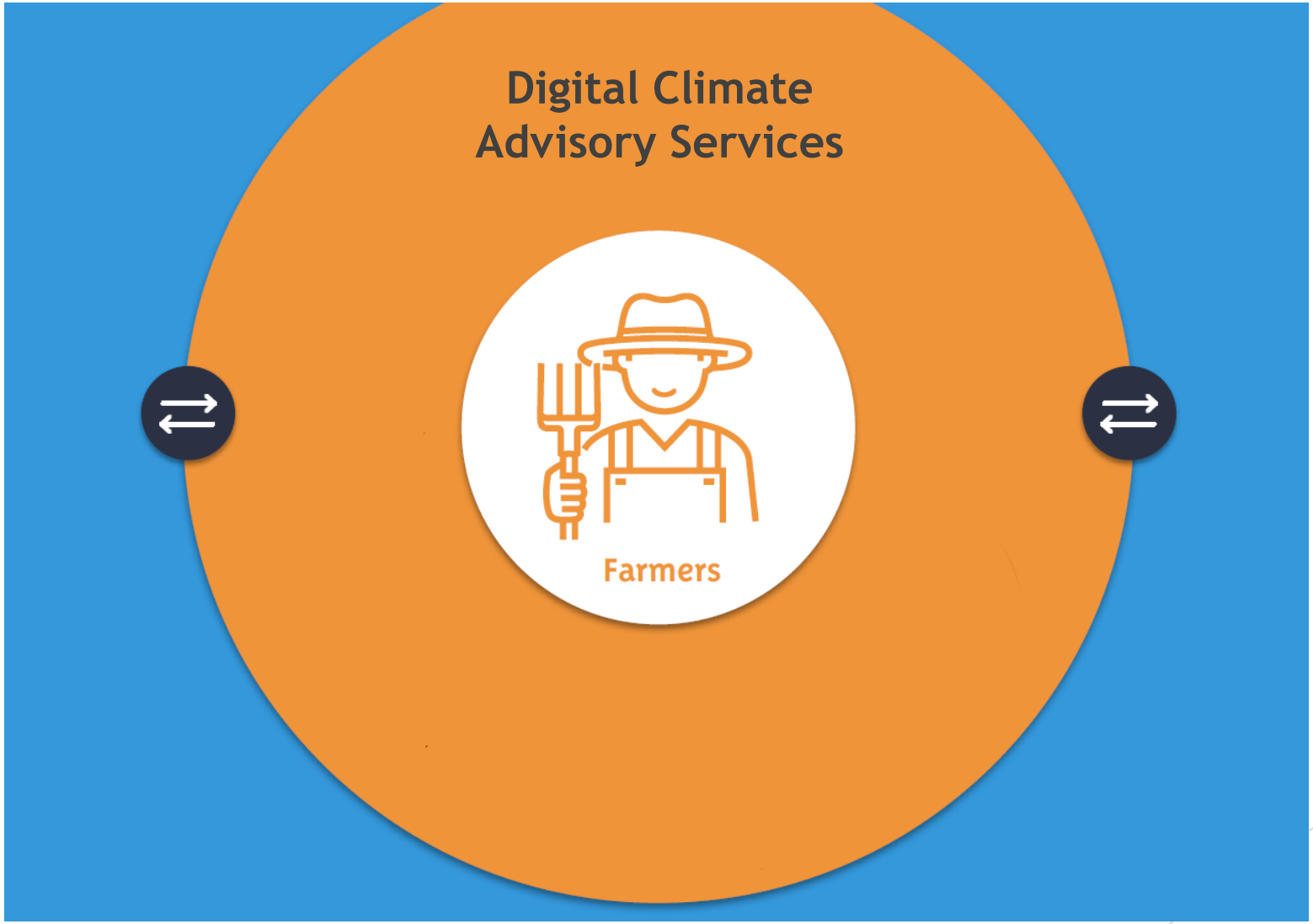
Source: IPCC AR6

From climate change to DCAS

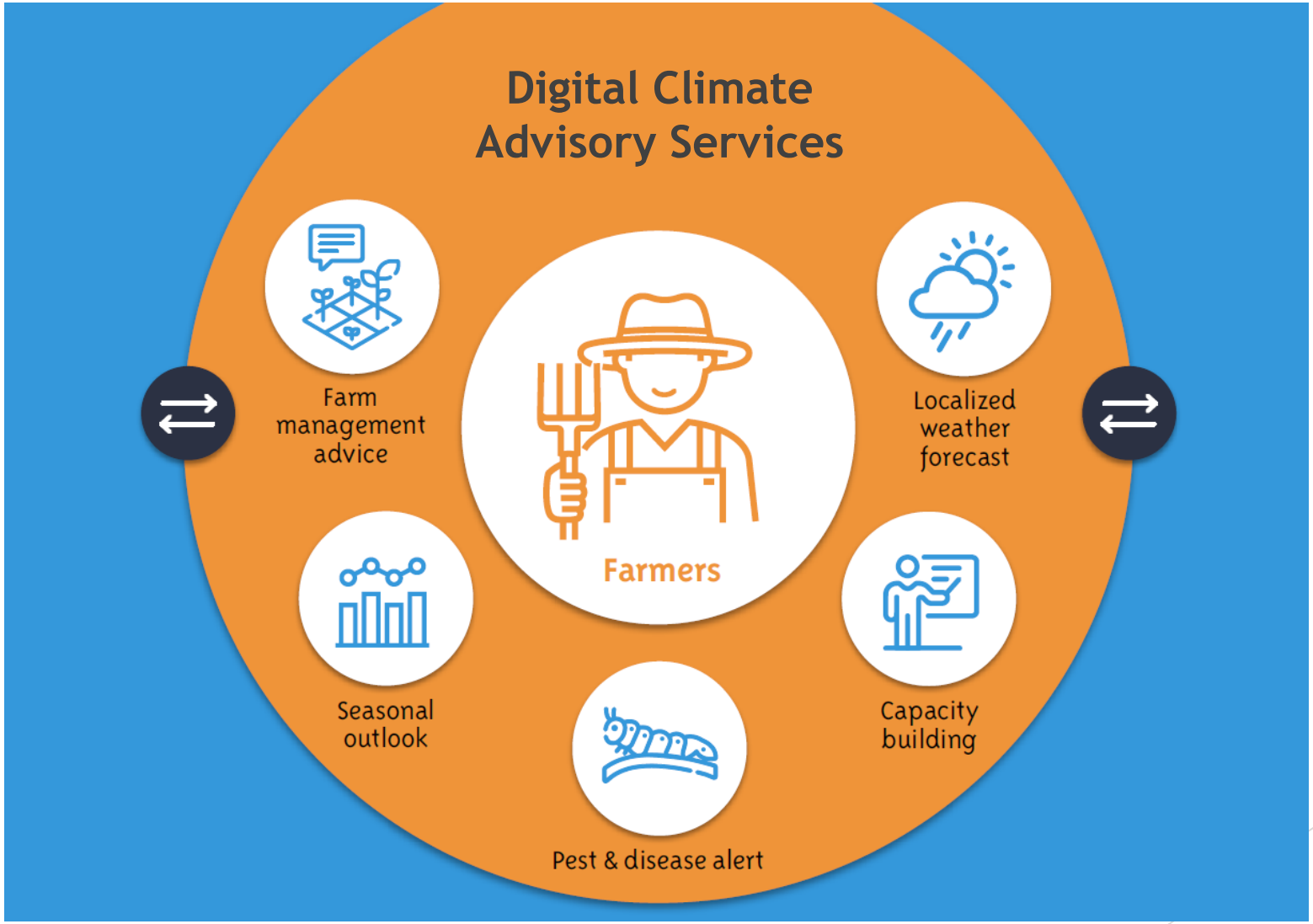
- Agriculture is directly impacted by climate change, especially droughts
- Smallholder farmers often lack irrigation possibilities
- Information on climate variability -and the link to agriculture- is essential
- Current infrastructure is insufficient to timely inform a large number of farmers with tailored specific information
- Digital services have the potential to fill the above cavities

Source: IPCC AR6

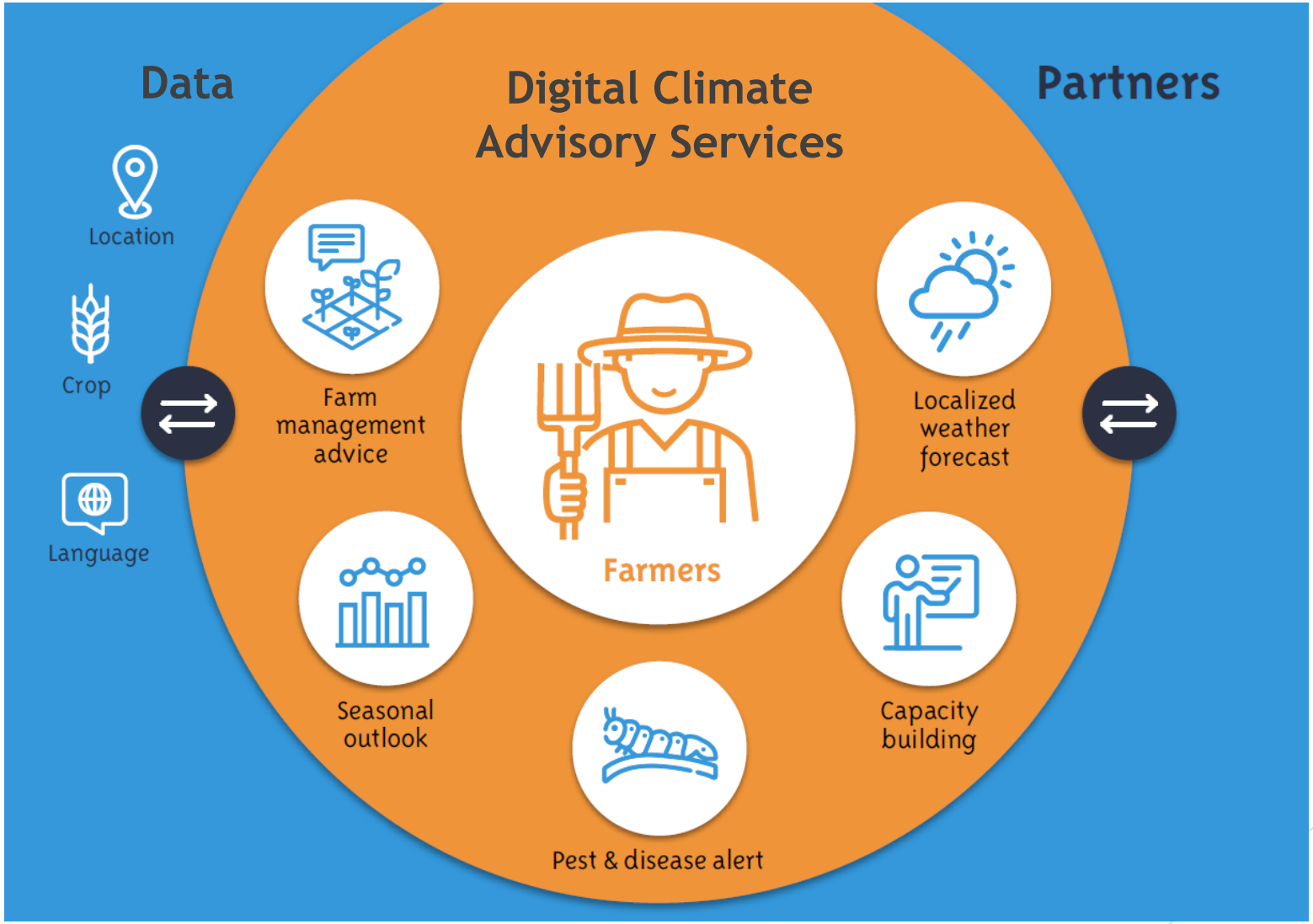
DCAS



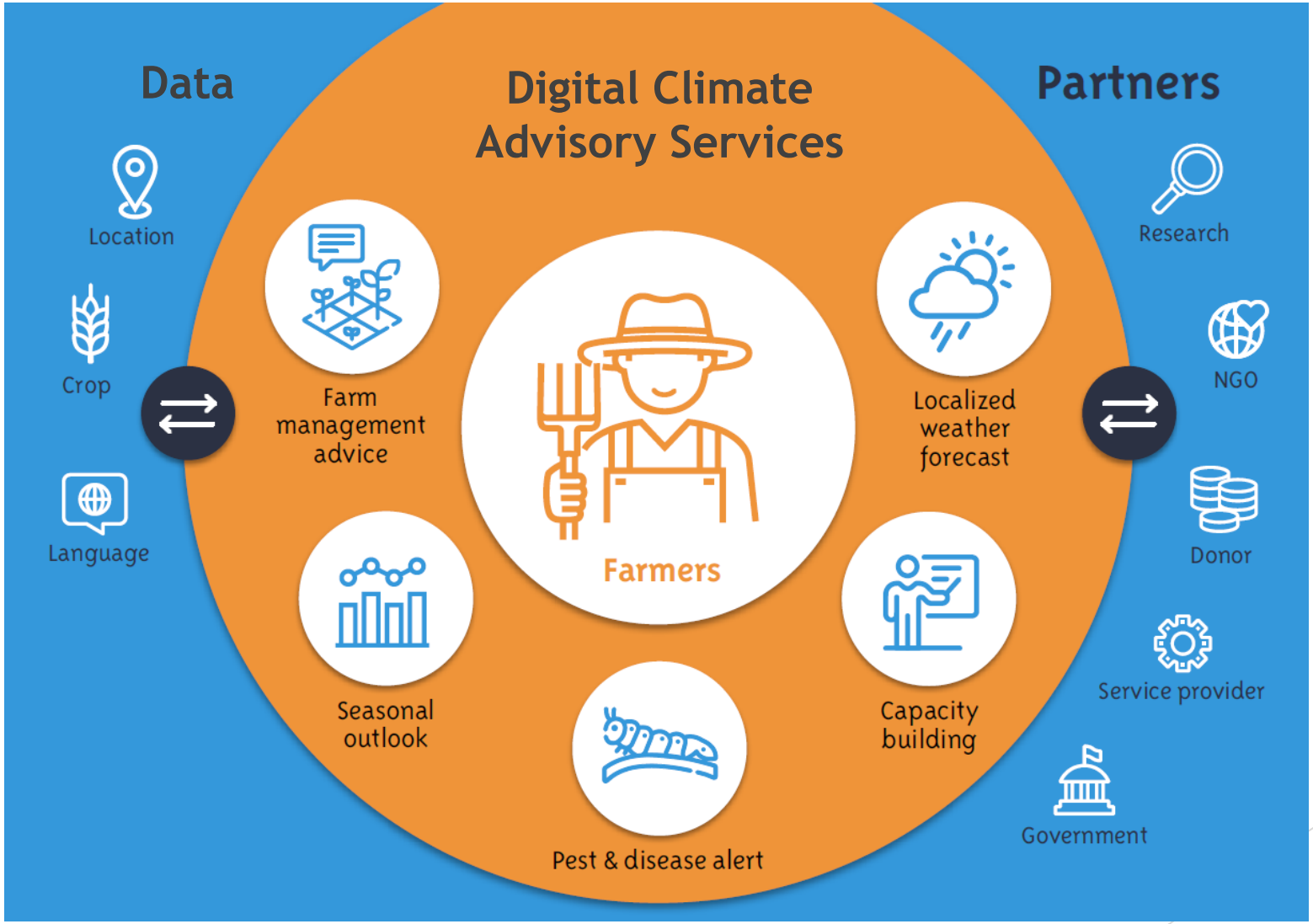
DCAS


Digital Climate
Advisory Services
Farm
management
advice
Localized
weather
forecast
Farmers
Seasonal
outlook
Capacity
building
Pest & disease alert

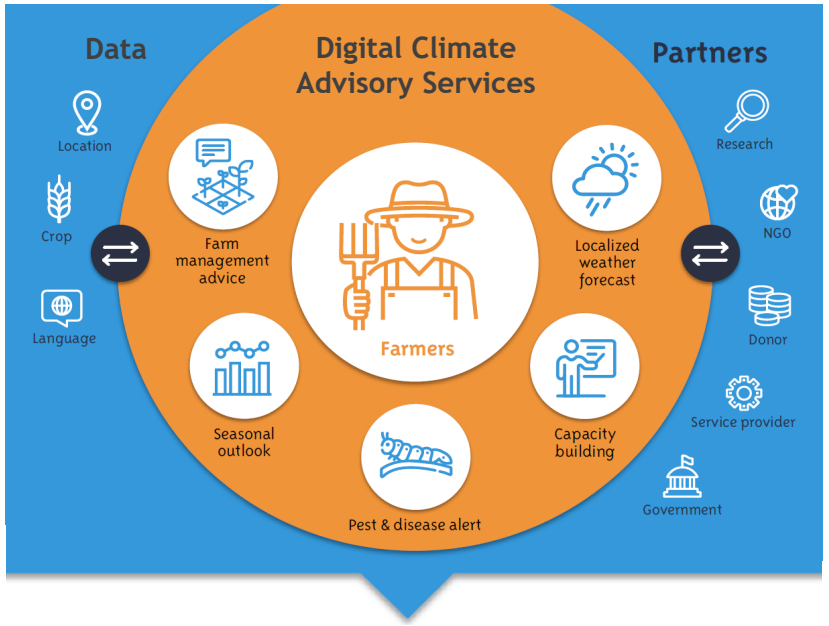
DCAS


Data
Location
Crop
Language
Digital Climate Advisory Services
Farm management advice
Farmers
Localized weather forecast
Seasonal outlook
Capacity building
Pest & disease alert
Partners

DCAS

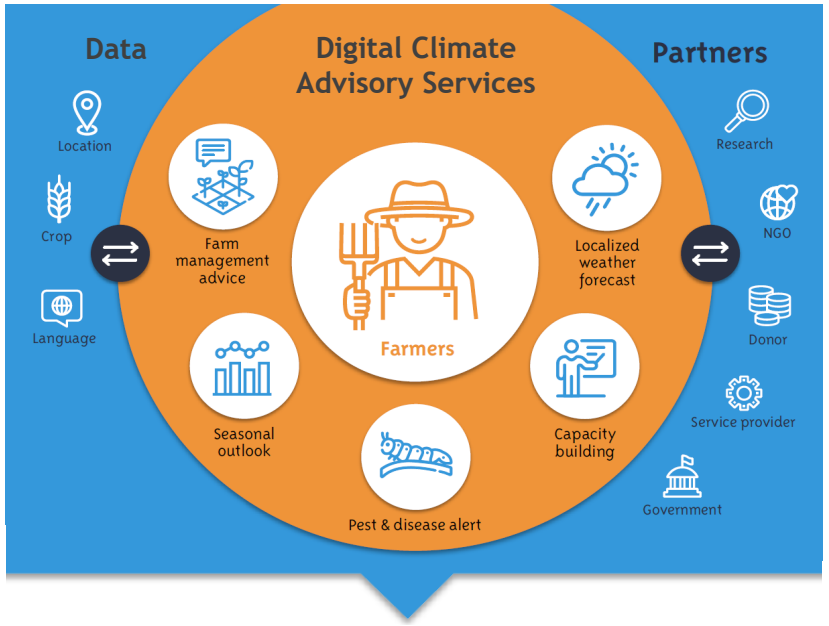

Data
Location
Crop
Language
Digital Climate Advisory Services
Farm management advice
Localized weather forecast
Farmers
Seasonal outlook
Capacity building
Pest & disease alert
Partners
Research
NGO
Donor
Service provider
Government

DCAS



Dissemination

DCAS



Dissemination

Potential for DCAS

- 300 million smallholder farmers worldwide
- Digital services use and (smart)phone penetration increase year-over-year
- Possibility to bundle with other services; e.g. finance, agri-inputs, insurance, product traceability
- Increase capacity and information-based decision making of individual smallholders, stakeholders and institutes

DCAS requirements

Data quality

User needs

Co-creation

Two-way communication

Accountability

Building trust

Scalability

Equity

Accessible by all

Sustainability

DCAS requirements

To you, which is the most important requirement for a successful DCAS?

Green: Accountability / Trust
Red: Quality / Accuracy / Usefulness
Yellow: Scalability
Blue: Accessibility

Farmer experiences

Farmer experiences

Farmer panel

Angellah Chitanje
Malawi

Sekila Molapo
Lesotho

Nkosephayo Manyatsi
Eswatini

Setting the scene

"The Impact of Climate Change in Southern Africa and the Potential of DCAS for Smallholder Agriculture, incl. Panel Discussion on Farmers' Experiences"

Dr. Stefan Ligtenberg
Meteorologist & Climate scientist
Managing Director of Weather Impact

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker
Bruce Campbell

Digital solutions for a changing climate

Bruce Campbell
Senior Advisor,
Global Center on Adaptation

Johannesberg, South Africa

September 2023

- Agriculture is tied to weather ▶▶ recurrent swings of food (in)security
- Weather patterns are changing
- Increased problems with extreme events

Climate adaptation is not on track

GLOBAL CENTER ON ADAPTATION

- Rates of hunger are growing; SDG2 on zero hunger will not be achieved
- Progress towards the Malabo Declaration of 2014 is off-track
- Immediate and near-term climate risk reduction – not transformational
- Fragmented, small in scale, incremental, sector-specific
- Slow implementation of National Adaptation Plans

➢ Global Center on Adaptation wants to turn that around

One of 7 key priorities:

Priority #5. Digital climate-informed advisories and services (DCAS)

Bruce M. Campbell, Amath Sene, Alloysius Attah, Oluyede Ajayi, Wole Fatunbi, Afton Halloran, Inga Jacobs-Mata, Rahwa Kidane, Ruwa Matsika, Mercy Nyambura, Jacob Nyirongo, Steve Prager, Dawit Solomon, Ishmael Sunga, Edmond Totin, Portia Adade Williams, Paul Winters

GLOBAL CENTER ON ADAPTATION

Impact Pathway to climate-resilient agriculture through DCAS

Technology is rapidly changing the way food is produced, transformed, and distributed.

Current context

Up to 40 – 70% increase in yield & incomes when digital solutions are used

250M (190M smallholders & 60M pastoralists) do NOT use digitAg services

Scale up Challenge

LIMITED ACCESS

Due to high cost of delivery, limited digital infrast ructure and insufficient enabling policy/incentive environment

MINIMAL USAGE

Low digital literacy, inability to afford cost of service, and lack of engagement to encourage utilization of digital services, digital gender divide

DigitAg solutions are still small-scale, **60%** still dependent on donor funding & in the pilot stage in SSA

Only 13-35% of African farmers use digital solutions, of which only **25% are women**

Goal

2025 goal: Sustained uptake of digital adaptation solutions for at least 30 million farmers in Africa and improve food security in 26 countries

Intervention areas

- **Knowledge and Analytics**
- **Mainstream digital solutions in Investments projects**
- **Last-mile Capacity Development**

What is GCA doing? *Knowledge & Analytics*

GLOBAL CENTER ON ADAPTATION

Thought leadership on climate smart digital technologies in agriculture

GLOBAL COMMISSION ON ADAPTATION

A Blueprint for Digital Climate-Informed Advisory Services: Building the Resilience of 300 Million Small-Scale Producers by 2030

TYLER FERDINAND, EMMA ILLICK-FRANK, LOUISE POSTEMA, JIM STEPHENSON, ALISON ROSE, DARKO PETROVIC, CLAUDE MIGISHA, KATIUSCIA FARA, STEPHEN ZEBIAK, TONY SIANTONAS, NICOLETTA PAVESE, TOM CHELLEW, BRUCE CAMPBELL, AND CRISTINA RUMBAITIS DEL RIO

Executive Summary

Highlights

- Digital climate-informed advisory services (DCAS) are tools and platforms that integrate climate information into agricultural decision-making.
- Globally, more than 300 million small-scale agricultural producers have limited or no access to DCAS because service provision is still fragmented, unsustainable beyond project cycles, and not reaching the last mile.
- To improve DCAS, six core principles of data quality, equity, co-creation, accountability, sustainability, and scalability should guide investment and service provision.
- The investment required by public and private actors to build the resilience of an additional 300 million small-scale producers via DCAS by 2030 is estimated to be US$7 billion.
- Returns on investment for DCAS providers range from 1-to-10 to 1-to-70. [illegible] or income average 30 percent and 25 percent, respectively, and gross domestic [illegible] powerment, and

Diverse systems

GLOBAL CENTER ON ADAPTATION

FIGURE 2 The DCAS Model Ecosystem

BUSINESS TO INTERMEDIARY

Solutions that are sold to agribusinesses, insurers, or banks that pay for their customers' access.

Example: aWhere

EMBEDDED WITHIN COMMERCIAL OPERATIONS

Solutions applied within commercial operations and supply chains of agribusinesses. Intermediary service providers may be paid for some of the services required for digital climate-informed advisory services (DCAS) development.

Example: Olam

SPECIALIZED INTERMEDIARY SERVICES

Services that help DCAS operate effectively, including platforms, data managers, or cloud-based support.
This is a more recent phenomenon, making it difficult to assess its scale.

Example: Climate Edge

COMPLEMENTARY SERVICE PROVISION

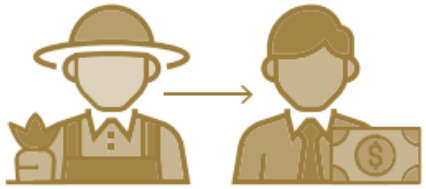
Services that integrate, or bundle, with DCAS to provide solutions for building resilience (see examples of bundled services).

Example: Pula Advisors

SERVICES SUPPORTING NATIONAL AGRICULTURAL ADVISORY SYSTEMS

Services typically led by nongovernmental organizations or academic institutions to help integrate climate information into existing training, extension services, farmer field schools, and so forth.

Example: Plantwise



"SUPER PLATFORMS"

Services that link farmers to buyers and finance, advice, and other services. Here, intermediaries are eliminated.[a]

Example: Farm to Market Alliance

Six principles

GLOBAL CENTER ON ADAPTATION

1. Data Quality and Assurance

2. Promote Equity

3. Co-create with Stakeholders

4. Establish Accountability and Transparency

5. Build for Financial Sustainability

6. Design for Scale

Mainstream digital solutions in Investments projects

GLOBAL CENTER ON ADAPTATION

Investment Projects

- Supported the **African Development Bank** and the **World Bank** through digital climate solutions to deliver **$ 2.1 billion dollar** in agriculture investment projects in the past two years

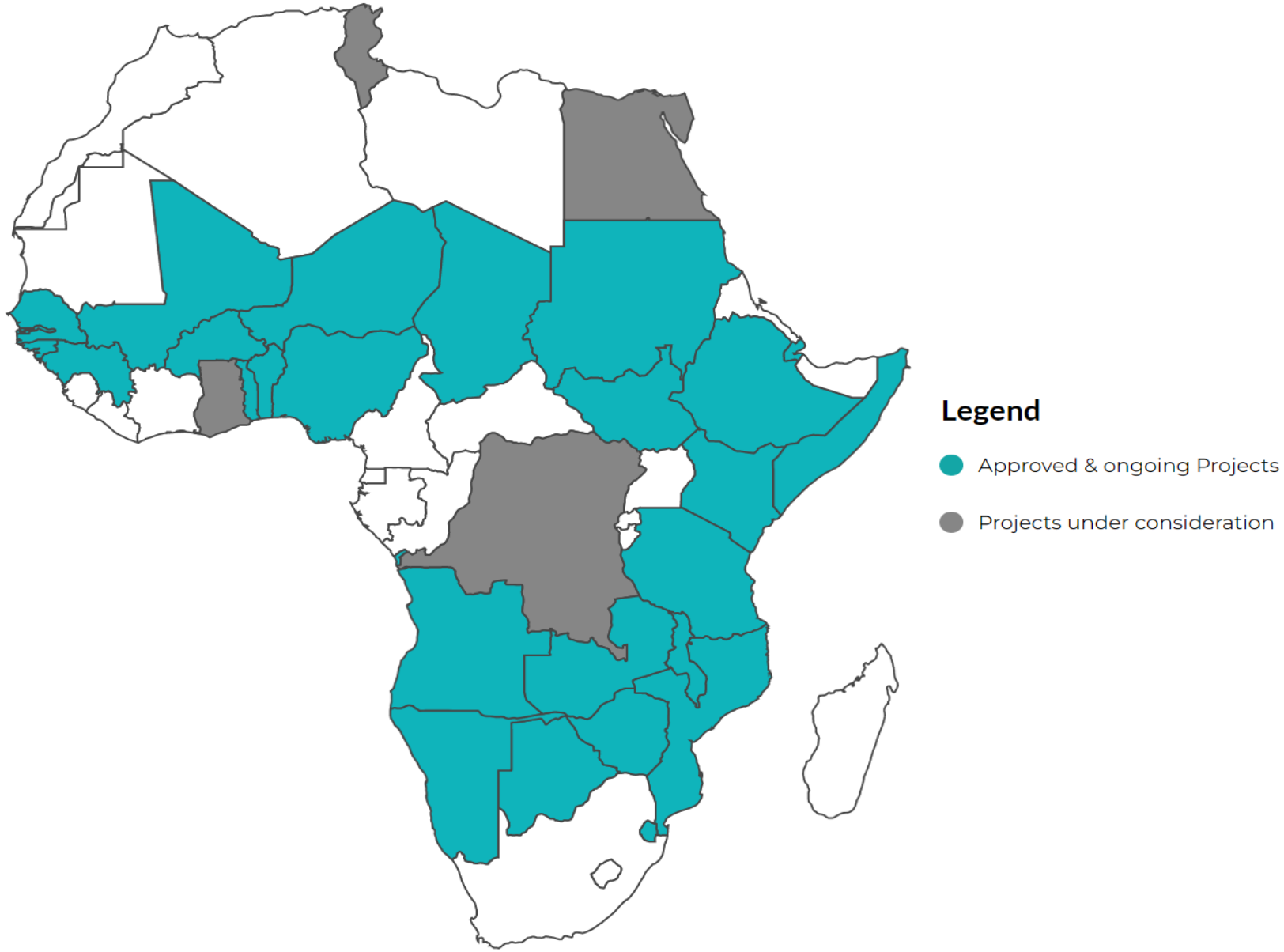
- Target is to (directly & indirectly) benefit **9.6 million individuals**

- **New collaboration with other MDBs/IFI & partners –**
  - International Fund for Agricultural Development (IFAD)
  - Agence Française de Développement (AFD)
  - Islamic Development Bank (IsDB)

Beneficiary countries of investment projects

GLOBAL CENTER ON ADAPTATION

30 countries



Capacity development, e.g. DCAS training

GLOBAL CENTER ON ADAPTATION

General

- Scale up the use of DCAS for improved adaptation and food security resilience in the region

Specific:

- Improve knowledge of stakeholders on potential benefits, challenges and best practices on DCAS in the region.
- Improve capacity of participants to deploy DCAS to promote climate adaptation to reach the last mile for improved food security and climate resilience.
- Facilitate experience sharing on contextual issues and approaches to scaleup DCAS in the region.

Partnerships

African organizations

Current

- African Agric Technology Foundation (AATF)
- Akademiya2063
- Indaba Agric & Policy Research Inst (IAPRI), Zambia
- Centre of Agric & Food Policy (CAFP), Zimbabwe
- Frontieri, Ethiopia
- AAAI
- WMI, University of Nairobi

Ongoing discussions

- IGAD Climate Prediction and App Centre (ICPAC)
- African Centre of Met Appl for Devpt (ACMAD)
- Nigerian Meteorological Agency (NIMET)
- Centre de Suivi Ecologique (CSE), Senegal
- Food Agric & Nat Res Pol Anal Network (FARNPAN)
- AGRHYMET/CILSS
- African Technology and Policy Studies (ATPS)

International/Non-African organizations

Current

- Alliance Bioversity-CIAT
- IWMI
- ILRI
- CIMMYT

Ongoing discussions

- Netherlands Space Office (NSO) / Geodata for Food and Water (G4AW)

GLOBAL
CENTER ON
ADAPTATION

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Olukemi Dolly Afun-Ogidan

AFRICAN DEVELOPMENT BANK GROUP

FEED AFRICA DIGITAL AGRICULTRE FLAGSHIP IN SOUTHERN AFRICA REGION

Sept. 2023

AFDB: Who we are and how we work

The AfDB is Africa's largest multilateral development finance institution, established to contribute to sustainable economic development, social progress, and reduce poverty in Regional Member Countries (RMCs).

AfDB:

- mobilizes and allocates resources, for investments in RMCs; and
- provides policy advice, and technical assistance to support development efforts.

African Development Bank (ADB)
Established in 1964
Non-concessional Financing Terms

ADB-Only & Graduating *Middle Income Countries (MICs) countries eligible to non-concessional financing only
Botswana, South Africa, Namibia, Swaziland

African Development Fund (ADF)
Established in 1972
Concessional Financing Terms

Low-Income Countries (LICs)

Nigeria Trust Fund (NTF)
Established in 1976 by Nigeria
Concessional and Non-Concessional Financing Terms

AfDB's Ten Year Strategy (TYS: 2023 – 2032) and High 5s

TYS goal is to facilitate rapid, inclusive, resilient and green growth in Africa.

Bank's portfolio is in-line with 5 operational priorities (High 5s) which reflect Africa's investment needs and Bank's comparative advantage as a development finance institution.

Ten Year Strategy
2023 - 2032

1. Power and Light Up Africa

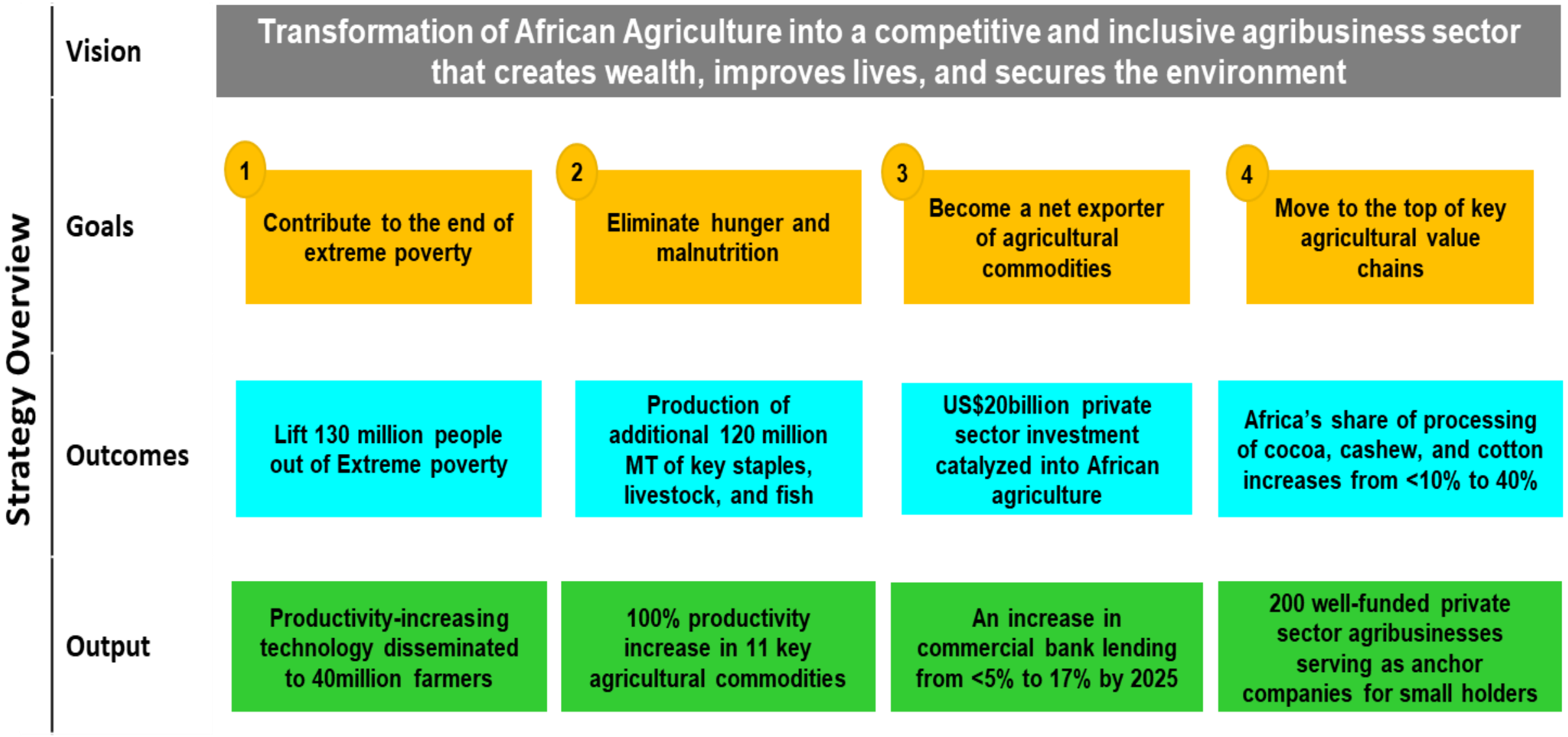
2. Feed Africa

3. Industrialize Africa

4. Integrate Africa

5. Improve Africans Quality of Life

Feed Africa Strategy



Feed Africa Flagships

Tech. for African Agriculture Transformation

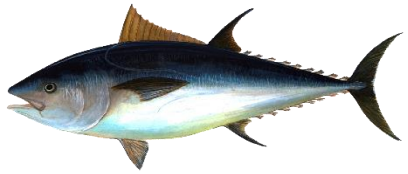
Africa Fertilizer Financing Mechanism

ENABLE Youth

Special Agro-Industrial Processing Zones

Climate Smart Agriculture

TAAT – Savannahs



Blue Economy

Livestock Flagship

Post Harvest

Digital Agriculture

African Leaders for Nutrition

Global Agriculture and Food Security Program

AFDB's Digital Agriculture Flagship

The Opportunity: for digital agriculture in Africa

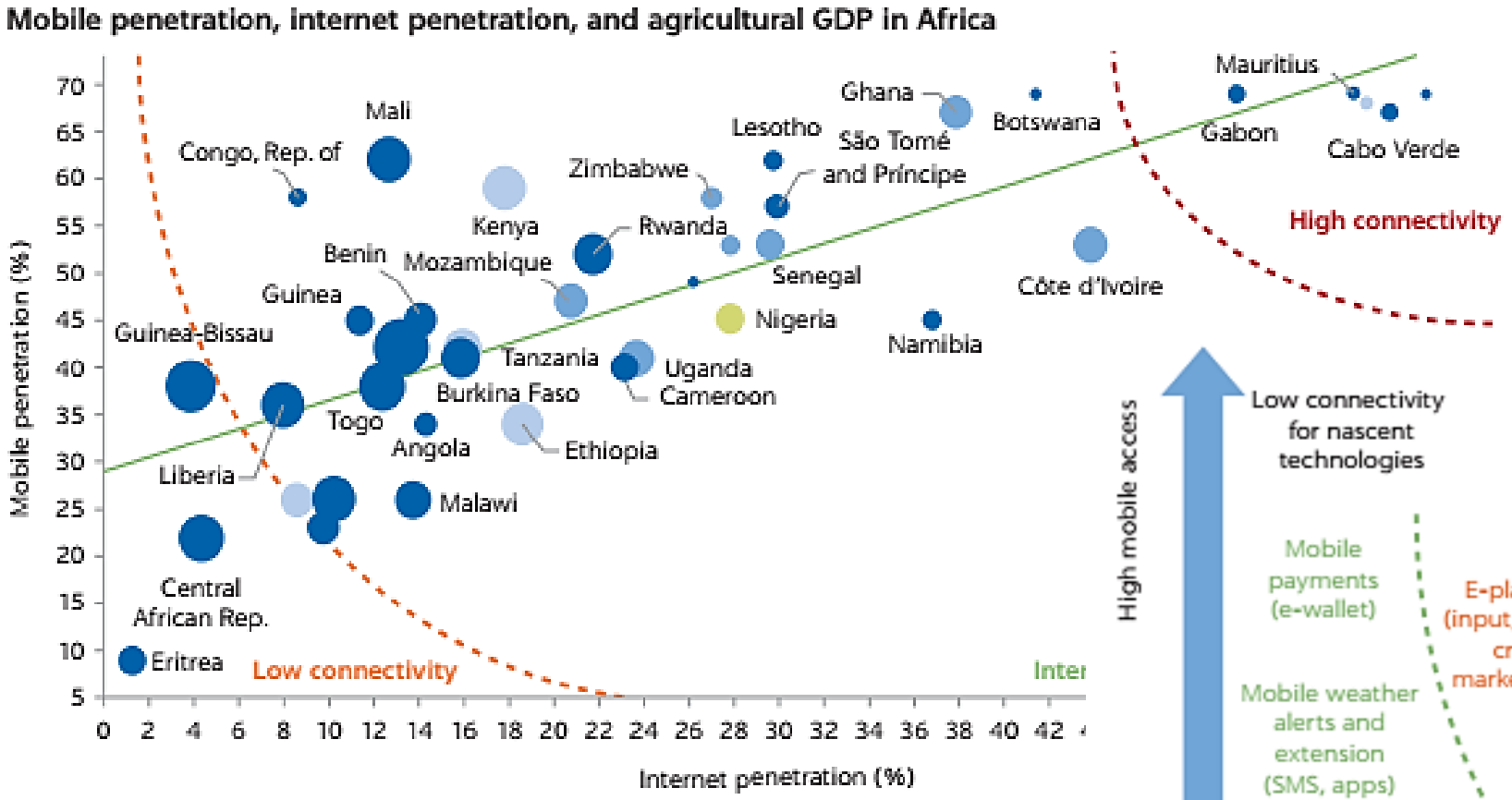
Digital Ag can be a game changer

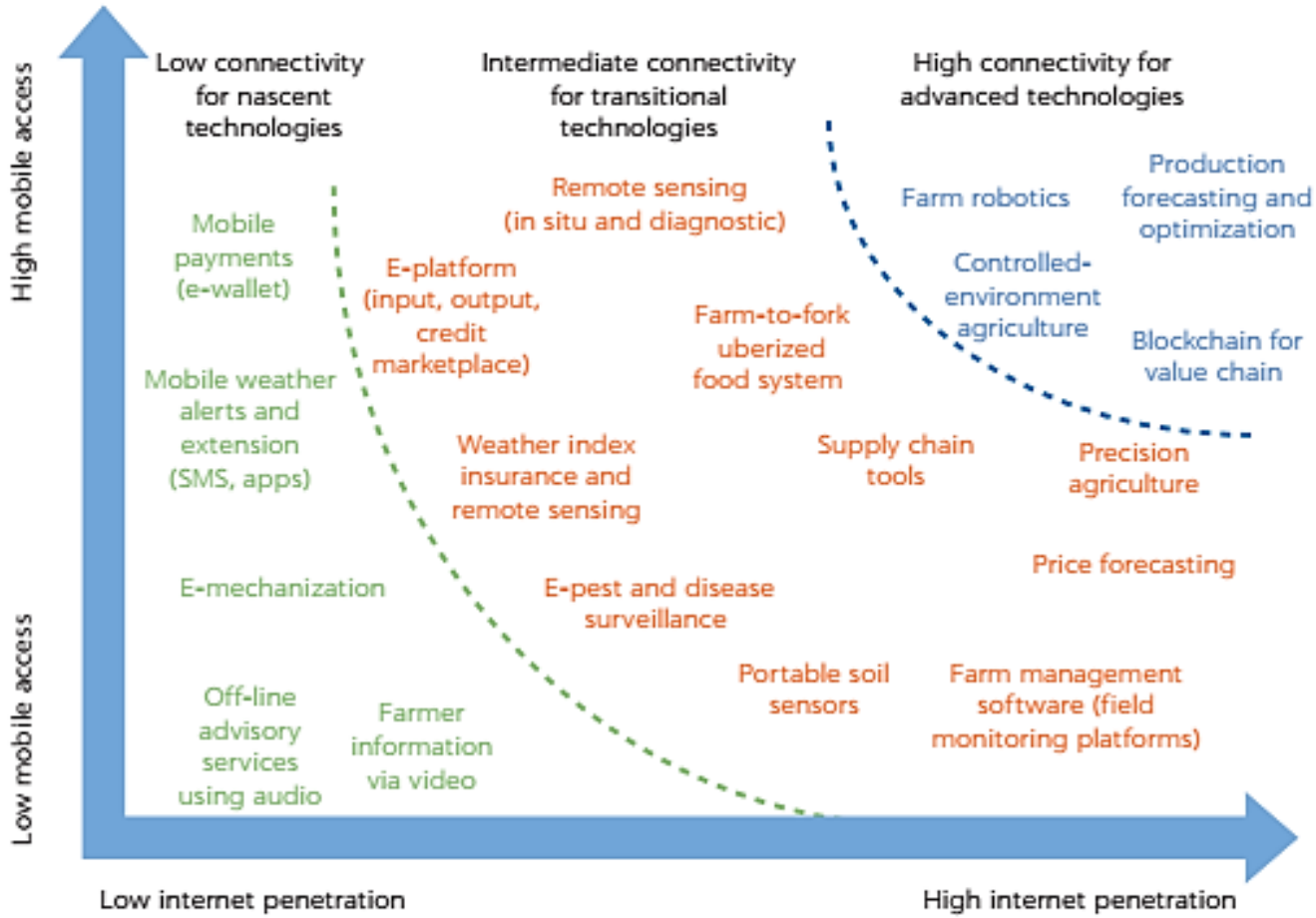
- Evidence points to **40 – 70% yield and income returns** when digital solutions are used.
- Digital agriculture can be a **net job creator, as 70% of users are youth**.
- 40–50% of smallholder farmers are **women but only 25% are registered users of digital Ag solutions**.

Rapid digitalization and business opportunities

- Mobile phone penetration and internet connectivity is as an entry point for digitalization in Africa. By 2025, half the continent - 634 million Africans will have mobile phones.
- Between 2017 & 2019, digital Ag solutions in Africa grew by 44% per annum, yet market penetration (i.e. no. of farmers reached) is only between 13 – 35%, an estimated 32 million African farmers.
- Potential for realizable revenue from digital Ag solutions is estimated at $2.5 – 5.5 billion.

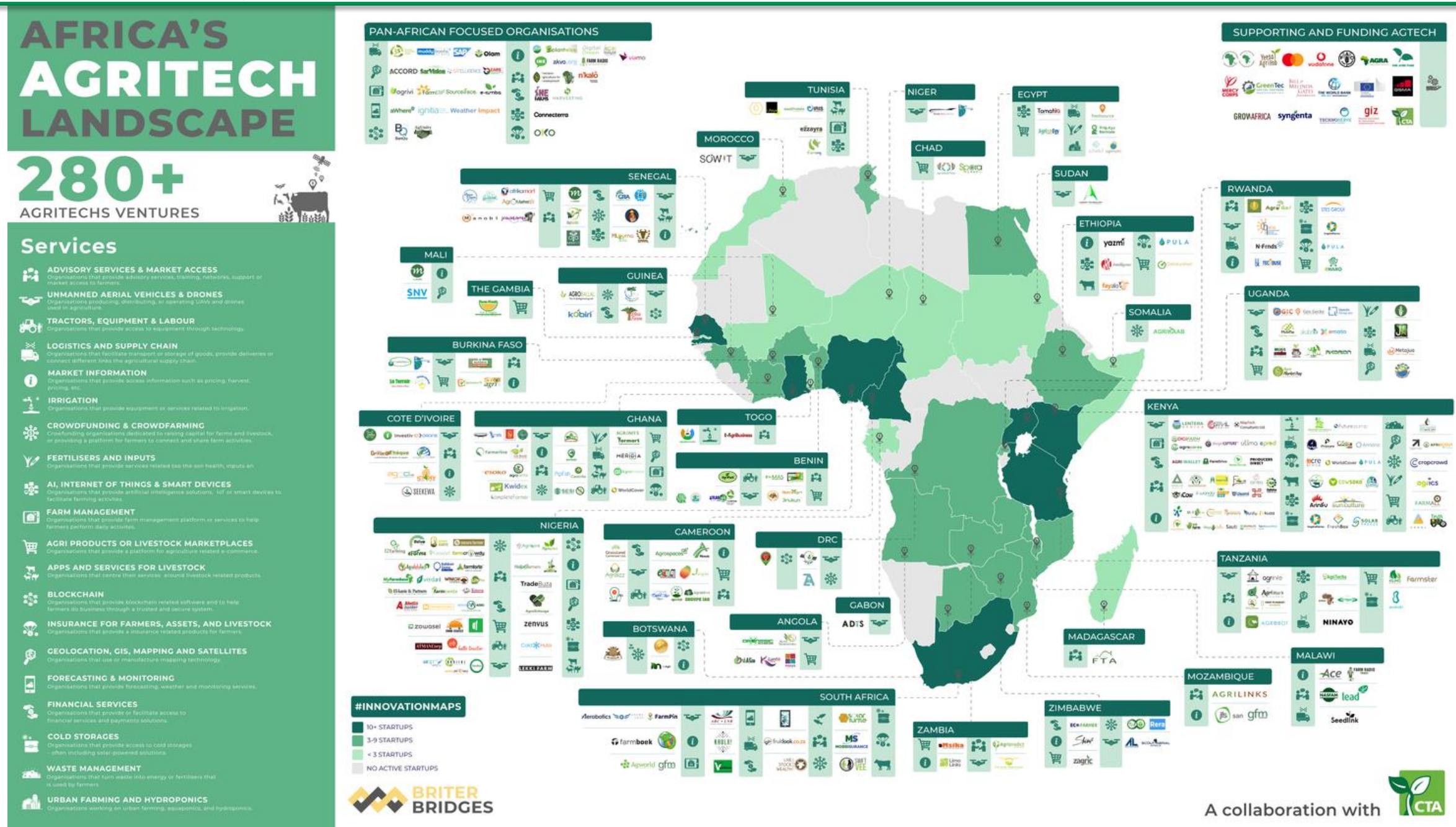
Scale of agricultural digitalization across Africa





Source: World Bank, 2021

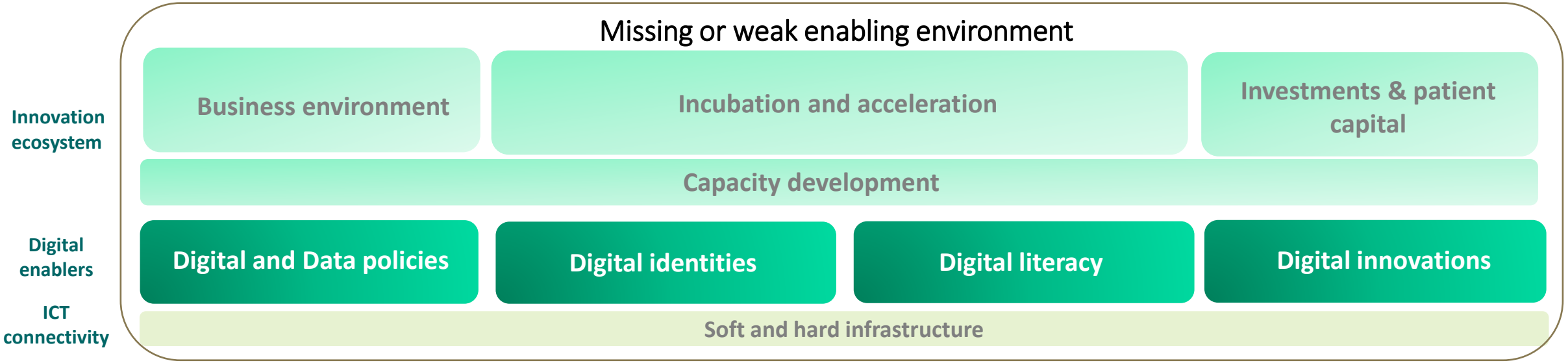
Growth of agritech solutions across Africa - 2019



Barriers to scale digital ag solutions in Africa

- Despite the 44% y-o-y growth of digital solutions in Africa, **African agriculture is yet to fully realize the benefits that digitalization can offer** for a number of reasons:

  - The **digital infrastructure, regulatory frameworks and data policies** needed to support innovators reach the last mile are insufficient or lacking in some cases.
  - **Digital literacy and human capacity** to develop, access and utilize digital Ag solutions is still nascent.
  - Many **Agtech companies are yet to find a commercially viable business model** to deliver digital solutions to smallholders and agri-SMEs.



Feed Africa Digital Agriculture Flagship

Public sector Entry Point

GOALS

- Informed and optimized decision-making processes for government and other actors in the agriculture ecosystem
- Enhanced yields and scale productivity
- Improved efficiency, resilience and inclusivity of production systems and farm management;
- Access to profitable markets; stronger cross-border trade, reduced import bill
- Financing for value chain actors
- Jobs for youth

Public good Interventions	Private sector collab./ Sandbox innovations

Enabling Environment for Digital Agriculture

- Digital agriculture strategies;
- Policies for data governance and stewardship;
- Digital innovation teams;
- Hard digital Ag infrastructure

Inclusive last mile connectors

- Farmer digital IDs for G2P, B2B and B2C payments
- E-registries as building blocks for advisory and planning
- Digital agronomy data surveillance/observatories and management systems

Digital Literacy and Human Capital for Digital Ag

- Smallholder farmer digital literacy programs
- Technology transfer
- Incubation and accelerator ecosystems
- Training programs to build local
- South-South technology transfer

Proof of Value Digital Ag Use Cases

- Integrated big data platforms for input-output advisory and marketplaces;
- Blockchain for traceability and supply chain efficiencies
- Automated systems for smart farm operations and precision agriculture
- Fintech for agriculture

Research and knowledge generation

Knowledge products, policy briefs, events, ect.

Africa Adaptation Accelerator Program (AAAP)

A joint program between the **African Development Bank** and the **Global Center on Adaptation.**

Through the AAAP, AfDB and GCA will leverage an additional $12.5 billion to accelerate climate change adaptation in Africa

The goal is for DCAS to serve as an **enabler to scale up**

the adoption of digital and data-driven technologies, by addressing core enabling environment bottlenecks, inclusivity, capacity development and de-risking impact-focused business models.

Targeted results

Contributed to food security
- Malnutrition ended for 10m people

Increased agriculture productivity
- 40% increase in yields

Increased incomes for farmers
- 40% increase in incomes

Increased access and utilization of bundled DCAS and DFS services for smallholders
- 30 million farmers adopting digital solutions

Increased digital literacy of agriculture sector actors
- 50% increase in digital literacy of agri-sector actors of which 80% are women and youth

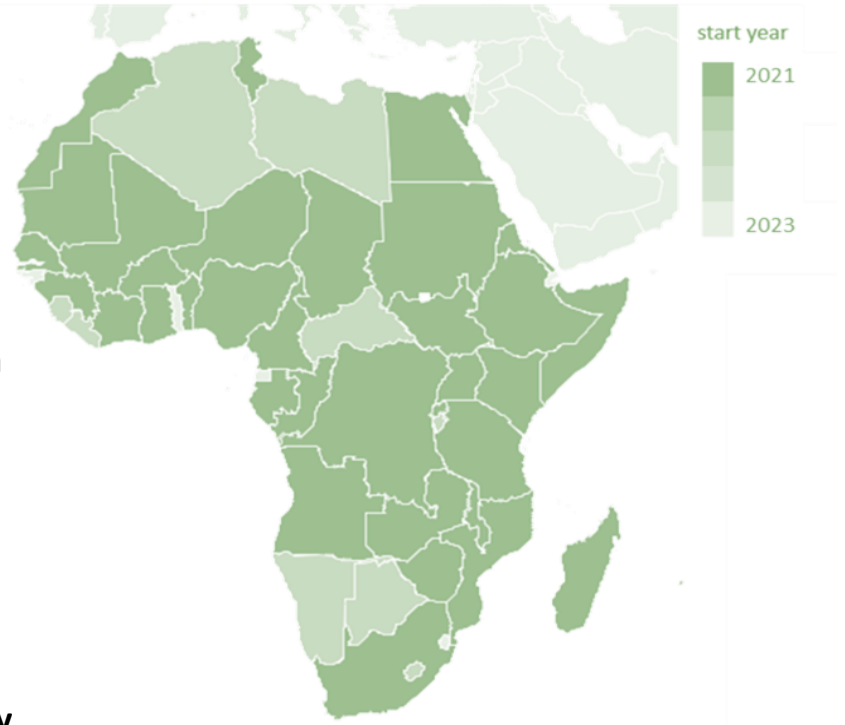
Increased access to finance for smallholder farmers
- 30% de-risked credit as a result of use of DCAS & DFS

Increased private investment in digital agriculture solutions
- 30% increase in private investment mobilized

Increased application of index insurance
- 30% increase in adoption of index insurance

Enhanced resilience and response to climate shocks in RMCs by improving the management of climate disaster risks
- 40% improvement in resilience

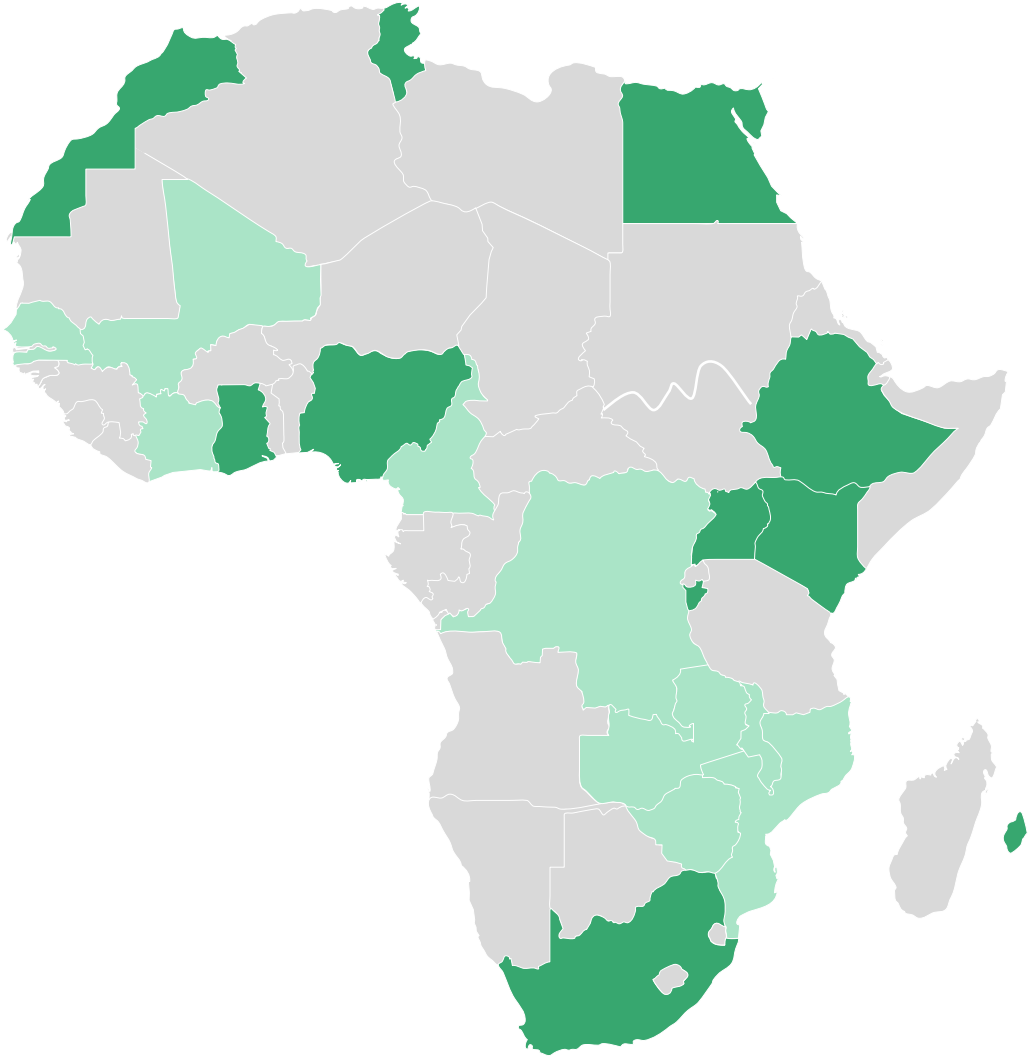
Start year of AAAP per country



Implementing the Digital Agriculture Flagship

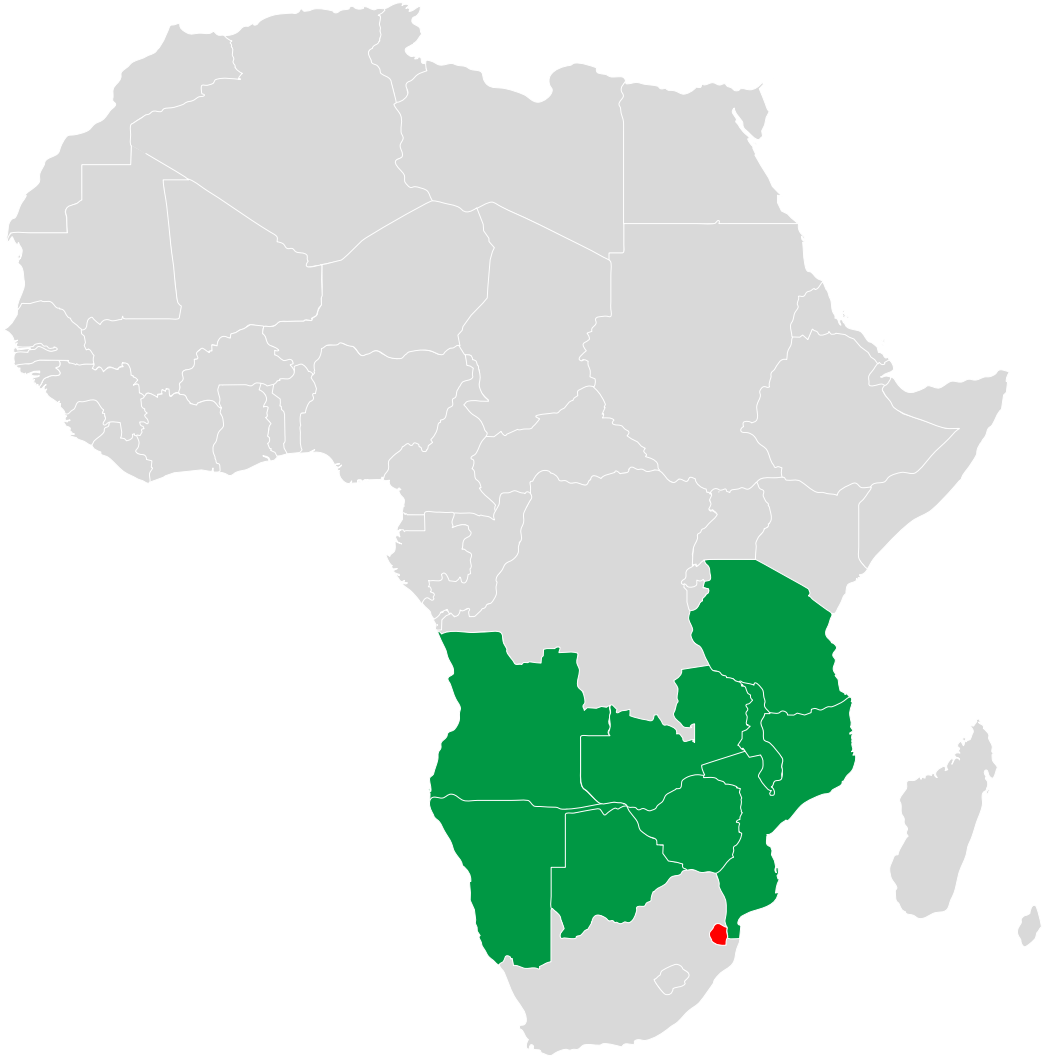
AFDB Digital Agriculture Investment Roadmap

Simultaneously targeting countries with the most digital innovation traction to support Government's investment in the enabling policy environment, middleware infrastructure, human capital and financing frameworks for the scaling of data-driven and digital technologies in the agriculture sector



Champion Countries	Mid-Track Countries	Early Starter Countries
Countries leading Africa's digital agenda	Countries with growing tech services	Countries at the nascent stage of digital development
Kenya, Nigeria, Ghana, South Africa, Tunisia, Morocco, Ethiopia, Egypt, Rwanda, Uganda, Mauritius	Cote d'Ivoire, Cameroon, DRC, Mozambique, Senegal, Mali, Malawi, Zambia, Zimbabwe	Other countries where there is opportunistic demand

AFDB-GCA DCAS Mainstreaming in Southern Africa



	PIDACC- Zambezi, covering 8 countries
	eSwatini MNWAP

	FUTURE DCAS INVESTMENT OPPORTUNITIES
Angola	AGRICULTURE VALUE CHAIN PROJECT
Sao Tome	CO-MANAGEMENT OF CLIMATE EXTREMES FOR AGRICULTURE AND FISHERIES RESILIENCE
Malawi	SHIRE VALLEY TRANSFORMATION PROJECT - PHASE 2 (SVTP-2)
Mozambique	THE INCLUSIVE AGRI-FOOD VALUE CHAIN DEVELOPMENT AND RESILIENCE PROGRAMME (PROCAVA)
Madagascar	PROJET DE PRÉSERVATION DE LA BIODIVERSITÉ DE MADAGASCAR.
Zimbabwe	SUPPORT TO THE BEEF AND LEATHER VALUE CHAIN PROJECT PHASE II
Zambia	FARM BLOCK TRANSFORMATION PROGRAM (FBTP) PHASE 1
Botswana, South Africa, Mauritius	SPECIAL AGRO-PROCESSING ZONES

AFDB-GCA DCAS Mainstreaming in Southern Africa

Research and Knowledge Generation

DCAS knowledge

- Digital Agriculture Profiles (DAPs) & Digital Agriculture Adaptation Profiles (DAAPs)
- Documenting impacts, Sharing best practices & Lessons learned

DCAS Enabling policies

- Case studies on low-cost low-tech solutions for DCAS
- Affordable access, Data 4Ag policies, D4Ag strategies

Investments

DCAS e-services

- Advisory services, market linkages, macro-intelligence services, data analytics
- Financial services, supply chain management, climate smart solutions

DCAS business models

- Promote viable Proof of Value business models
- Finance entrepreneurship

Digital Upskilling

DCAS Capacity building

- Digital literacy, Skills
- for extension officers, policy makers, etc.
- D4Ag in Incubators/Accelerators

PARTNERS

CIAT International Center for Tropical Agriculture Since 1967 Science to cultivate change

CGIAR Platform for Big Data in Agriculture

Food and Agriculture Organization of the United Nations

GLOBAL CENTER ON ADAPTATION

Microsoft

aws PUBLIC SECTOR

vodacom

LIQUID TELECOM

Standard Bank

GLOBAL CENTER ON ADAPTATION

Contact our flagship leader:

Kemi Afun-Ogidan
O.AFUN-OGIDAN@AFDB.ORG

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Dr. Durton Nanja

Engagement of smallholder farmers in the evaluation and co-development of DCAS

Dr Durton H. Nanja

Principal Consultant

Climate Field Services Limited

A38, Natwange Street, Livingstone Airport,

Livingstone Zambia

Email: dnanja@yahoo.com, +260 977 499 502

Content

i. How is agrometeorological and climatological information perceived?

ii. How does this depend on the way the message is presented?

iii. How can DCAS be improved by evaluating their design with farmers?

iv. How to build legitimacy and trust with farmers?

(i) How is agrometeorological and climatological information perceived?

Zambia Met. Dept. generates Information

Sends to:

- General public
- Local Radio & TV stations
- Lead farmers & extension staff

Digital methods used:

- SMS & What's Apps using **ZMD Platform "Weather and Stakeholders"** to registered people on list and Emails
- Live TV & Radio presentation
- Broadcast "News items"
- Discussion topics with invited experts
  - Giving implications for farmers
  - Advisories on what to do
- Emails & SMS
  - Share with farmers via sms
    - Hold face to face meetings

- Value of NMS info –
  - Enhance smallholder farmers' resilience to climate change
- Why are smallholder farmers so vulnerable to climate change amidst all agrometeorological and climatological information?
- Compare value farmers put on Indigenous Knowledge (IK) with NMS forecasts

What info do farmers need for agriculture decision making? Zambian example

- **First**
  - Financial Resources
  - Seed & fertilizer
  - Inputs bought in October
- **Secondly**
  - Seasonal forecast obtained from TV & Radio & extension & NGOs
  - Released about September every year
  - Chose which cultivar according to seed supplier & Season forecast

Farmers' Perception of Agrometeorology and Climatological information is dependent on

- Whether they have been taught about it or not.
- Length of their experience using weather info.
- Indigenous Knowledge (IK) has been used more by the older generation so they believe in it more than Agrometeorology and Climatological information *(P.L. Mafongoya and O.C. Ajay, 2017)*[1]
- Exposure to DCAS information may improve their views.
- Younger generation – more exposure to scientific forecasts and use mobile phones – so are more receptive audience.
- Good opportunity for using digital methods to reach younger farmers in rural areas.

1) Book: Indigenous Knowledge Systems and Climate Change Management in Africa – CTA Wageningen, The Netherlands, 316pp Contributing author CHAPTER 14 - Indigenous knowledge in weather and seasonal rainfall prediction in Zambia D.H. Nanja

(ii) How does this depend on the way the message is presented?

(ii) How does this depend on the way the message is presented?

a. TV
   - Wide coverage
   - BUT it is too broad & too little detail
   - Not all small holders have TV

b. Radio
   - In local language easily understood
   - Discussions on implications of forecast
   - Local listeners
   - More airtime available

c. SMS & What's App
   - Targeted audience
   - Users – language; Zambian Met. Department does 9 languages according to region
   - Can refer to it & forward to others
   - Large % community can receive as have own phones

(iii) How can DCAS be improved by evaluating their design & delivery with farmers?

(iii) How can DCAS be improved by evaluating their design & delivery with farmers?

- Smallholder farmers should be engaged in evaluating message production & delivery system.
- Improved time of message delivery – Peak listening times better (Early Night & Weekends) than Day times.
- Use of role-plays to get message across helps to connect to farmers lifestyle – via radio & TV
- Use of Radio listening clubs
- Use maps or symbols or pictures
- Capacity building in testing application of information

(iv) How to build legitimacy and trust with farmers?

Farmers participation - from production to dissemination to promote acceptability of message

(a) In presentation of forecast

- Discussion of forecast
- Sharing previous experience of using forecast &
- In analyzing implication of forecast **on radio & TV**

Mosley participating in radio programme design and recording on 8/12/2007

Building legitimacy and trust with farmers Continued

- (b) Phone-in programmes on radio
- (c) Radio listening clubs

Malomo radio listening club at Mosley's home on 17/01/2008

Consensus integrated, interpreted and distributed forecast

Use of Radio listening clubs

- Integrated forecast (IK + Modern forecast) using radio listening structures.
  - IK communicated to NGOs to NMS before production of modern forecast for integration and sent back using same digital SMS or Email structure.
- Disseminated & interpreted using smallholder preferred DCAS modes (Radio, SMS, TV & Radio &TV role plays)
- Feedback provision using radio listening club structures

Malomo community, Monze

Conclusions

- Agrometeorology and Climatological information has less credibility with older generation who believe more in IK than with the young generation.
- Use of info depends on way message is communicated – better to use farmers accessible and preferred modes – radio SMS etc.
- Improve DCAS by engaging farmers in evaluating message production (Integrated forecast) & using preferred DCAS delivery system at appropriate times to reach more farmers and supporting testing application of information.
- Farmers participation in production through to dissemination of information to farmers will promote legitimacy and trust of Agrometeorology and Climatological information with farmers.

Thank you

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Four Examples of operational DCAS

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Yannick Chokola

Digital Climate Advisory Services

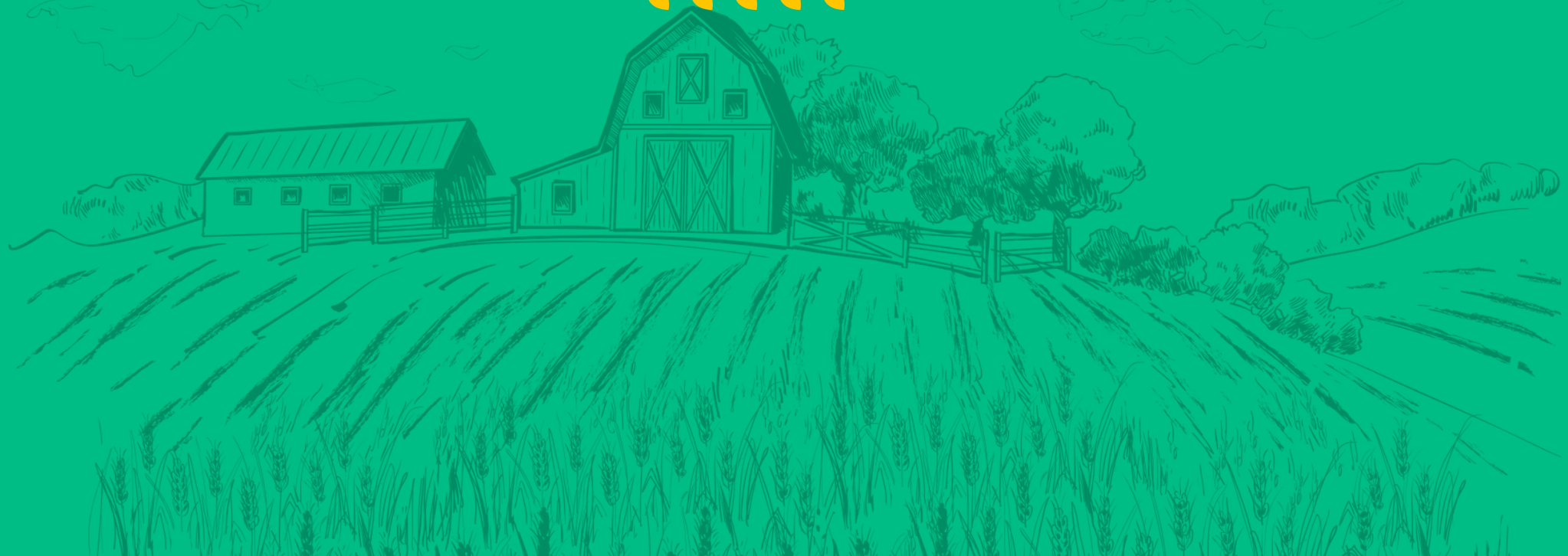
Agricoach case

By YANNICK CHOKOLA

AgriCoach

AUXFIN

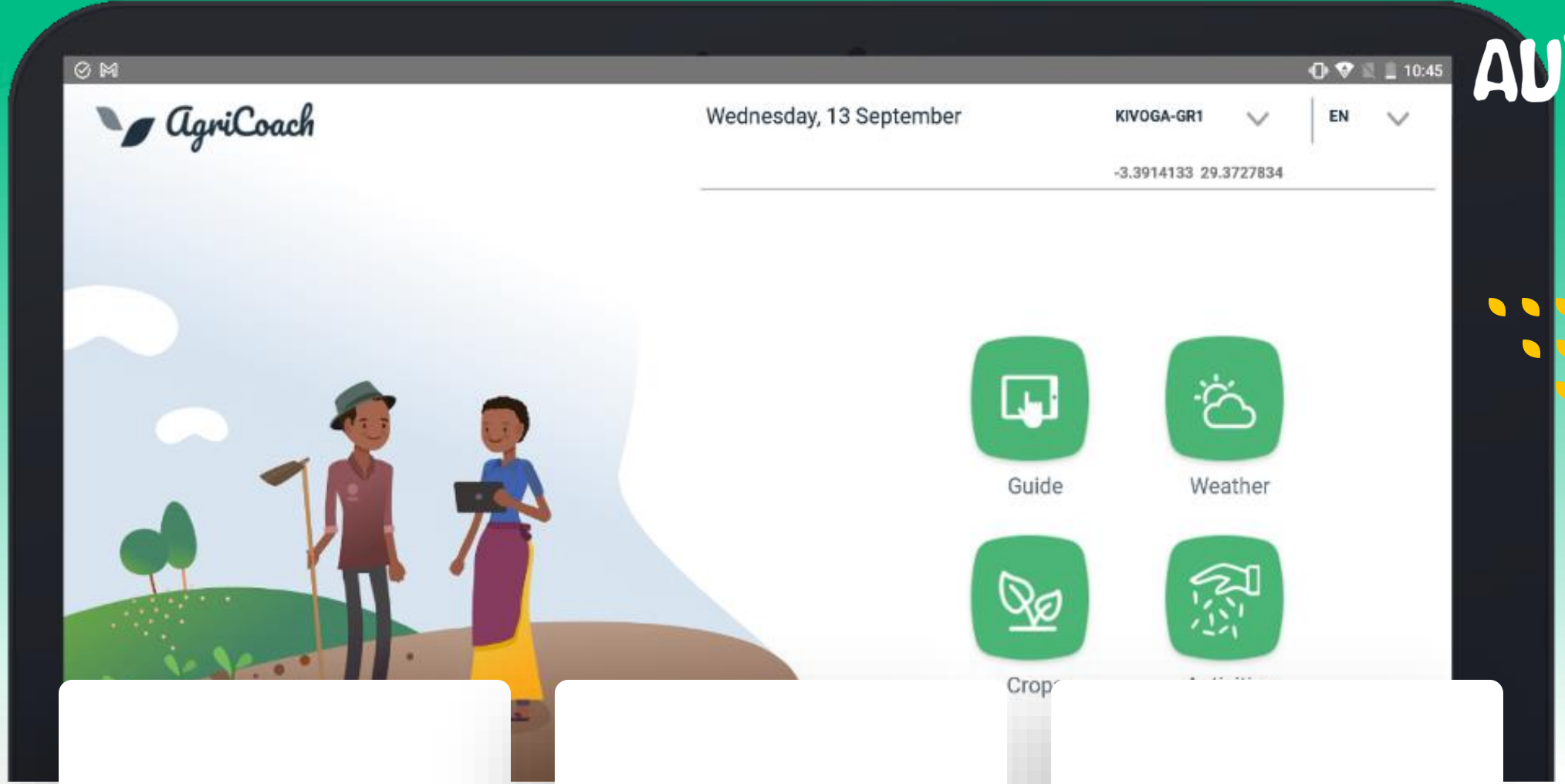
" Connect the Unconnected,
bank the unbanked And
Serve the underserved"
LEAVE NO ONE BEHIND



AUXFIN

Mission of Agricoach

to support farmer with timely and relevant agricultural information to solve 3 basic decisions



The CropSelector

What to grow?

The Activity Timer

When to grow?

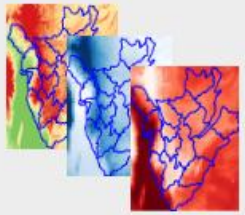
Best Practices

How to grow?

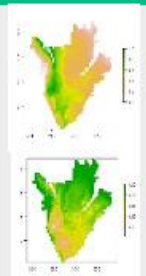
- Supported by The WeatherCenter and The AgriKnowledgeCenter

AgriCoach: digital assistance to farmers

What to grow?



Remote sensing:
- Soil
- Topography
- Climate
- Climate change



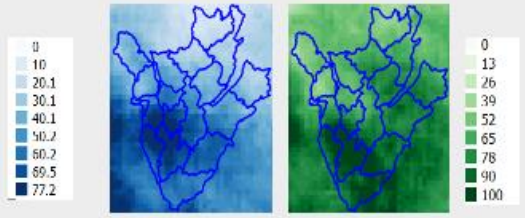
Agronomical model based on 2010-2017 data

Advice to farmer

Recommended crop for a field
taking into account farmer's priorities

When to grow?

(Rainfall mm) (Vegetation index)



Historic weather combined local weather forecast and rain observation

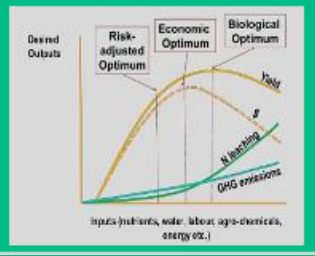
Advice to farmer

When to plant, when to harvest

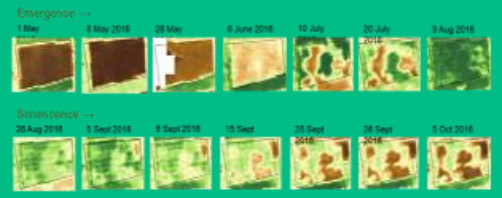
How to grow?

Crop Disease Management

Fertilizer / pesticide advice



Crop Monitoring / Yield prediction

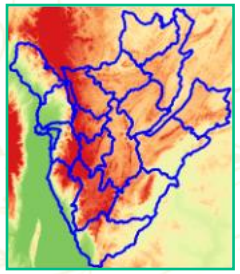


Advice to farmer

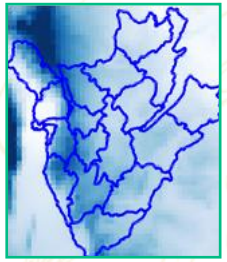
How to optimize yield (and income)

AgriCoach: Crop selector and Crop details

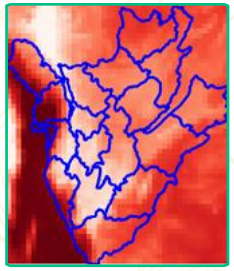
Climate



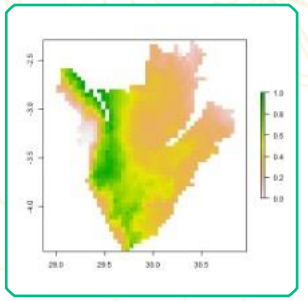
Topography



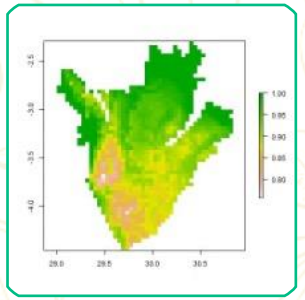
Soil



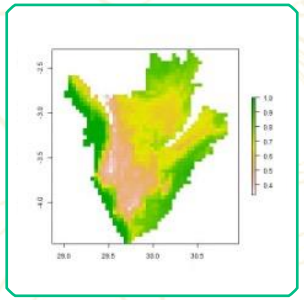
Models and local knowledge



Coffee



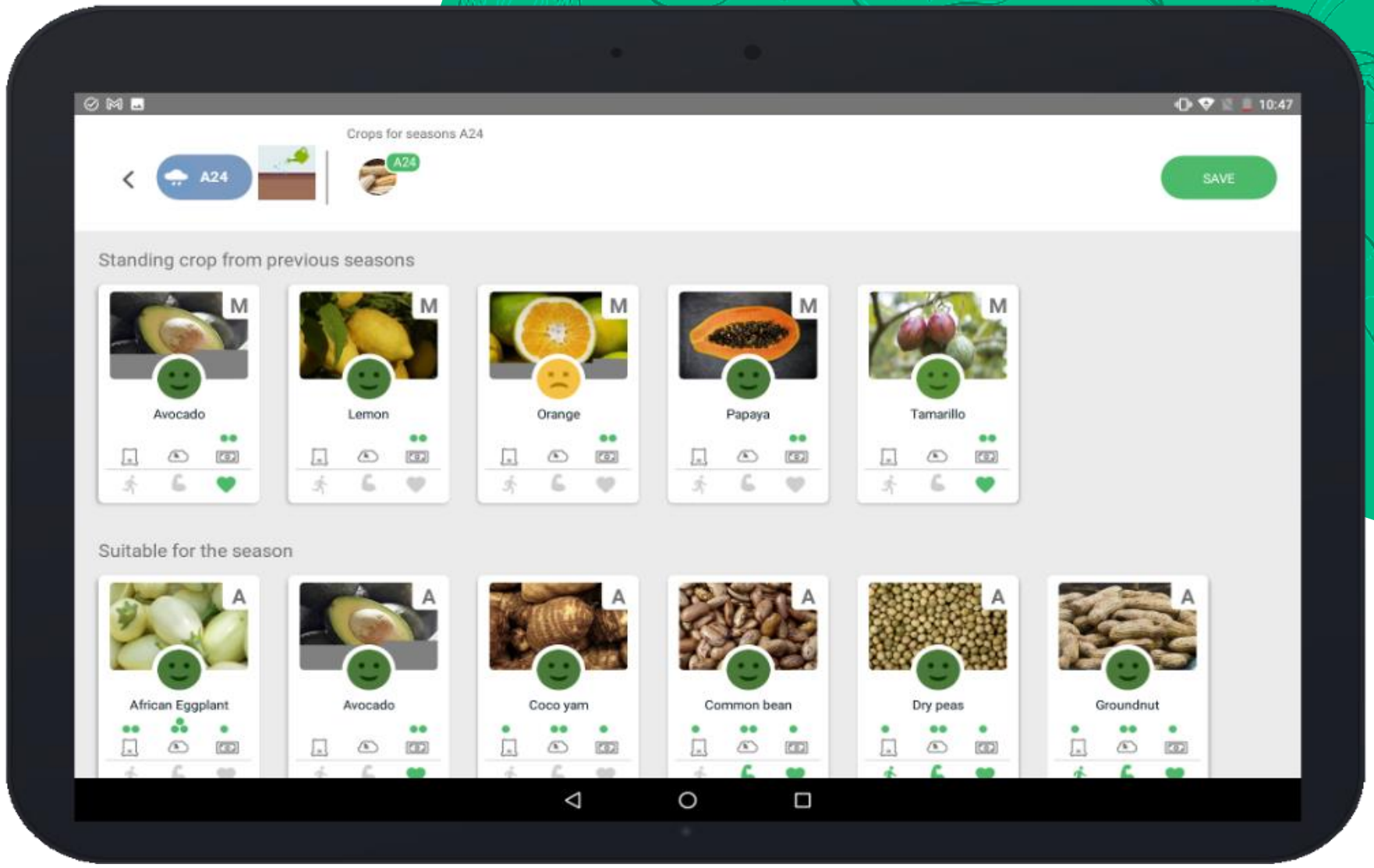
Potato



Sorghum

AgriCoach

AUXFIN

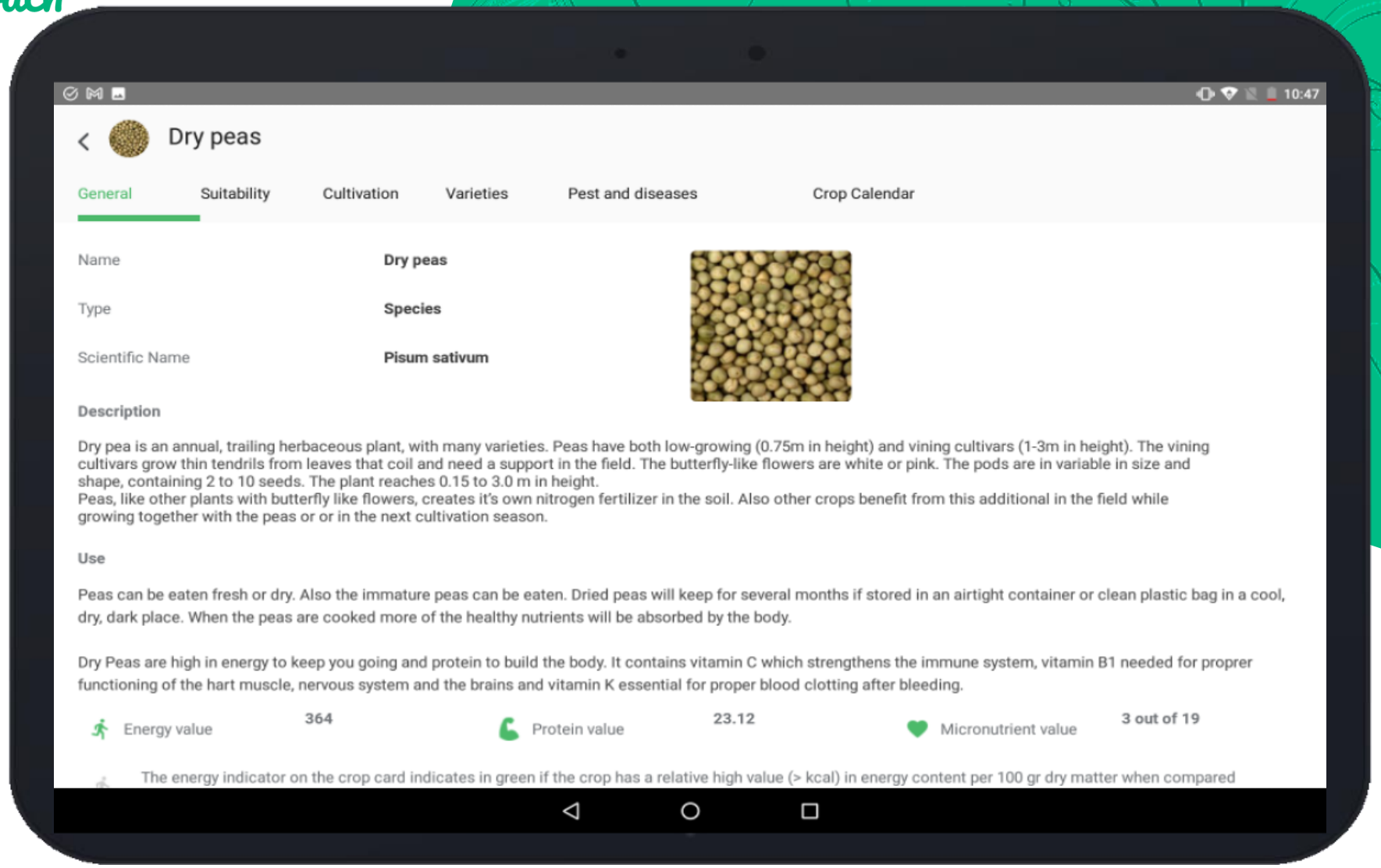


Agricoach : What crops to grow?

Crop selector

AgriCoach

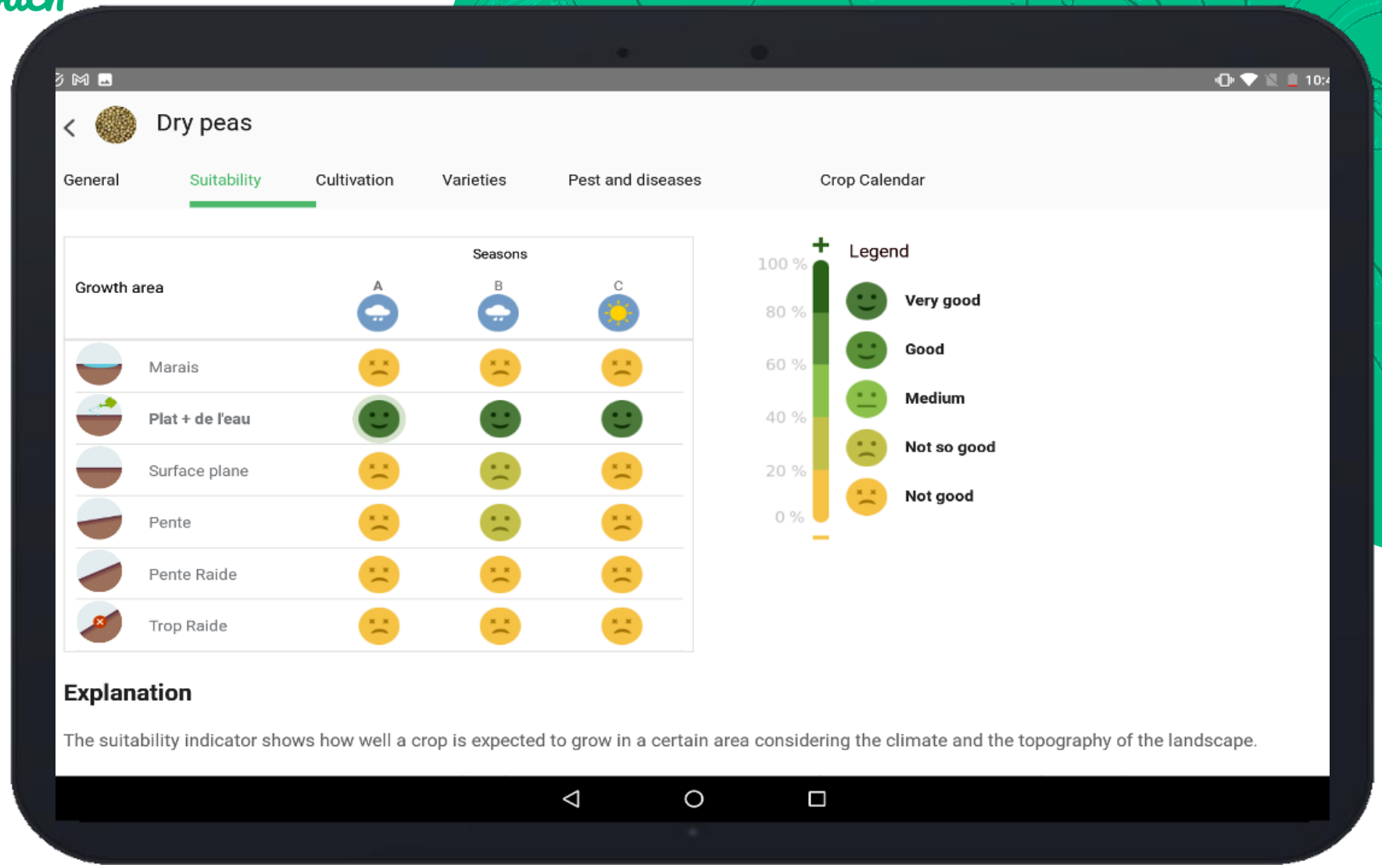
AUXFIN



Agricoach : What to grow?
Crop selector

AgriCoach

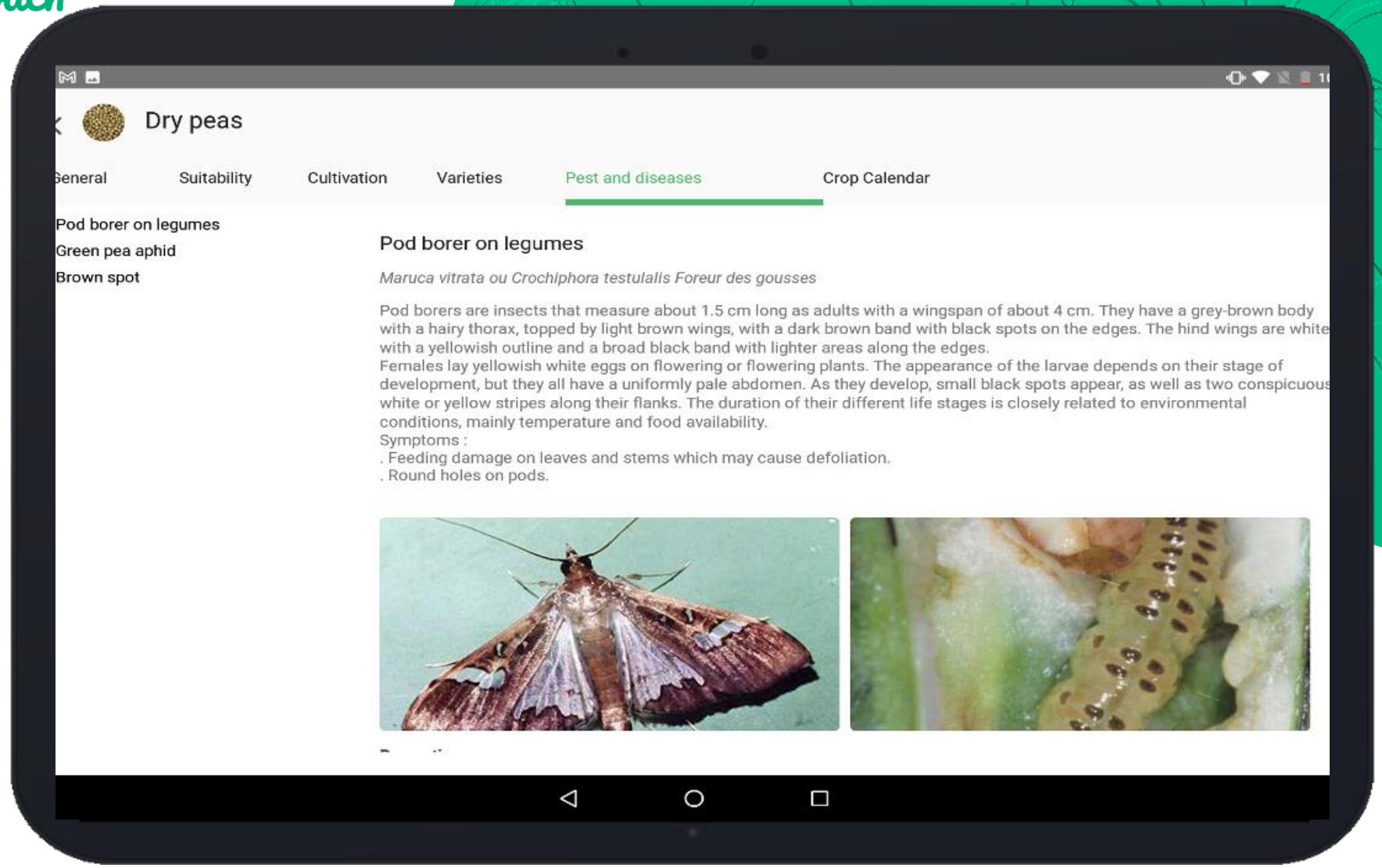
AUXFIN



Agricoach : What to grow?
Crop selector

AgriCoach

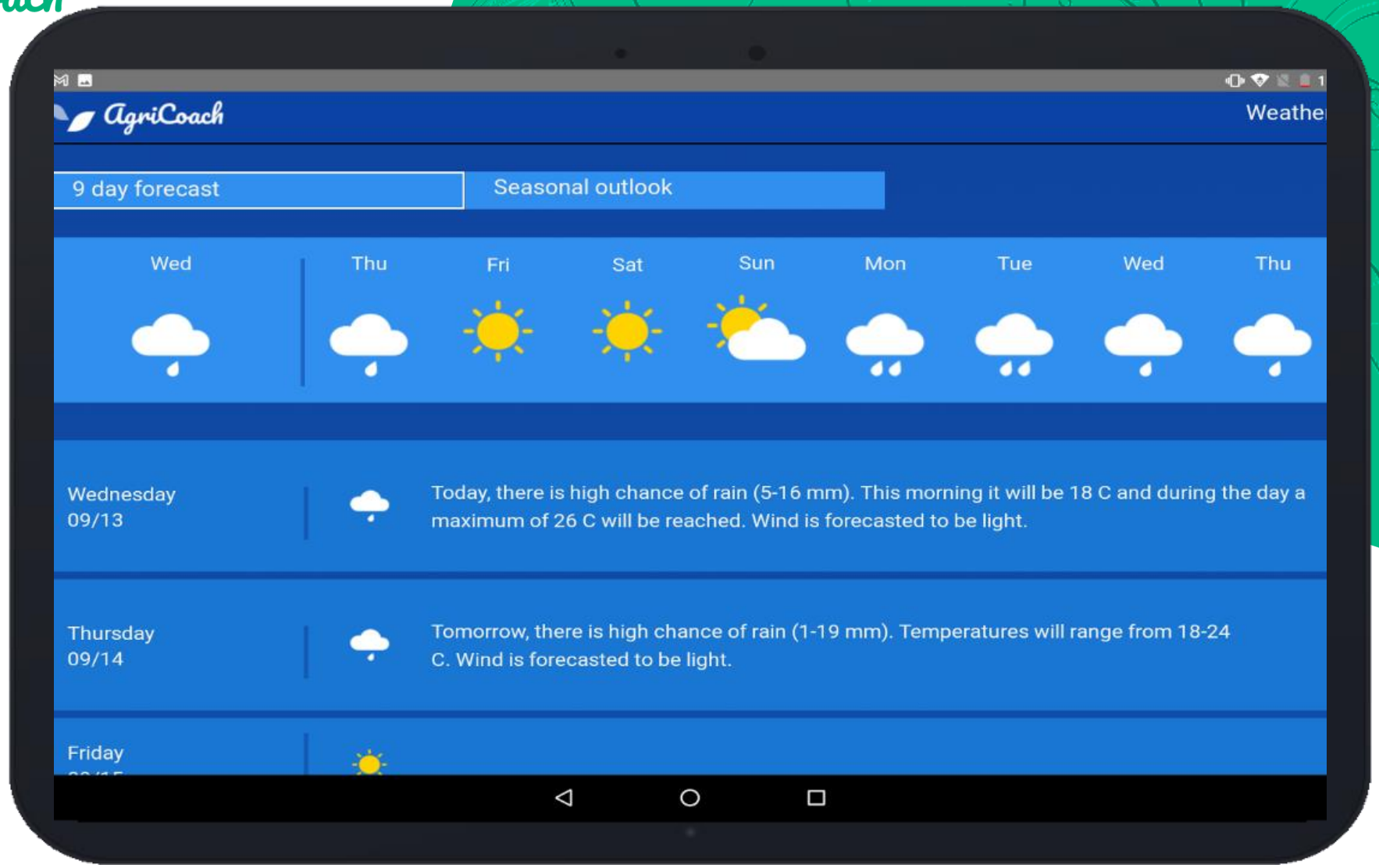
AUXFIN



Agricoach : What to grow?
Crop selector

AgriCoach

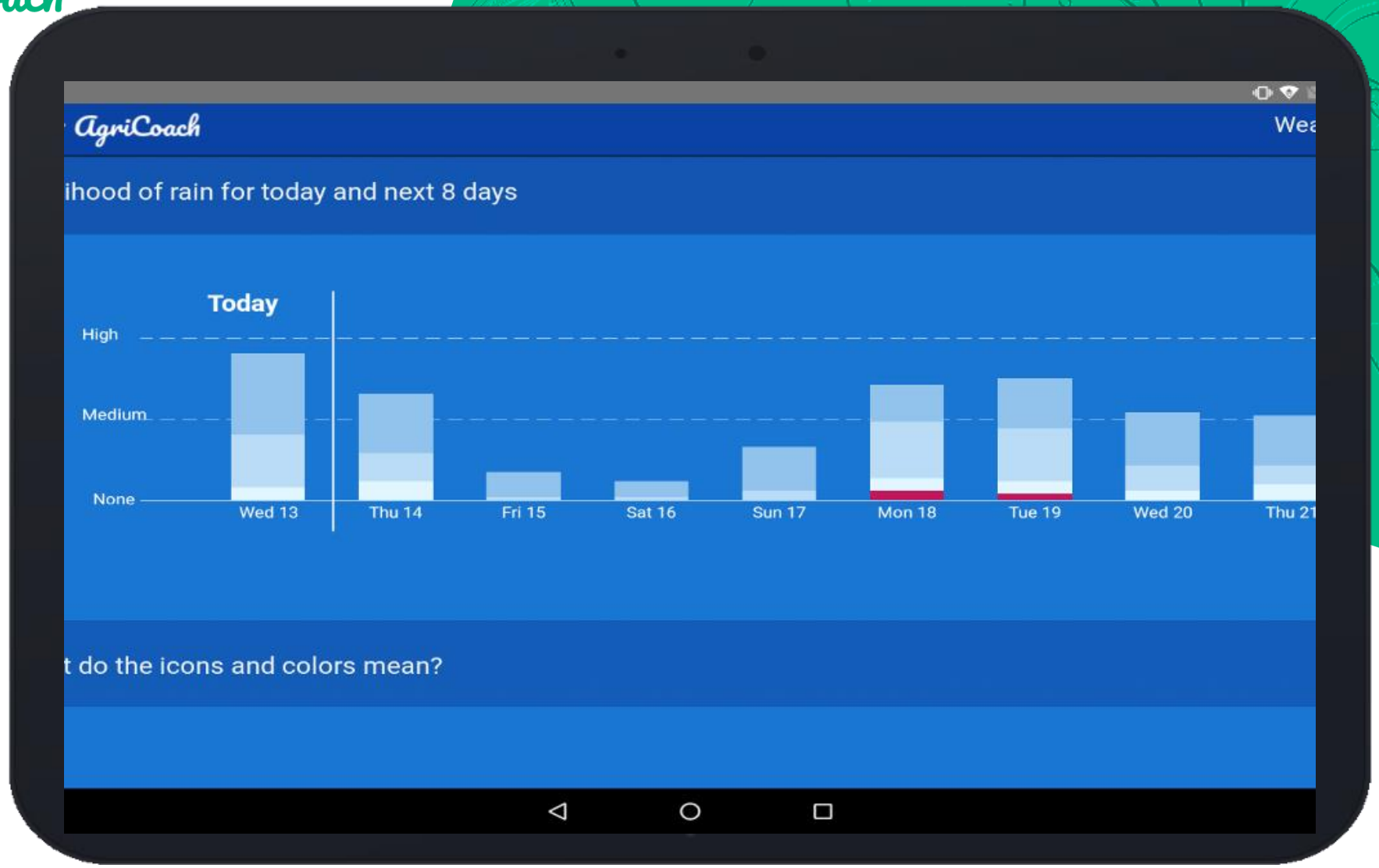
AUXFIN



Agricoach : 9 days weather forecast module

AgriCoach

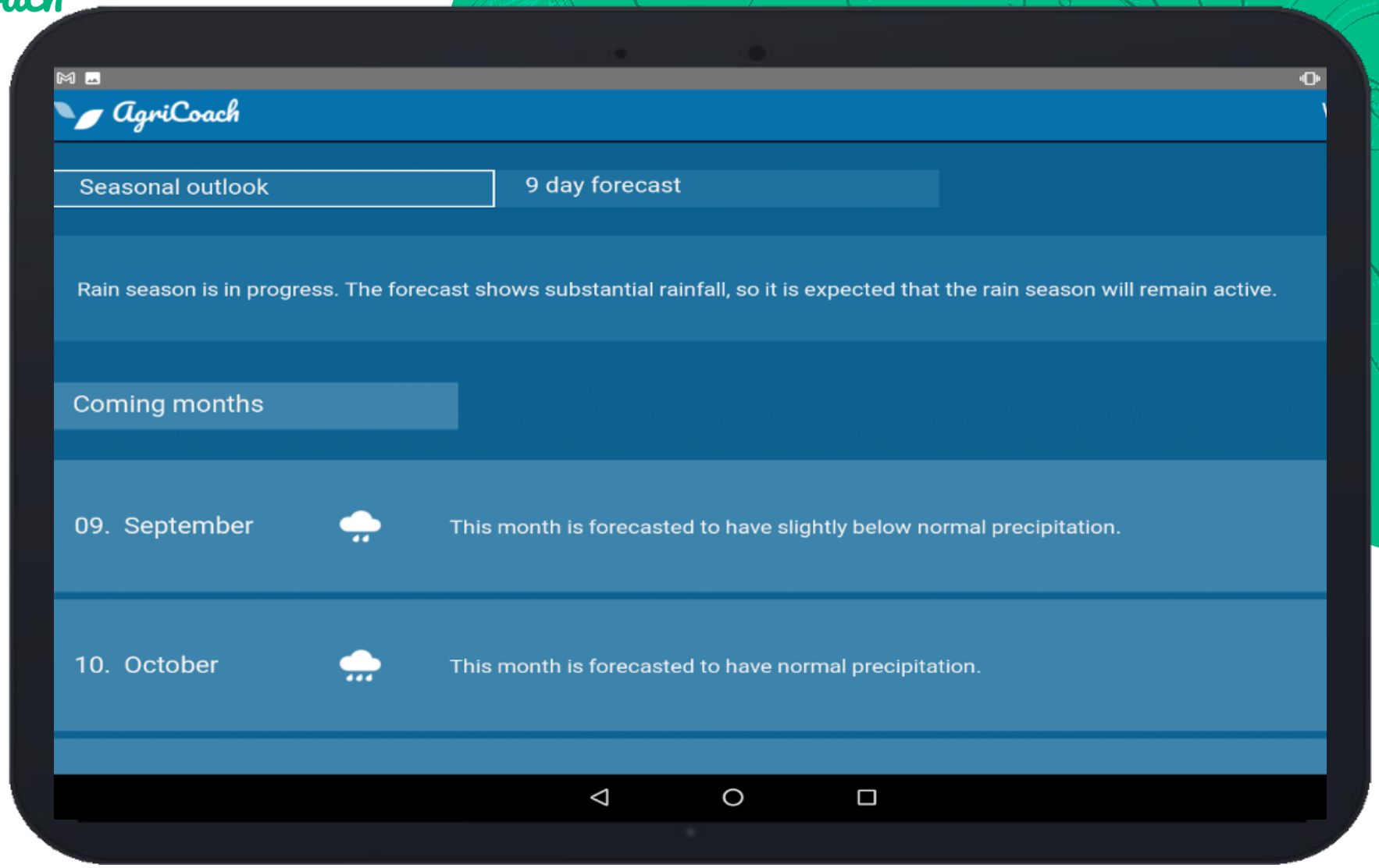
AUXFIN



Agricoach : 9 days weather forecast module

AgriCoach

AUXFIN

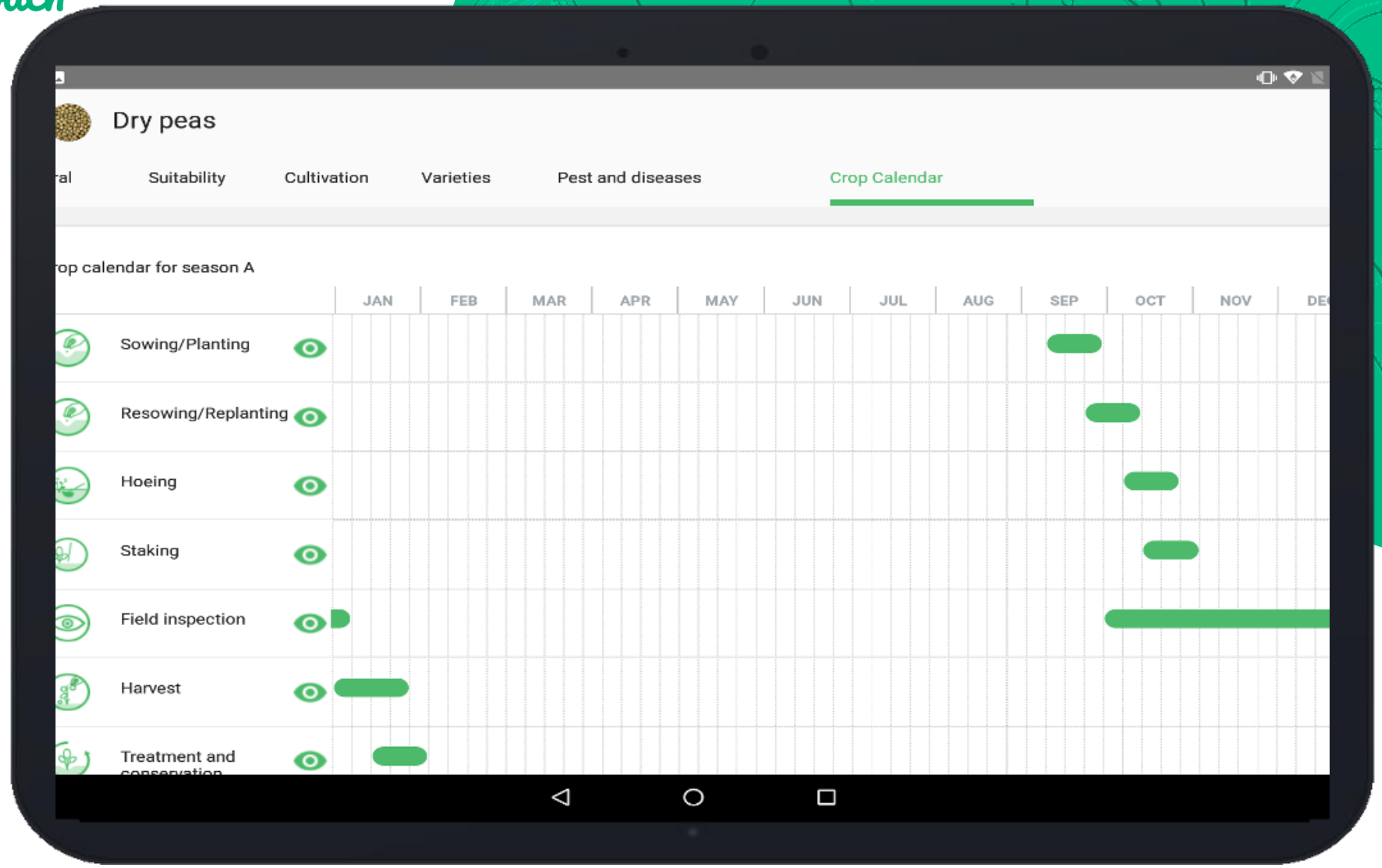


Agricoach : When to grow?

Seasonal outlook

AgriCoach

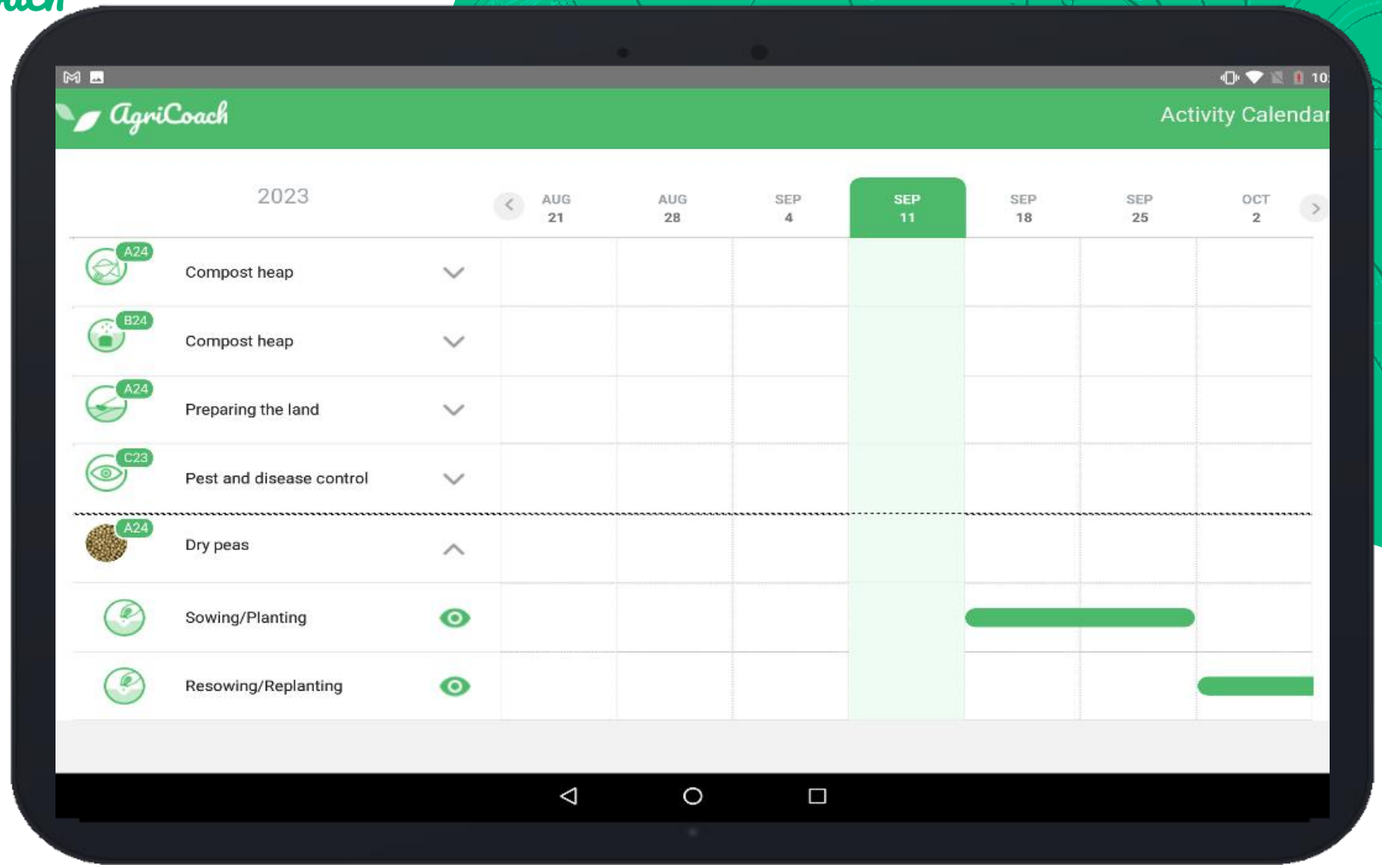
AUXFIN



Agricoach : When to grow?
Crop Calendar

AgriCoach

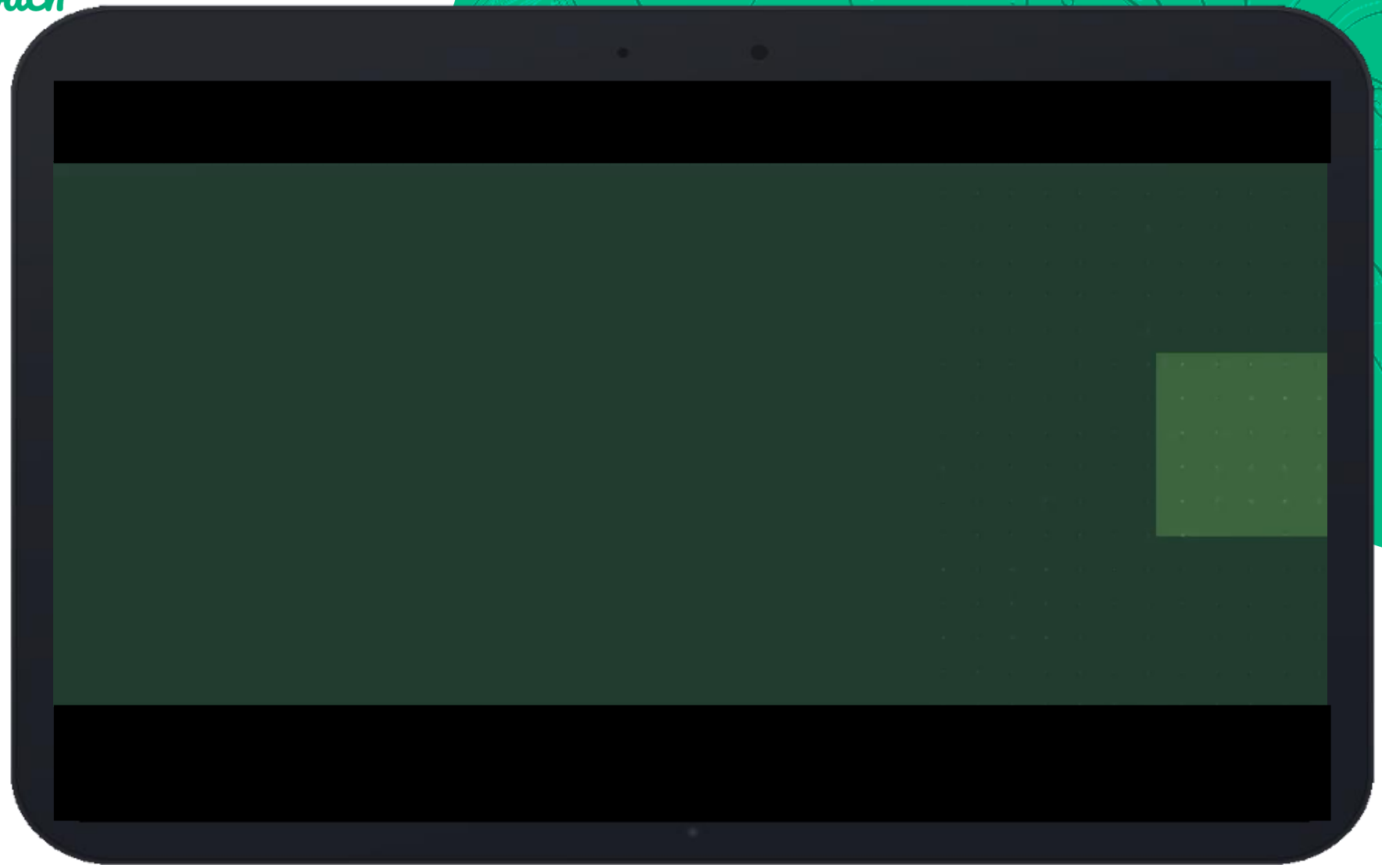
AUXFIN



Agricoach : When to grow?
Activity Timer

AgriCoach

AUXFIN



Agricoach : Best Agricultural Practices Movies

AgriCoach

- 94% of farmers rate the AgriCoach as very good (9.3 out of 10)
- AgriCoach is appreciated by both trained and untrained farmers

Lessons learnt for use of digital tools

Respond to farmer needs & adopt to local conditions

- ✓ Local language + videos
- ✓ Applications design: easy User Centered Design gender inclusive
- ✓ Illiteracy and digital illiteracy: G50 group helping each other
- ✓ Offline apps & Solar bank

Scaling results :
Points of attention

- Internet connection is weak in certain regions - work offline
- Support of local administration can take time
- Management of groups need digital solutions to keep overview
- Large number of staff need training and communication
- Number of tablets to be managed & updated
- Can take time for farmers to understand advantages

Digital Solution

Offline

Farmer Feedback

- Weather helps with field activities as planting, hiring labour
- Videos are highly appreciated: see, discuss, repeat
- Important that the tablet and Coach stay close to them
- Common to test first small piece of land or demo plot
- Farmers from outside the group come for the information
- Yield significant increased after following good practices

Challenges use of digital tools

1. Organisation to reach the rural population
2. Support and guidance is needed for field staff

Thanks for your attention.

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Prof. Dr. Muthoni Masinde

Information Technology & Indigenous Knowledge with Intelligence

MUTHONI MASINDE

Indigenous Knowledge (IK)

- Indigenous knowledge (IK) / local knowledge or traditional knowledge/ folk knowledge, is accumulation of knowledge passing from generation to generation and guides communities in almost every aspect of their interactions with their environment (Mafongoya, 2017)
- Since time immemorial, IK have been at the heart of the coping mechanisms employed by Africans to adapt to climatic variabilities.
- Solutions for combating climate-related problems must incorporate some implicit elements of the status quo, cultural transfers, and mutual learning.

The role of IK in creating climate forecasts that matter for Africa's small-scale farmers

Examples of IK from Mbeere People, in Kenya

	January - February	Long Rains (*mbura ya nthoroko*)	Dry Season (June to September)		Short Rains (mbura ya mwere)
			Cold Part (*mbevo*)	Hot and Dry (*Thano*)	
Seasons' Onset, intensity and duration	• This period forms the transition from OND and MAM rain seasons. In a normal season, the OND rains end in the second week of December and the MAM starts in the second week of March;	• Starts by second week of March and ends in the first or second week of June • Late onset and/or early cessation is sign of a bad season • Crops requiring more moisture are planted	• Extremely cold and foggy (nundu) • Starts from the second week of June and Ends in the last week of July or first week of August	• Starting from the last week of July or first week of August to the second week of October	• Early on-set (second week of October) is a sign of a good season; late on set is sign of a bad season • The onset is accompanied by sharp lightening that is spotted from the East

	January - February	Long Rains	Dry Season (June to September)		Short Rains (mbura ya mwere)
			Cold Part (*mbevo*)	Hot and Dry (*Thano*)	
Meteorological	• Moderate temperatures (less than 25^0C) is considered good; it ensures that the annual crops (cotton and pigeon peas) survive until the MAM rains	• Presence of thunderstorms and lightening is a sign of good season • Intense heavy showers mostly falling in the evenings and early parts of night is a good sign • Very warm nights is a sign of rains within 24 hours	• Night temperatures to 15^0C or below • Intense cold implies abundant rainfall in the rainy season • The cold sometimes accompanied by drizzles retains the moisture from the MAM rains and gives late (planted) crops a chance to grow. Late (and annual) maturing crops such as pigeon peas also benefit from the cool temperature and so are animals because the water bodies retain water for longer and the fodder does not wither fast. • Cowpeas plants grow new leaves that are used as vegetables • Interruptions of the cold season by days of warm temperature implies drought spells during the rainy season • Strong and destructive winds are a bad omen at this time; they carry away stocks (of crops) that are used as fodder for animals	• Intense hot temperature predict abundant rainfall; the community belief that the temperatures '*cook*' the rain. • East-West very Strong whirling (*kĩthirĩi*) winds observed in the September is a sign of favourable season. There are many water bodies on the East; translated to mean that the wind is carrying the water to go 'make' the rains • Very warm nights is a sign of rains within 24 hours	• Presence of intense thunderstorm with no rains is sign of a bad season • Moderate start (not storms) is a good sign • Rains falling mostly during the day (from 11 am onwards) is a sign of a good season • Storms and hailstones are considered bad omen; they bring down millet stocks which are generally weaker than maize • Dew in the morning is a sign of dry spell onset.

Sample Seasonal Climate Forecasts

https://meteo.go.ke/forecast/Seasonal-Forecast

Seasonal weather forecast October, November, December(OND) 2023

Outlook for October-November-December(OND) 2023

- The "Short Rains" October-November-December (OND) season constitutes an important rainfall season in Kenya, particularly in the Central and Eastern regions of the country. The highest seasonal rainfall amounts (greater than 700mm) are normally recorded over the Central highlands.
- During OND 2023, it is expected that most parts of the country will experience enhanced (above average) rainfall that will be fairly distributed in some areas and well distributed in others in both time and space. The forecast also indicates a high probability that some counties in the Northeastern region are likely to experience above-average rainfall.
- This will be driven by warmer than average Sea Surface Temperatures (SSTs) over the Central and Eastern Equatorial Pacific Ocean indicating the presence of El Nino conditions. According to most of the global climate models, El Nino conditions are likely to persist throughout the OND season.

Seasonal Climate Watch

September 2023 to January 2024

https://www.weathersa.co.za/home/seasonalclimate

Date issued: Aug 28, 2023

1. Overview

The El Niño-Southern Oscillation (ENSO) is currently in an El Niño state and according to the latest predictions is expected to persist through most of the summer months. ENSO's typical impact on Southern Africa is in favour for generally drier and warmer conditions during the summer seasons from October to March. Current global forecasts indicate a great deal of uncertainty for the typical drier conditions that South Africa experiences during an El Niño.

The multi-model rainfall forecast indicates above-normal rainfall for most of the country during mid-spring (Sep-Oct-Nov) and late-spring (Oct-Nov-Dec). The early-summer (Nov-Dec-Jan) however, indicates below-normal rainfall over the central parts of the country and above-normal rainfall for the north-east.

Minimum and maximum temperatures are expected to be mostly above-normal countrywide for the forecast period.

The South African Weather Service (SAWS) will continue to monitor the weather and climate conditions provide updations on any future assessments that may provide more clarity on the current ations for the coming season.

The Bridge

Drought Monitoring and Prediction

Artificial Intelligence

Effective Drought Index

Drought Early Warning System (DEWS)

IK Data

Wireless sensors

Mobile Phones

Weather stations

Weather data

Meteorological

Hydrological

Agricultural

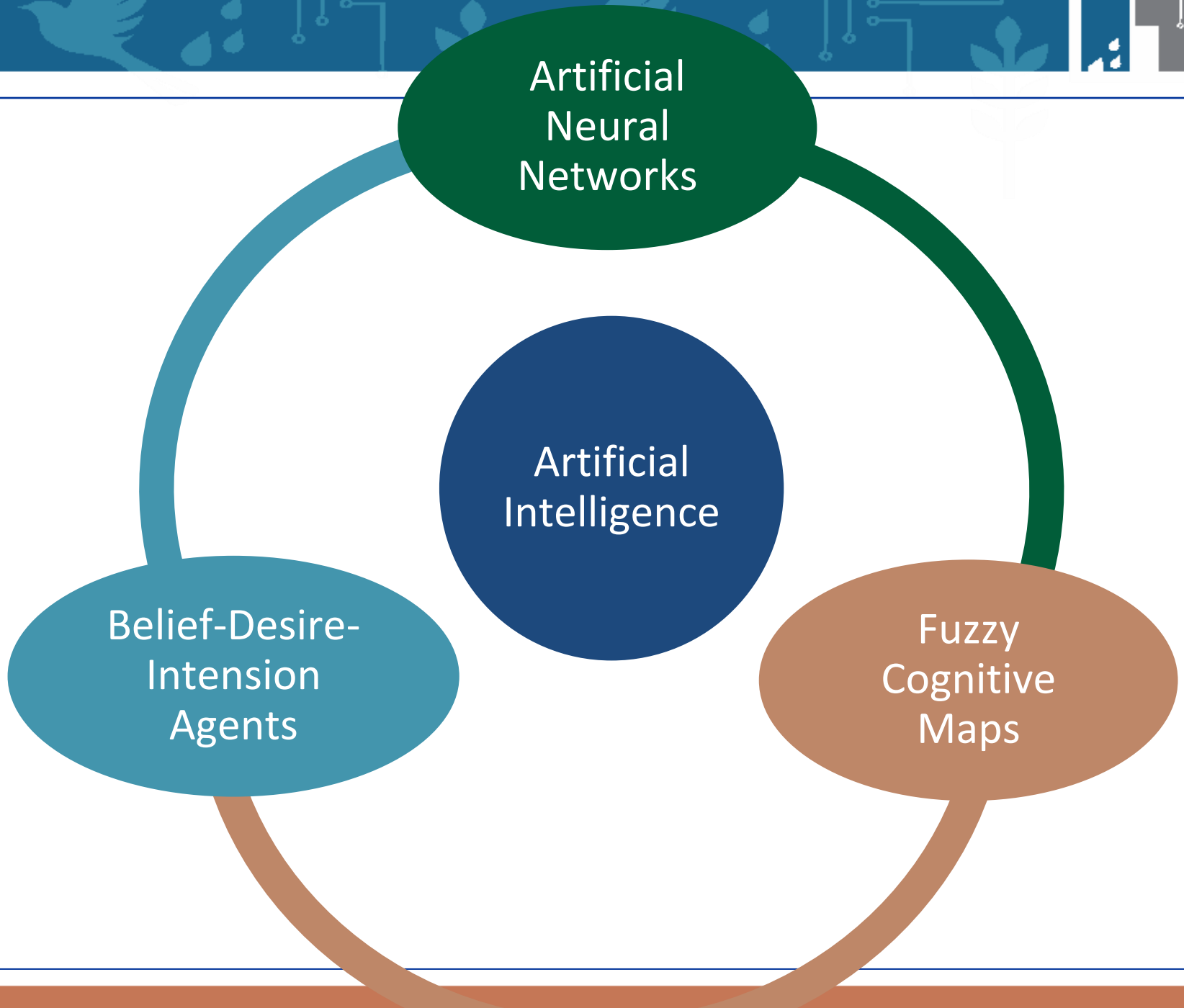
Social-economic Drought

Ground Water Drought

Creeping Hazard

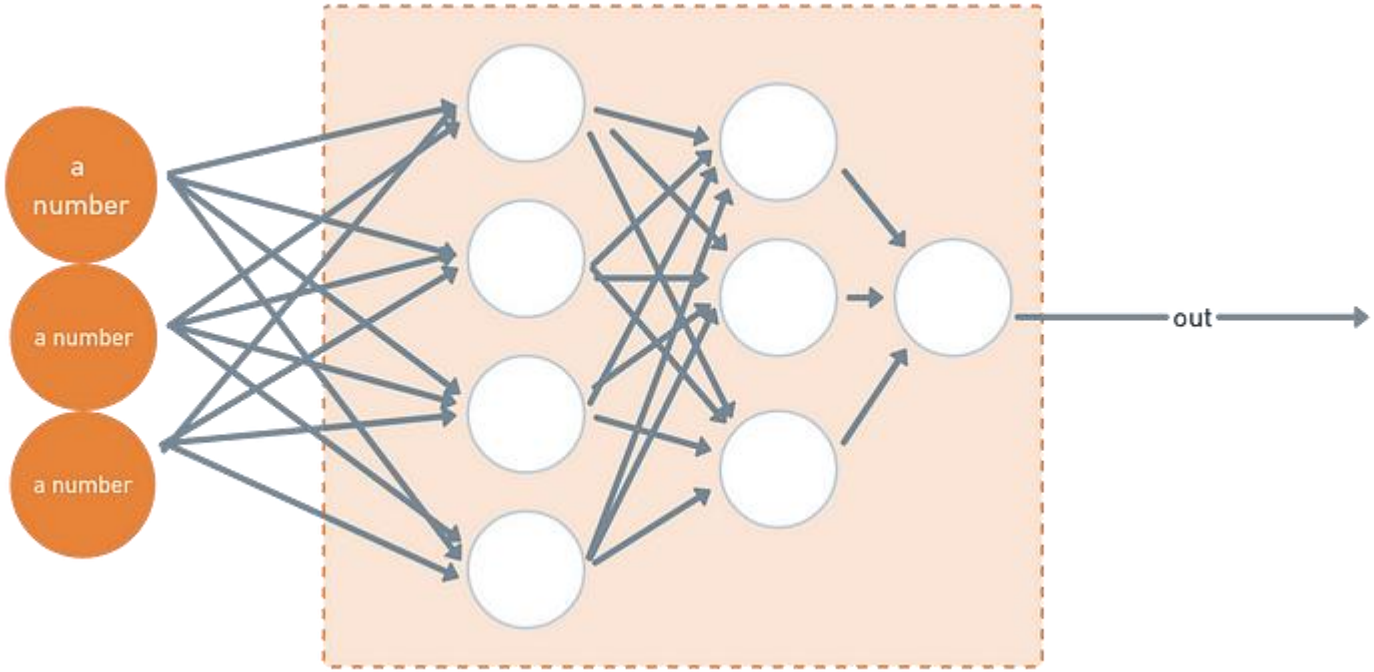
Disaster

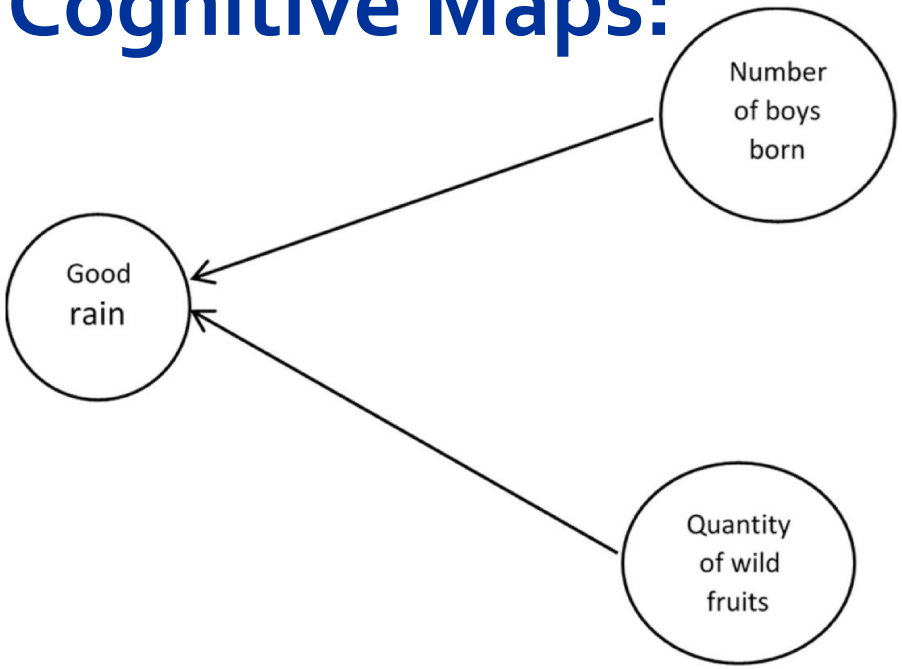
Droughts

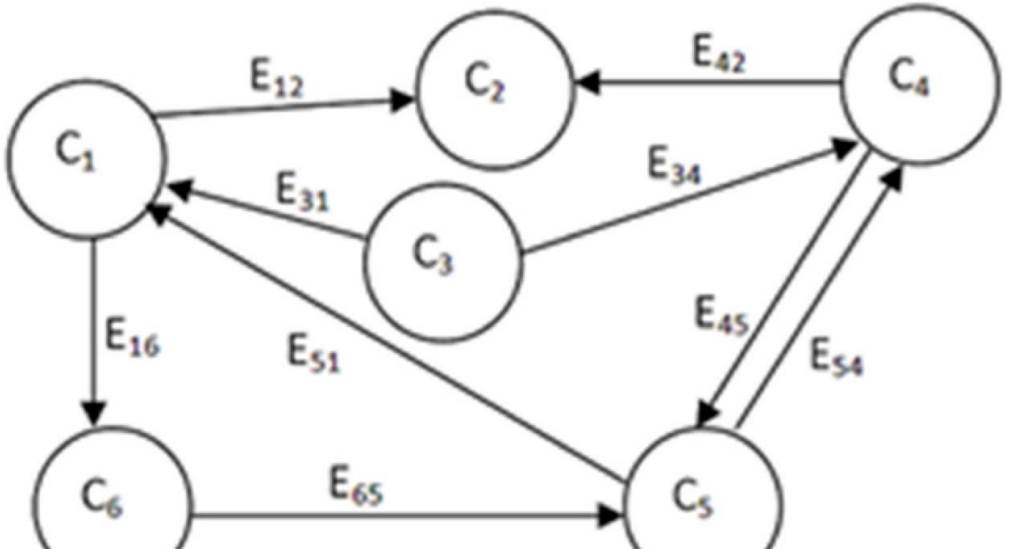

Artificial Neural Networks
Artificial Intelligence
Belief-Desire-Intension Agents
Fuzzy Cognitive Maps

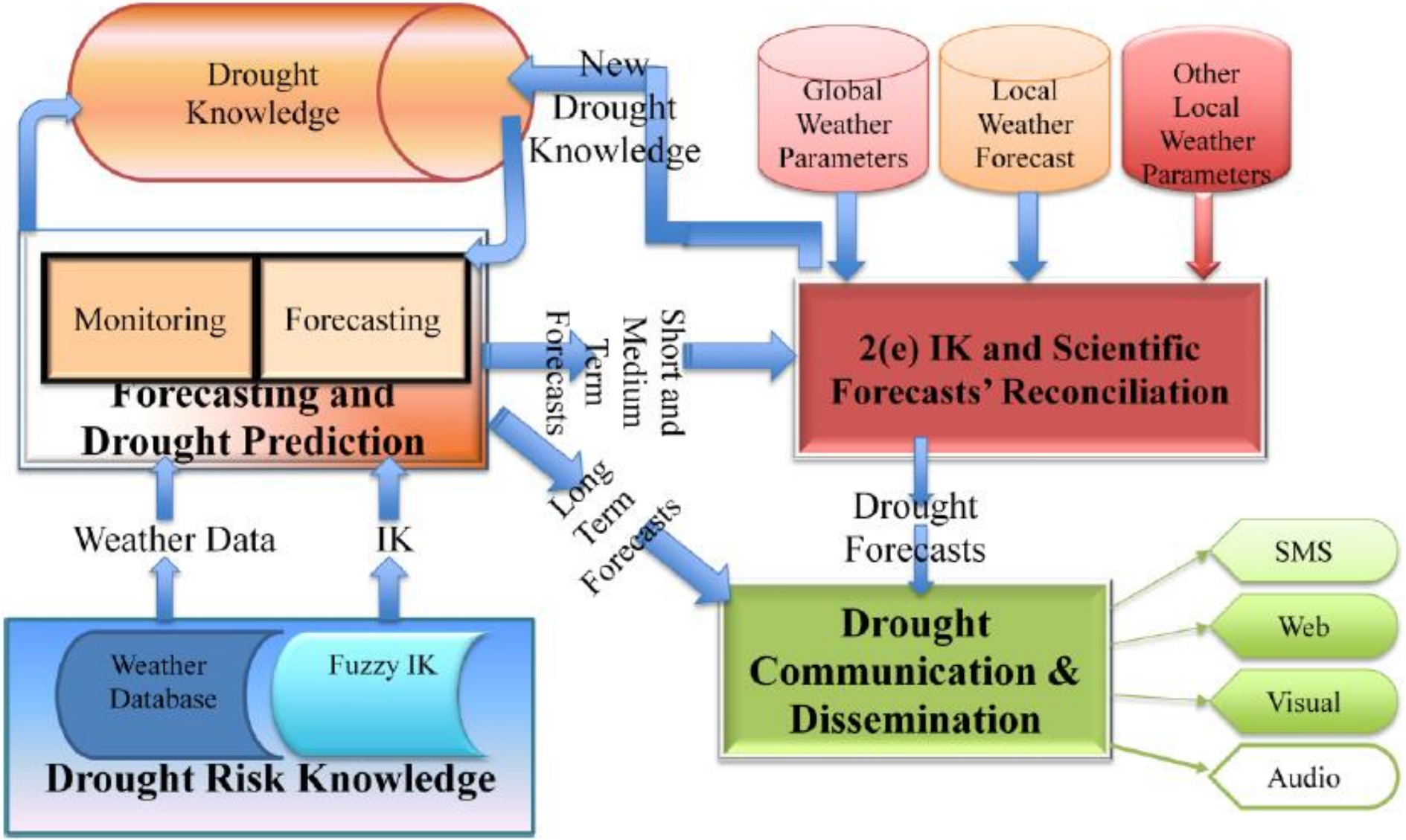
Artificial Neural Networks and Fuzzy Cognitive Maps: Illustrated

$$\text{Forecast}[E_{21+5}] = f(E_{21},\ E_{20},\ E_{19},\ E_{18},\ E_{17},\ E_{16})$$







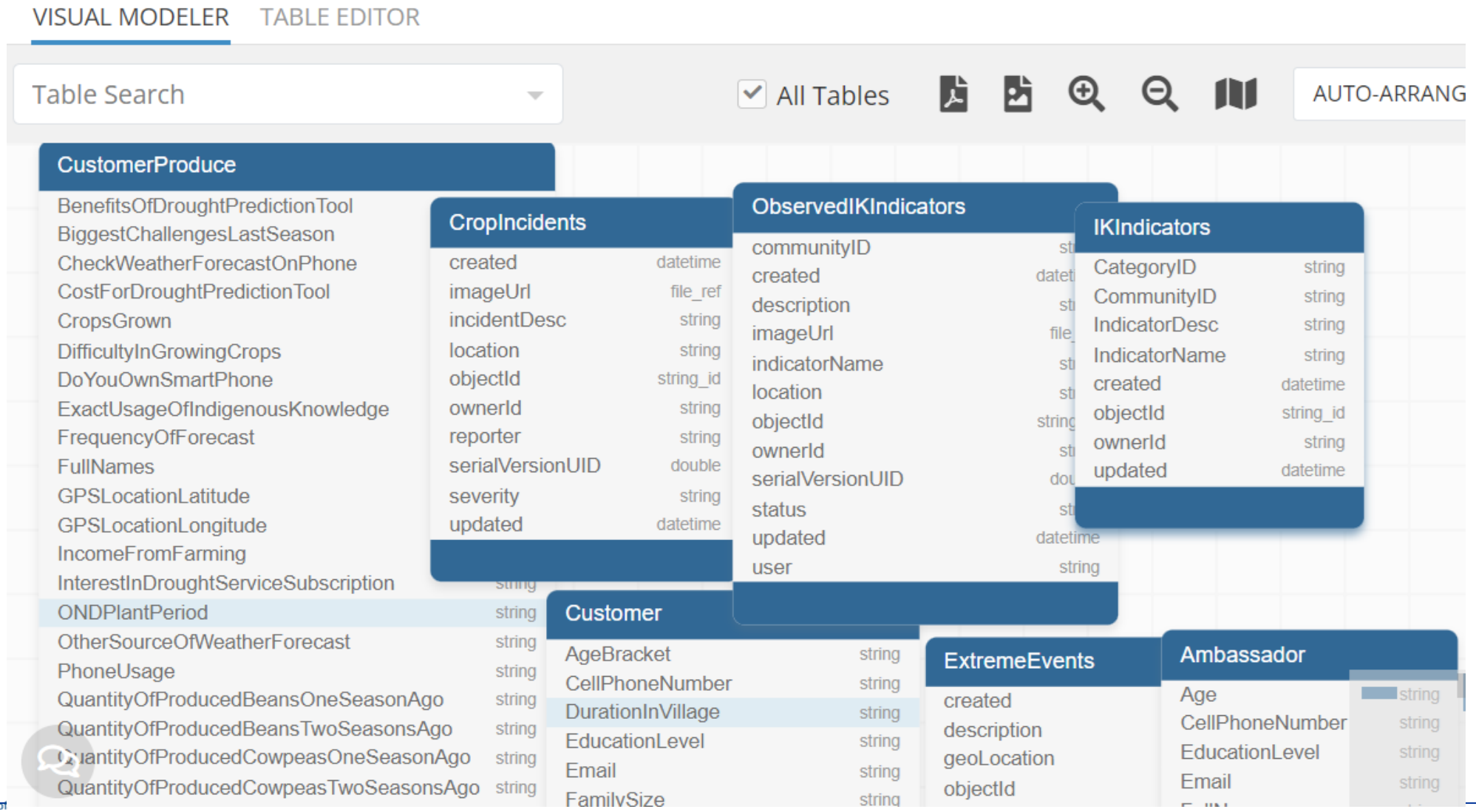

Drought Knowledge
New Drought Knowledge
Global Weather Parameters
Local Weather Forecast
Other Local Weather Parameters
Monitoring
Forecasting
Forecasting and Drought Prediction
Short and Medium Term Forecasts
2(e) IK and Scientific Forecasts' Reconciliation
Long Term Forecasts
Drought Forecasts
Weather Data
IK
SMS
Web
Visual
Audio
Drought Communication & Dissemination
Weather Database
Fuzzy IK
Drought Risk Knowledge

Mentimeter Question 3

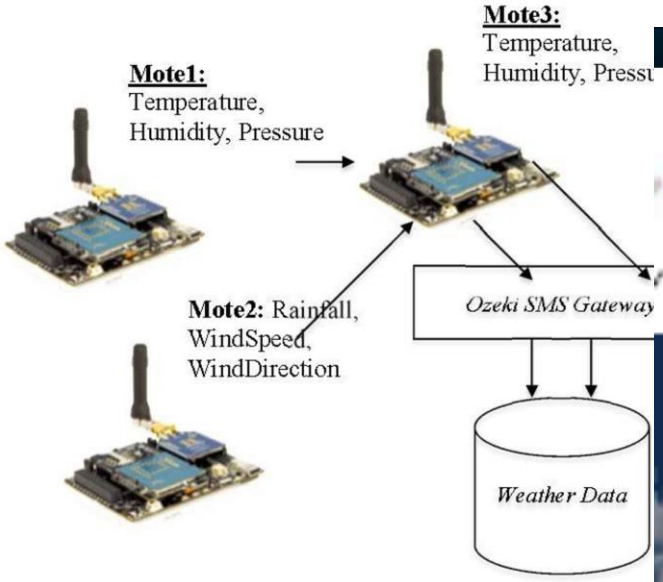
- According to you, what do you consider to be the MAIN feature that sets ITIKI apart as an effective drought and weather forecasting tool for small-scale farmers?

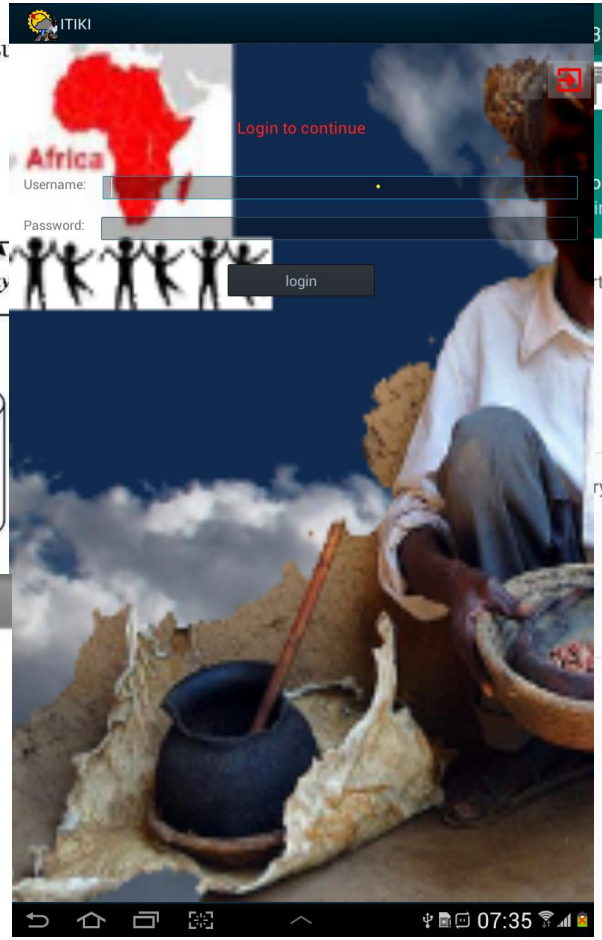
- A. It only uses scientific weather forecasting methods / Ele usa apenas métodos científicos de previsão do tempo
- B. It integrates scientific weather forecasting with traditional knowledge/Integra a previsão meteorológica científica com o conhecimento tradicional
- C. It only uses indigenous knowledge for its forecasts/Ele usa apenas conhecimento indígena para suas previsões
- D. Forecasts via a subscription-based website that is user-friendly/Previsões por meio de um site baseado em assinatura que é fácil de usar

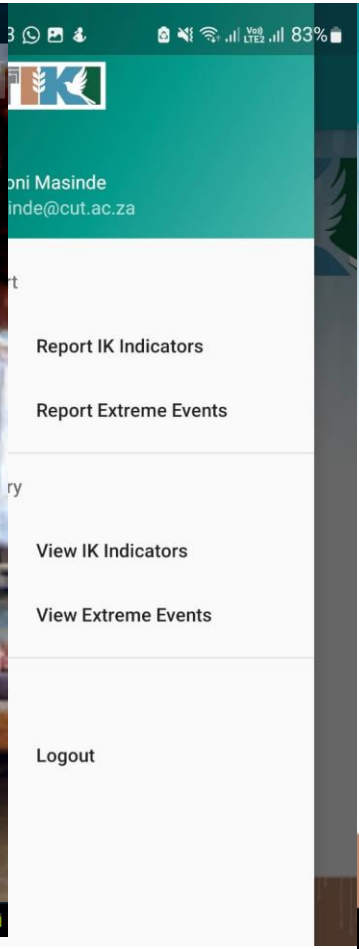
ITIKI Backend Database Structure

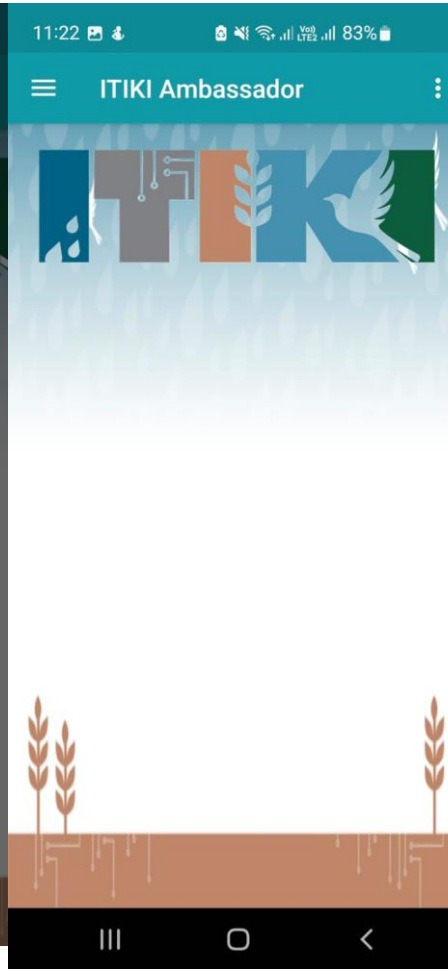


ITIKI data input and output interfaces









ITIKI original web interface

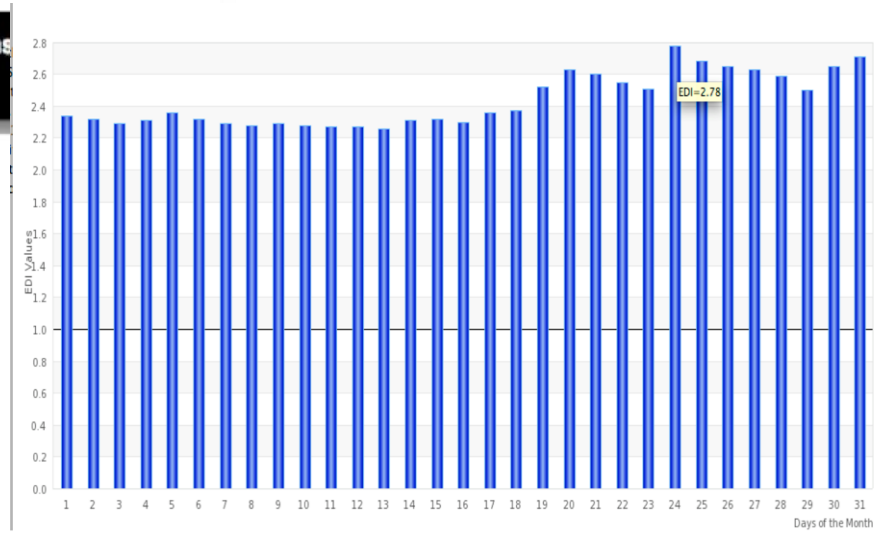
Home | About the Project | Weather Monitoring | Drought Monitoring | Past Droughts | Related Links | Related Publications

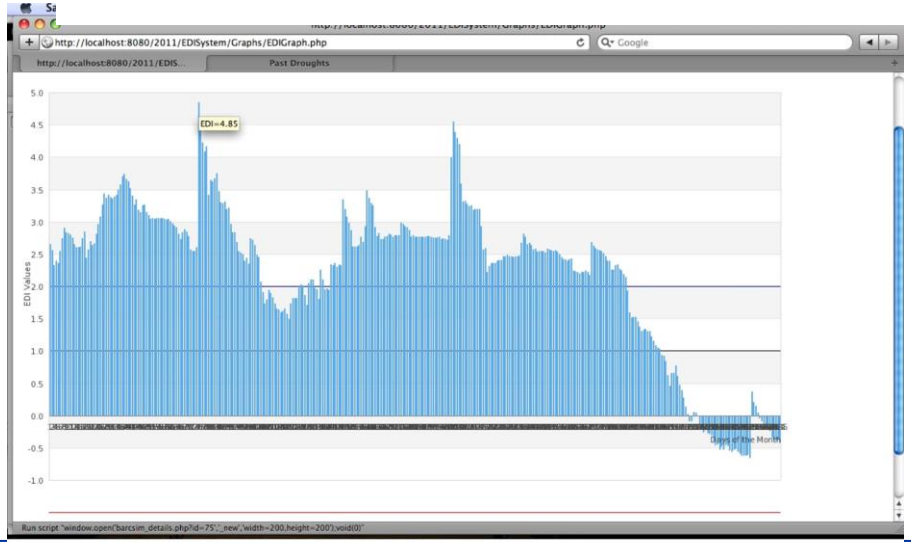
Browse This Site

- Home
- About the Project
- Weather Monitoring
- Drought Monitoring
- **Past Droughts**
- Related Links
- Related Publications

Weather Readings for Makindu [May, 2009]

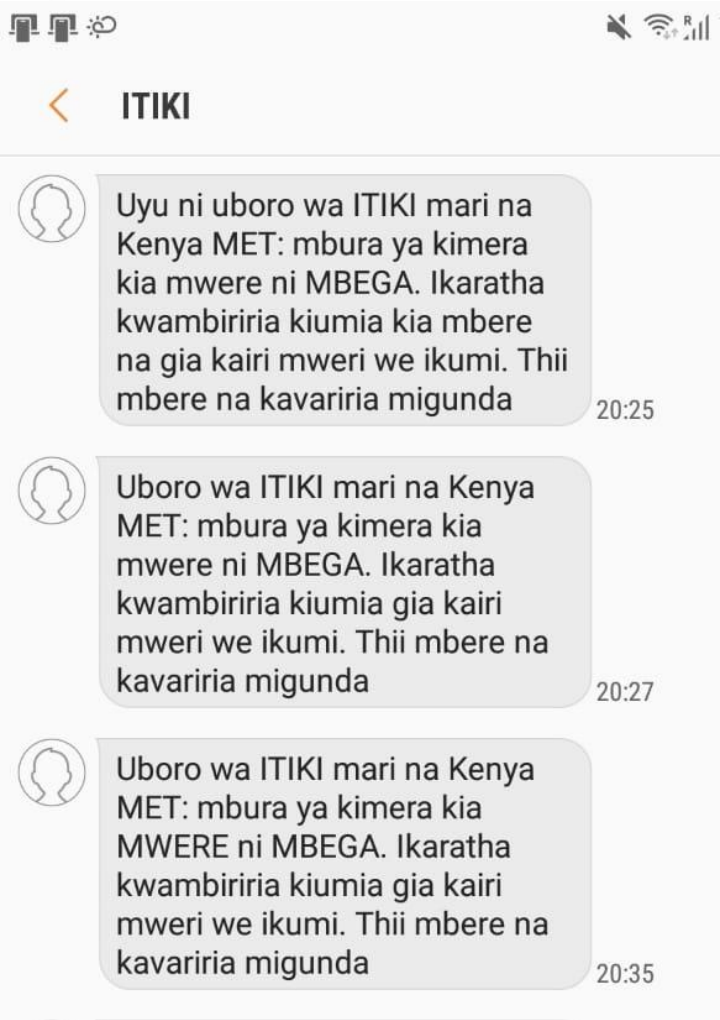
Date	Precipitation	AWRI	EDI	EDI Class
1-May-2009	0	43.1	-1.59	Severe Drought
2-May-2009	11	53.1	-1.37	Moderate Drought
3-May-2009	0	50.6	-1.44	Moderate Drought
4-May-2009	0	49.1	-1.52	Severe Drought
5-May-2009	0	47.8	-1.51	Severe Drought
6-May-2009	2.1	48.9	-1.51	Severe Drought
7-May-2009	0	47.6	-1.54	Severe Drought
8-May-2009	0	46.6	-1.55	Severe Drought
9-May-2009	0	45.7	-1.62	Severe Drought
10-May-2009	0	45	-1.62	Severe Drought
11-May-2009	0	44.2	-1.57	Severe Drought
12-May-2009	0	43.5	-1.55	Severe Drought
13-May-2009	0	42.9	-1.59	Severe Drought
14-May-2009	0	42.3	-1.49	Moderate Drought





ITIKI Interface for Bulk SMS Service

Date	Text	From	To	Cost	Status
September 10, 2023 8:42 PM	Uboro wa ITIKI mari na Kenya MET: mbura ya kimera kia MWERE ni MBEGA. Ikaratha kwambiriria kiumia gia kairi mweri we ikumi. Thii mbere na kavariria migunda 1 message (155 characters)	ITIKI	+254	KES 0.70	Success
September 10, 2023 8:42 PM	Uboro wa ITIKI mari na Kenya MET: mbura ya kimera kia MWERE ni MBEGA. Ikaratha kwambiriria kiumia gia kairi mweri we ikumi. Thii mbere na kavariria migunda 1 message (155 characters)	ITIKI	+2547	KES 0.70	Success
September 10, 2023 8:42 PM	Uboro wa ITIKI mari na Kenya MET: mbura ya kimera kia MWERE ni MBEGA. Ikaratha kwambiriria kiumia gia kairi mweri we ikumi. Thii mbere na kavariria migunda 1 message (155 characters)	ITIKI	+25472	KES 0.70	Success



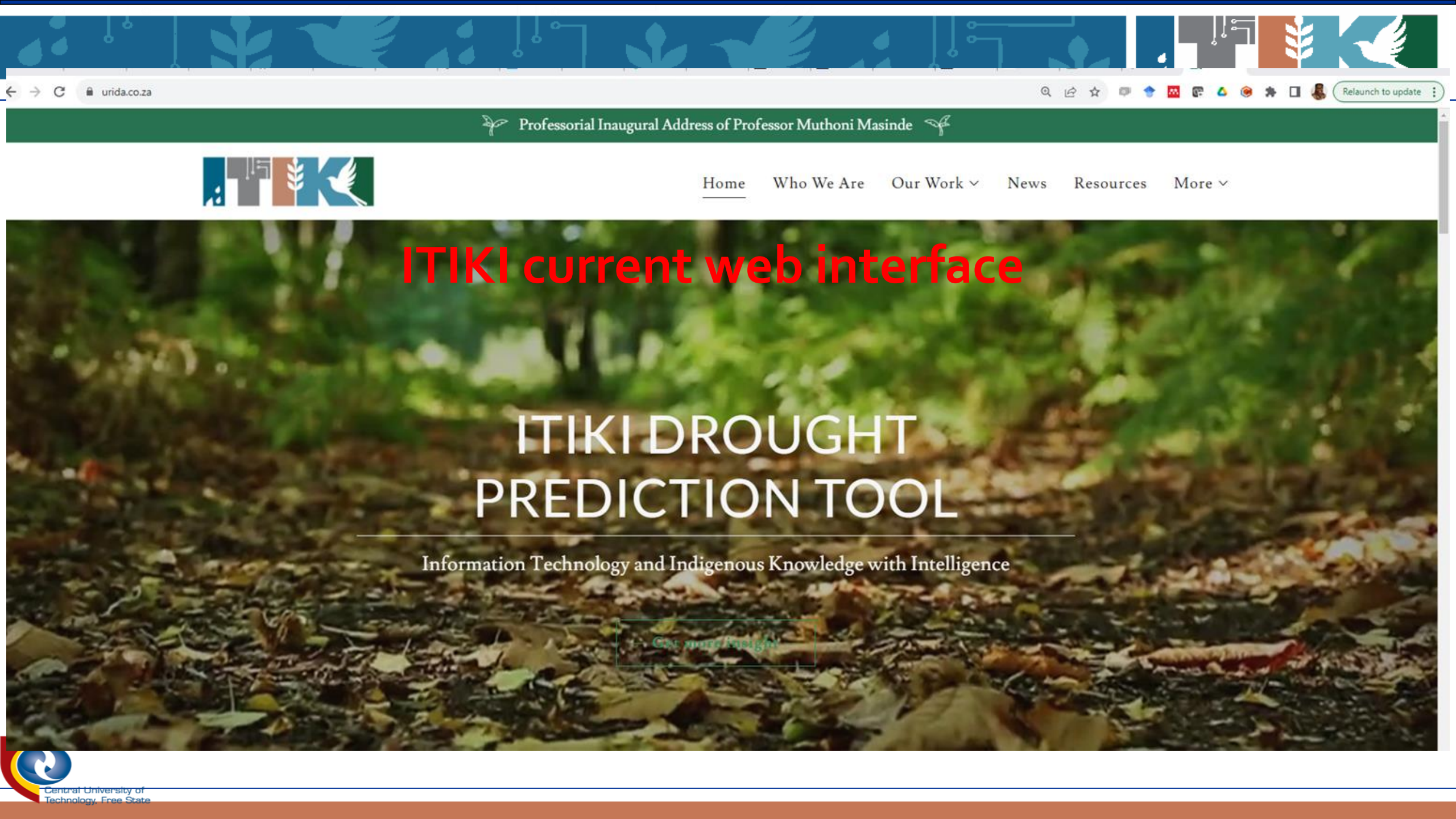
– ITIKI Adoption Numbers – 1st two years

	Individual Subscribers	Approx. Total Number
Kenya	3 090	14 533
Mozambique	1 278	6 200
South Africa	800	3 200
Total	5 168	23 933

Over 70% of the subscribers are women

– ITIKI impacts: crop yield increase

	Production (Before) in Tonnes	Production After	
Kenya	3 808	4 340	14%
Mozambique	1 364	1 464	7%
Total	5 904	6536	11%


urida.co.za
Relaunch to update
Professorial Inaugural Address of Professor Muthoni Masinde
Home
Who We Are
Our Work
News
Resources
More
ITIKI current web interface
ITIKI DROUGHT PREDICTION TOOL
Information Technology and Indigenous Knowledge with Intelligence

urida.co.za/contact-us

Home | Who We Are | Our Work | News | Resources | More

MEET THE TEAM

Prof Muthoni Masinde, CEO and Founder.

Muthoni Masinde (PhD)
Founder and Director
URIDA PTY LTD (SOUTH AFRICA) & ITIKI-RI LIMITED (KENYA)

Tel: +27 51 5073091 | **Cell:** +27 72 807 0389 | **E-mail:** muthoni@itiki.co.za

Private Bag X20539, Bloemfontein, 9300, South Africa || **Website:** itiki.co.za

Securing Water for Food: A Grand Challenge for Development.

Prof. Masinde's work has also seen her attract invitations as a guest speaker, expert advisor, and reviewer from across the globe. This includes invitation in

Thank you

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker
Bradwell Garanganga

CIS-based DST for Agricultural Productivity

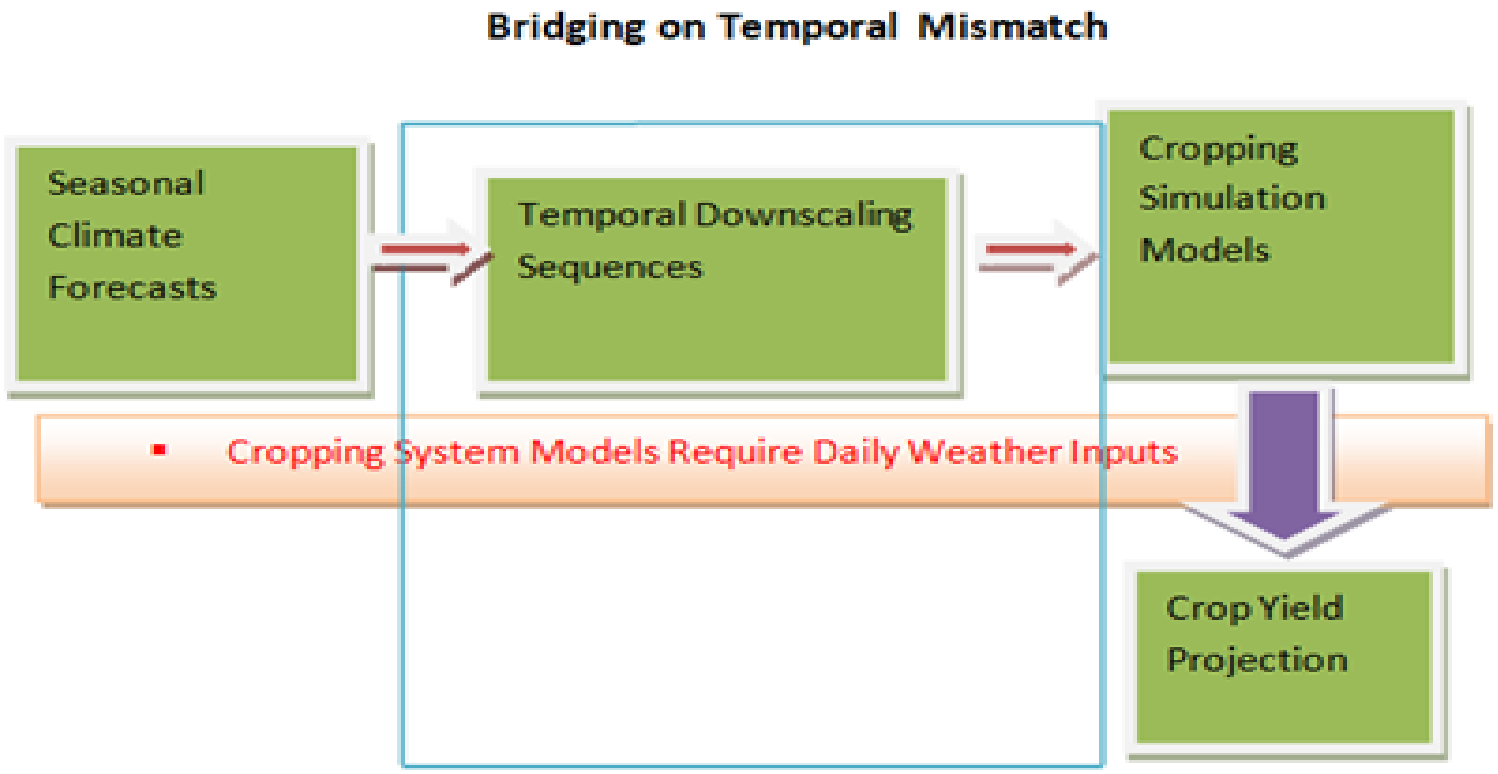
DCAS Training
to support climate resilience for
smallholder agriculture in Southern Africa
Hybrid, South Africa
27 – 28 September 2023

Bradwell J Garanganga and Trymore Nyakutambwa

CIS-based DST for Agricultural Productivity

INTRODUCTION

- Climate variability affects 70% of the agricultural production costs.
- Productivity in Africa **is <1T/Ha,** Global is **5-10 T/Ha**.
- There is need to develop CIS-Based Decision Support Tool (DST) for Agriculture. This is critical to guide communities in making decisions for optimum productivity. For instance, there is in use DSTs such as:
  - Climate-Agriculture Modelling and Decision Tool (CAMDT) which drives Decision Support System for Agrotechnology Tool (DSSAT) to give rice yield projection in Phillipines.
- Digitron adapted and modified CAMDT for use with typical Sub-Saharan Africa cultivars and climate conditions.
- CAMDT has been re-engineered by Digitron for African cultivars and conditions. This Decision Support Tool will significantly contribute to:
  - improved efficiencies in agricultural production systems;
  - improved food security by cost-effective imports/exports;
  - minimized adverse impacts of hydrometeorological hazards.



Schematic of crop yield projection modeling process

SEASONAL RAINFALL FORECAST/CROP YIELD PREDICTION

EXAMPLES OF ADVICE TO FARMERS

Above normal

ZONE 1

70-80% of cropping land for ***long-season cultivar/seed varieties***; 20-30 % medium-seed varieties

Near normal

50-70% of cropping land for ***medium-season cultivar/seed varieties***; 15-20% short-season seed varieties; 15-20% long-season seed varieties

Below Normal

30-40% of cropping land for ***medium-season cultivar/seed varieties***; 50-60% short-season seed varieties

ZONE II	70-80% of cropping land for medium-season cultivar/seed varieties; 20-30% short seed varieties.	60-80% of cropping land for short-season ultivar/ seed varieties; 15-20 % medium- season ultivar/seed varieties	50-60% of cropping land for short-season cultivar/seed varieties; consider letting 30% land unplanted.
ZONE III	70-90% of cropping land for short-season ultivar/seed varieties; 10-20% medium cultivar/seed varieties	60-80% of cropping land for short-season ultivar/ seed varieties; 15-20% medium- season ultivar/ cultivar/seed varieties	30-40% of cropping land for short-season cultivar/ seed varieties; consider letting 60% land unplanted

SUMMARY

CIS-Based DST gives **three to five months lead time** before harvest.

This enhances Climate Smart Agriculture (CSA), as farmers, suppliers and governmental decision makers can make strategic decisions on:

- what inputs to procure well before the agricultural season commences.
- benefiting agricultural production systems, through ensuring:
  - significant avoidable losses in agricultural production systems;
  - enhanced productivity efficiencies; and
  - informed more cost effective import/export of grain.

CIS-Based DST will increase socio-economic benefits through enhancing Climate Smart Adaptation.

NEXT STEPS

- Further model development for greater usability such as:
  - ✓ regionalization;
  - ✓ localization of cultivar coefficients for input into crop yield models;
  - ✓ localization of soil types; and
- More experimentation in order to extend lead times further.

digiSoft Climate Information Services

Science

Thank You For Your Attention

M: +263 772 220330 (WhatsApp)
M: +263 784 996 727 (WhatsApp)

E: bjgaranganga@digitron.co.zw
bjgaranganga@gmail.com
E: trymoren@digitron.co.zw

CIS-based DST for Agricultural Productivity

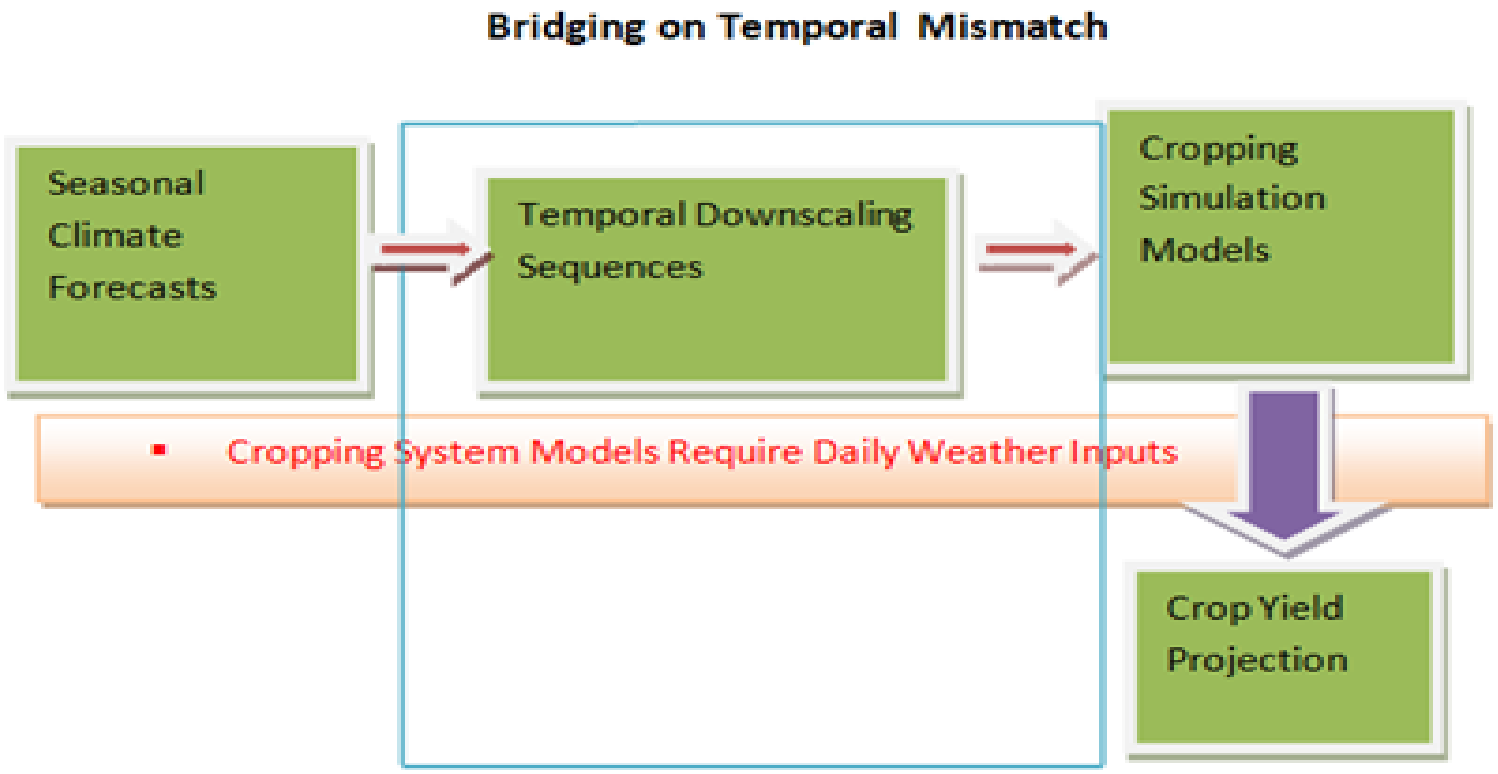
DCAS Training
to support climate resilience for
smallholder agriculture in Southern Africa
Hybrid, South Africa
27 – 28 September 2023

Bradwell J Garanganga and Trymore Nyakutambwa

CIS-based DST for Agricultural Productivity

INTRODUCTION

- Climate variability affects 70% of the agricultural production costs.
- Productivity in Africa **is <1T/Ha,** Global is **5-10 T/Ha**.
- There is need to develop CIS-Based Decision Support Tool (DST) for Agriculture. This is critical to guide communities in making decisions for optimum productivity. For instance, there is in use DSTs such as:
  - Climate-Agriculture Modelling and Decision Tool (CAMDT) which drives Decision Support System for Agrotechnology Tool (DSSAT) to give rice yield projection in Phillipines.
- Digitron adapted and modified CAMDT for use with typical Sub-Saharan Africa cultivars and climate conditions.
- CAMDT has been re-engineered by Digitron for African cultivars and conditions. This Decision Support Tool will significantly contribute to:
  - improved efficiencies in agricultural production systems;
  - improved food security by cost-effective imports/exports;
  - minimized adverse impacts of hydrometeorological hazards.



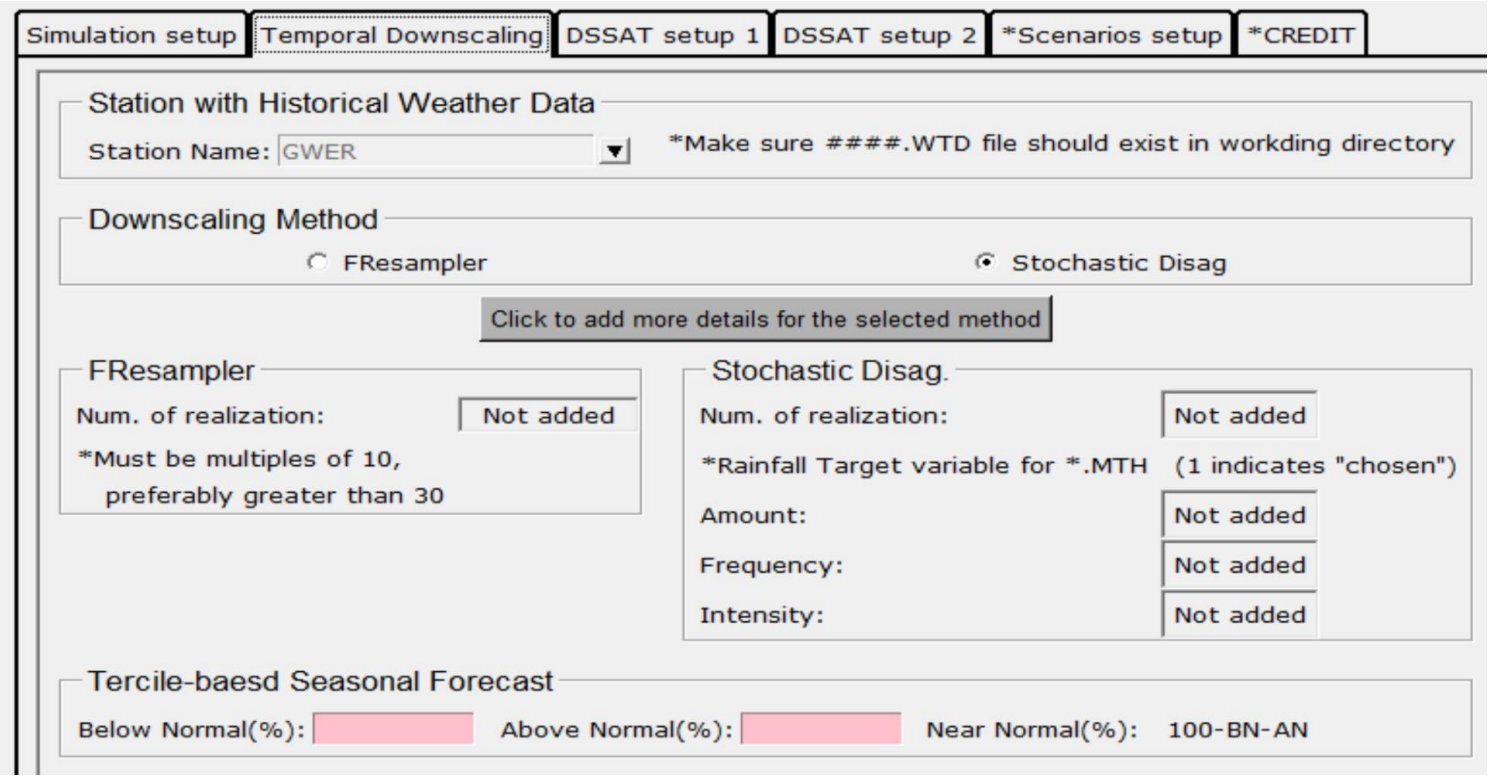
Schematic of crop yield projection modeling process

Demonstration of Tool

A short online demonstration of CAMDT is made. **It has 5 steps:**

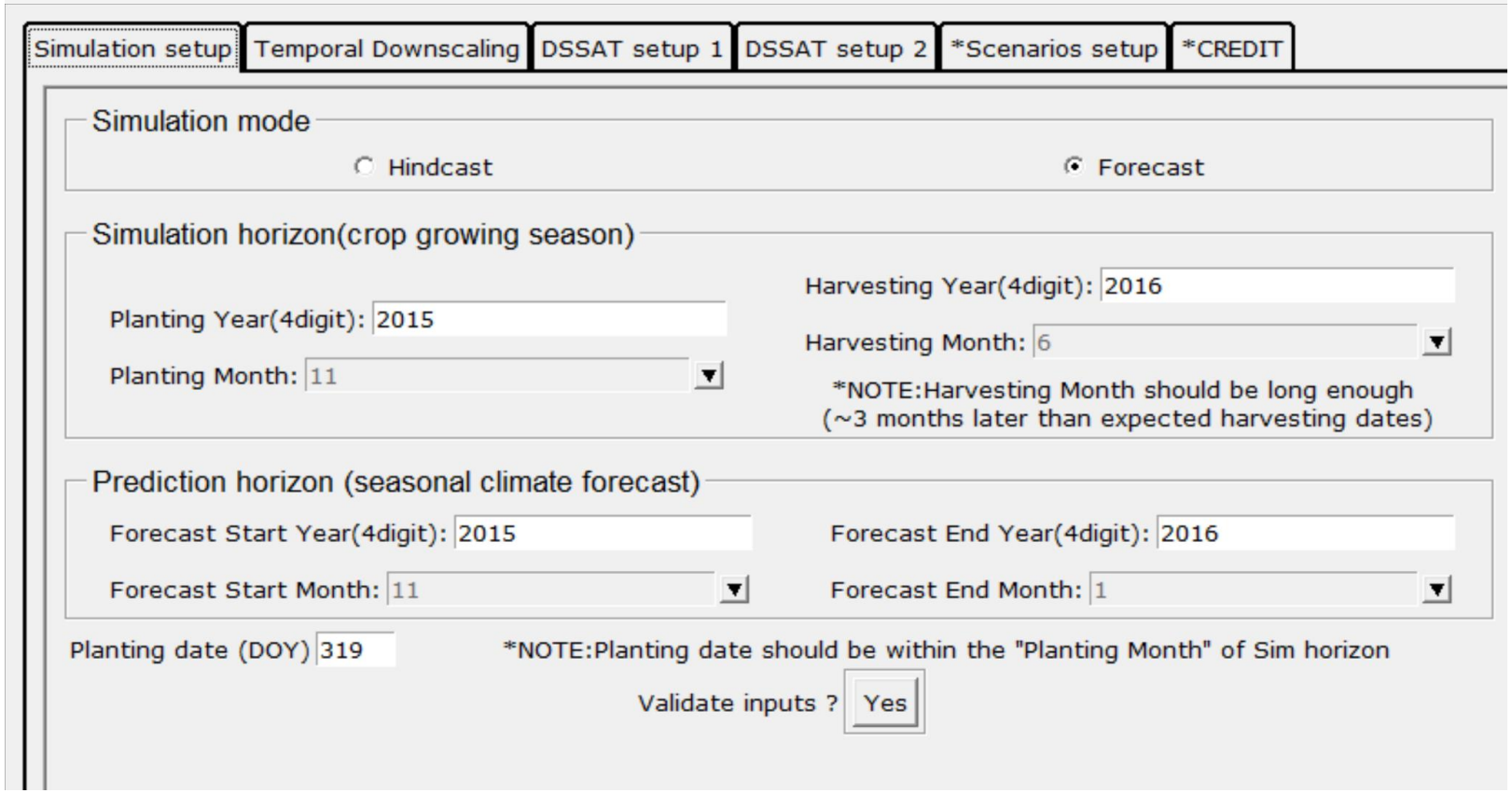
1. Simulation Setup
2. Temporal Downscaling
3. DSSAT Setup 1
4. DSSAT Setup 2
5. Scenario Setup

Demonstration of Tool: Step 1



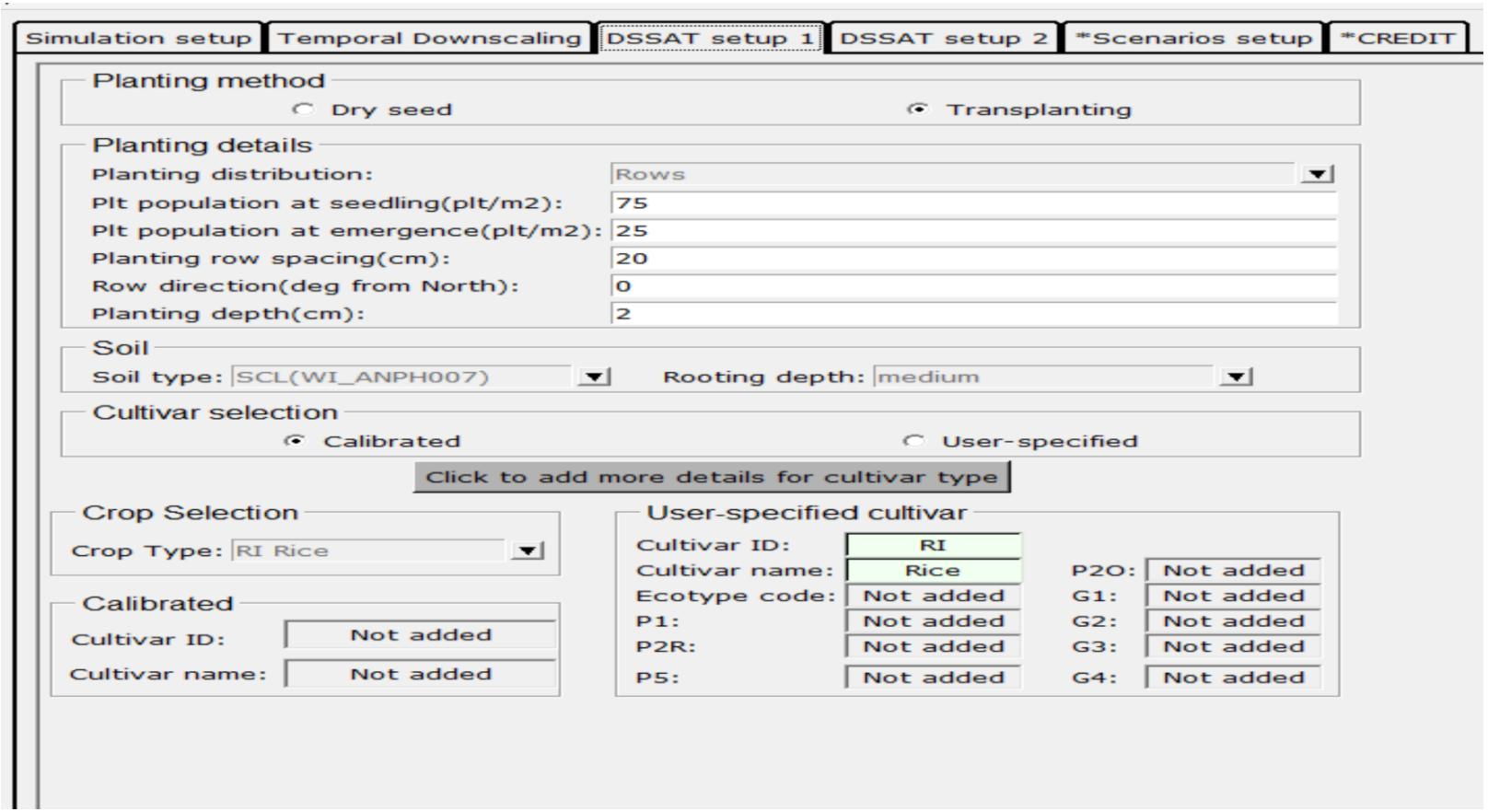
Simulation mode setup Tab: Selecting Weather Station and its tercile based seasonal forecast

Demonstration of Tool: Step 2



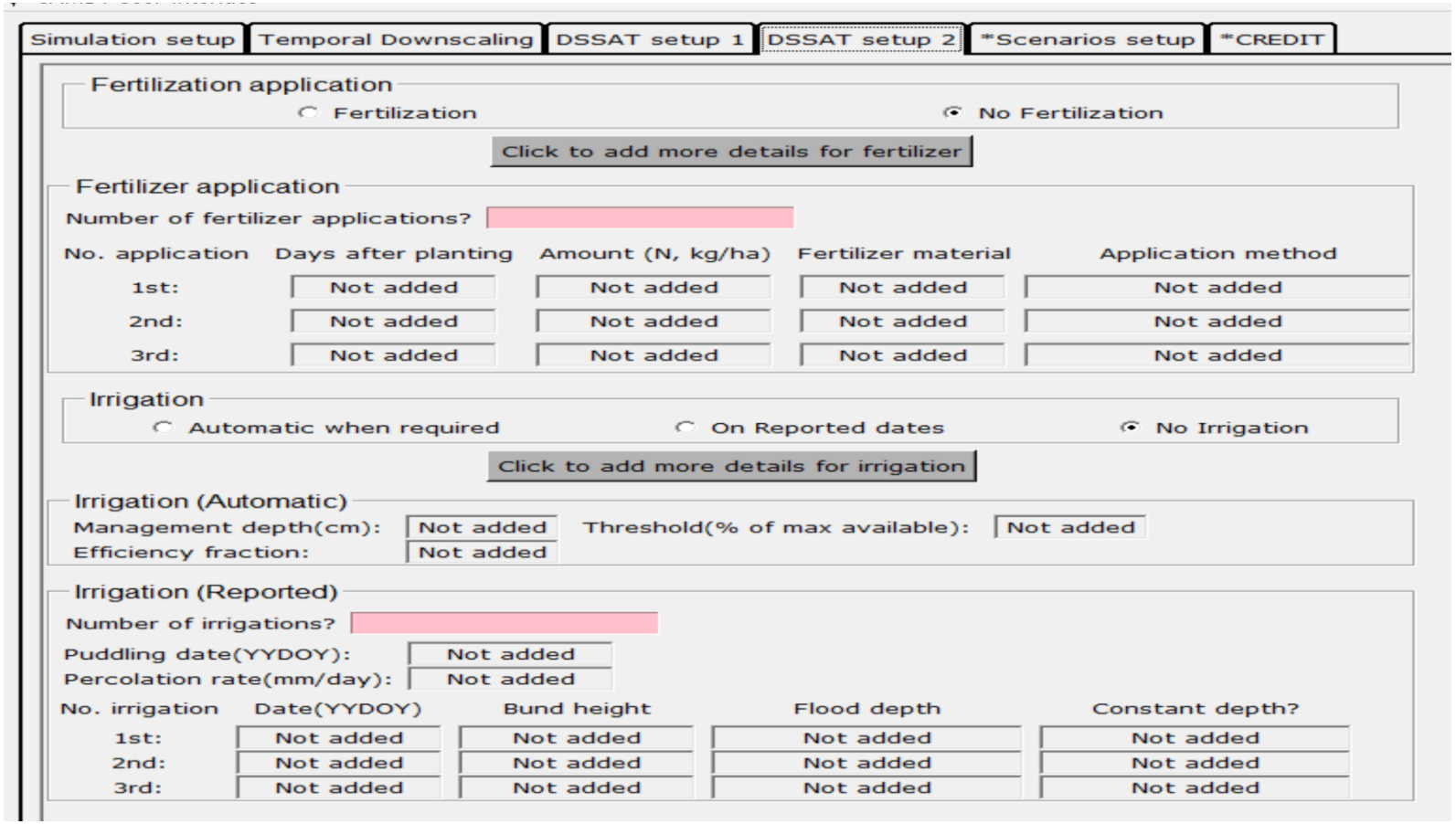
Temporal downscaling Tab: Selecting planting and harvesting dates

Demonstration of Tool: Step 3



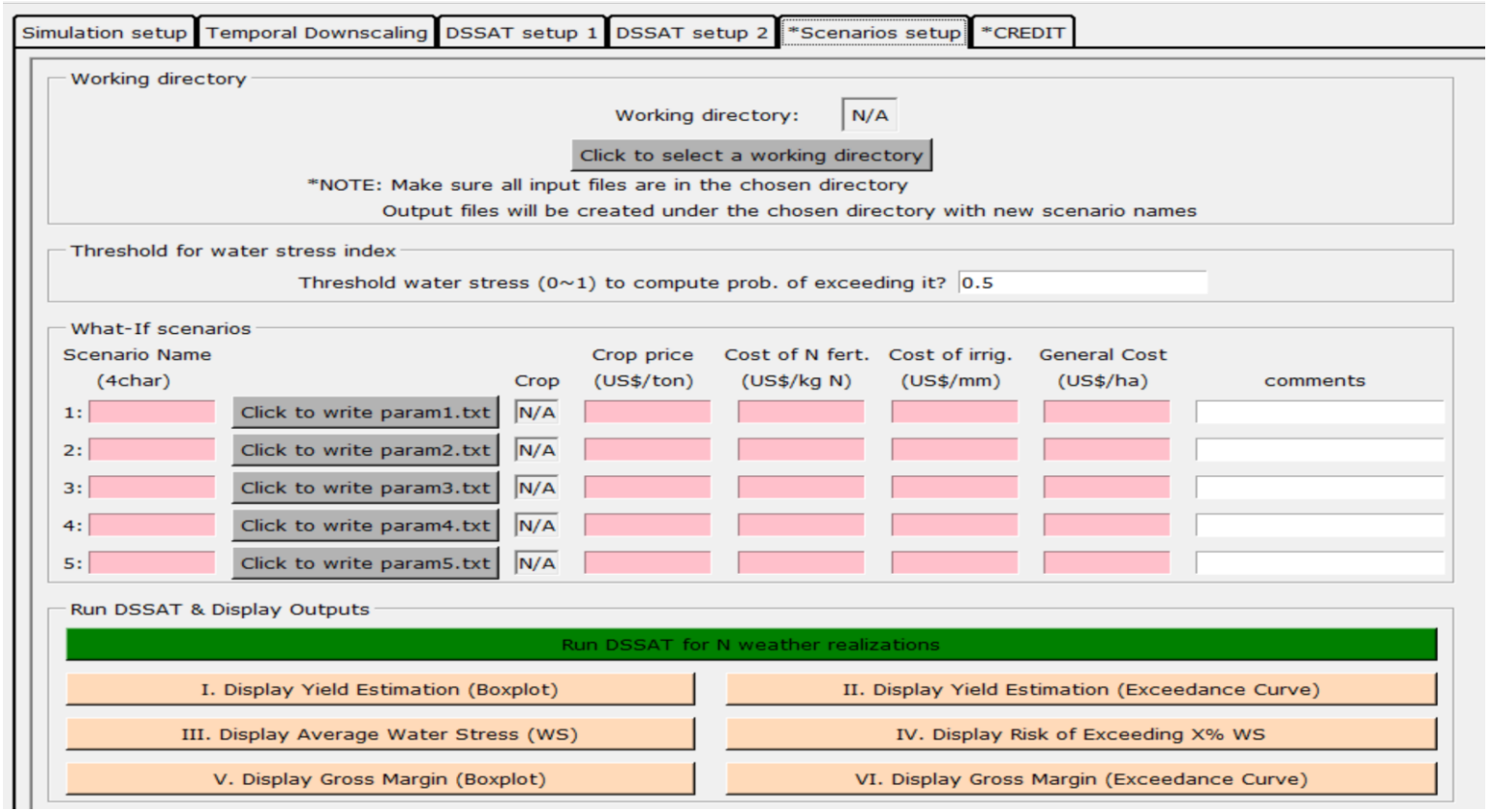
DSSAT setup 1 Tab: Selecting cultivar type and its planting method.

Demonstration of Tool: Step 4



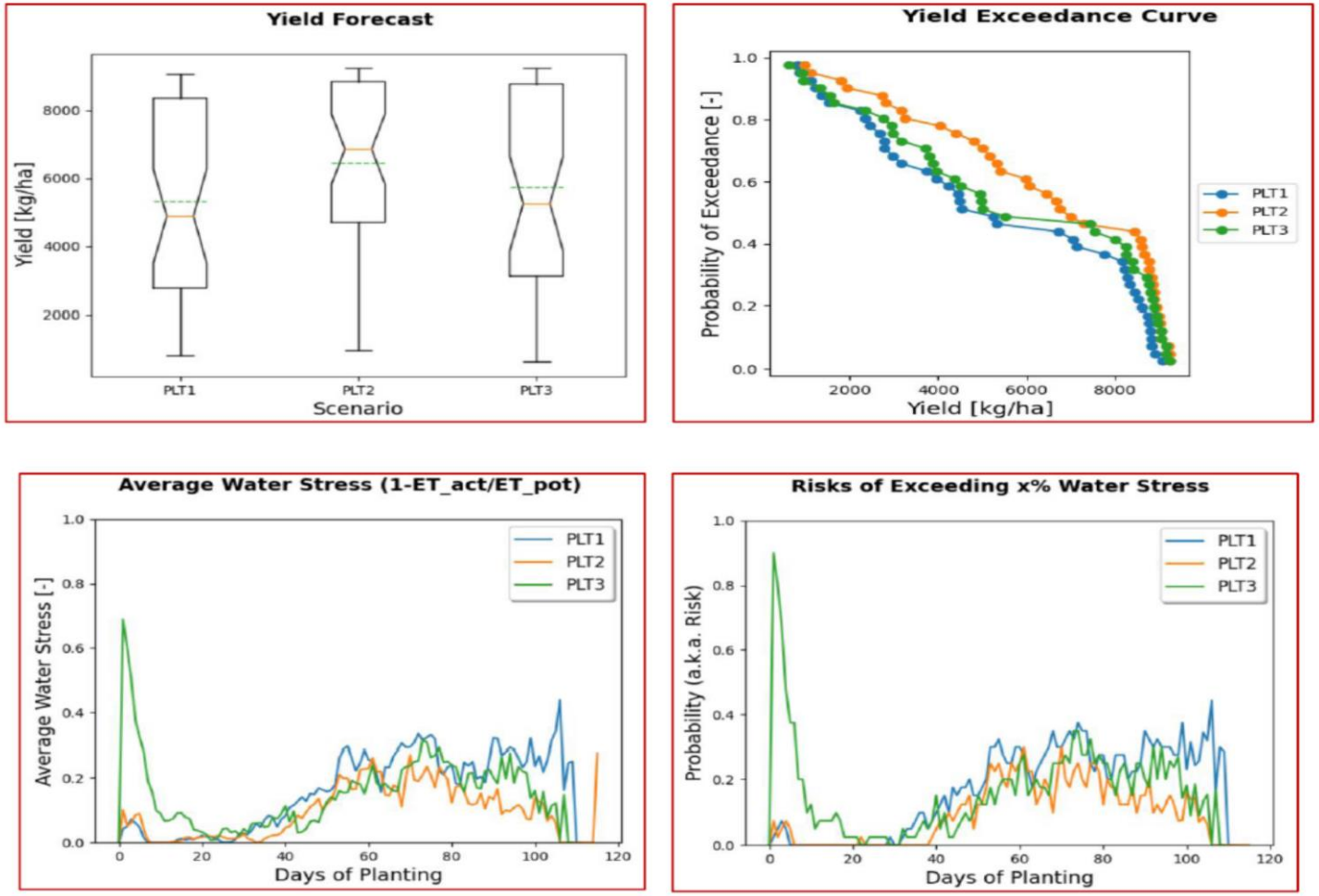
DSSAT setup 2 Tab: Selecting crop management, fertilizer application and irrigation.

Demonstration of Tool: Step 5



Scenario set up Tab: Selecting crop prices and production costs: up to 5 different scenarios:Running the programme; displaying related outputs when successful. (See next slide)

Demonstration of Tool Outputs



<Figure 30> Multiple scenarios MAIZE Yield (a & b) and Water Stress (c & d) from varying planting dates

SEASONAL RAINFALL FORECAST/CROP YIELD PREDICTION

EXAMPLES OF ADVICE TO FARMERS

Above normal

ZONE 1

70-80% of cropping land for ***long-season cultivar/seed varieties***; 20-30 % medium-seed varieties

Near normal

50-70% of cropping land for ***medium-season cultivar/seed varieties***; 15-20% short-season seed varieties; 15-20% long-season seed varieties

Below Normal

30-40% of cropping land for ***medium-season cultivar/seed varieties***; 50-60% short-season seed varieties

ZONE II	70-80% of cropping land for medium-season cultivar/seed varieties; 20-30% short seed varieties.	60-80% of cropping land for short-season ultivar/ seed varieties; 15-20 % medium- season ultivar/seed varieties	50-60% of cropping land for short-season cultivar/seed varieties; consider letting 30% land unplanted.
ZONE III	70-90% of cropping land for short-season ultivar/seed varieties; 10-20% medium cultivar/seed varieties	60-80% of cropping land for short-season ultivar/ seed varieties; 15-20% medium- season ultivar/ cultivar/seed varieties	30-40% of cropping land for short-season cultivar/ seed varieties; consider letting 60% land unplanted

SUMMARY

CIS-Based DST gives **three to five months lead time** before harvest.

This enhances Climate Smart Agriculture (CSA), as farmers, suppliers and governmental decision makers can make strategic decisions on:

- what inputs to procure well before the agricultural season commences.
- benefiting agricultural production systems, through ensuring:
  - significant avoidable losses in agricultural production systems;
  - enhanced productivity efficiencies; and
  - informed more cost effective import/export of grain.

CIS-Based DST will increase socio-economic benefits through enhancing Climate Smart Adaptation.

NEXT STEPS

- Further model development for greater usability such as:
  - ✓ regionalization;
  - ✓ localization of cultivar coefficients for input into crop yield models;
  - ✓ localization of soil types; and
- More experimentation in order to extend lead times further.

digiSoft Climate Information Services

Science

Thank You For Your Attention

M: +263 772 220330 (WhatsApp)
M: +263 784 996 727 (WhatsApp)

E: bjgaranganga@digitron.co.zw
bjgaranganga@gmail.com
E: trymoren@digitron.co.zw

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker
Janina Fraas

Weather Impact

Reaching farmers in the last mile, with our weather and climate services, throughout Africa, Asia and Europe

Mission statement

Weather Impact

1. Deliver high-quality digital weather and climate services (DCAS)
2. Optimize global food productivity and quality
3. Reduce the impact of climate change

DCAS at Weather Impact

Weather Impact

WEATHER AND CLIMATE SERVICES

- ✓ Forecasts
- ✓ Extreme Weather Alerts
- ✓ Seasonal outlook
- ✓ Onset of rainy season

AGRO-METEOROLOGICAL ADVICE

- ✓ "weather-" and "climate-smart" farming advice (e.g., timing of planting and fertilizing)

CAPACITY BUILDING

- ✓ Use and interpretation of services
- ✓ Technical development and python scripting

DCAS at Weather Impact

Weather Impact

WEATHER AND CLIMATE SERVICES

- ✓ Forecasts
- ✓ Extreme Weather Alerts
- ✓ Seasonal outlook
- ✓ Onset of rainy season

AGRO-METEOROLOGICAL ADVICE

- ✓ "weather-" and "climate-smart" farming advice (e.g., timing of planting and fertilizing)

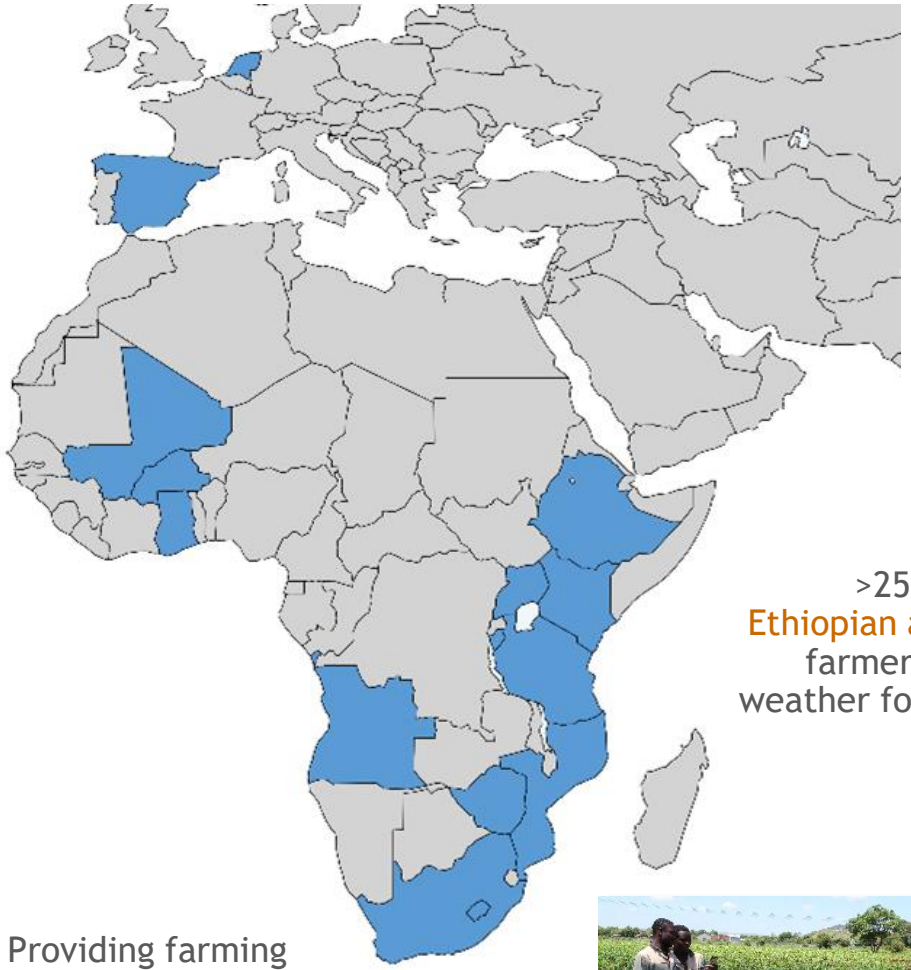
CA[illegible]TY [illegible]NG

- ✓ Use and interpretation services
- ✓ Technical development [illegible] python scripting

How do we primarily disseminate that information?

- ✓ Sharing raw data on our API with partners
- ✓ SMS
- ✓ Other

Where we are active



>250,000 Kenyan, Ethiopian and Tanzanian farmers received our weather forecasts as SMS

Providing farming advisories by **SMS** and capacity building on agro-weather data in Lesotho

Providing farming advisories by **SMS** and capacity building on agro-weather data in Zimbabwe

Weather Impact

825,592

Number of farmers reached

Where we are active

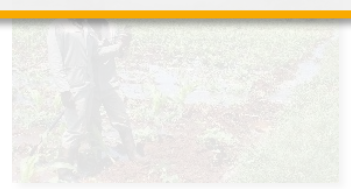
Weather Impact

WI's key strengths:

✓ High-level **technical expertise** to create DCAS tailored to local context

+

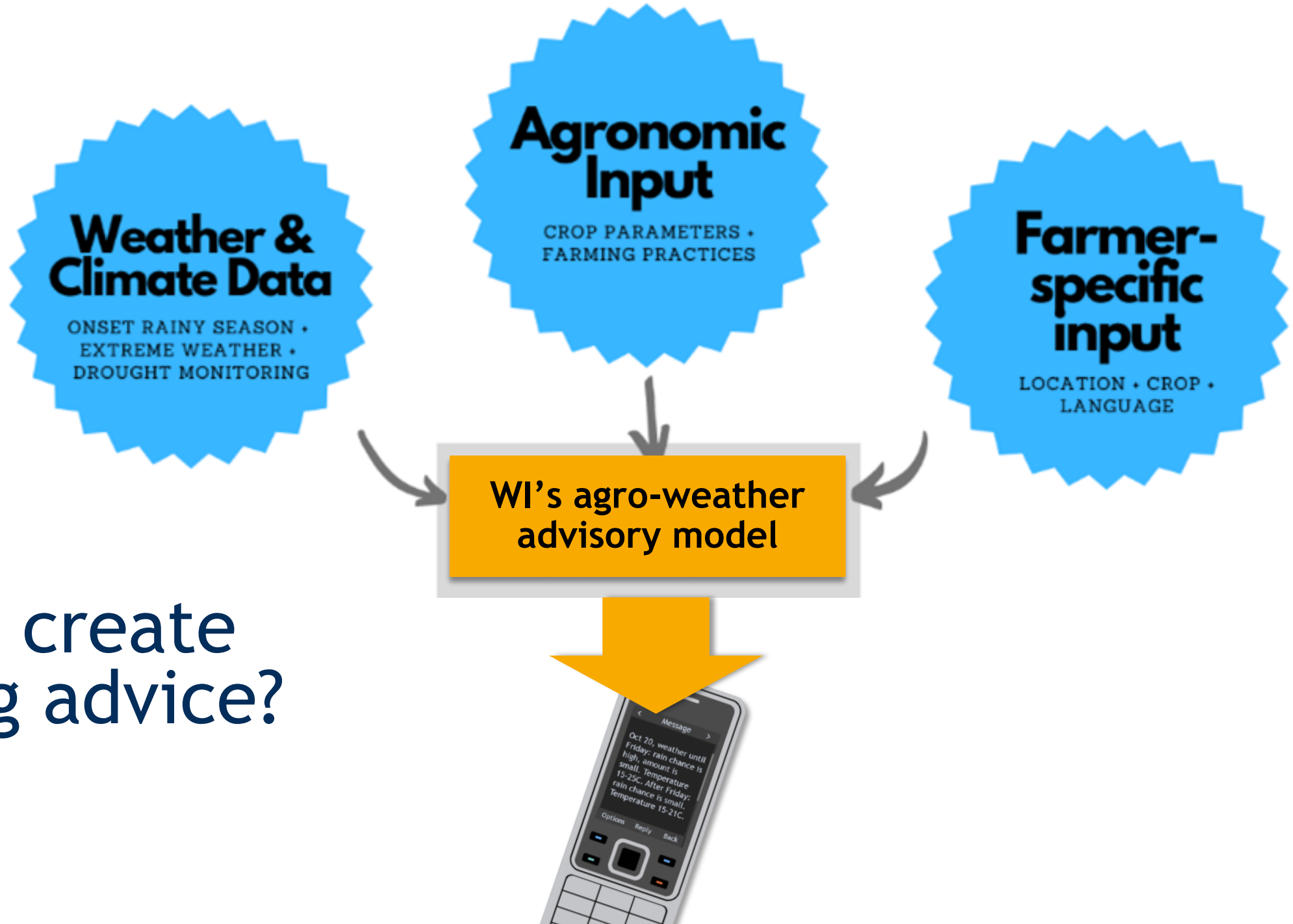
✓ building and sustaining **collaborations** with local partners to create **impact**



Providing farming advisories by SMS and capacity building on agro-weather data in Lesotho

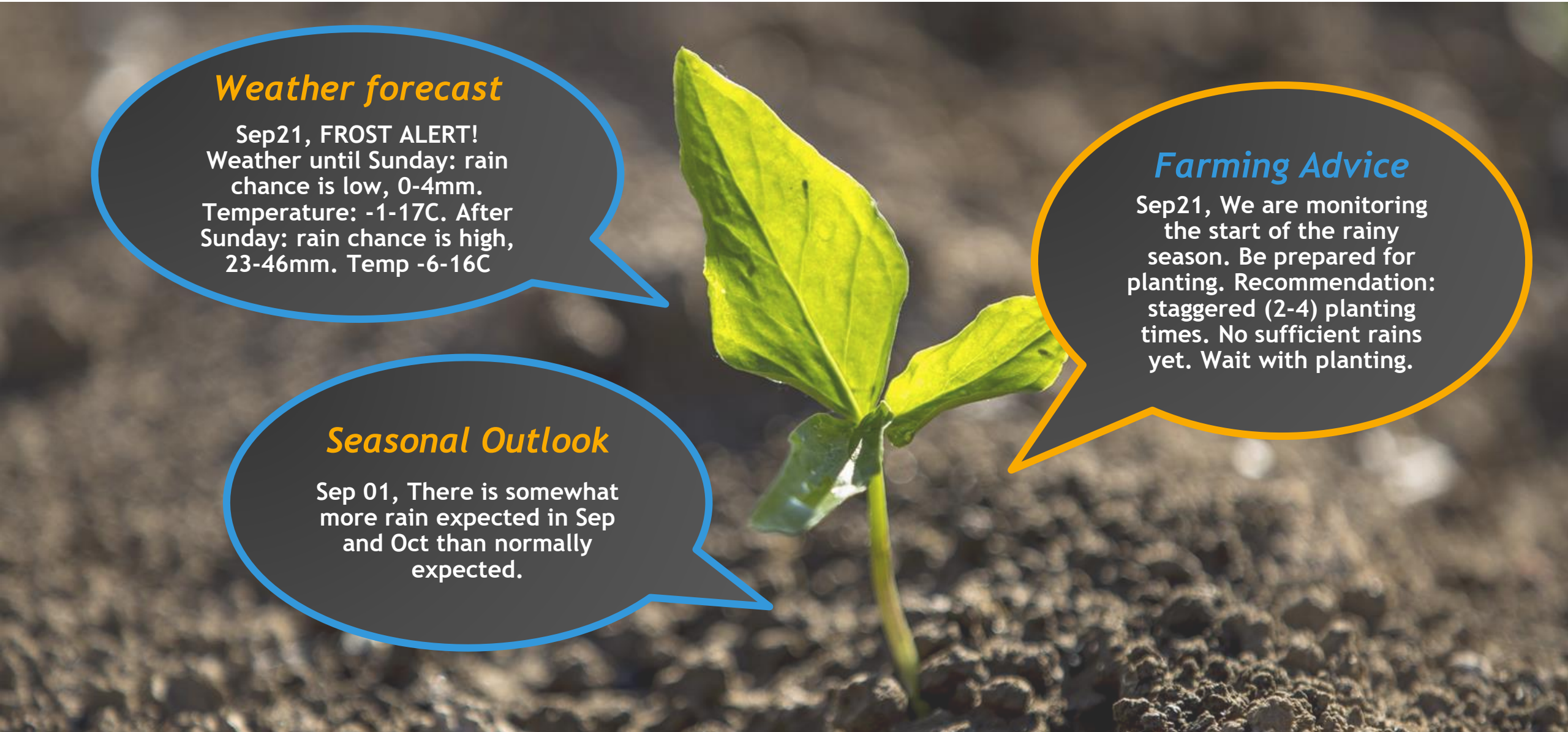
Providing farming advisories by SMS and capacity building on agro-weather data in Zimbabwe

How to create farming advice?



Weather Impact's SMS Service

Weather Impact

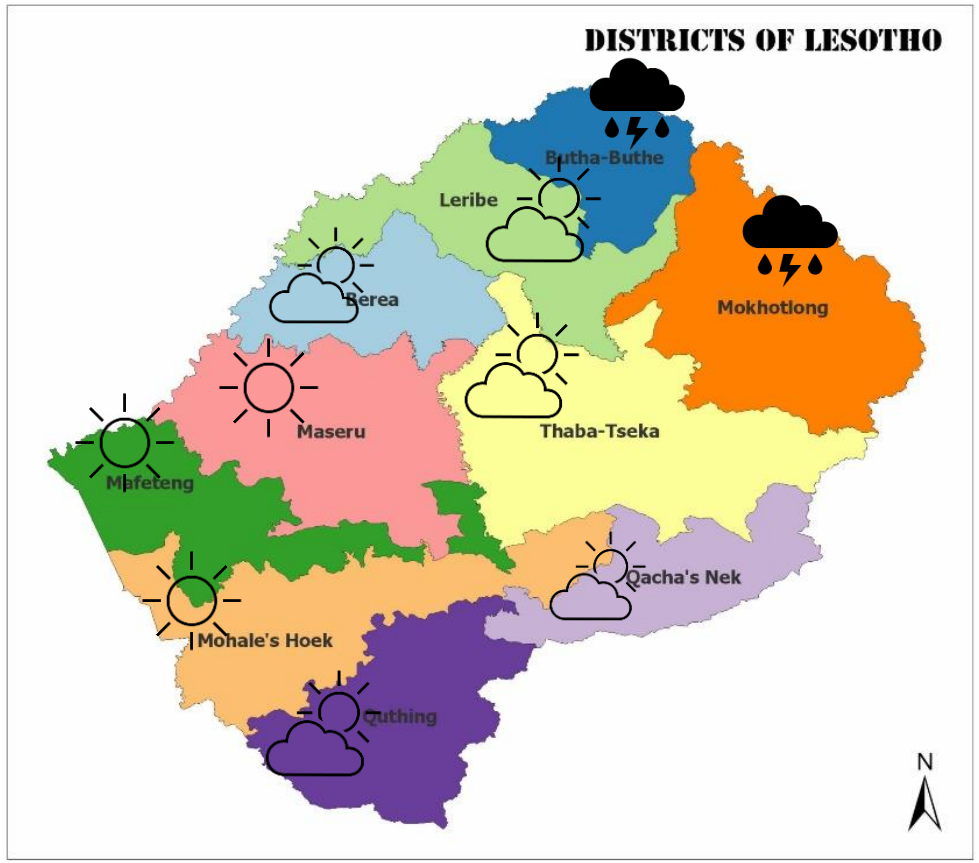


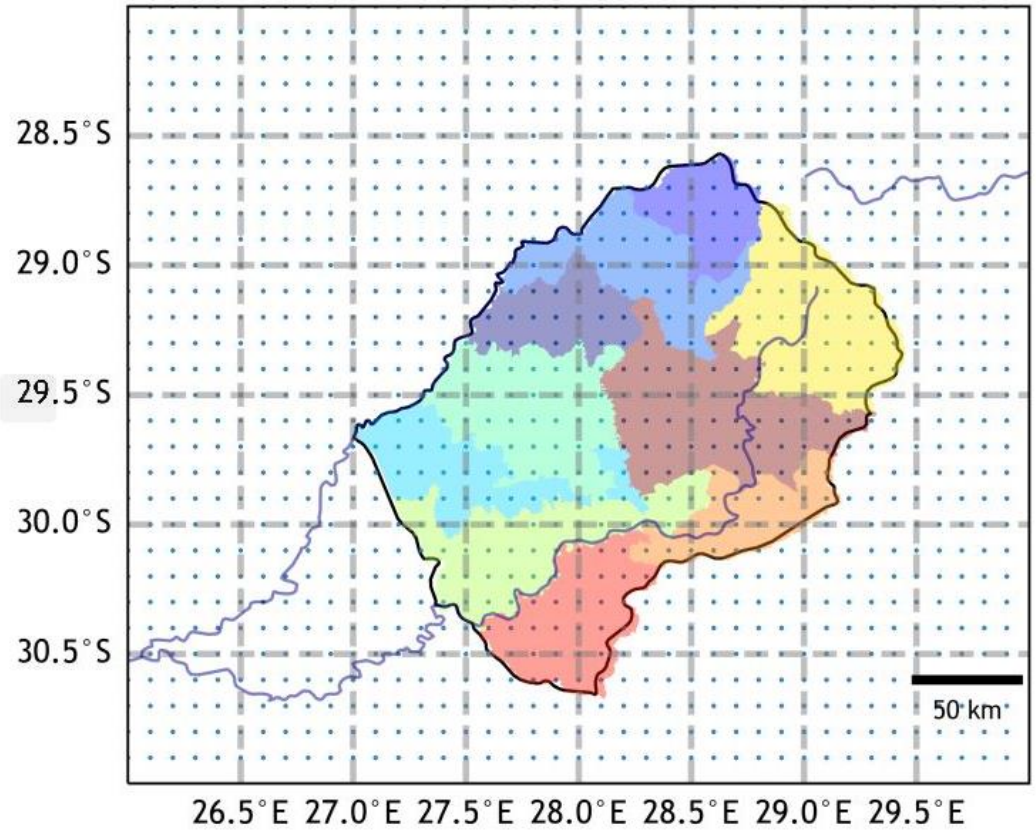
Why SMS?

Weather Impact

Pros

- Location-specific

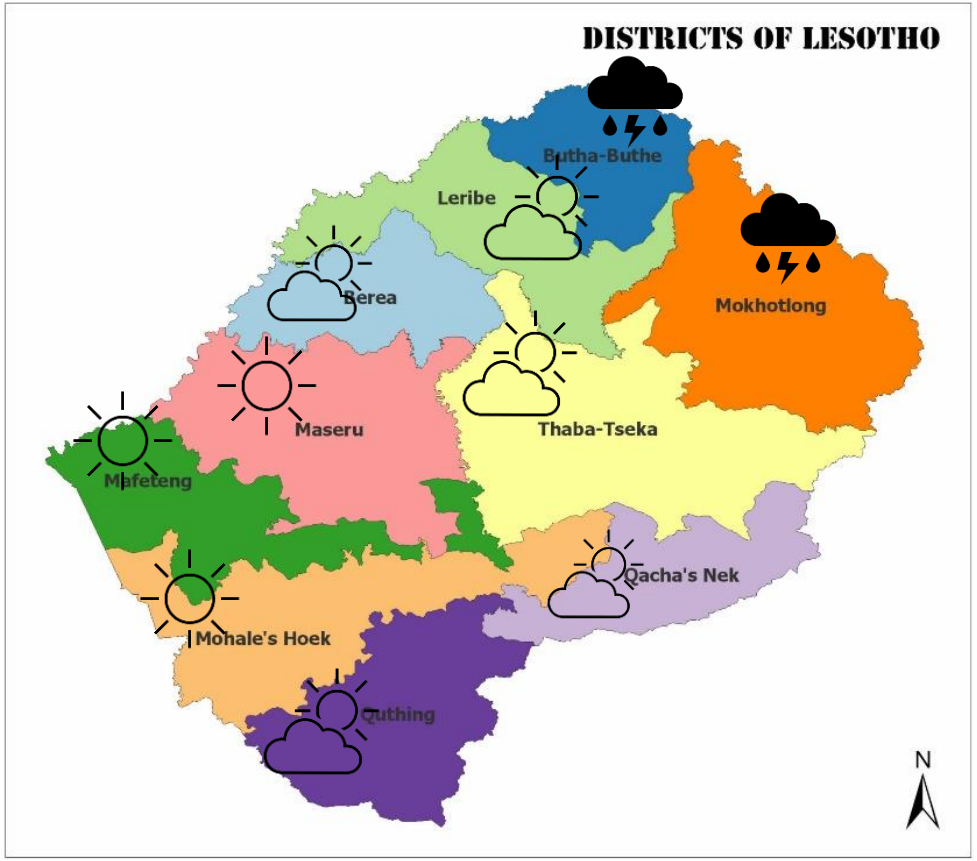




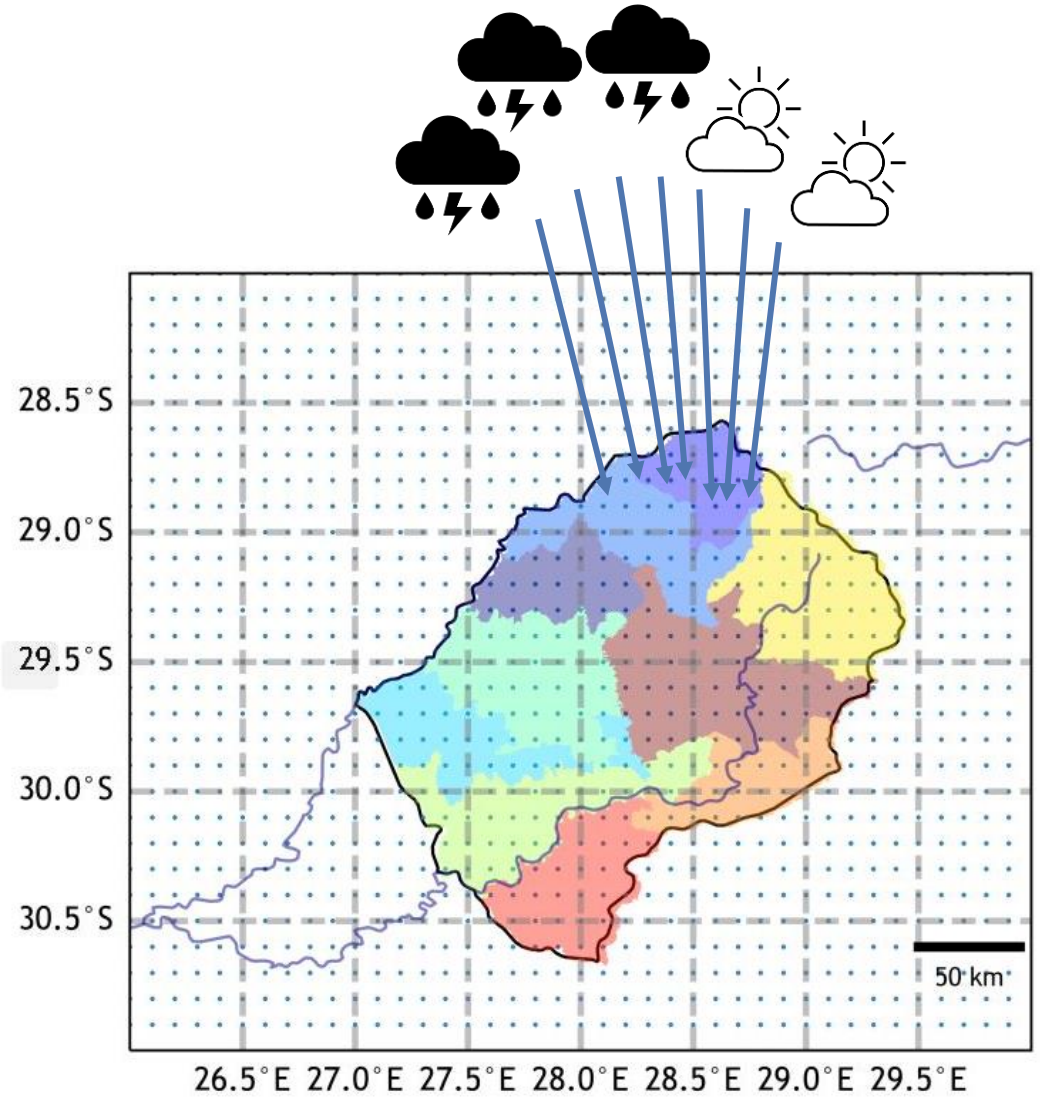
Why SMS?

Pros

- Location-specific



Weather Impact



Why SMS?

Weather Impact

Pros

- Location-specific
- Crop- and farmer-specific
- No smartphone required
- Requires low digital literacy

Cons

- Costly
  → **difficult business model !!!**
- Limited information
  (max. 160 characters)
- No feedback mechanism
  → less accurate advice

How to bridge the cons?

- ✓ Provide a set of services to serve different target groups (e.g., young and old)
- ✓ Harness the opportunities smartphones have to offer
- ✓ Build on existing services for successful user-uptake

Our solution: The Telegram Agro-Weather Chatbot

Weather Impact

- Messenger / Chat app
  - Similar to Whatsapp

- Open source
- Free to use
- Easy to use

- Flexible design opportunities and functionalities (Python compatibility)

Why Telegram?

Weather Impact

- ✓ **Cost-effective:** send bulk messages for free
- ✓ Large message capacity: send text, images, videos, and more
- ✓ Information can be accessed any time
- ✓ Possibility of push-messages for alerting
- ✓ User can request **location**-specific advice
- ✓ Two-way communication: feedback and data collection from user possible
- ✓ *Why Telegram instead of Whatsapp? No reviewing process and for free*
- ✓ (-) use it as additional service to SMS (account for challenges in onboarding and digital literacy)

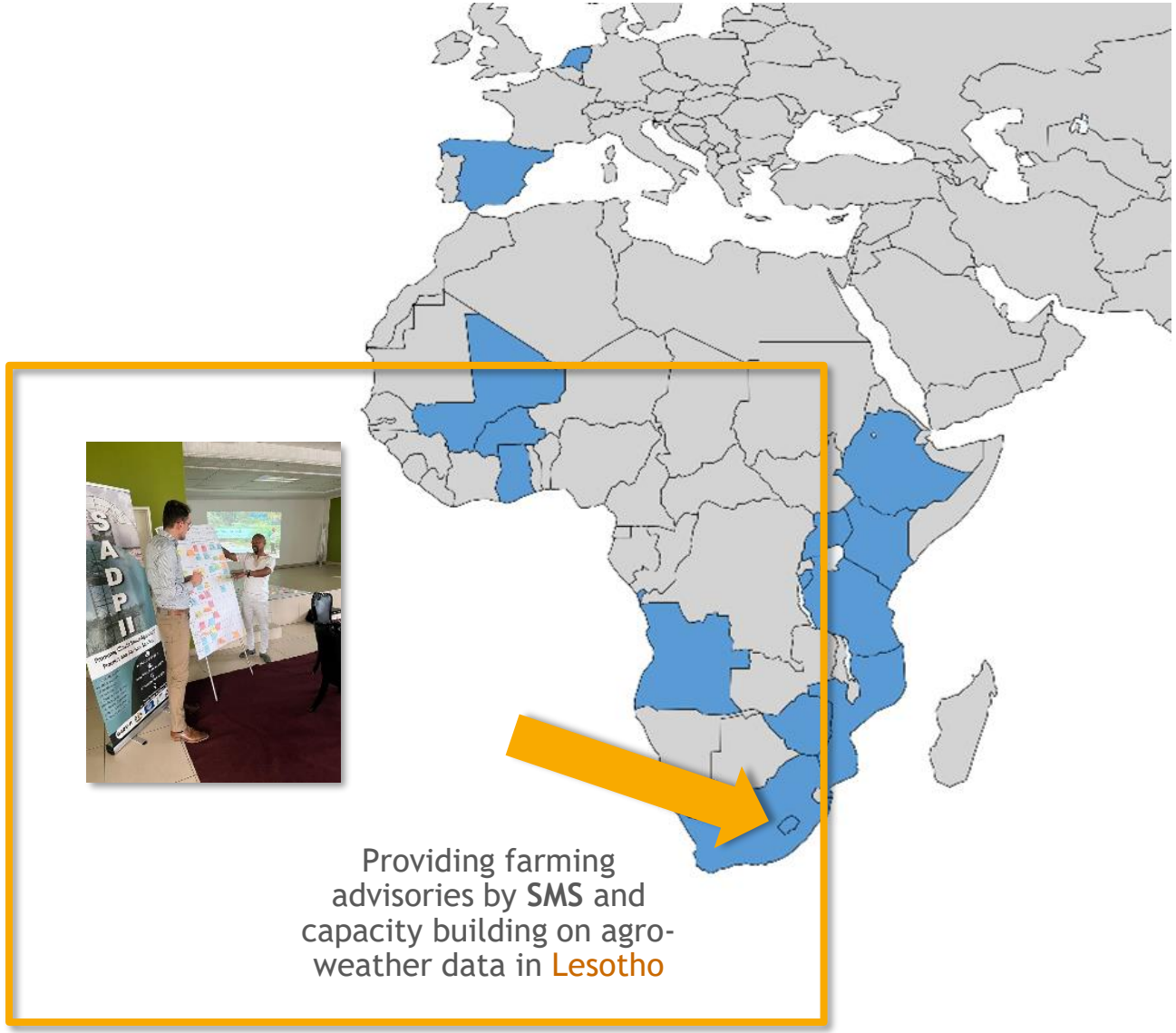
Why Telegram?

Weather Impact

WI is started developing a chatbot prototype in early 2023 for **sophisticated, timely, and actionable agro-weather advice** for smallholder farmers.

Pilot in Lesotho

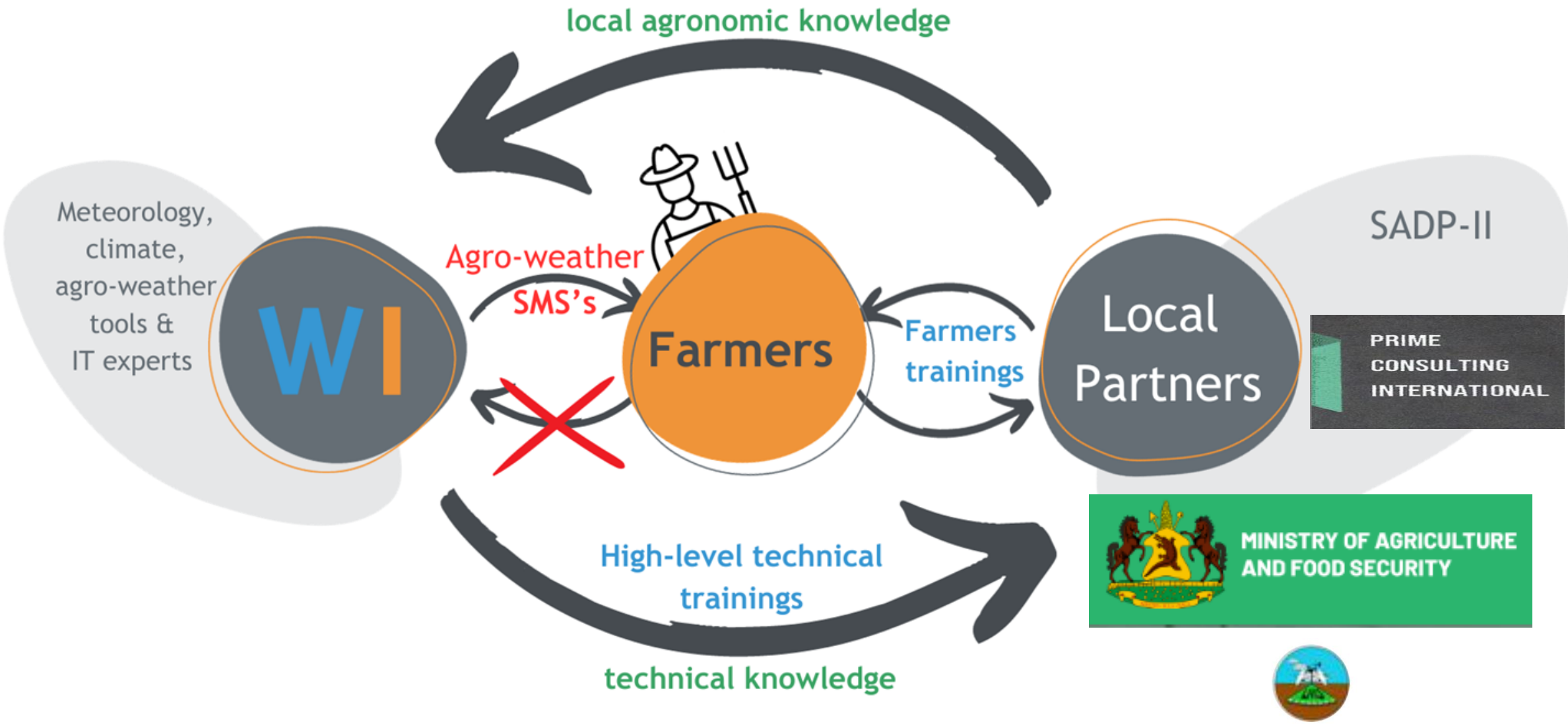
Weather Impact



Providing farming advisories by **SMS** and capacity building on agro-weather data in Lesotho

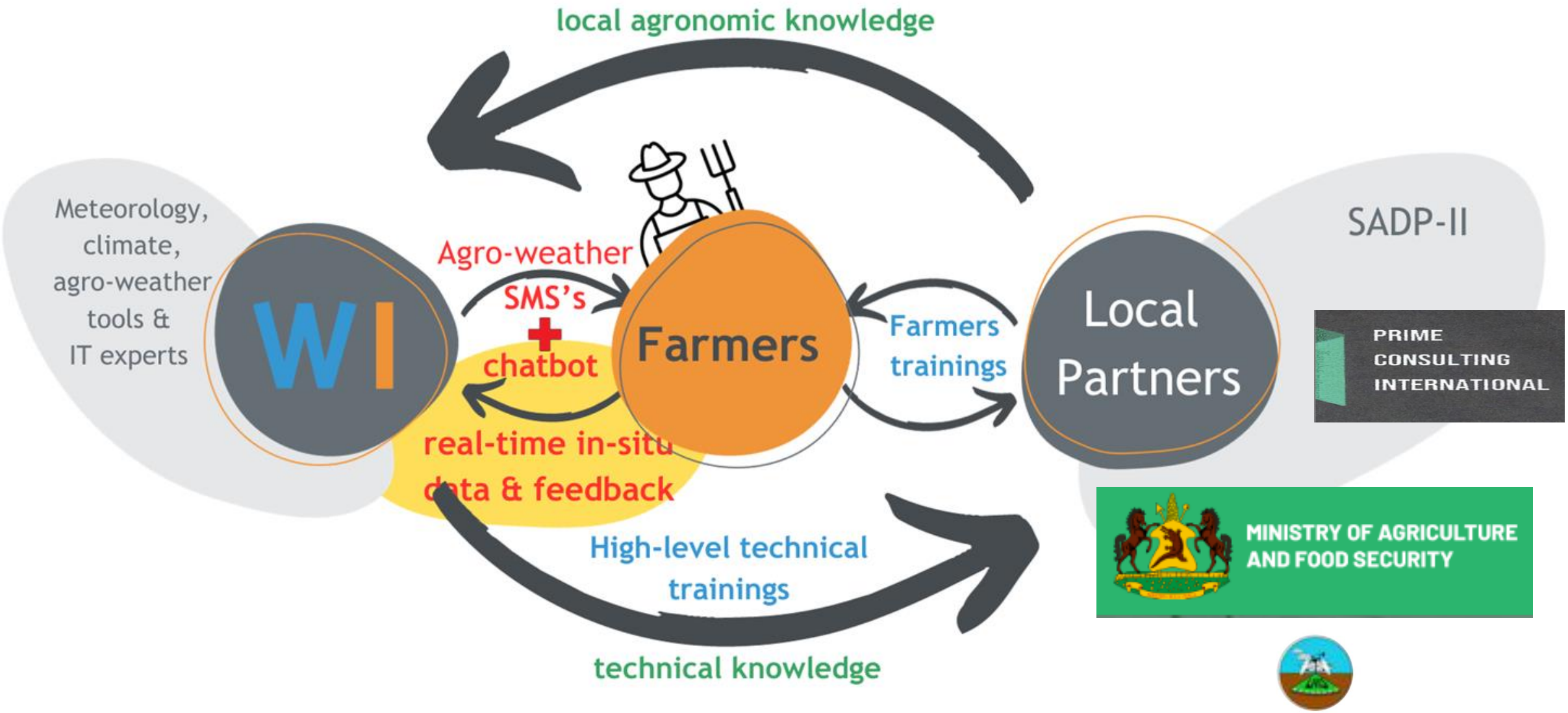
Lesotho: Smallholder Agriculture Development Project II (SADP-II)

Weather Impact



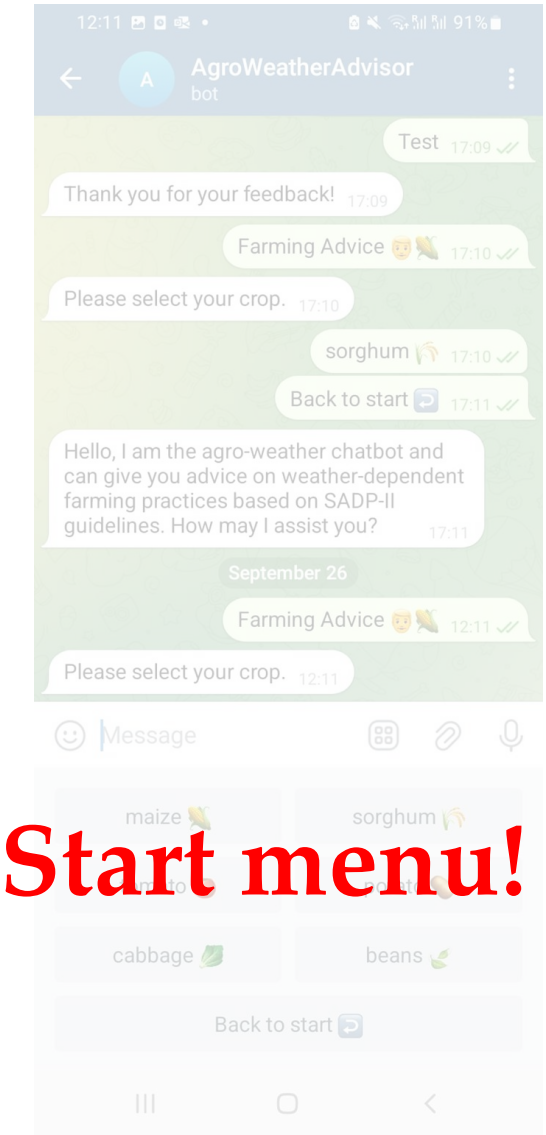
Lesotho: Smallholder Agriculture Development Project II (SADP-II)

Weather Impact

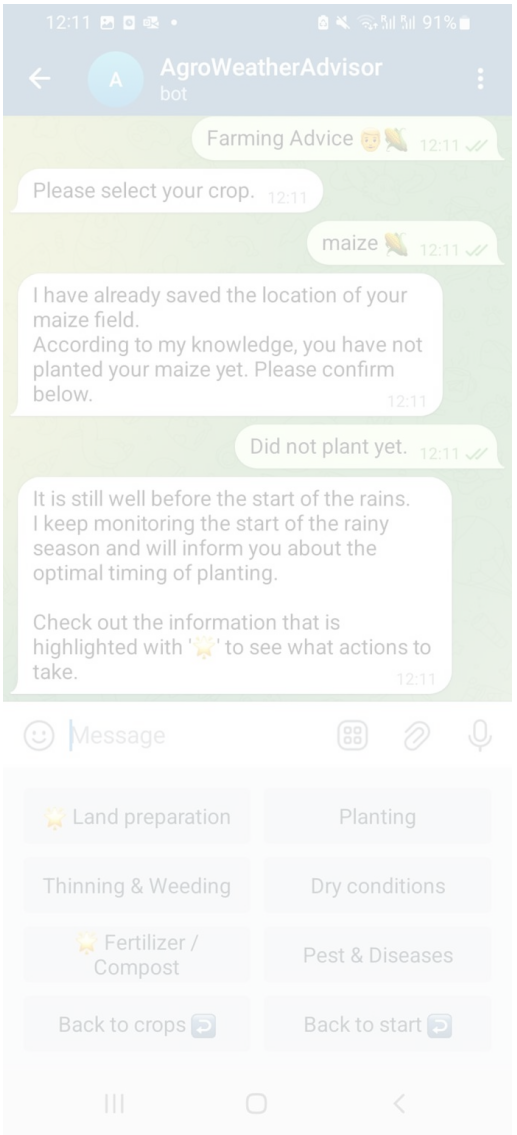


Chatbot functionalities

Weather Impact

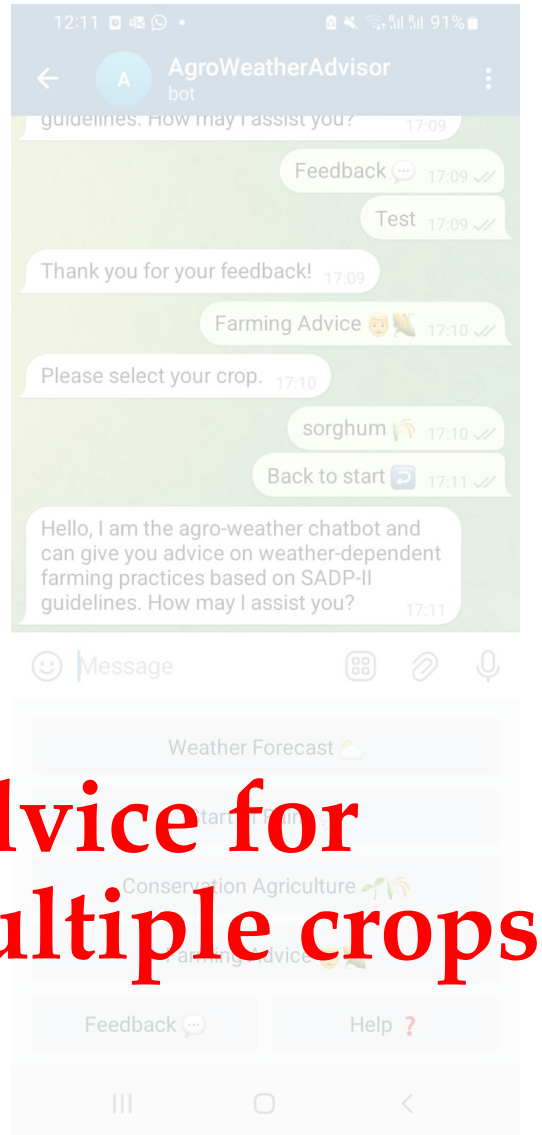


Start menu!

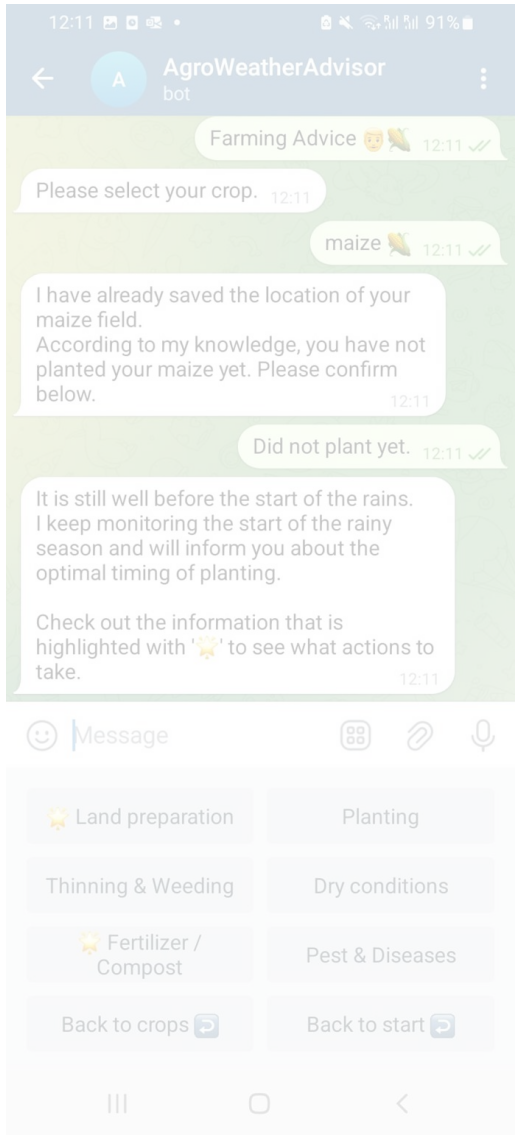


Chatbot functionalities

Weather Impact

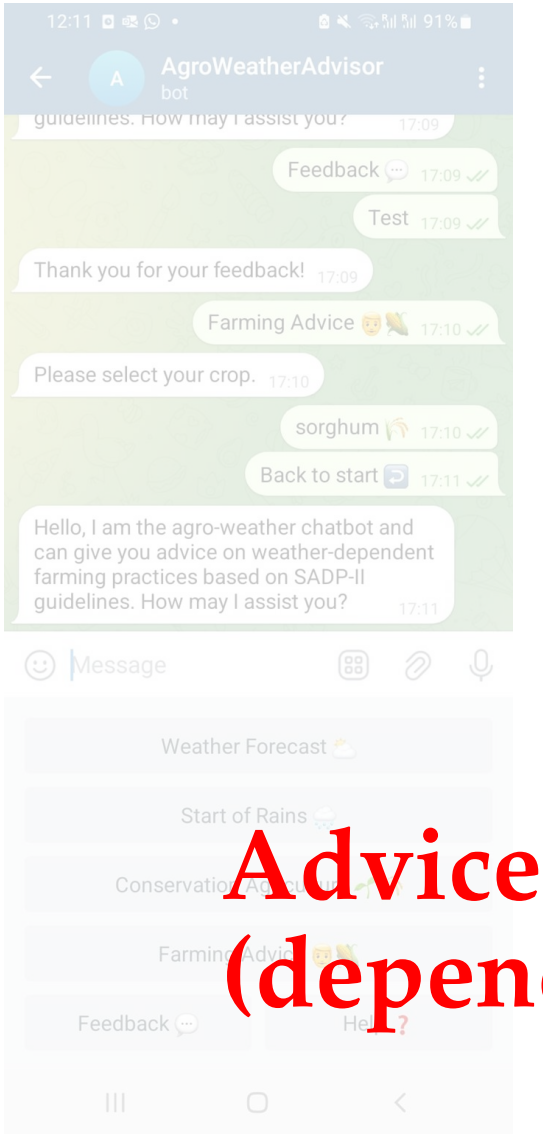


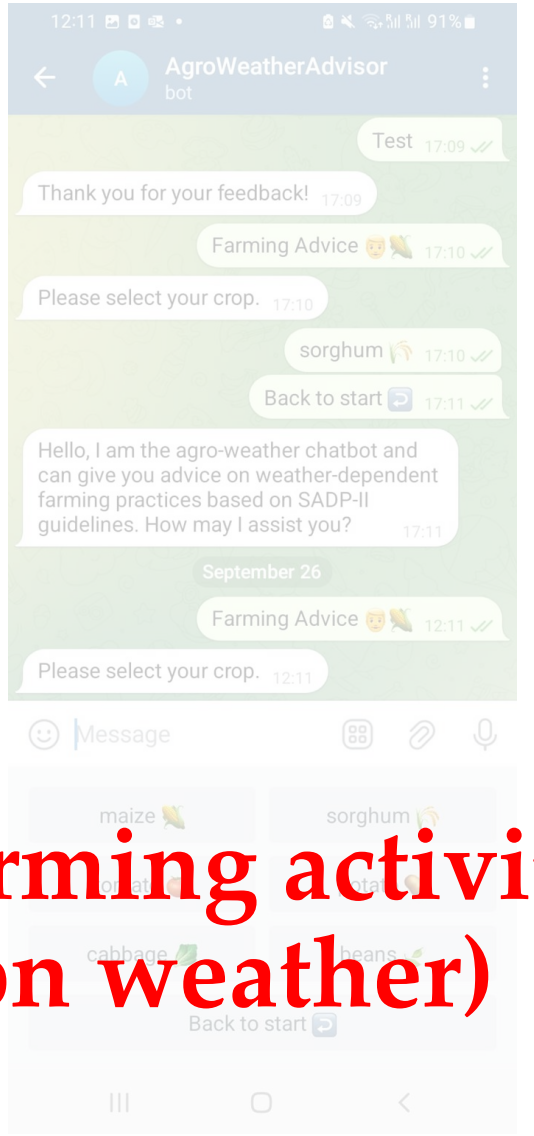
Advice for multiple crops



Chatbot functionalities

Weather Impact

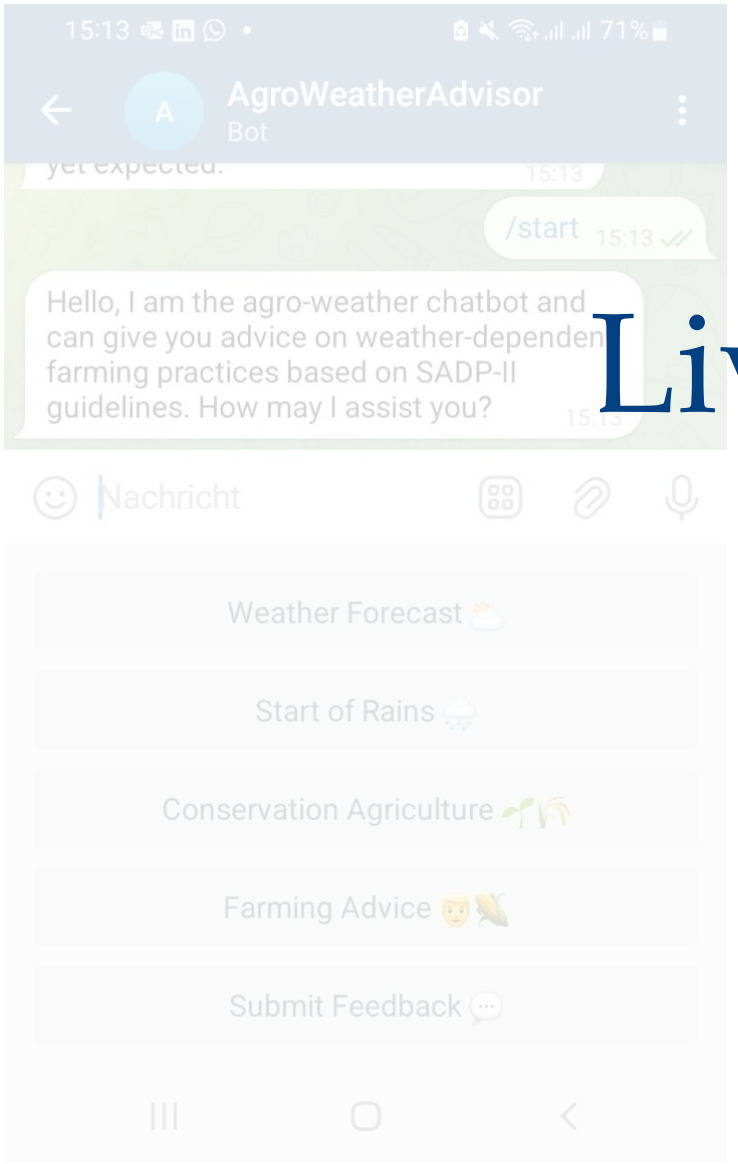


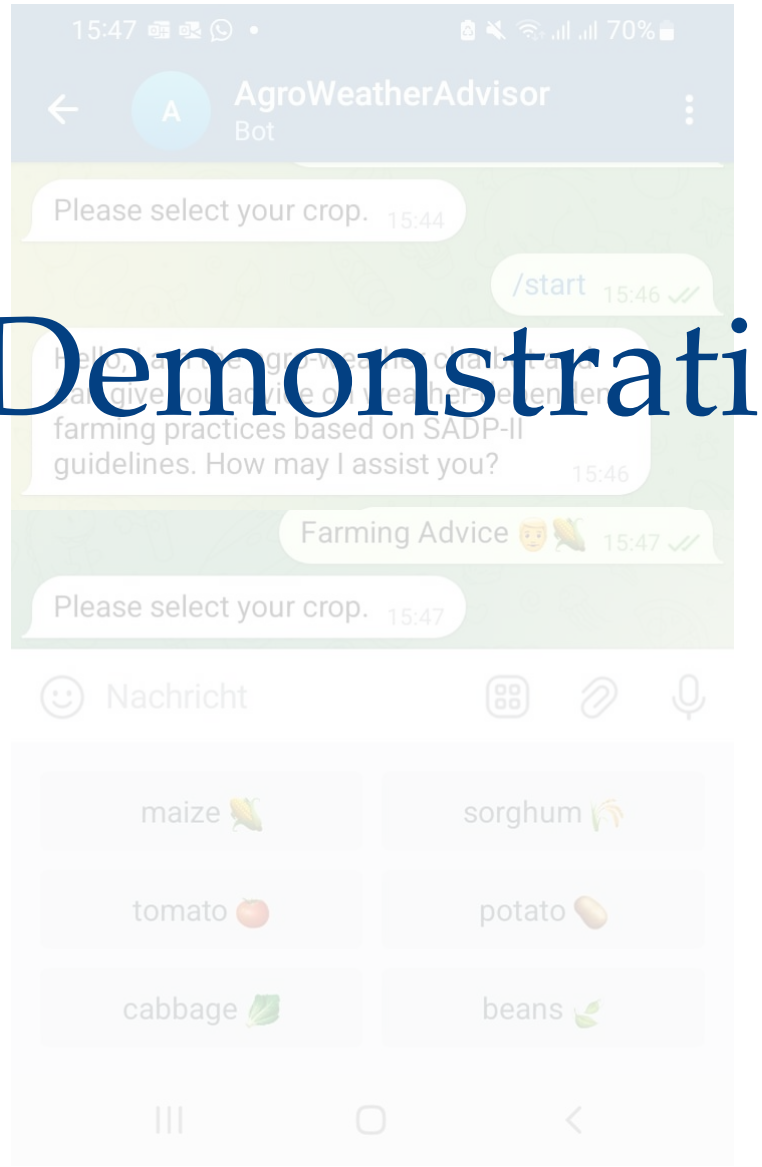


Advice on farming activities (depending on weather)

Chatbot functionalities

Weather Impact





Live Demonstration

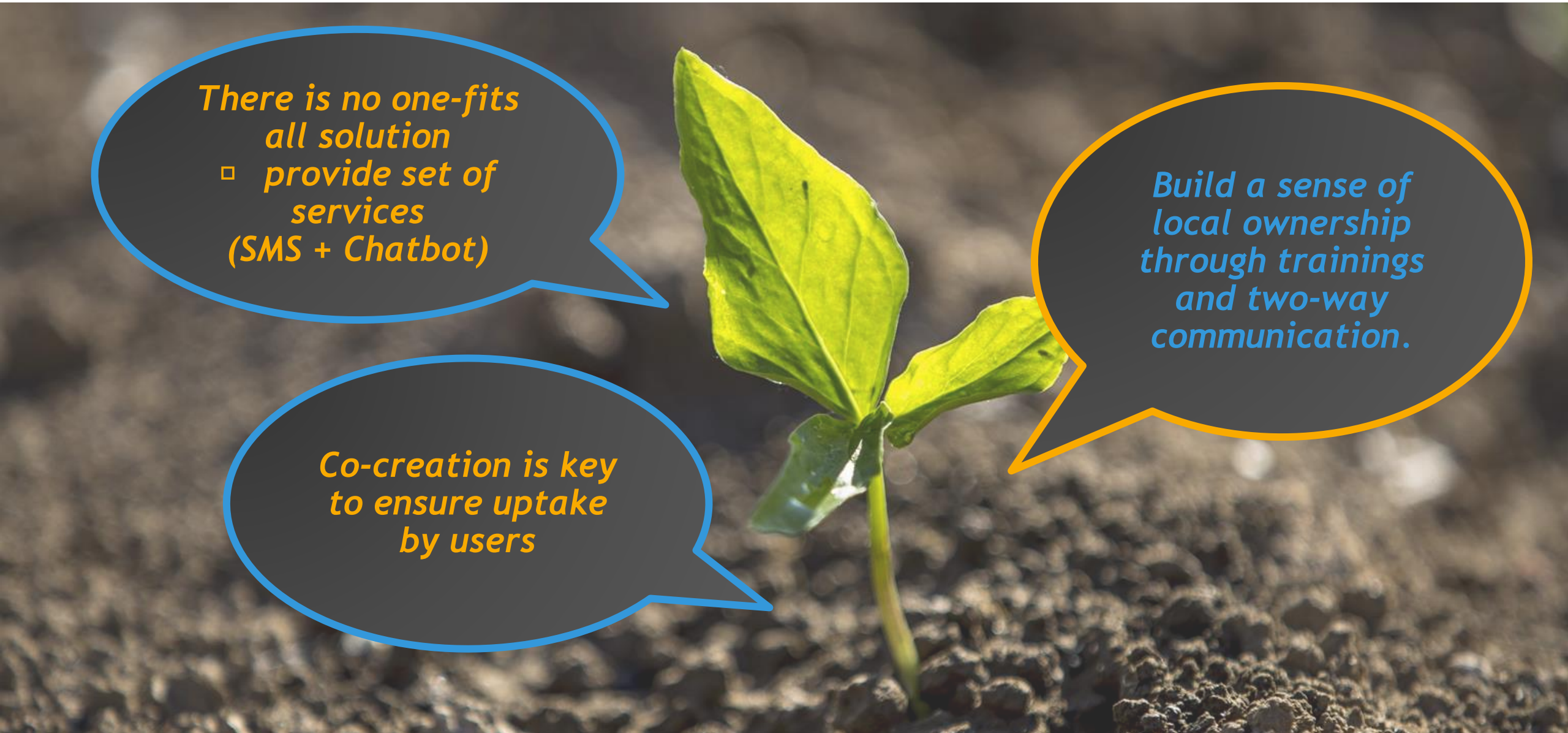
Pilot Timeline

Weather Impact

1. **October 2023**
   - **Add** the chatbot as a dissemination tool to balance the cons of SMS's
   - Chatbot user and co-creation **training** with a small group of extension officers
   - Content (Conservation agriculture, Weather forecasts and onset of rains alert, Farming advice)
2. **Oct / Nov 2023**
   - Testing in the field and reaching more extension officers and farmers
   - **Data collection** (farmer profile, planting date and other activities, feedback)
3. **Dec 2023**
   - Implement feedback + improvements
   - **Discuss outlook for chatbot**

Towards Sustainability

Weather Impact



Get in touch

Janina Fraas

Consultant Meteorology and Climate Change

T: +31 638599294

E: janina.fraas@weatherimpact.com

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

DCAS Providers' Perspectives – Panel Discussion

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker
Prof Sue Walker

DCAS Delivery to Smallholder Farmers - Pros/cons of Free vs Subscription Service: Challenges and Benefits

Prof Sue Walker

Agrometeorologist Specialist Researcher & Emeritus Professor
Agricultural Research Council & University of the Free State
South Africa
walkers@arc.agric.za

ARC • LNR
Excellence in Research and Development

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

Introduction

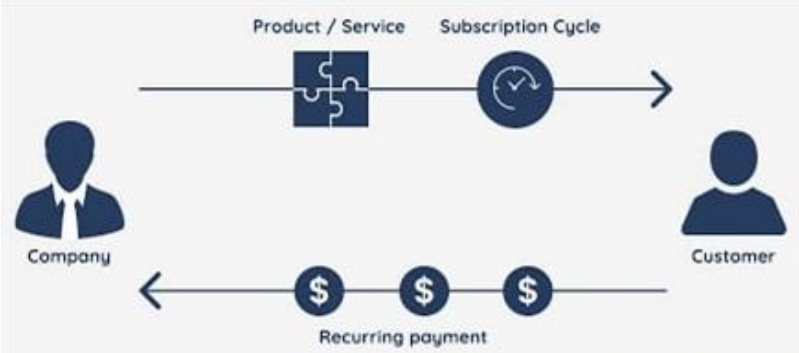
- Many tools have been developed in the recent past mostly by researchers and IT specialists
- However, there is little uptake by farmers.
- Subscription services
- Some examples using partial digital services:
  - Group membership
  - Apps & Webpages
  - National Meteorological Services advisories
  - Together with crop insurance

- Remember –
- ***“If you don’t ask the right question – you won’t get the right answer”***

Definition – Subscription Service

A subscription service - offer to sell products or services on a set timeline (monthly or weekly).

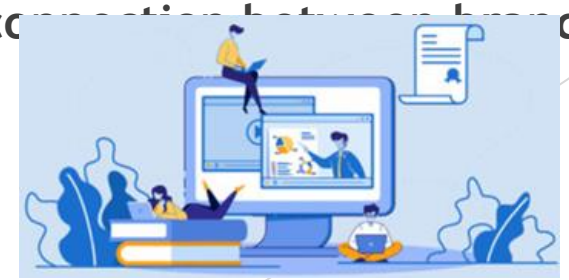
- customers charged on recurring basis (recurring fee) for product/service.
- repeated transactions scheduled on a regular basis
- choose how long & how often to receive each offer.
- option to renew or cancel.
- a contract between you and the customer.



Types of subscriptions

- Fixed usage subscription = a set price for a fixed quantity of goods or services over a set time frame.
- Unlimited usage subscription = set price for unlimited access.
- Pay-as-you-go-subscription = convenience model or no-commitment billing.
- Freemium model = offers access to limited levels of content for free.

Subscription relationship provides a **new level of trust & co** **d & consumer**.



- Predictable revenue & Customer loyalty for business.
- Convenience & cost effective for customer.

Why pay for Climate Data?

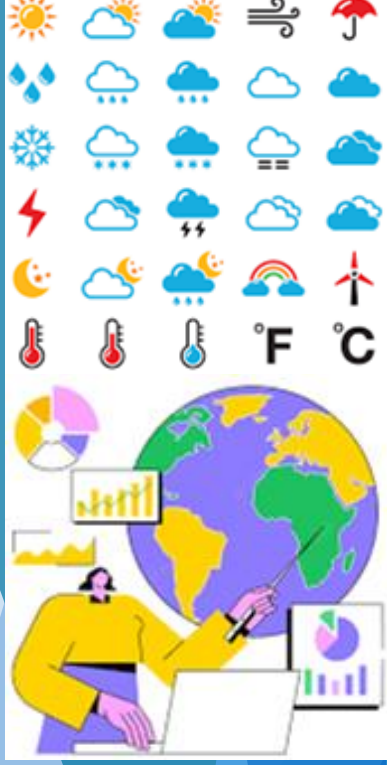
- There are so many place where you can download climate data,
- So people **do not want to pay for climate data** from reliable sources.
- However, you need to evaluate the “climate data” by asking some questions:
  - Is it actual measured or observed data? Available at the point of measurement from automatic weather stations.
  - Is it climate surfaces? Grid data - Spatially interpolated monthly climate data for global land areas.
  - Is it reanalysis data? S blend of observations with past weather forecasts rerun with modern weather forecasting models.
- What climate data to use depends on what you want to achieve.

Why pay for weather forecasts?

- Many free weather forecast systems are available
  - Google, AccuWeather, Windy, yr.no, Weather Underground, WeatherBug, Weather Radar & Live Forecasts, NOAA Weather, Weather on The Way, RadarScope, CARROT Weather, 1Weather, Clime, Yahoo Weather, The Weather Channel, FAO-WAPOR

But

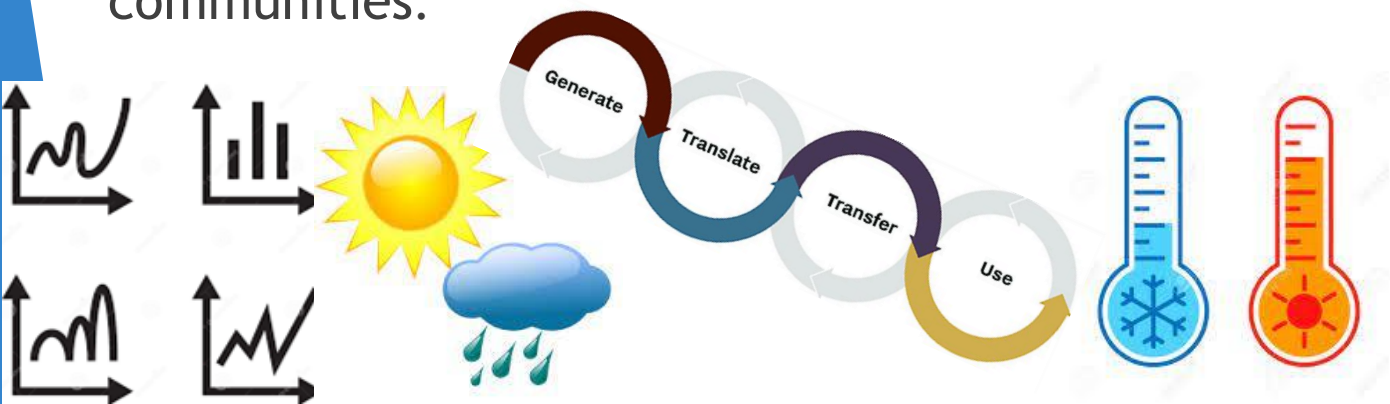
- Do we know where the information comes from?
- Do we know how accurate the information is?
- The best weather and climate data is that recorded and stored by the scientific organizations – usually the **"National Weather Services"** as the stations are maintained to the World Meteorological Organization standards.
- Therefore, when weather is used for climate services and advisories, we need the very best we can obtain.
- **The major drawback of such "weather apps" is that there is no way to validate the accuracy of such data and information, but this has not deterred users as evidenced by the rise in uptake of these services, especially among crop farmers (Midgley et al., 2022)**



Climate Services

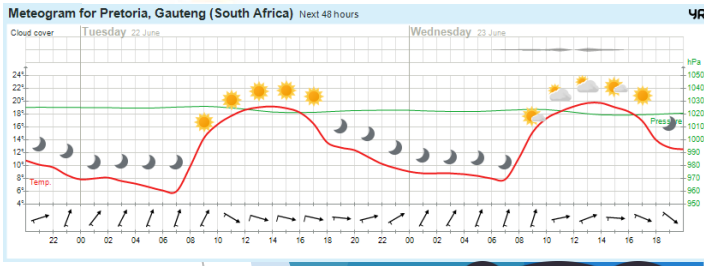
Provision of scientifically based information & products to enhance users' knowledge & understanding about impacts of climate on their decisions & actions

- provide climate information to help climate sensitive sectors (individuals & organizations) make **climate-smart decisions.**
- data & information transformed into customized products **with Added-Value**:
- advisories, services, projections, trends, economic analysis & alerts for different user communities.



Can be for:

- Different time scales:
  - Past data
  - Short-term: 1-3 days
  - Medium-term: 3 – 14 days
  - Long-term: 14d & seasons
  - Climate change for decades
- Different Sectors – water/food/industry/city/tourist
- Various geographical scales
  - Local to national or regional



Agricultural Climate Services or Advisories

Key elements are:

1. **Monitoring** – good coverage of automatic weather stations

1. **Data** – collection & quality control & storage & access

1. **Tools** – to formulate tailor-made messages

2. **Communication methods** – 2-way dissemination & feedback;
3. **Risk analysis** for climate variability & change & emergency response – many levels
4. **Manage food systems security information & resources**
5. **Develop environmental services**

Gaps across Southern Africa:

1. **Weather station network:**
   a) Poor spatial distribution lacking for each agro-eco-zone.
   b) Inadequate automation & hourly reporting.
2. **Data archive:**
   a) Lack data quality checks & seamless storage
   b) Poor accessibility to data sources- available for public & society
3. **Tools Needs:**
   a) Routine analysis & address specific needs
   b) Development & Design of new advisories
   c) Frequent interaction with Users for requirements
4. **Communications**
   a) Traditional methods are strong (radio, TV, paper bulletins)
   b) 4IR – Needs development & new applications
   c) High-speed mobile Internet, AI & automation, Use of big data analytics, & Cloud technology.

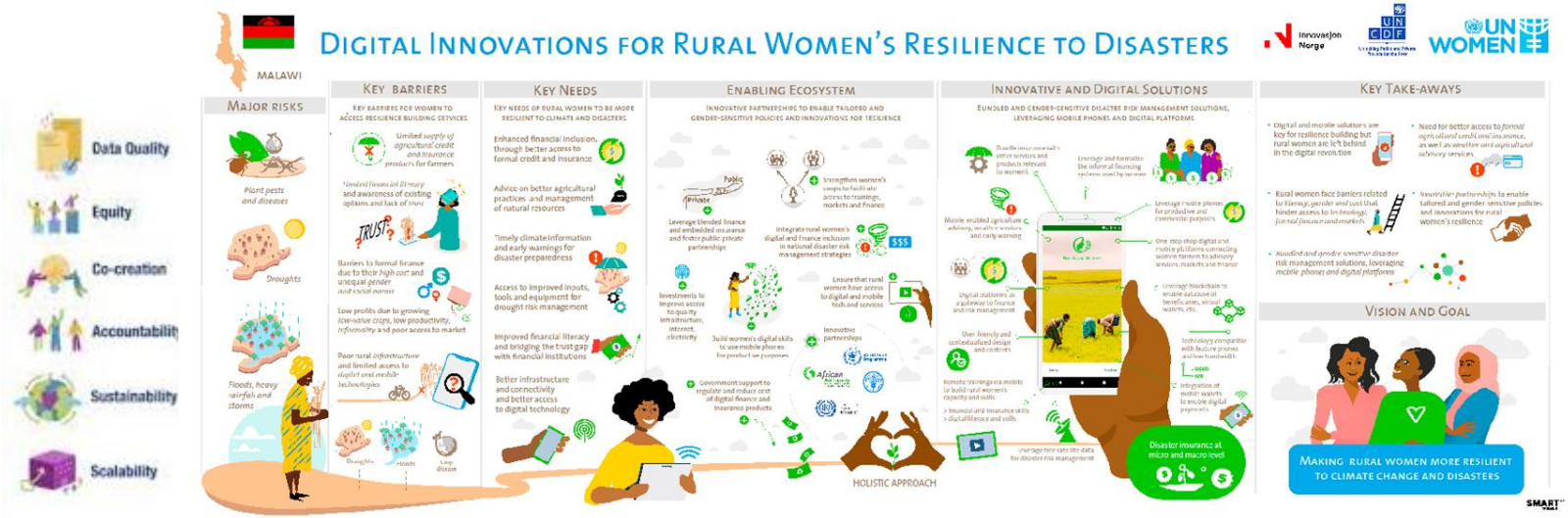
Examples of Digital Ag CS

Using Some Digital Aspects

- Group membership - Science Field Shops & Rainfall Measuring Club Groups - Indonesia
- AgriCloud App – South Africa
- National Meteorological Services (NMS) Examples - forecasts
- Citizen Science
- Business Case - private services
- Weather information together with crop insurance

Pay-as-U-go

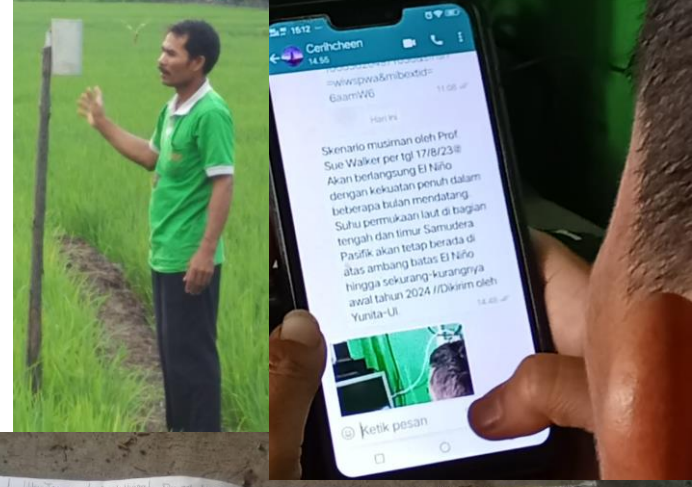
- AgroMet Agri-Data Web Portal – South Africa (https://www.agroclimate.agric.za/WP/WP/)
- ARC Agricultural Drought Early Warning System (https://www.drought.agric.za/)

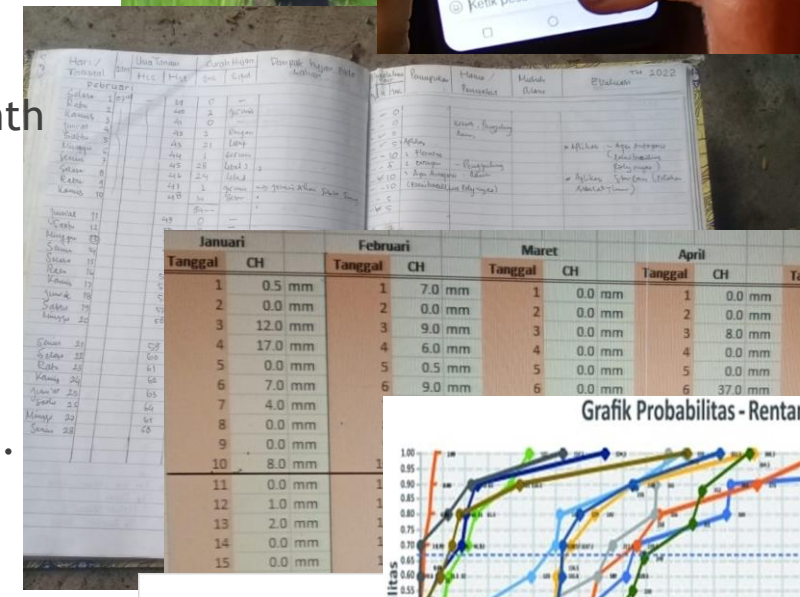


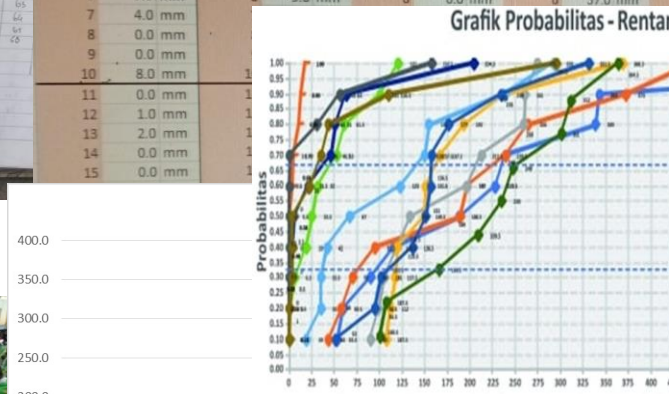
Dissemination via Group Membership

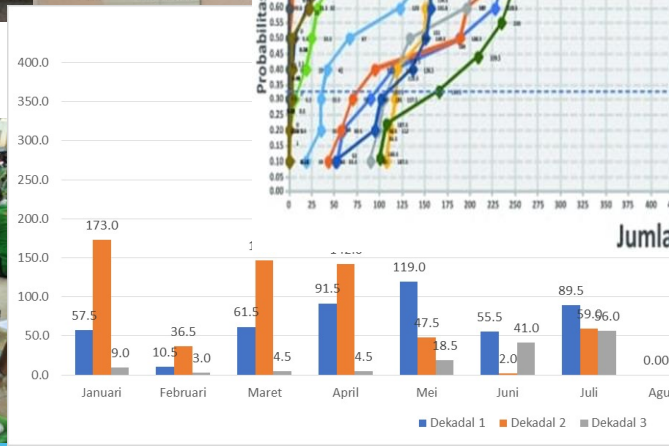
Indonesia – “Rainfall Measurement” groups or clubs

- Formulated as “Science Field Shops” – established with support from Universatas Indonesia
  - Must measure your own daily rainfall to be a member
  - Meet once per month to compare and contrast rainfall received in last month
  - **Distribute seasonal forecast via sms**
  - Discuss interventions according to seasonal forecasts
  - Use “8 Climate Services” – including **Rainfall Database**
  - Assist each other by sharing new knowledge & learning organizational skills.
- Overall better yields that other non-member farmers
- Improve soil fertility and sustainability of rice farming system
- More resilient to climate variability
- **Essentially “free” shared information via digital means**







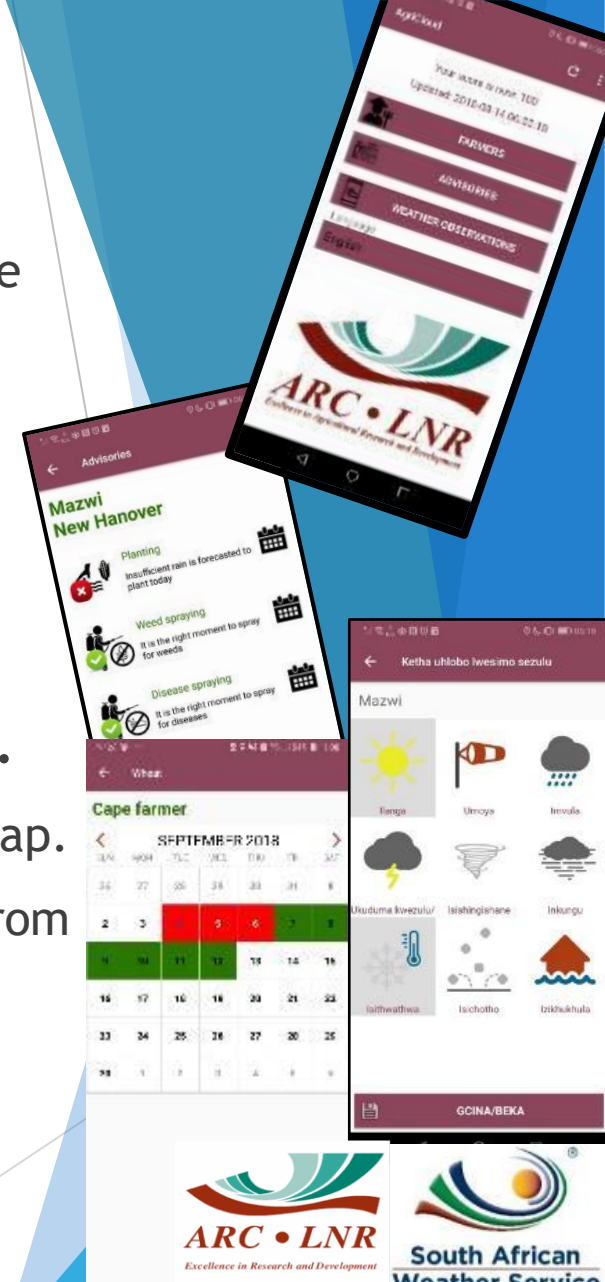


AgriCloud App

AgriCloud = a mobile phone 'Planting App'

Developed during Rain for Africa (R4A) project funded by Netherlands Space Office

- Addresses gaps in info relating weather to crop production
- AgriCloud App provides:
  - Planting advice
  - Spraying advice against pests and diseases
  - Collect current weather conditions by crowd sourcing.
- Farmers only need info for their own farm - Register with precise location on map.
- Based on scientific information and weather forecasts using climate grid data from ARC-ISCW & SAWS & rainfall from NASA.
- Delivered via cellular telephone:
  - For smart phone – use "AgriCloud" from Google Play Store
  - For simple phone – use interactive "USSD" *134*8383#
- Currently not operational



ARC • LNR
Excellence in Research and Development

South African Weather Service

R4A Rain for Africa

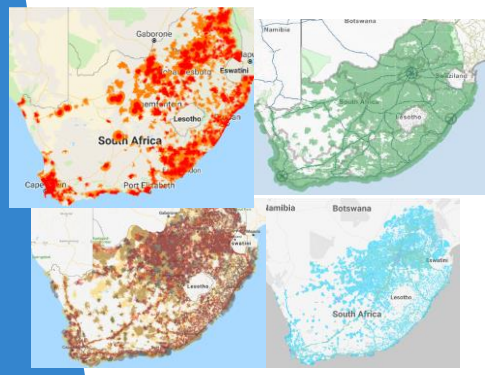
HydroLogic Weather Impact

Netherlands Space Office

Advantages of Delivery by Mobile Phone Services

Coverage

Large numbers of South African farmers have access to a phone & signal



Localised

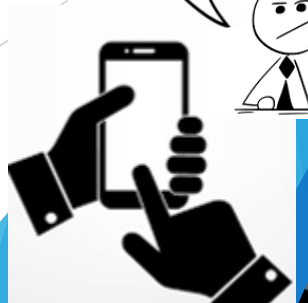
Information is provided precisely for farm location

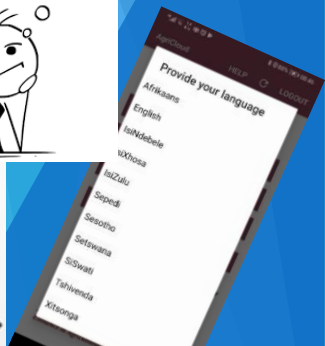
Timely

Information reaches farmer immediately

Local language

User chooses own language





Examples from National Met. Services

Global public good (Chiputwa et al., 2020)

- Not-rivalrous and Non-excludable

Australia: commonwealth government (various departments) & state governments carry cost of supply side of climate services - 2021/22: 21.3% from commercial operations & investment)

- AU-BOM generates around 15% of its annual budget from contractual services.

Brazil: 2 services: Agriculture & Science, Technology and Innovation

- An industry of climate services exists with several private companies providing a range of services to several sectors.
- User application aspects of climate services is less evolved however data products are extensively used by various sectors.

India: Users comprise mainly other institutions, agencies and programmes both within these departments and beyond.

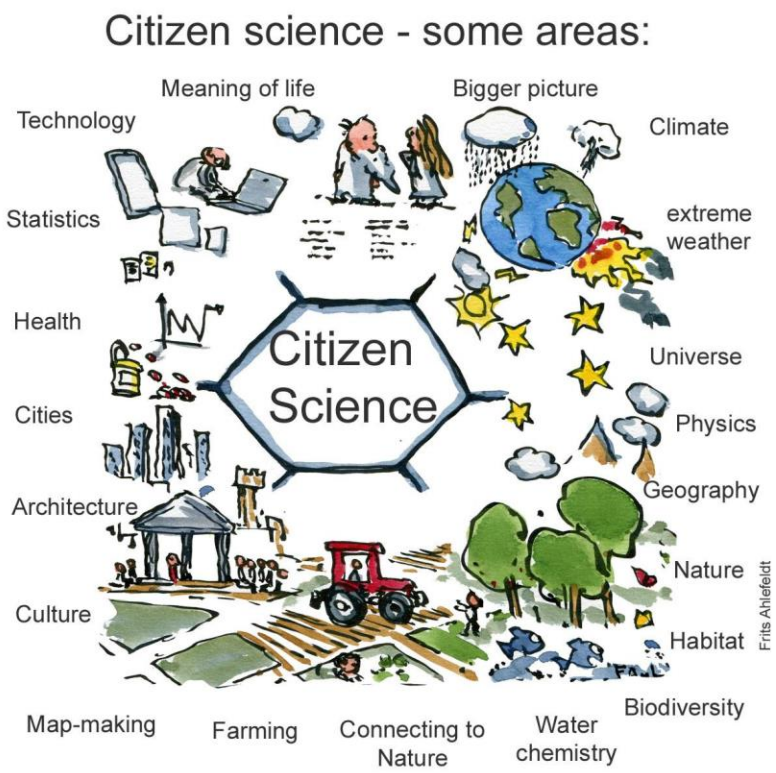
- All of this physical and intuitional infrastructure is government funded.
- Services are devolved in some sectors to municipal level.

Citizen Science

- Actively involve citizens in scientific endeavour that generates new knowledge or understanding.

Citizens: as contributors, collaborators, or project leader

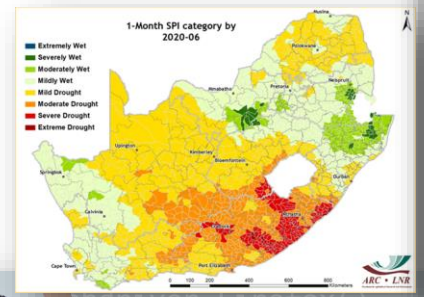
- Have a meaningful role in the project.
- When the public voluntarily helps conduct scientific research.
- May design experiments, collect data, analyze results, and solve problems.
- Bridge divides where researchers do not have connections, social capital, or knowledge on their own.
- Identify new challenges during research process, as well as develop new approaches.
- Includes: observations, monitoring, wildlife counts, land use & degradation

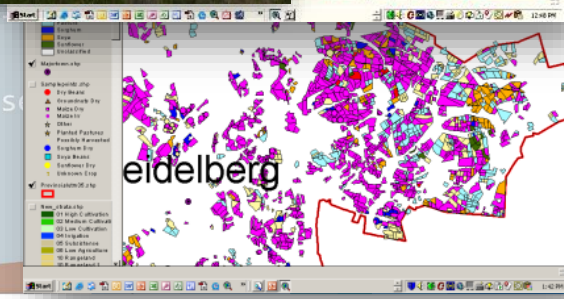


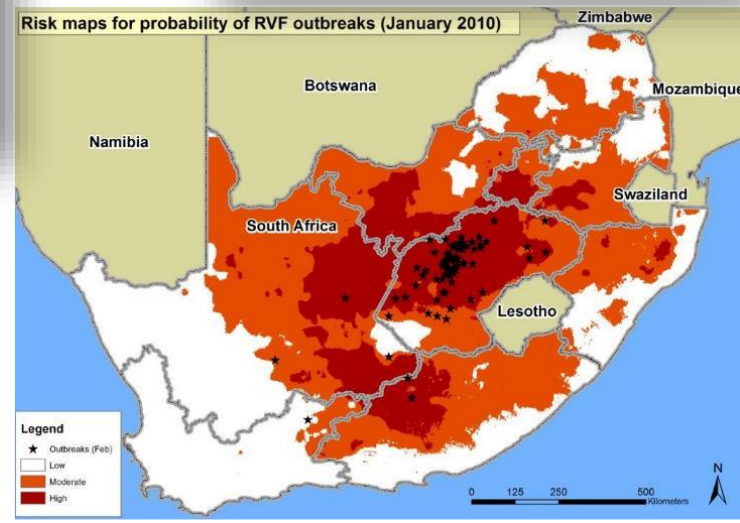
https://drawnjournalism.com/2022/05/08/the-variety-of-citizen-science/

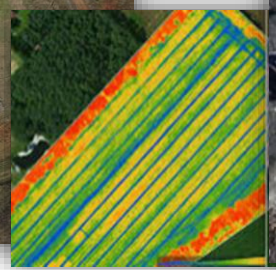
AgroMet Agri-Data Web Portal – South Africa

- Daily climate data available to purchase - Pay-as-U-Go – by credit card
  - Rainfall, Temperatures – maximum & minimum
  - Solar radiation, Relative humidity, Wind speed & direction
- From more than 600 automatic weather stations
  - From early 1990s
- **Services available:**
  - Drought Monitoring - Tool: MESA.
  - Early Warning System for Rift Valley Fever outbreaks.
  - Crop Yield Estimate project-Digital survey.
  - Migration to precision agriculture with artificial intelligence.
  - Automated Python tool for processing climate related data.



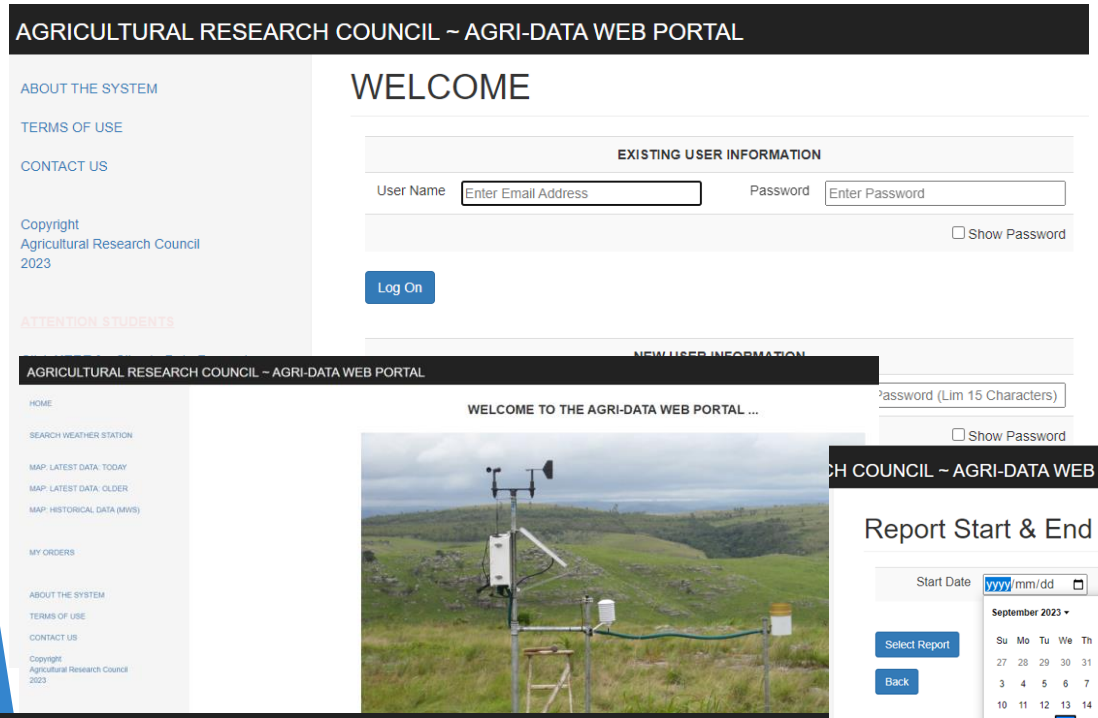


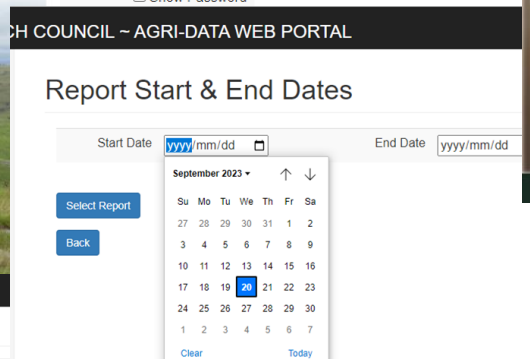


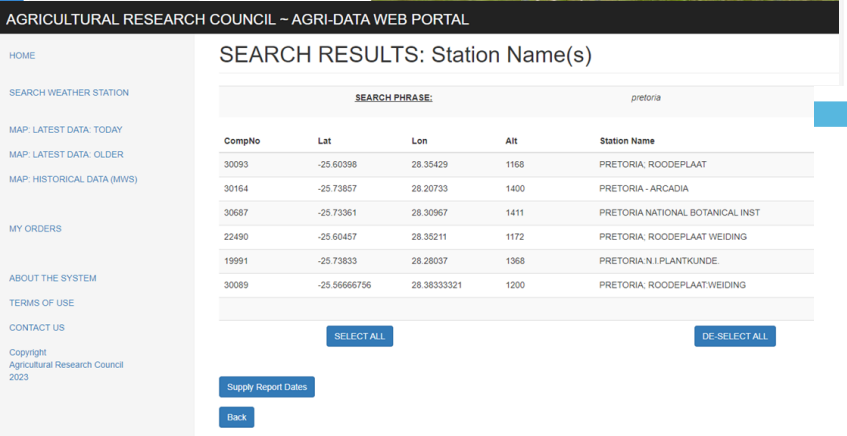


AgroMet Agri-Data Web Portal – South Africa (https://www.agroclimate.agric.za/WP/WP/)

Pay-as-U-go

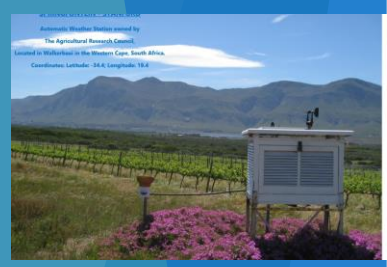


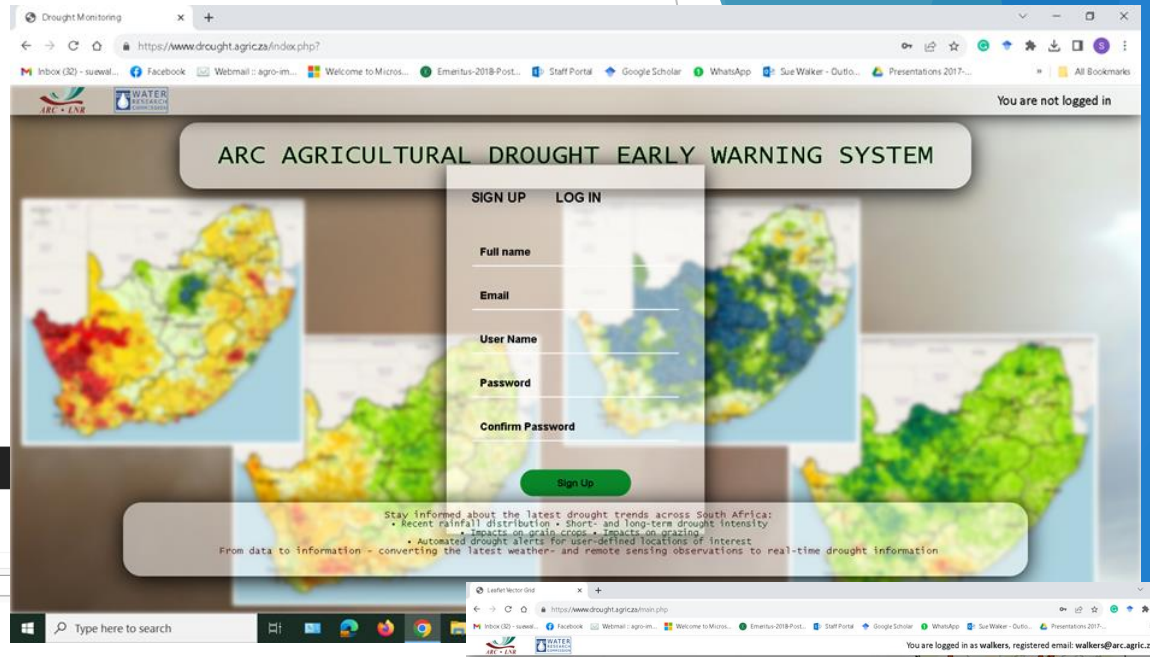


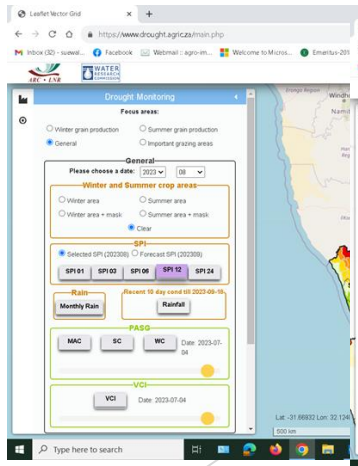


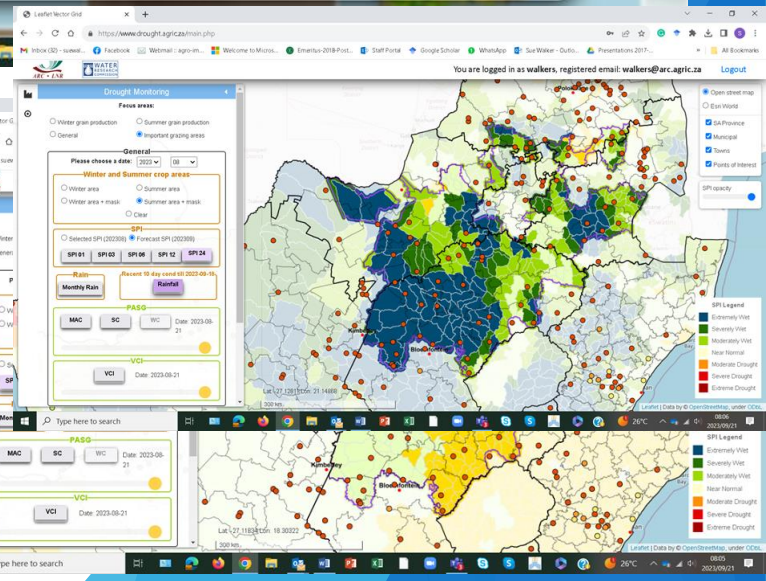
ARC Agricultural Drought Early Warning System

https://www.drought.agric.za/









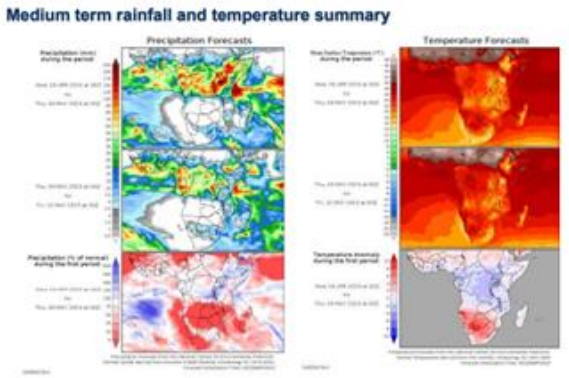
Business Case for Private Weather Services

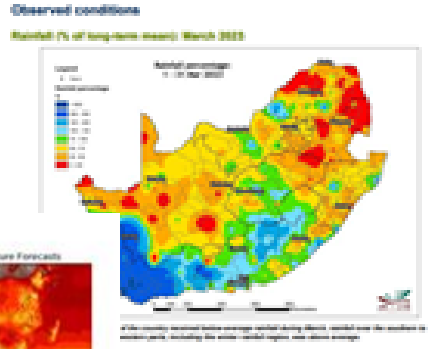
- Services generate income, through either subscriptions and/or advertising on their websites.
- Main source of income is ‘business to business’ and
- Less from ‘business to consumers’ – lower income stream.
- Commodity based services combined with analytical & marketing services (e.g. HortTec)
  - Growers buy own automatic weather station and pay an annual subscription fee.
  - Receive location specific weather & climate data & forecasts, many tailored for specific agricultural practices.
- Not an easy operation to generate funds

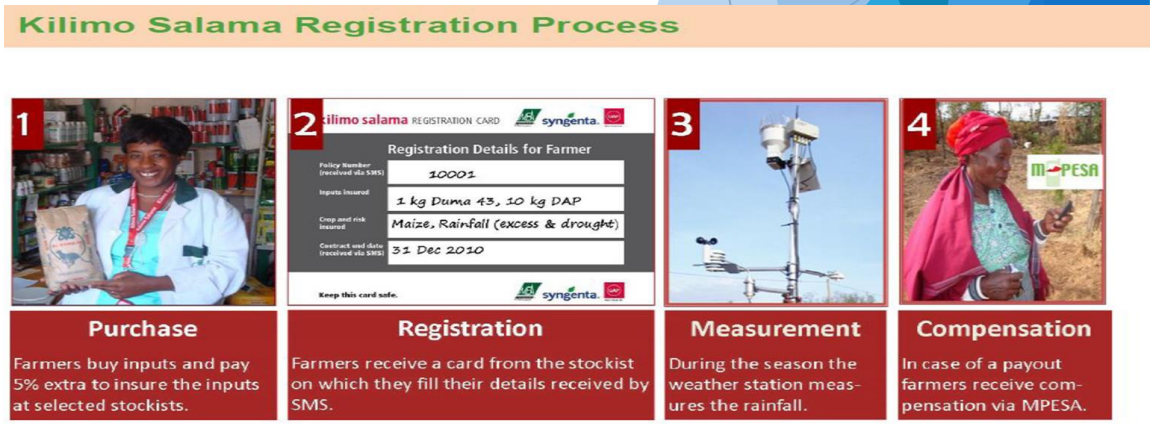
Weather Information via Crop Insurance

Weather updates included as a service when purchasing crop insurance

- ARC writes Weekly Newsletter “Cumulus” for Farmers insured by Agriseker over the summer rainfall months.
- Also a Newsletter focusing on the seasonal outlook.
- Information about weather conditions that may affect activities during the next few days.
- Helps to prepare for use of resources during the next few days for assessments.
- Historical assessment of their hail insurance exposure using GIS techniques with historical data is in progress.







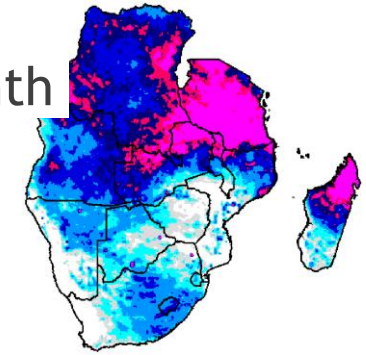
Examples of Agricultural Climate Services

Regional & long-term:

- Maize varieties adapted to maize production environments

- Livestock adapted to heat stress
- SARCOF

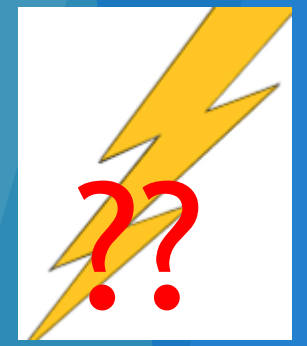
  Rainfall & temperature - 3-month seasonal outlooks



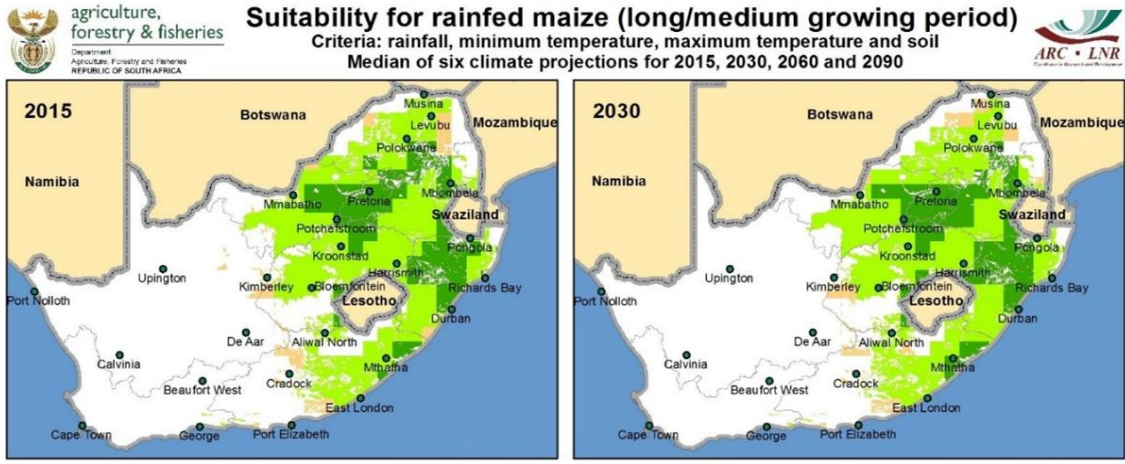
Local & short-term

- Planting dates
- Frost warnings
- Spray info

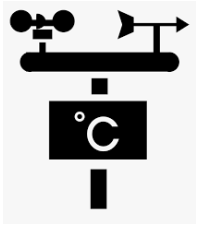
National long & medium-term:



- Extreme weather warnings
- Including Probabilities
- River flow & irrigation
- Crop suitability maps
- Food production



Main Gaps in Southern Africa



- **Automatic weather stations**
  - Better distribution & increased numbers & connectivity
  - Improved maintenance
- **Data analysis & availability**
  - Storage standards with quality checks
  - Access for users
- **Development of Specific Services & Advisories**
  - Use 4IR with Local Added-value according to farming-food systems
  - Different users need different products
    - Short-term for farmers – via mobile apps
    - Medium-term for agribusiness – via customized computer platforms
    - Long-term for policy makers & NGOs – via interactive platforms

Conclusions

- Various digital agromet climate services have been tried.
- Not much success – as farmers expect such services to be free as:
  - they either pay taxes or
  - pay levies via their commodity groups
- Therefore the government needs to fund these services.
- Group membership seems to work as they gain more than just the climate services.
- Further options can be explored

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Dr Brian Muroyiwa

DIGITAL CLIMATE-INFORMED ADVISORY SERVICES TRAINING

Business models Tailored to the Local Context: How to design a sustainable business model (subsidy-based, third-party customers, farmer-payments) for DCAS?

Dr Brian Muroyiwa

27-28 September 2023

Johannesburg, South Africa

INTRODUCTION

- Small-scale producers (SSPs) dominate the farming landscape in Africa, Asia, and Central America – and they face an increasingly challenging production environment.
- Although production quantities may not be significant for most SSPs due to unique challenges they face they are the majority category of farmers and by aggregation they produce significant quantities.
- Therefore, smallholder farmers are the backbone of our global food supply, and their activities contribute to reducing poverty, food and nutrition insecurity.

STATEMENT OF THE PROBLEM

- There exists a significant gap in institutional (public and private sector) investments, climate science, and inclusive planning and policy for transdisciplinary co-design and co-production processes of Digital Influenced Climate and Advisory Services.
- SSPs often lack tools and information necessary to adapt to climate change impacts, build resilience to natural hazards and produce food in safe and sustainable ways.
- Extension services are often under-resourced, meaning the opportunities for sustained, in-person support for farmers is extremely difficult.
- That’s where digital influenced climate advisory services come into their own.

STATEMENT OF THE PROBLEM

- Where farmers can access DCAS, it more often than not has a strong business case for them.
- Most farmers access DCAS through donor funded projects and access ceases once the funding ends/project phases out.
- Unfortunately, the business model is not included in projects development.
- However, the business model should be the **FIRST** thing to think about when setting up a project and it should be included in the PIM.

STATEMENT OF THE PROBLEM

- User evaluation surveys indicate that farmers surveyed opined that DCAS applications are not meeting their expectations, as applications often provide a too generalized advice.
- This presents a business opportunity and we need to take into account such feedback when developing DCAS business models.
- There is a need for tailored solutions across vast geographic areas, which presents a challenge to companies, as this requires significant investments and the willingness to pay for the services remains relatively limited.

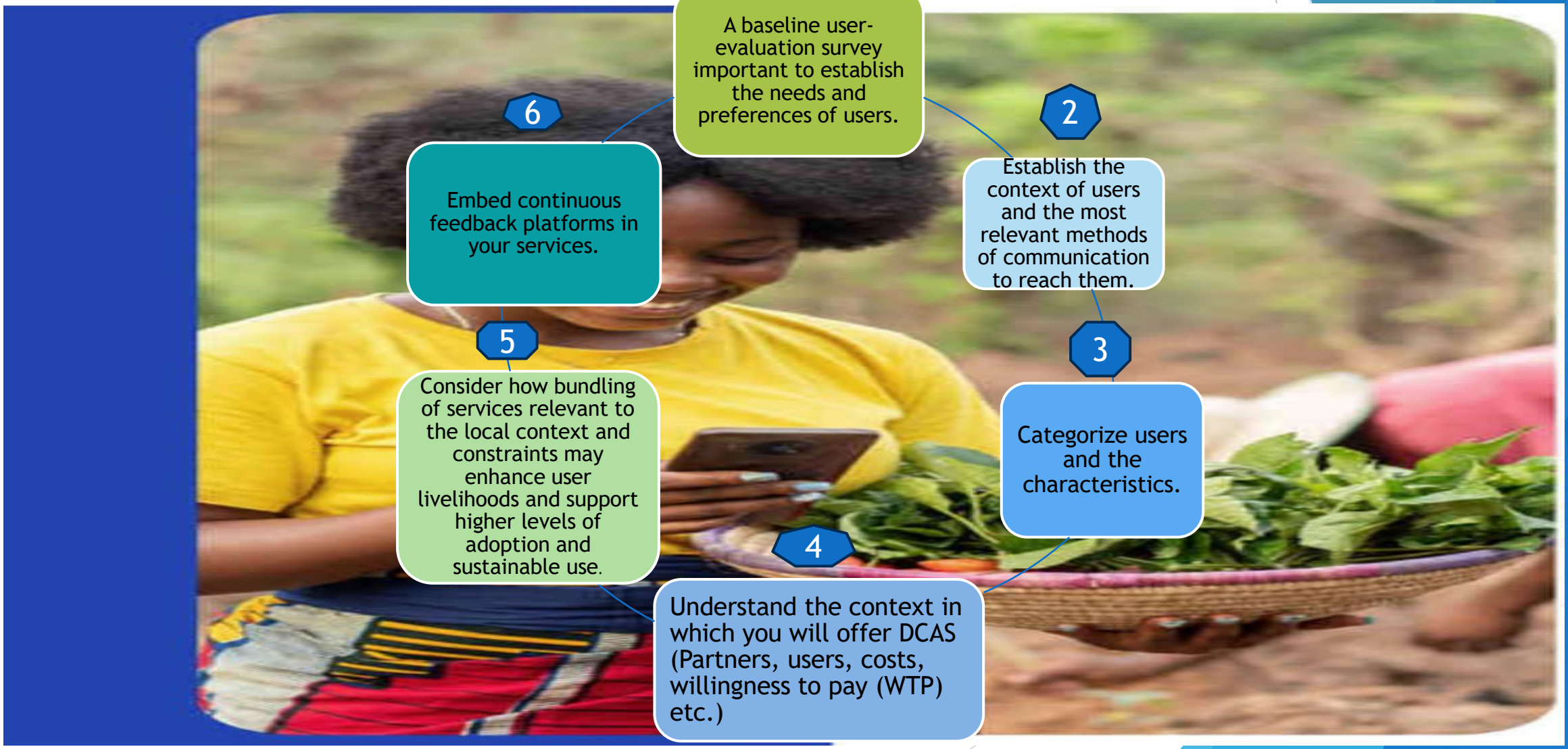
POSSIBLE SOLUTIONS AND REMEDIES

- Proposed solutions include setting up more effective public/private collaboration to scale up tailored DCAS, investigating the potential of low-cost peer-to-peer delivery options, increasing high-risk tolerant donor/impact investments in farmer-centric models, and broader infrastructure investments.
- There is also a need for a DCAS learning community of practice and an open-data sharing platform which can help DCAS reach its full potential impact and scale.
- These issues are critical in the development of a sustainable DCAS business model.

SIX CORE PRINCIPLES TO IMPROVE DCAS

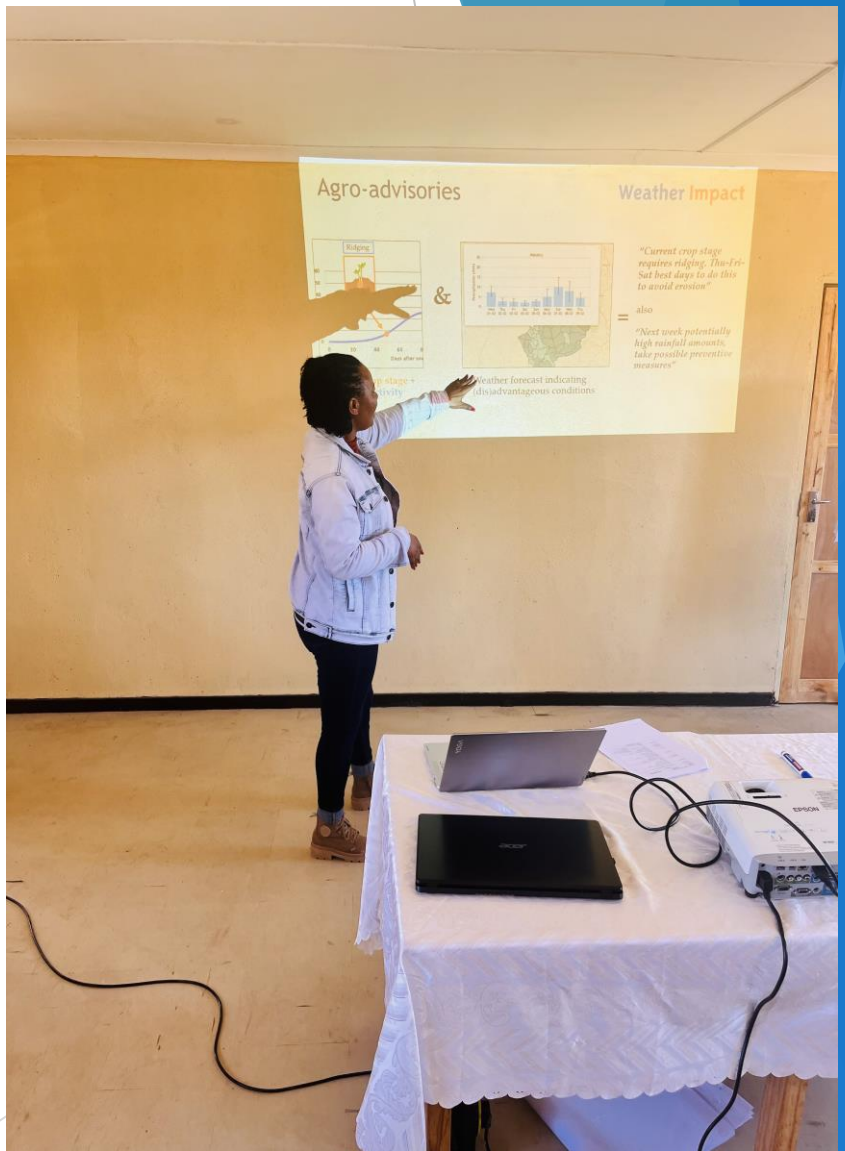
- To improve DCAS, the following six core principles should guide investment and service provision:

Prerequisites in the Development of Sustainable Business Model



Characteristics of a Sustainable DCAS

- Farmer centric
- Farmer specific.
- Location specific.
- User needs specific (Tailor made for user(s).
- Crop specific
- Simple and Flexible delivery channels
- Cost effective



DCAS BUSINESS MODEL CANVAS

Key Partners

Who are our Key Partners?

- **Public sector and its agencies, the private sector, development organisations and donors, international and local NGOs, research institutes, and civil society and farmer organisations, mobile industry, innovators and investors.**

Who are our key suppliers?

MSDs, Private sector companies, PPPs agricultural sector stakeholders.

Which Key Resources are we acquiring from partners?

Platform, Weather data, Agronomic advice

Which Key Activities do partners perform?

Data Management and Hosting

MOTIVATIONS FOR PARTNERSHIPS: Optimization and economy, Reduction of risk and uncertainty, Acquisition of particular resources and activities.

Key Activities

Technical Development. Data collection, Data processing and management, DCAS Generation, delivery, influencing the adoption of the DCAS by end users.

CATEGORIES:

Data, Production, Delivery, Marketing

Key Resources

Data

Channels

Revenue Streams

Human and Financial Capital

TYPES OF RESOURCES: Physical, Intellectual (brand patents, copyrights, data), Human, Financial

Value Propositions

What value do we deliver to the customer? **Custom made and location specific agro-weather information.**

Which one of our customer's problems are we helping to solve? A

What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?

CHARACTERISTICS:

Price, Cost Reduction, Risk Reduction, Accessibility, Convenience/Usability

Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?

Channels

Radio

Television

Mobile applications (E.g whatsapp, telegram chatbox)

Agro-met bulletins

Customer Segments

DCAS best serve the customers when they are tailor made of the needs of the client and location specific

We could offer the services within the following market segments:

Niche Market, Segmented and Diversified.

Agricultural producers

value chain actors

When the services are produced from a mass market perspective they fail to address the farmer specific needs.

Cost Structure

Fixed Costs

Variable Costs

These may include:

- Customer Acquisition Costs (Marketing and Adveritising0
- Distribution Costs
- Hosting
- Salaries

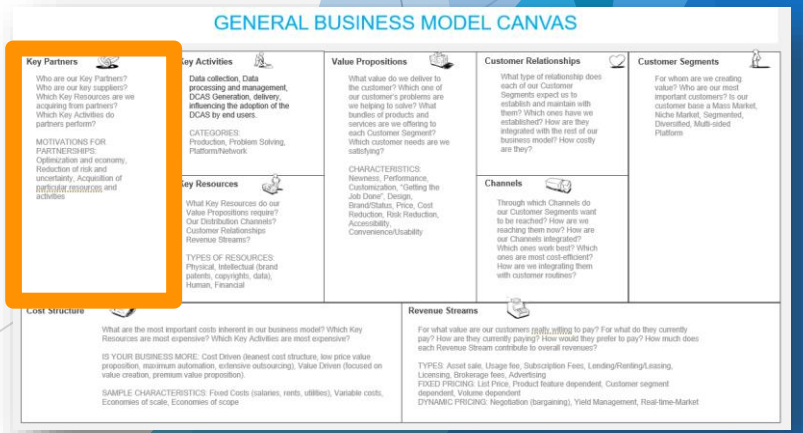
Revenue Streams

Subscriptions

Advertising

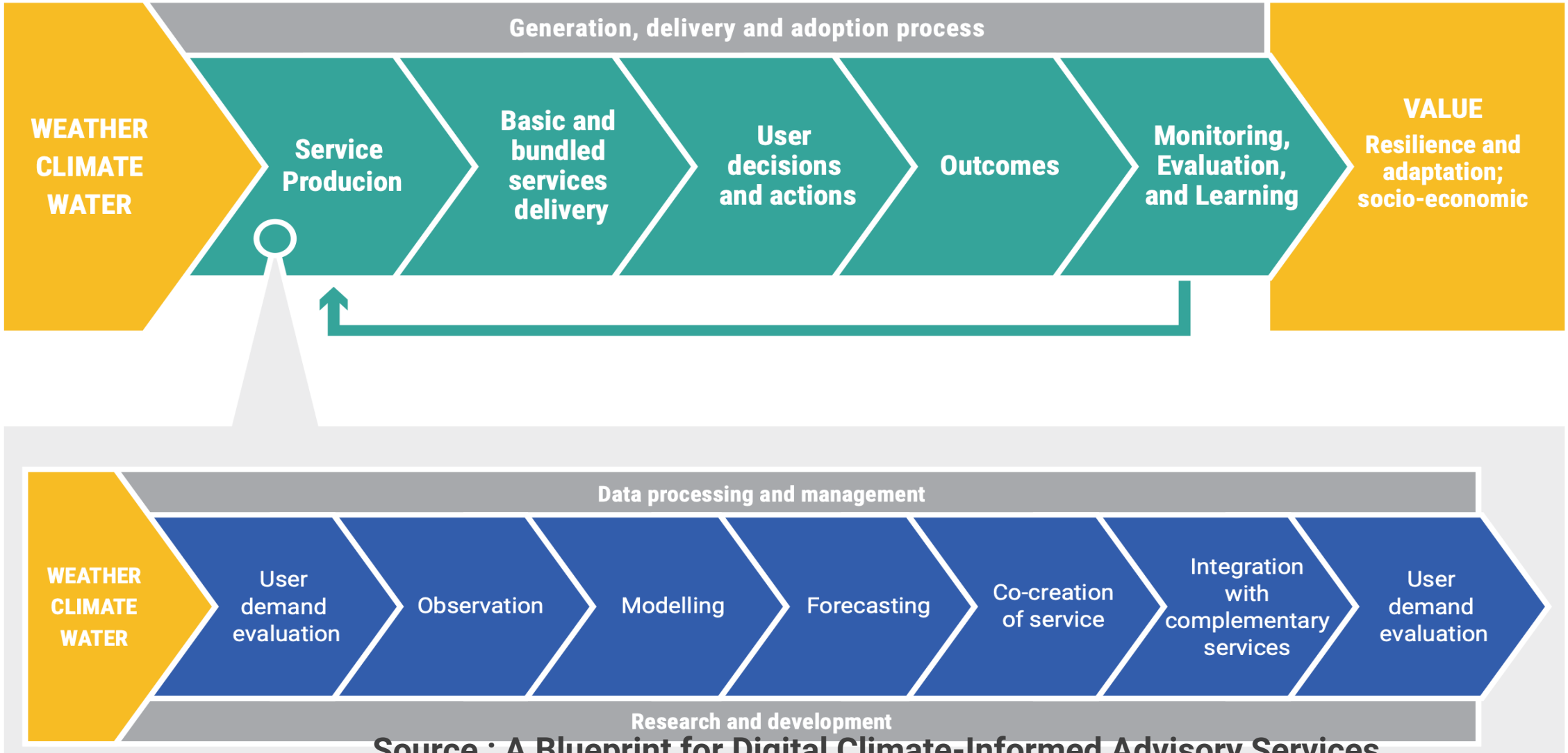
KEY PARTNERS

- Who are our Key Partners?
  - **Public sector and its agencies, the private sector, development organisations and donors, international and local NGOs, research institutes, and civil society and farmer organisations.**
- Who are our key suppliers?
  - **Private sector companies, PPPs**
- Which Key Resources are we acquiring from partners?
  - **Platform, Weather data, Agronomic advice**
- Which Key Activities do partners perform?
  - **Hosting**
  - **Data Management**



Key Activities

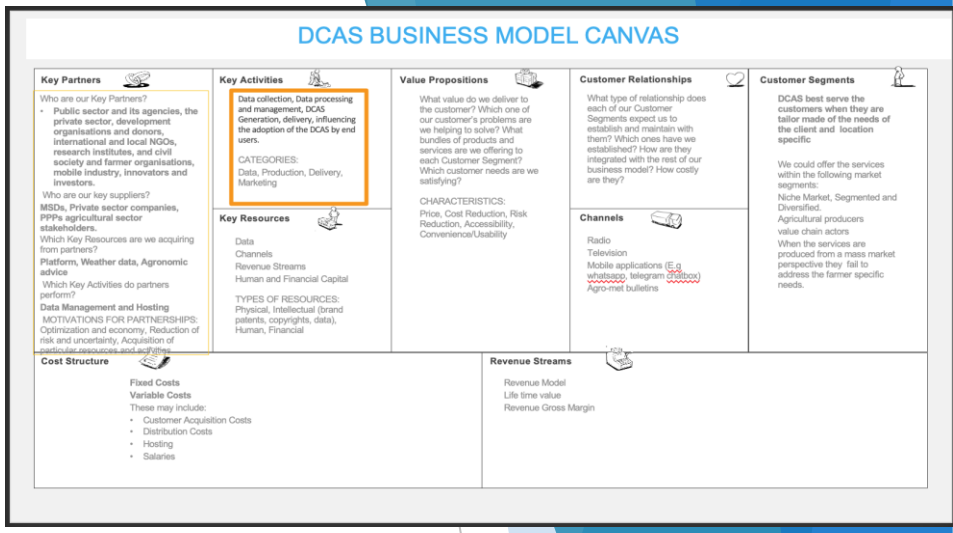
FIGURE 1 DCAS Value Chain The adaptation process and its enabling factors

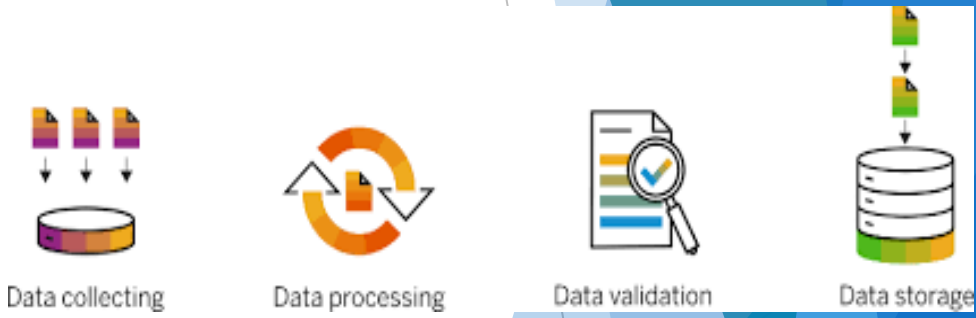


Source : A Blueprint for Digital Climate-Informed Advisory Services

KEY ACTIVITIES

- Automized Data collection.
- Data processing and management
- DCAS Generation.
- DCAS Delivery
- Marketing - Influencing the adoption of the DCAS by end users

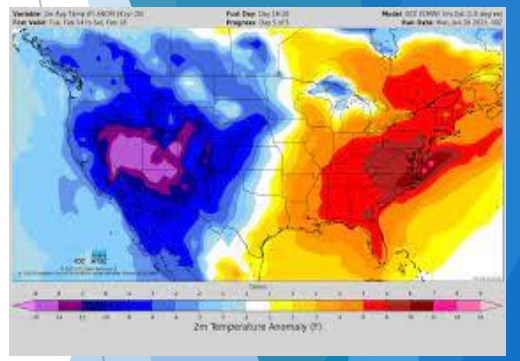




KEY RESOURCES

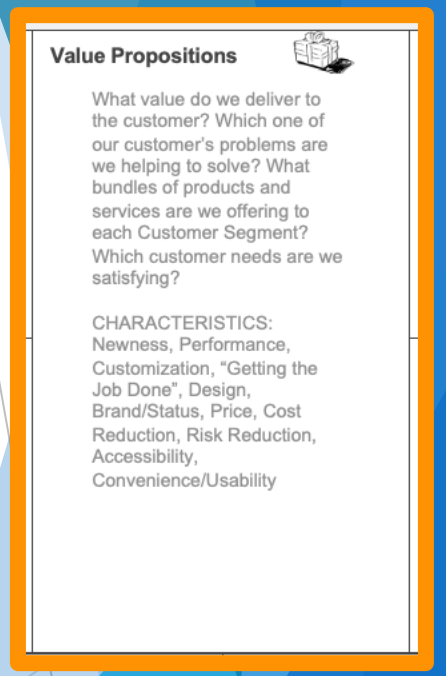
- Data
- Channels
- Revenue Streams
- Human and Financial Capital

TYPES OF RESOURCES: Physical, Intellectual (brand patents, copyrights, data), Human, Financial.

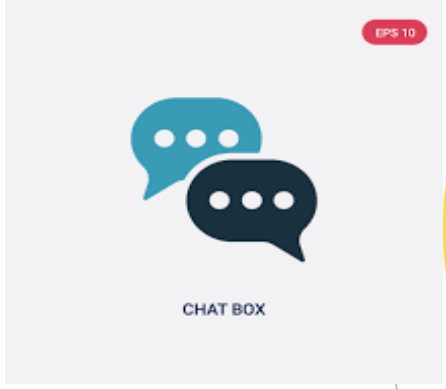


WHAT IS THE VALUE PROPOSITION

- We have to be clear as to what benefits we are delivering to our customers who buy our DCAS products?
- The benefits are embedded in our product offerings.
- The products we offer have to respond to our customers needs.



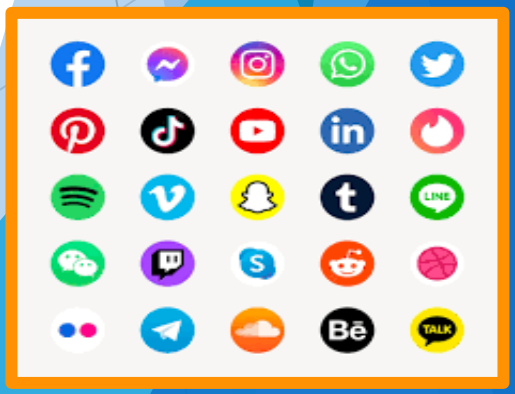
CHANNELS



- Short Message Service (SMS)
- Voice call and Interactive Voice Response (IVR)
- Unstructured Supplementary Service Data (USSD)
- Video messaging
- Smart phone and web-based apps
- Social media
- Chatbots
- Call centres
- Recorded push messages and interactive radio or broadcast media that is supported by mobile phone access.
- Radio and TVs

CHANNELS

- DCAS initiatives may use several of these channels together to have a broader reach, depending on the context and capabilities of next-users.
- In person communication for example Participatory Integrated Climate Services for Agriculture (PICSA) & Local Technical Agro-climatic Committees(LTAC).
- Bundling with other products.

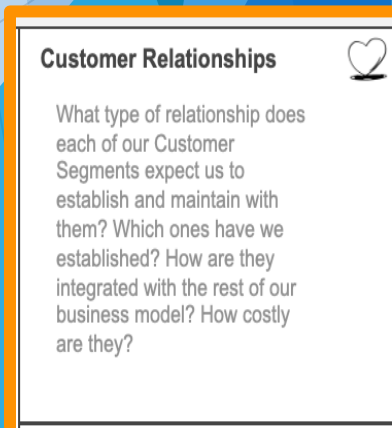


CUSTOMER RELATIONSHIPS

- Will differ depending on whether it's a B2B model or B2C model.
- The nature and type of relationship will differ according to our Customer Segments
- Different customers have different expectations.
- Customers value:

  Feedback.

  Constant after sales support that enables them to get the maximum value possible from the product.
- If the business is already operational we may have already established customer relationships
- We would need to decide on how are they integrated with the rest of our business model?
- How costly are they?



Customer Segments

- DCAS best serve the customers when they are tailor made to the needs of the client and location specific.
- We could offer the services within the following market segments: Niche Market, Segmented and Diversified.
- Under these customer segments we can cater for the farmers and different value chain actors that support farmer activities.

Cost Structure and Revenue Streams

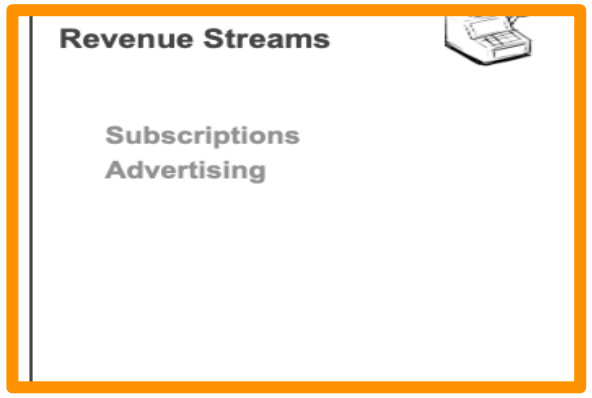
COST STRUCTURE

- **Fixed Costs**
- **Variable Costs**
- These may include:

- Customer Acquisition Costs (Marketing)
- Distribution Costs
- Hosting
- Salaries

REVENUE STREAMS

- Subscriptions
- Advertising



Subsidy Based DCAS Bus. Model

- Subsistence farmers are most often reached through donor and government DCAS models, and these models are typically free or subsidized.
- Donor funded and subsidised DCAS models are not sustainable.
- DCAS providers that are or aim to be sustainable, target commercial and commercializing farmers as they perceive them as most attractive.
- This leaves out small scale producers the biggest category of farmers.

FARMER'S PAYMENTS BASED DCAS BUSINESS MODEL

- SSPs believe it is government's responsibility to provide them with extension and advisory services including DCAS.
- SSPs production and incomes are low due to lack of access to important resources such as finance, inputs, markets & DCAS.
- There is limited evidence of Willingness To Pay (WTP) by SSPs.
- A business model that is farmer's payments based is likely to fail due to the above reasons unless it goes through farmer associations.
- Farmer based organisations can facilitate SSPs DCAS buy in and unlock farmer payments.

Third party Customers Based DCAS Business Model

- Insurance companies
- Market information companies (Market Information Systems (MIS))
- Input suppliers(Agro dealers)
- Financial services

- These actors can assist in lowering the cost to the end users (the consumers-SSPs) through the benefits they would accrue from reaching a potential large customer base for their services.

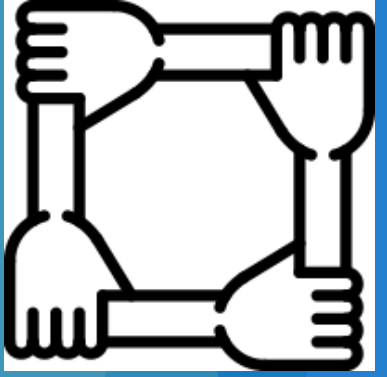
- Bundling of DCAS services is the most effective route to creating sustainable business models.

- B2B and B2C models should bundle different service types and diversify revenue streams to ensure that their offerings are impactful and viable.

MAIN OBSTACLES FACING THE GROWTH OF SUCCESSFUL BUSINESS MODELS FOR DCAS

- Lack of DCAS standards and regulation by government.
- Limited data and evidence of the additional value commercial DCAS can provide for B2B/B2C customers and real or perceived transaction costs.
- Large segments of the farmer market not suited or engaged in commercial DCAS provision, particularly those without an intermediary or aggregator willing to pay for DCAS.
- In some markets there are low levels of farmer trust towards DCAS and a reluctance to share information, with a preference for receiving advisory services face to face.
- Infrastructure challenges such as coverage of mobile networks and supply networks for the inputs and materials required.
- Last mile engagement challenges.
- Purely commercial models may be transactional in nature without addressing last mile engagement but working with NGO or CSO delivery partners to help with last mile engagement brings additional costs to a business unless these partners have other financing sources (or PPP support.

WAY FORWARD



- There is a need for an appropriate combination of public goods investment and sustainable business models.
- Development of regulatory frameworks for an enabling regulatory environment of DCAS to thrive.

- Open access to climate and agricultural data which in most cases is in the public sector.
- Promote PPP to help reduce high costs associated with sustaining data collection, monitoring and communication.
- Co-production to ensure that relevant products are generated.
- Production of customized products to sell.

QUESTIONS AND ANSWERS

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Business Model Canvas Exercise

SUSTAINABLE BUSINESS MODEL CANVAS

CASE STUDY

CASE STUDY ACTIVITY

Smallholder farmers in your country are struggling with unexpected heavy rains(floods), prolonged dry spells, more prevalence of pests and diseases; and unusual timing of onset of of the rains and a shorter growing season. A funding organisation like Global Centre on Adaptation(GCA) or Africa Development Bank (AfDB) is providing a USD 3 million for a two-year project to enhance smallholder farmers' climate change adaptation capacity and resilience to climate change. The project seeks to enhance smallholder farmers access to information that can help them to make climate informed decision making. The funding is meant to increase farmers resilience to climate change and hence improve their agricultural production. During the implementation of the project a DCAS (location and crop specific farming advice, including suggesting time of planting and weather forecasts) will be piloted. Please build a business model that can allow for upscaling of the DCAS of your choice beyond the project lifetime using the business model canvas provided.

GENERAL BUSINESS MODEL CANVAS

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

MOTIVATIONS FOR PARTNERSHIPS:
Optimization and economy, Reduction of risk and uncertainty, Acquisition of particular resources and activities

Data collection, Data processing and management, DCAS Generation, delivery, influencing the adoption of the DCAS by end users.

CATEGORIES:
Production, Problem Solving, Platform/Network

What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships Revenue Streams?

TYPES OF RESOURCES:
Physical, Intellectual (brand patents, copyrights, data), Human, Financial

What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?

CHARACTERISTICS:
Newness, Performance, Customization, "Getting the Job Done", Design, Brand/Status, Price, Cost Reduction, Risk Reduction, Accessibility, Convenience/Usability

What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?

Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?

For whom are we creating value? Who are our most important customers? Is our customer base a Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform

What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive?

IS YOUR BUSINESS MORE: Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing), Value Driven (focused on value creation, premium value proposition).

SAMPLE CHARACTERISTICS: Fixed Costs (salaries, rents, utilities), Variable costs, Economies of scale, Economies of scope

For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues?

TYPES: Asset sale, Usage fee, Subscription Fees, Lending/Renting/Leasing, Licensing, Brokerage fees, Advertising
FIXED PRICING: List Price, Product feature dependent, Customer segment dependent, Volume dependent
DYNAMIC PRICING: Negotiation (bargaining), Yield Management, Real-time-Market

Business Model Canvas

Designed for:

Designed by:

Date:

Version:

Key Partners

Key Activities

Key Resources

Value Propositions

Customer Relationships

Channels

Customer Segments

Cost Structure

Revenue Streams

Answers on-site participants

ZAMBIA

Business Model Canvas

GROUP: 1

Key Partners

Key Activities

Value Propositions

Customer Relationships

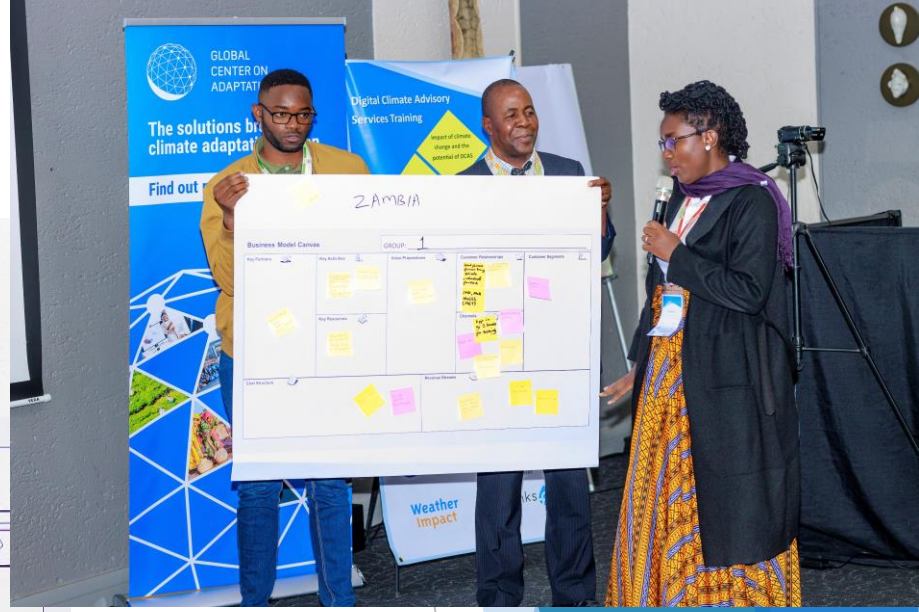
Customer Segments

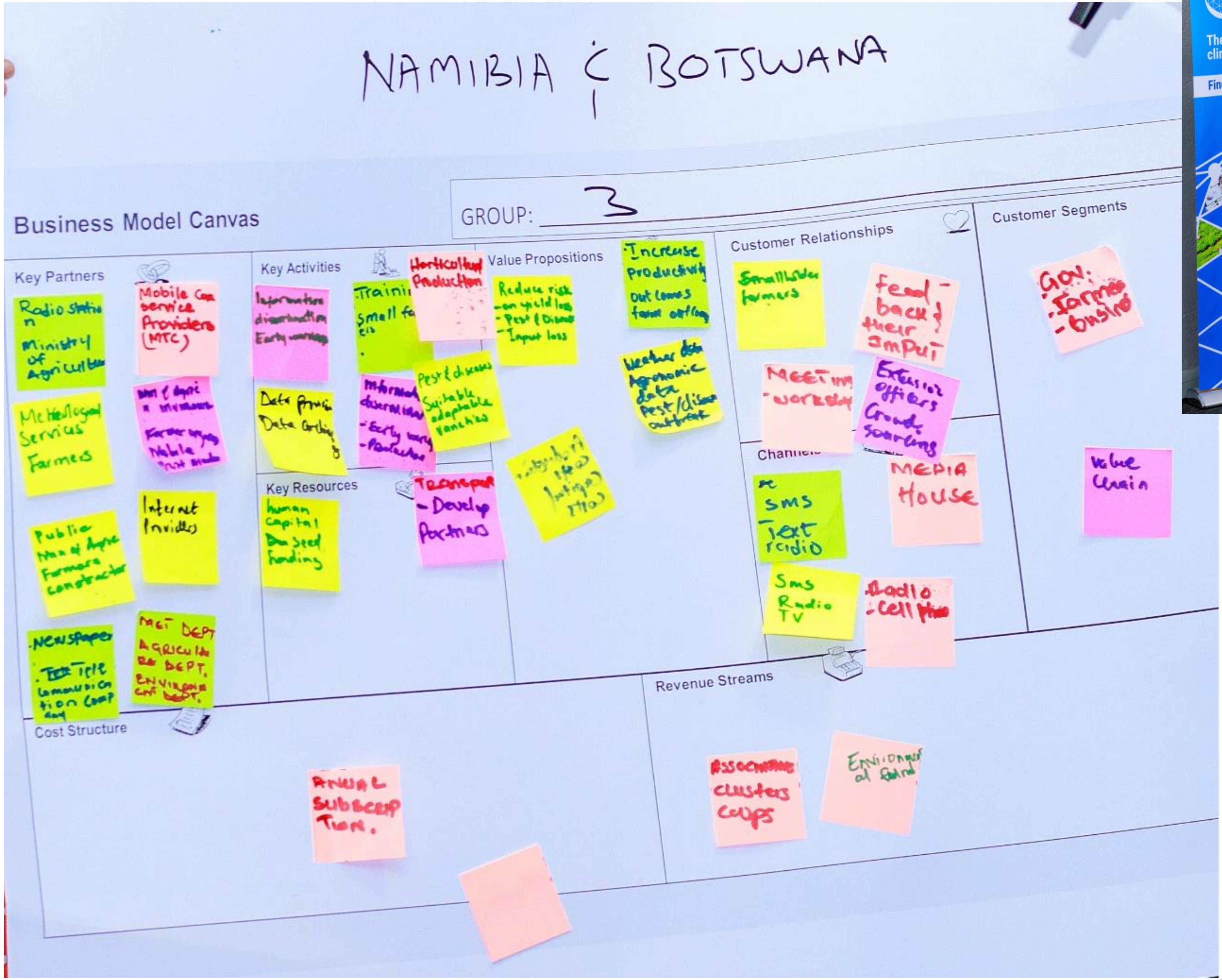
Key Resources

Channels

Cost Structure

Revenue Streams




NAMIBIA & BOTSWANA
Business Model Canvas
GROUP: 3
Key Partners
Key Activities
Key Resources
Value Propositions
Customer Relationships
Channels
Customer Segments
Cost Structure
Revenue Streams


GLOBAL CENTER ON ADAPTATION
The solutions broker for climate adaptation action
Find out more at: gca.org
Digital Climate Advisory

MALAWI

Business Model Canvas

GROUP: 4

Key Partners

Key Activities

Running and managing a Call Center

Developing Content (Audio and Video)

Value Propositions

Weather Clinic for Productive Smallholder farmers

Customer Relationships

Customer Care line
Call Centre

Customer Segments

Key Resources

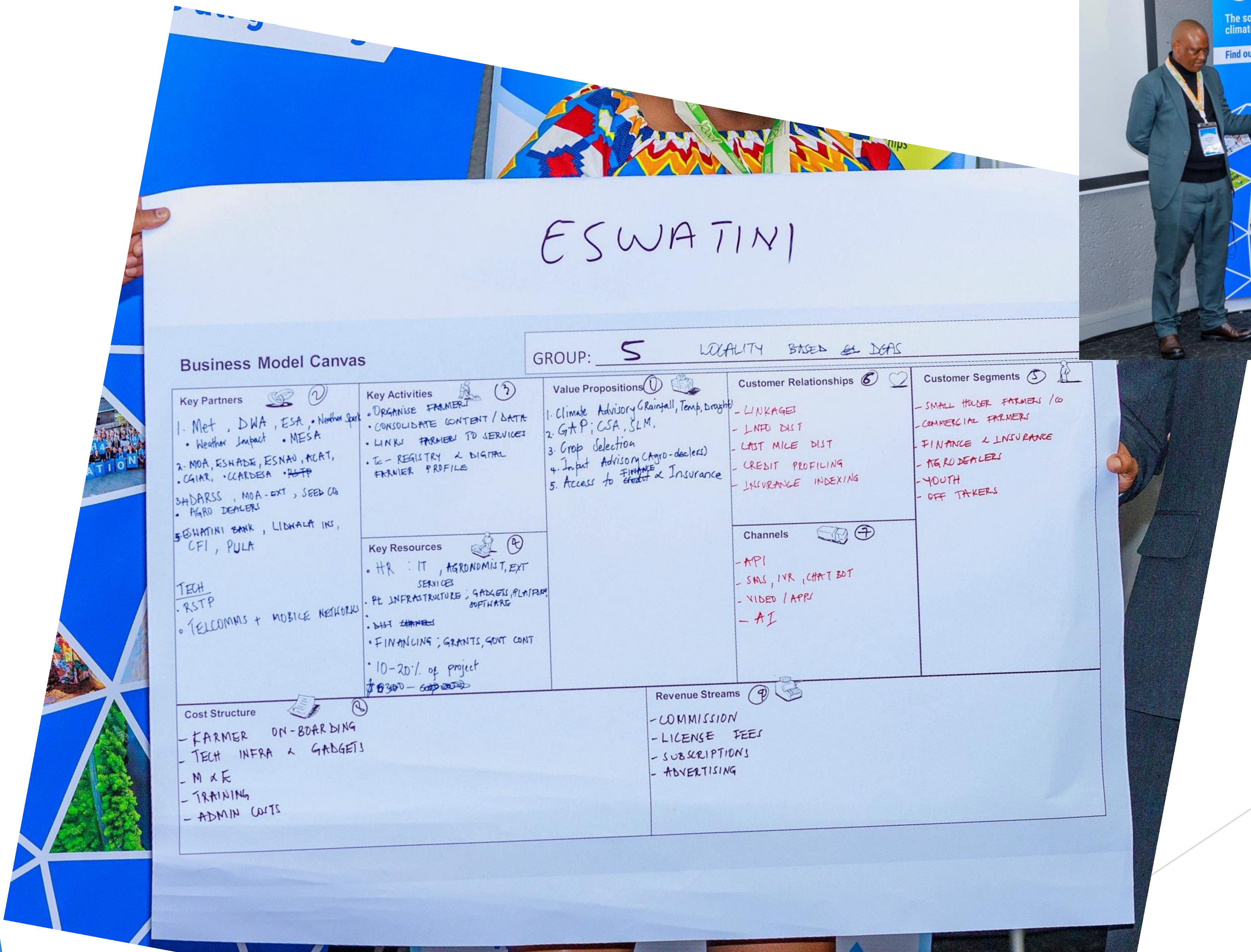
Channels

Cost Structure

Salaries
Infrastructure
Equipment and gadgets

Revenue Streams

Subscriptions


ESWATINI
Business Model Canvas
GROUP: 5 LOCALITY BASED DCAS
Key Partners
1. Met, DWA, ESA
• Weather Impact • MESA
2. MOA, ESNAU, ACAT,
• CGIAR, • CCARDESA
3. DARSS, MOA-EXT, SEED CO
• AGRO DEALERS
ESWATINI BANK, LIDWALA INS,
CFI, PULA
TECH
• RSTP
• TELCOMMS + MOBILE NETWORKS
Key Activities
• ORGANISE FARMERS
• CONSOLIDATE CONTENT / DATA
• LINKS FARMERS TO SERVICES
• E-REGISTRY & DIGITAL FARMER PROFILE
Key Resources
• HR : IT, AGRONOMIST, EXT SERVICES
• PL INFRASTRUCTURE ; GADGETS, PLATFORM, SOFTWARE
• FINANCING ; GRANTS, GOVT CONT
• 10-20% of project
Value Propositions
1. Climate Advisory (Rainfall, Temp, Drought)
2. GAP; CSA, SLM.
3. Crop Selection
4. Input Advisory (Agro-dealers)
5. Access to Finance & Insurance
Customer Relationships
- LINKAGES
- INFO DIST
- LAST MILE DIST
- CREDIT PROFILING
- INSURANCE INDEXING
Channels
- API
- SMS, IVR, CHAT BOT
- VIDEO / APPS
- AI
Customer Segments
- SMALL HOLDER FARMERS / CO
- COMMERCIAL FARMERS
- FINANCE & INSURANCE
- AGRO DEALERS
- YOUTH
- OFF TAKERS
Cost Structure
- FARMER ON-BOARDING
- TECH INFRA & GADGETS
- M & E
- TRAINING
- ADMIN COSTS
Revenue Streams
- COMMISSION
- LICENSE FEES
- SUBSCRIPTIONS
- ADVERTISING


GLOBAL CENTER ON ADAPTATION
The solutions broker for climate adaptation action
Find out more at: gca.org
ESWATINI

ZIMBABWE

Business Model Canvas

GROUP: 6

Key Partners

1. Government Ministries
   - Finance, Agric, ICT, MSD), Local Gvt
2. Farmer Associations
3. Insurance Co,
4. ISP & Mobile SP
5. Development partners
6. Traditional leaders

Key Activities

- Baseline Survey cost
- Seasonal Climate fore
- ~~Inf~~seasonal Forecast
- Setting up DCAS
- Stakeholder Coordination
- Farmer & staff training
- MoUs
- Co-designing & prdct
- ~~1,6m registered F(s)~~

Key Resources

API, Server, Tablets HR, Power banks, Funding

Value Propositions

- Real time, crop & location specific agric advisory services for increased productivity

TTK x Trad Source

Customer Relationships

Freemium to low cost sustainable subscription based

Channels

SMs, WhatsApp, Telegrams, Radio TV

Customer Segments

- SHFs
- Commercial Farmers
- Contractors
- Agribuzz Players
- Extension Staff

(A) secondary

(1) primary.

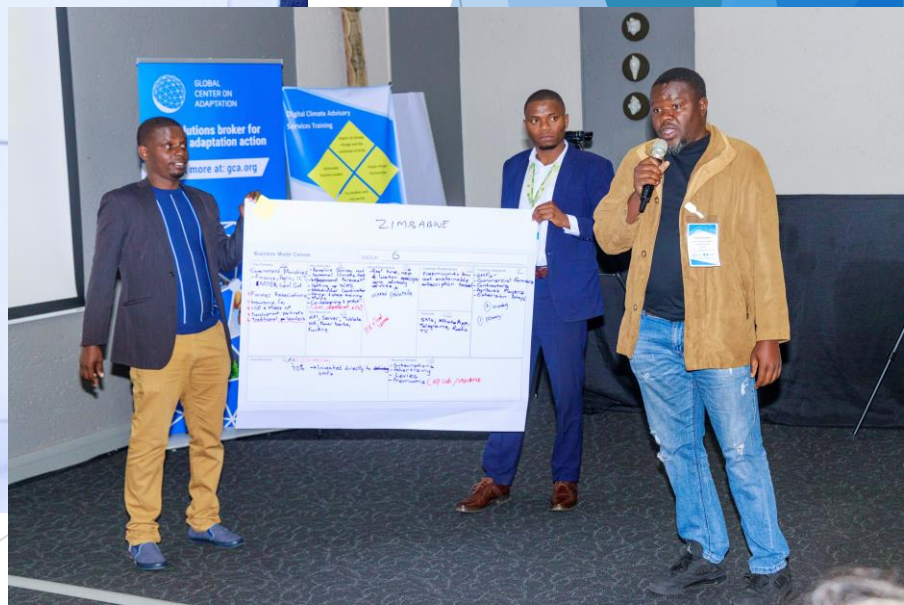
Cost Structure

0.012 cents/SMS

70% → Invested directly to ~~defray~~ SHFs

Revenue Streams

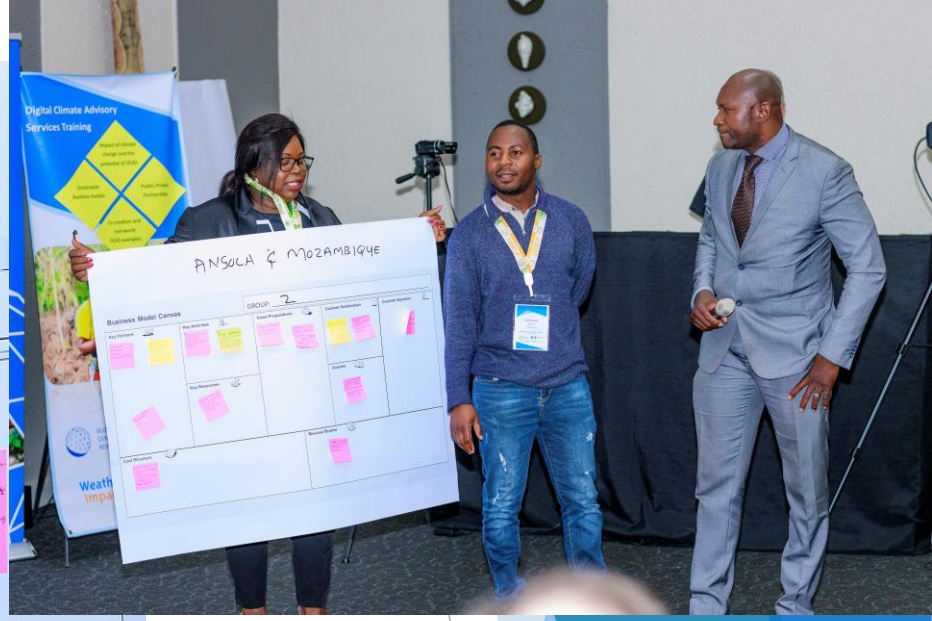
- Subscriptions
- Advertising
- Levies
- Premiums (crop cuts / insurance




SOUTH AFRICA
Business Model Canvas
GROUP: 7
Key Partners
Key Activities
Value Propositions
Customer Relationships
Customer Segments
Resources
Channels
Cost Structure
Revenue Streams
Media + Network
SWS SAWS
Donors Civil Society
Research Academic Institution
Marketing
Set up
ON site Visits
Multi-lingual >4 languages
Smart AI + IOT
Smart Knowledge
Capacity Building
Freemium Market Prices
Community Champions
Schools' Programme
SMS Radio TV
Mobile App? Social media
Farmers' organisations and Groups
Emerging ss farmers
Insurance companies for SS-farmers
Agro-vets Retailers
Provincial Govt (DOA)
H/W S/W Purchase maintenance
Subscription Service Marketing
H/R Crowd-source Cost
Premium SMS Subscription
Sale of Data Information
B-2-B Subscription by insurance companies
Taxes Govt

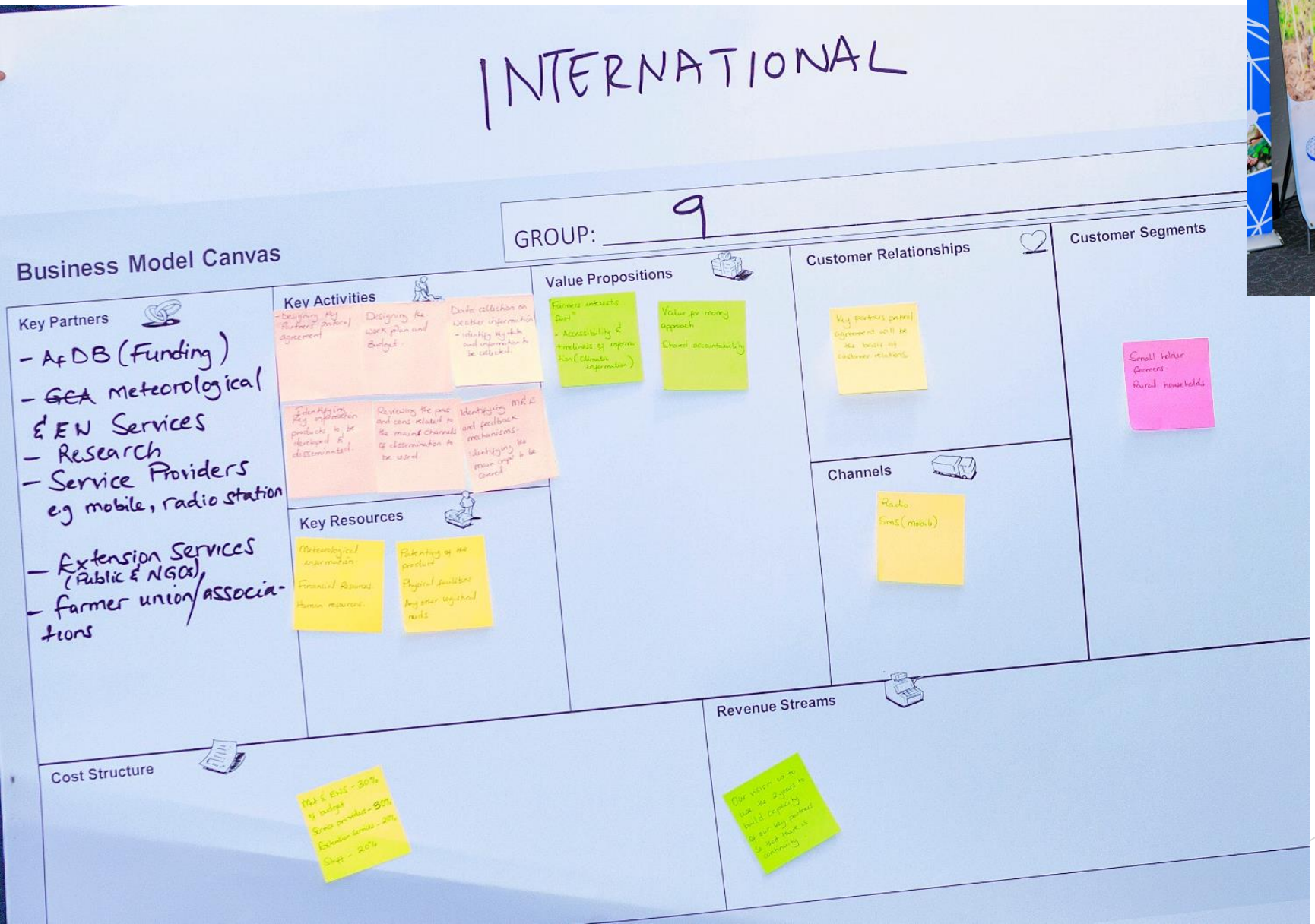

GLOBAL CENTER ON ADAPTATION
SOUTH AFRICA

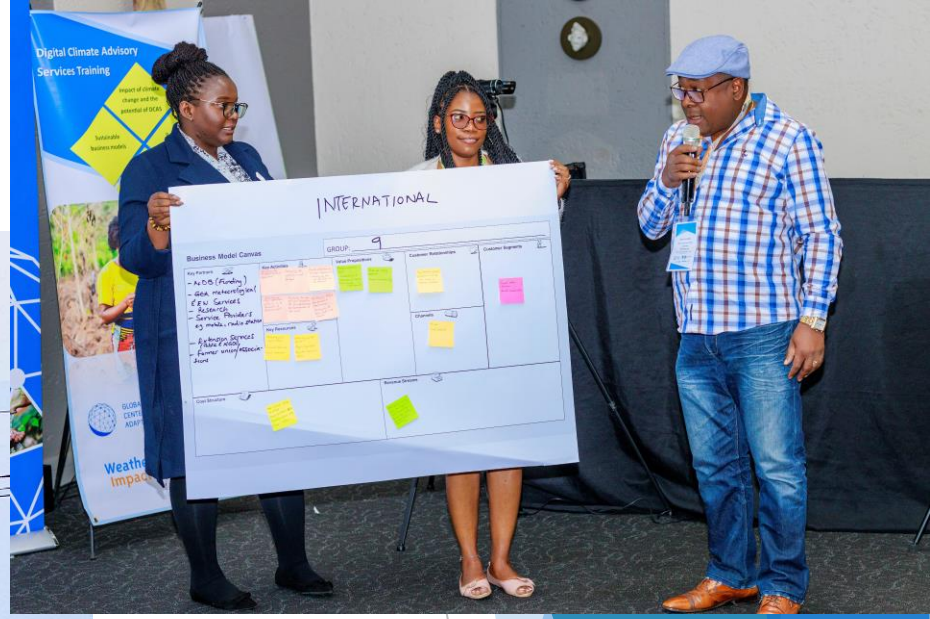

DCAS examples
ANGOLA & MOZAMBIQUE
GROUP: 2
Business Model Canvas
Key Partners
Key Activities
Value Propositions
Customer Relationships
Customer Segments
Channels
Key Resources
Revenue Streams
Cost Structure


Digital Climate Advisory Services Training
ANGOLA & MOZAMBIQUE
Business Model Canvas


LESOTHO
Business Model Canvas
GROUP: 8
Key Partners
Key Activities
Value Propositions
Customer Relationships
Customer Segments
Key Resources
Channels
Revenue Streams
Cost Structure
NGOs
Thermometers
DATA PROCESSING


GLOBAL CENTER ON ADAPTATION
The solutions broker for climate adaptation action
Digital Climate Advisory Services Training
LESOTHO
Weather Impact
aqualinks

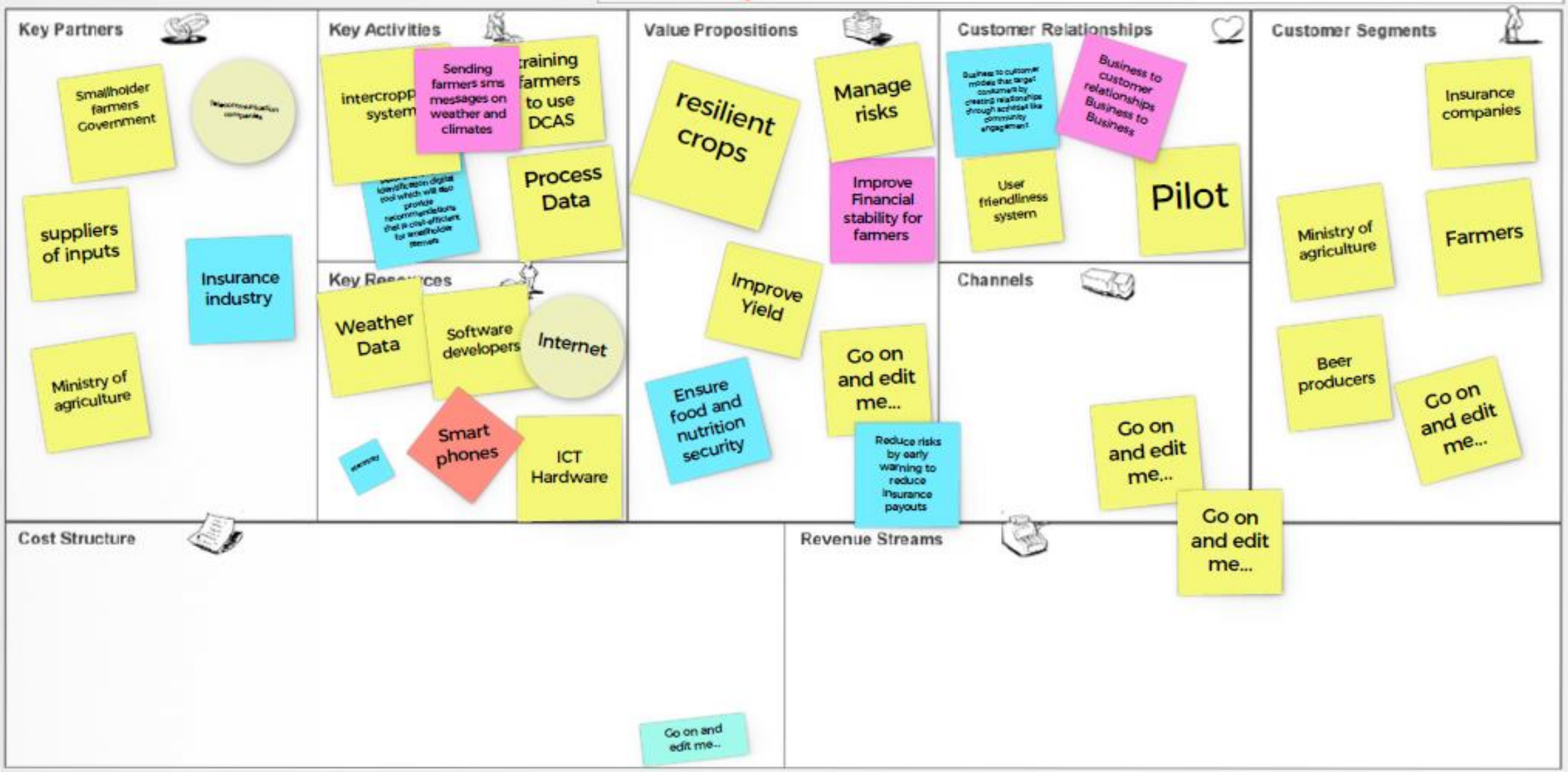

INTERNATIONAL
Business Model Canvas
GROUP: 9
Key Partners
- AfDB (Funding)
- GCA meteorological & EW Services
- Research
- Service Providers e.g mobile, radio station
- Extension Services (Public & NGOs)
- Farmer union/associations
Key Activities
Designing the work plan and budget
Data collection on weather information
Identifying key information products to be developed & disseminated
Reviewing the pros and cons related to the means/channels of dissemination to be used
Identifying M&E and feedback mechanisms
Key Resources
Meteorological information
Financial Resources
Human resources
Value Propositions
Farmers interests first
- Accessibility & timeliness of information (Climatic information)
Value for money approach
Shared accountability
Customer Relationships
Key partners/ partnership agreement will be the basis of customer relations
Channels
Radio
SMS (mobile)
Customer Segments
Small holder farmers
Rural households
Cost Structure
Revenue Streams

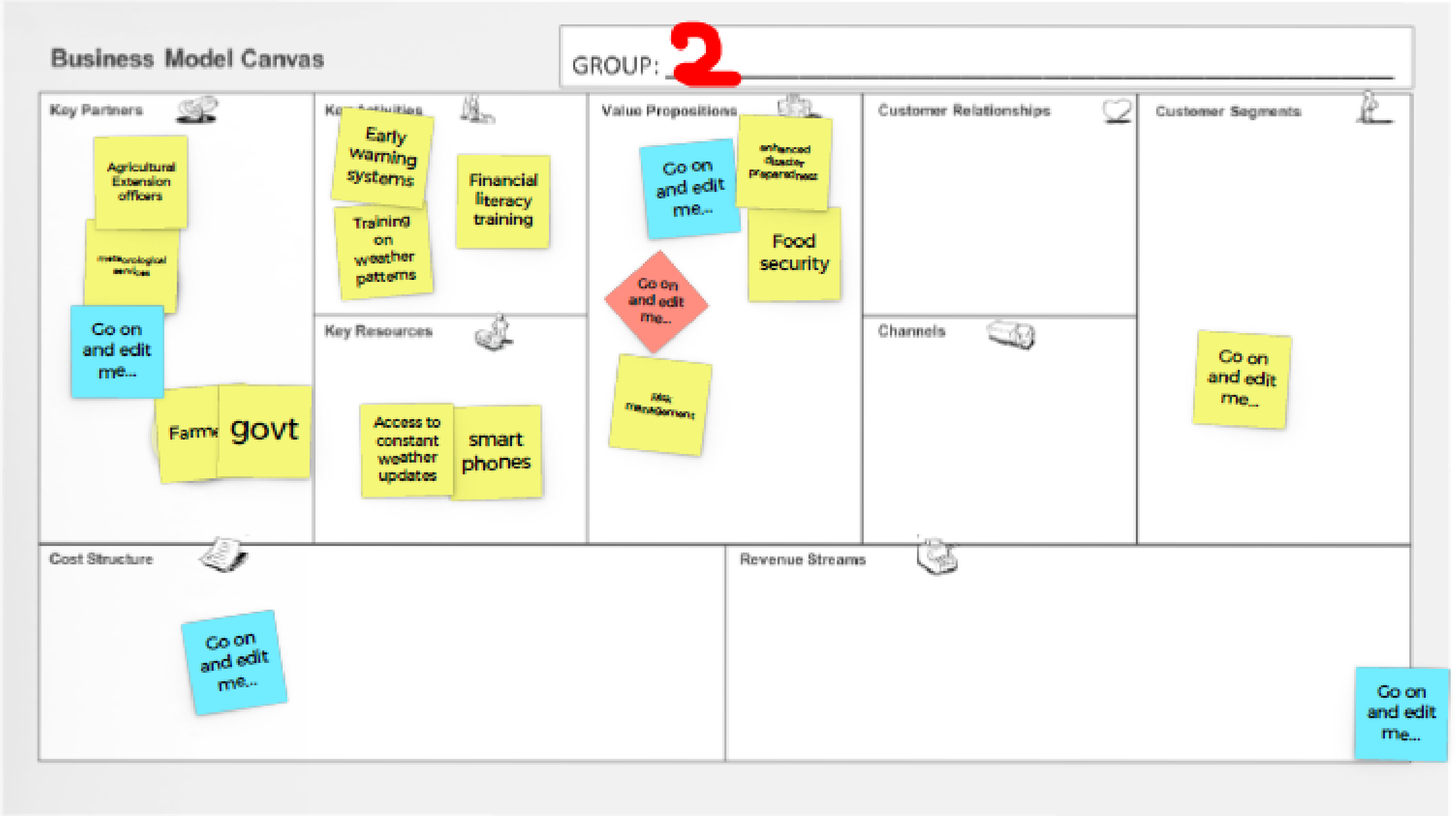

Digital Climate Advisory Services Training
INTERNATIONAL
Business Model Canvas
GROUP: 9

Answers online participants

Business Model Canvas

GROUP: 1




Business Model Canvas
GROUP: 2
Key Partners
Agricultural Extension officers
Co on and edit me...
Farm
govt
Early warning systems
Financial literacy training
Training on weather patterns
Value Propositions
Co on and edit me...
Food security
Co on and edit me...
Customer Relationships
Customer Segments
Co on and edit me...
Key Resources
Access to constant weather updates
smart phones
Channels
Cost Structure
Co on and edit me...
Revenue Streams
Co on and edit me...

Business Model Canvas

GROUP: 3

Key Partners

Communication platfor...

Meteo organizations

network providers /radio service / government

Extension officers

Key Activities

Providing more information incl weather

...curement ...services ...lling crops ...services

Training of farmers on weather information interpretation

Climate resilience strategy

Key Resources

Value Propositions

Improve yield

Reduce risk in losing crops e.g. / increase production

Customer Relationships

Channels

Radio TV Digital ways

Training head of community to dissaminate info

Customer Segments

Cost Structure

Revenue Streams

Membership fees for farmers associated, allocate a part to continue the service

advertising from input suppliers in app

Business Model Canvas

GROUP: 3.2

Key Partners

- Farmers associations
- Go on and edit me...
- Network Providers /radio service / Government
- Go on and edit me...
- Go on and edit me...

Key Activities

- Training of farmers on weather information interpretation
- Train the trainer. Farmer field business school
- Procurement services Selling crops services
- Climate resilience strategy

Key Resources

- Go on and edit me...
- Localised weather information delivered by SMS, radio and e-mail

Value Propositions

- Go on and edit me...
- Improve yield
- Go on and edit me...
- Reduce risk in losing crops e.g. / increase
- government
- funding
- or

Customer Relationships

Channels

- Radio TV Digital ways
- Training head of community to dissaminate info

Customer Segments

Cost Structure

Revenue Streams

Business Model Canvas

GROUP: 4

Key Partners

Department of Extension Services of Ministry of Agriculture

Key Activities

Key Resources

-Funding
-Infrastructure
-Data
-Technology
-Content
-Human capacity
-Partnerships

Value Propositions

1. Building resilience to climate change
2. Improving efficiency in production and productivity
3. Improved access to markets

Challenges that farmers face, how to navigate climate change in farming and how to best prepare.

Customer Relationships

Channels

1. Mobile phones
2. Radio
3. TV
4. Community-based Organizations (CBOs)
5. Web
6. Phones

Customer Segments

Cost Structure

Technology costs
Content development costs
Human resources costs
Marketing and outreach costs

Revenue Streams

-Subscription fees
-Advertising
-transaction fees

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Kanyekanye Tonderai

DCAS as an opportunity for Youth to accelerate in building successful agri-businesses.

Presentation By: Kanyekanye Tonderai (former ZFU Youth Officer)

28th of September 2023.

Zimbabwe Farmers' Union

INTRODUCTION

- Digital Climate Advisory Services (DCAS) are digital services that provide climate information and advice to small-scale producers in the agricultural sector. DCAS can help young agripreneurs adapt to climate change, improve their productivity, and reduce their risks.
- DCAS can also create **opportunities for youth to engage in the digital economy** and **build successful agri-businesses** in Southern Africa ad beyond.

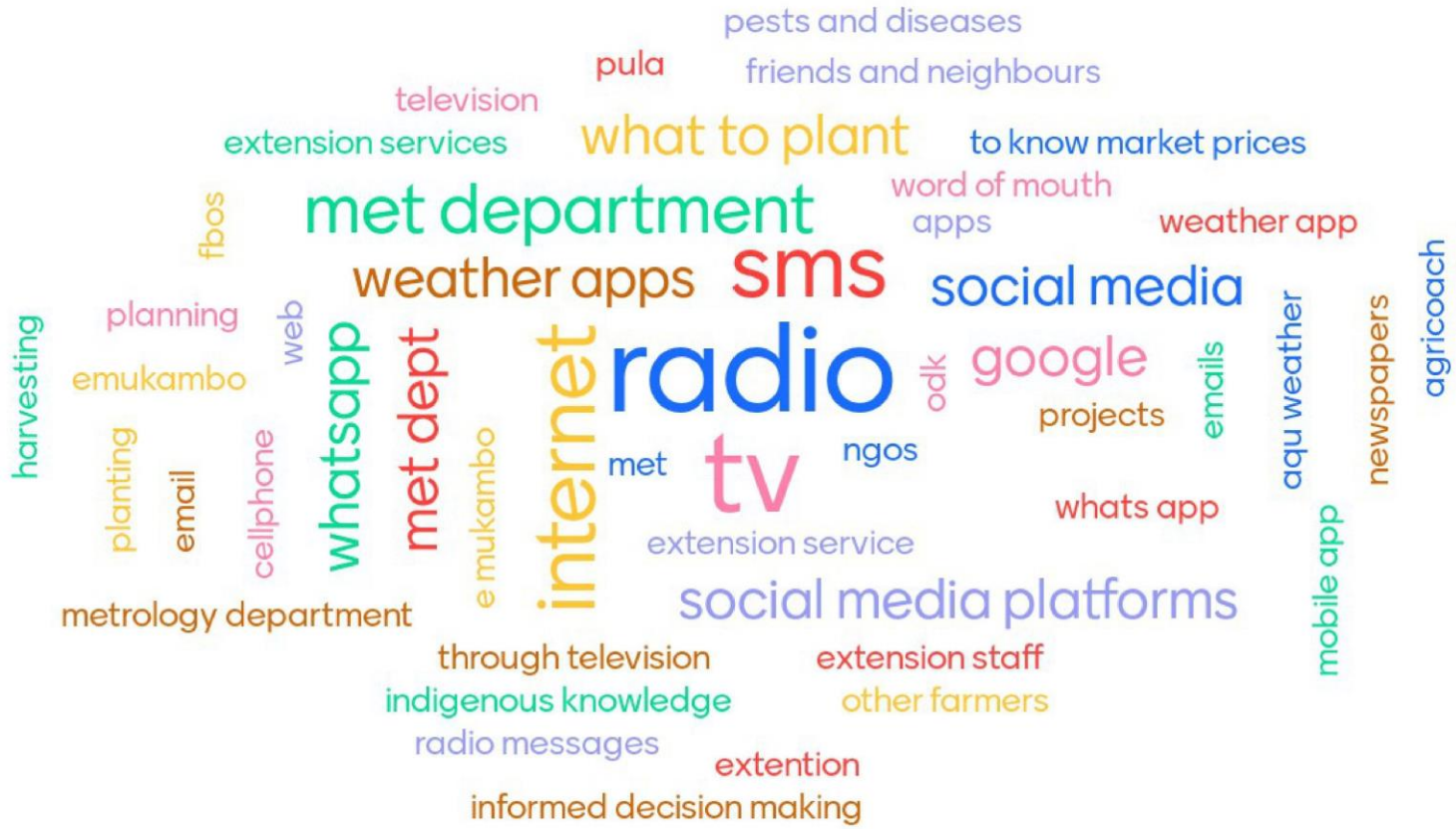
1. What are some of the challenges that you face as young agripreneurs in the context of climate change in your country?

79 responses

Mentimeter

2. How do you access and use climate information to make decisions for your agri-businesses in your country?

86 responses



25

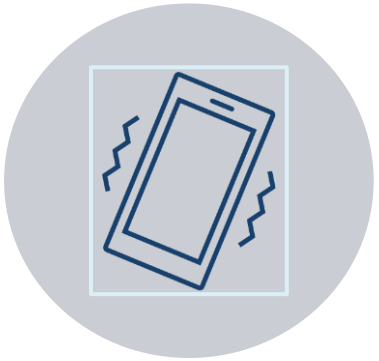
3. What are some of the benefits of using digital climate advisory services for your agri-businesses?

99 responses

31

Opportunities and strategies for Youth to create sustainable agribusiness at ZFU

- The **Zimbabwe Farmers Union (ZFU)** has been supporting young agripreneurs to develop innovative solutions that address the challenges faced by smallholder farmers in the country. Some of the initiatives that have been launched by the ZFU youth include:



AGRI APP

- ✓ Weather Forecasts
- ✓ Crop management
- ✓ Market prices
- ✓ Platform to interact with other farmers & experts

AGRI RADIO

Radio program that broadcasts

- ✓ Agronomic information
- ✓ Success stories
- ✓ Opportunities for young famers in different languages and regions

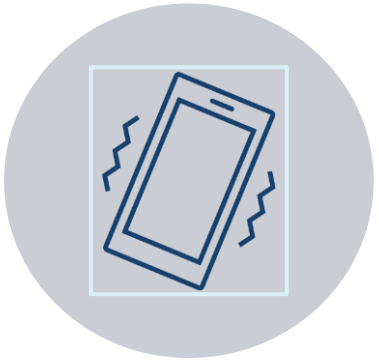
AGRI WEB

Online platform that connects farmers with

- ✓ Buyers
- ✓ input suppliers
- ✓ financial institutions
- ✓ extension services

Opportunities and strategies for Youth to create sustainable agribusiness at ZFU

- The **Zimbabwe Farmers Union (ZFU)** has been supporting young agripreneurs to develop innovative solutions that address the challenges faced by smallholder farmers in the country. Some of the initiatives that have been launched by the ZFU youth include:



AGRI APP

AGRI RADIO

AGRI WEB

- These initiatives aim to improve the **productivity, profitability, and resilience** of smallholder farmers, as well as to **inspire and empower more young people** to engage in agriculture.

Partnerships and Collaboration

- ZFU has been promoting partnership and collaboration to accelerate and build sustainable agribusiness for young agripreneurs.
- Address climate change challenges by partnering with stakeholders such as Ministry of Agriculture, Harare Institute of Technology among others.

ZFU Initiatives for Youth

- Youth Agripreneurs Development Programme (YADP)
- Youth Agripreneurship Summit
- Young Farmers Clubs
- Fit For Live
- Young Farmers' Innovation Lab

Digital Economy

- The Zimbabwe Farmers Union (ZFU) has been actively promoting the participation of young agripreneurs in the digital economy.
- Through its **Youth Agripreneurs Development Program (YADP)**, ZFU has trained and mentored over 500 young farmers in 2023 on how to use digital technologies to enhance their productivity, profitability, and resilience.

- Some of the digital solutions that ZFU has introduced to the young agripreneurs include **mobile applications for market information, crop management, and financial literacy; online platforms for e-commerce, e-learning, and e-mentoring**; and partnerships with mobile network operators, financial service providers, and agribusinesses to access mobile money, insurance, and input supply services.

Youth Agripreneurship summit (1)

- The goal of the summit which is held annually is to generate and connect ideas aimed at progressing agriculture in Zimbabwe with the next generation of young people.

Youth Agripreneurship summit (2)

- **Key objectives:**
  - Provide an avenue for agriculturally sustainable solutions.
  - Create a platform for young people to actively engage in the agricultural sector.
  - Bring young people together and to support them in developing their communities through climate change mitigation and adaptation.
  - Create a platform allowing peer learning, creativity, innovation and motivation

Young farmer –led scaling up of conservation agriculture.

"CATCH THEM YOUNG"

- ZFU has been promoting conservation agriculture across the country
- The program has trained rural young people and youths in primary and secondary schools on practical agricultural skills as a means of empowering them to develop fundamental principles of agriculture.
- Goal: promotion of the adoption of Conservation Agricultural skills (CA) by young agripreneurs through **farmer managed demonstration plots and CA clubs**.
- **50 School-based Young Farmers club (YFCs) with Demo Plots and 40 community Demo Plots have been supported**. Communities learnt from the school demo plots. These plots utilized CA principles in the growing of maize and during the winter period school young farmers clubs and the communities around them implement horticulture projects. For both CA and horticulture there has been a national competition which motivated youths to do their best.

Demo Plots

Innovation

- Zimbabwe Farmers Union has been promoting innovation among young agripreneurs in promoting acceleration in building successful agri-businesses.
- Through the **Young Farmers' innovation lab** program ZFU has innovatively developed and nurtured entrepreneurship abilities of young farmers in Zimbabwe. The program equipped young farmers with agribusiness entrepreneurship and **ICT Skills**. Furthermore the program successfully merged farming and ICTs which is witnessed by the deployment of ICT based solutions to strengthen farming operations. The marketing label developed by the program, improved market access, thus successfully **penetrating structured markets like SPAR and Pick N Pay TM supermarkets**.
- Under the same program, value addition has increased the income generated by young farmers. The program procured **10 dryers** which can dry vegetables and fruits. Partners were UNDP, Harare Institute of Technology (HIT), Hypercube Hub, Watershed College, Africa University, University of Zimbabwe, Khangelani Studios, and Innovation Baraza.

Young Farmers Club empowerment and Entrepreneurship - Fit for Life Programe (1)

- ZFU has endeavored to empower young farmer through entrepreneurship development.

- This has been premised on the **Fit for Life** mantra.
- Collaboration with Ministry of Primary and Secondary Education (MOPSE)
- The training took place at MOPSE schools after hours.
- Qualified teachers who had been trained.
- On completion of the farming as a business and financial literacy in **two months**, the youths were placed in **young farmers clubs of 10-15** youths.

Learning Contents

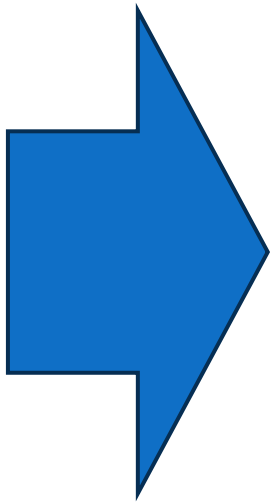
Literacy and numeracy program

Agricultural training (crops and livestock)

Farming as a business (FAAB) and Financial Literacy (FL) courses (2 months)

Young Farmers Club empowerment and Entrepreneurship - Fit for Life Programe

- Young Farmers Clubs received micro grants for projects
  - small livestock (broilers, indigenous chickens, layers, rabbit, goats, guinea fowls, and piggery)
  - Horticulture
  - cereal production
  - ZFU distributed 144sqm greenhouses material to 11 project sites. Young Farmers Clubs utilized these greenhouses to generate income.
- Fit for life is implemented in 16 districts in the following provinces: Mashonaland Central, Mashonaland East, Mashonaland West, Midlands and Matabeleland South with Barclays funding from 2015 to 2017.



30.634 youths reached (38% female)

Conclusion

- Under its VISION, ***"A resilient, commercialized and viable agricultural sector"*** ZFU has chosen capacity building, ICTs, business enabling environment, promoting youth participation and strengthening young farmers club structure as its main pillars in accelerating and building successful agri-businesses for young agripreneurs.
- By leveraging on DCAS approach, ZFU has enabled young entrepreneurs not only to contribute to the resilience and prosperity of the agricultural sector in Zimbabwe, but also to create employment opportunities, generate income, and enhance their skills and capacities in the digital age.

THE END

THANK YOU

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Speaker

Yannick Chokola

Sustaining an eService business **for small holder farmers**

Speaker
Yannick **CHOKOLA**

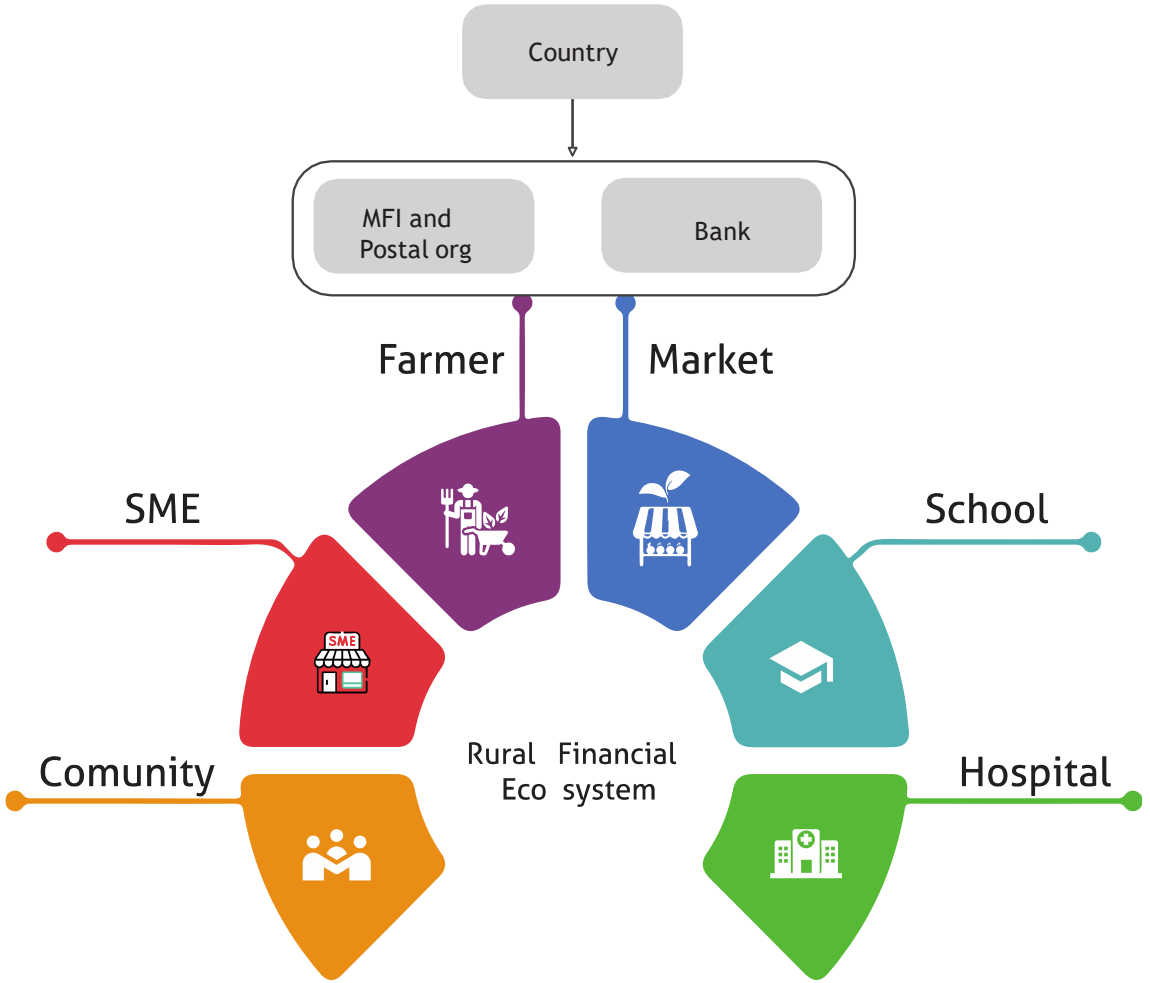
About us

AUXFIN is a social enterprise that aims to provide financial and non-financial solutions accessible to all, including vulnerable low-literate populations with limited access to the Internet, electricity and limited experience with mobile and other technologies.

To achieve this goal AUXFIN has developed the UMVA ("Universal Methods of Value Access") platform, which facilitates transactions of any value.

This UMVA Platform therefore allows small producers to have access to basic financial services such as access to transaction accounts, savings, micro credits, payments and transfers.

Community activation



Financial inclusion:

01

At all levels in the community

02

Support of the daily activities

03

In collaboration with other partners

Realization

Social Capital

Creating networks of connected small-scale farmers

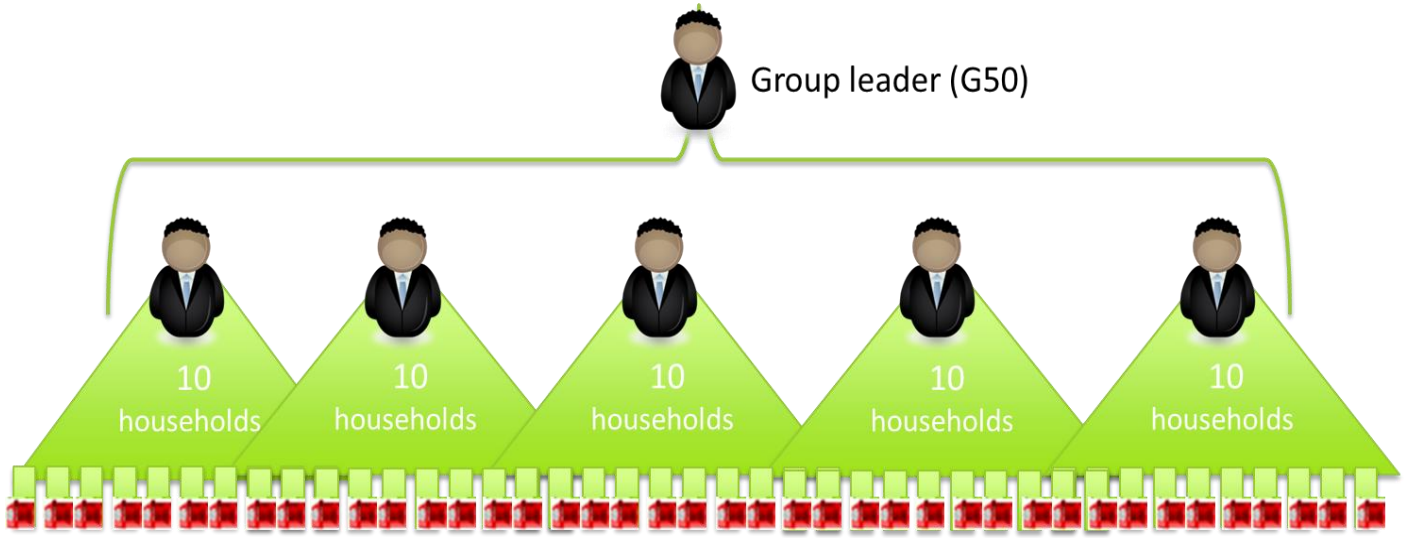
ICT4D

Provide these networks with targeted solutions via the UMVA system

Sustainability

Exploiting these networks as a business

Social Capital: G50 Group



- The 3 group leaders are elected by the group members, based on criteria established by the group;
- 50 makes you stronger, weekly meetings + more social cohesion;
- Each group has access to the AUXFIN platform via a tablet;
- Each group is supported by a key activator;

Social Capital: G50 Approach

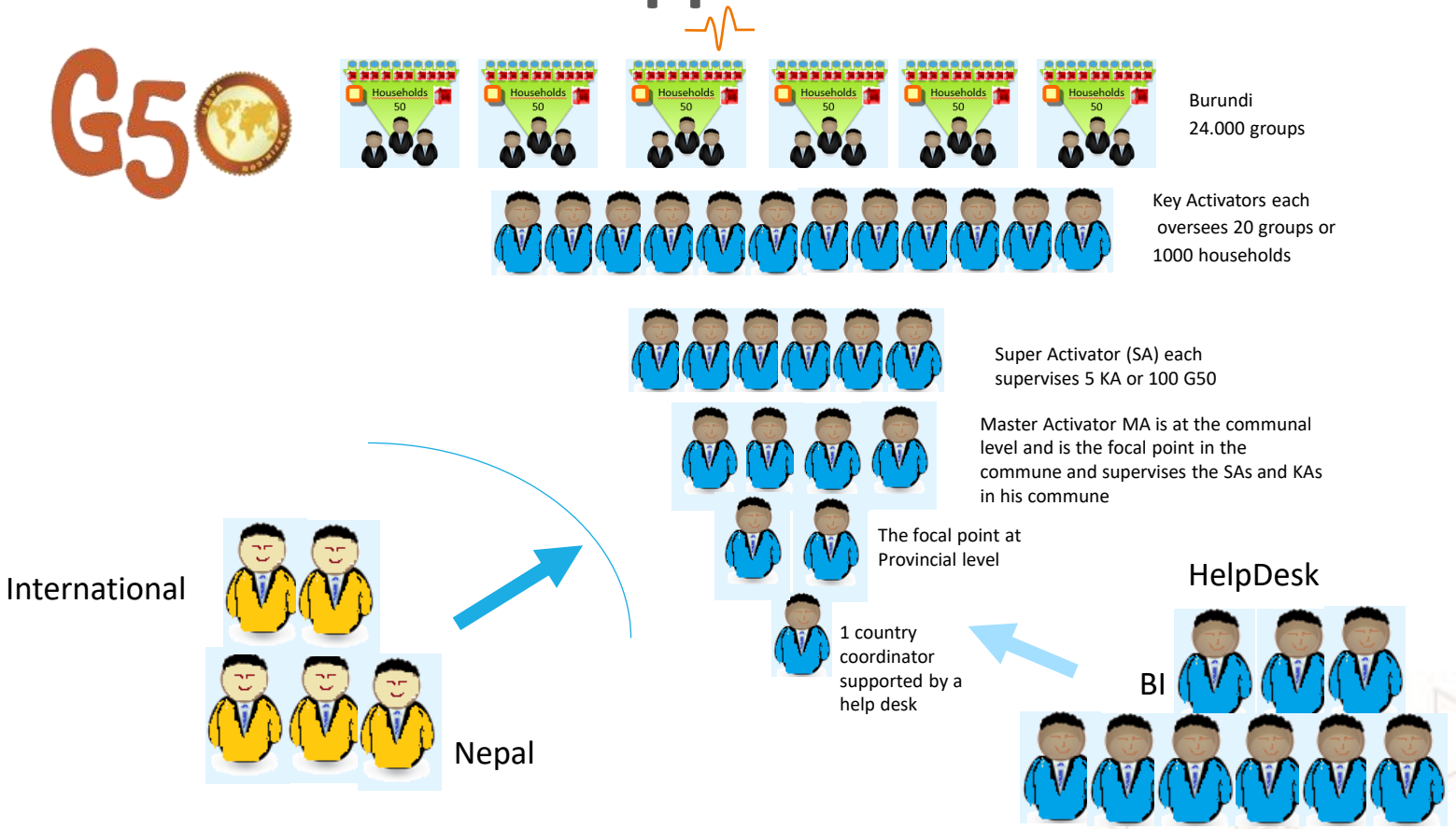
- The G50 approach is an effective way to fight poverty in a sustainable way. It consists of organizing groups of maximum 50 households around a tablet and connected to the UMVA platform and community activation program (CAP) that aimed to facilitating their access to different services.

- Each group is governed by self-elected and representative leaders, considering age and gender. Through the tablets each member is provided with, and connected to information and services through the UMVA platform.
- In order to make sure the groups are well governed, and our solutions are used well each group is supported by a field agent

- After registration and group formation, each group is going through a resource mapping and mobilization phase to make an inventory of their biggest challenges and opportunities to get to self-development as a group.
- Based on this assessment the group prioritizes a plan and can use the tools and services provided to realize this plan


ICT for rural development
UMVA
AgriCoach
HealthCoach
NutritionCoach
FinancialCoach
GovernanceCoach
G5

The G50 support network



10.000 Groups
in BURUNDI

800 Agents
Serving the community

Scaling results: applications

14 DIGITAL APPS

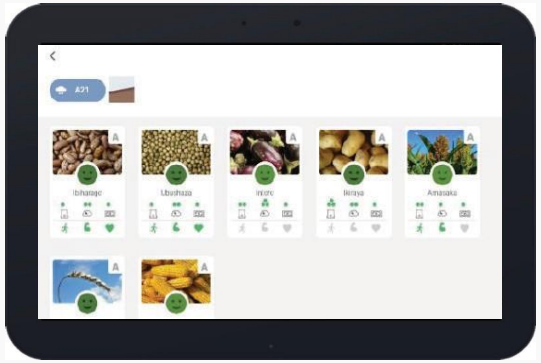
To support households

565

Training videos produced

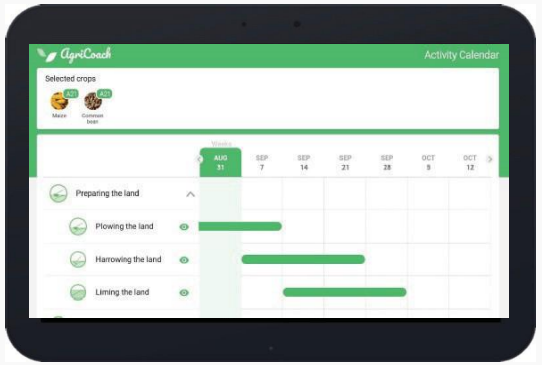
AgriCoach as an Example

Mission: to support farmer with timely and relevant agricultural information to solve 3 basic decisions:



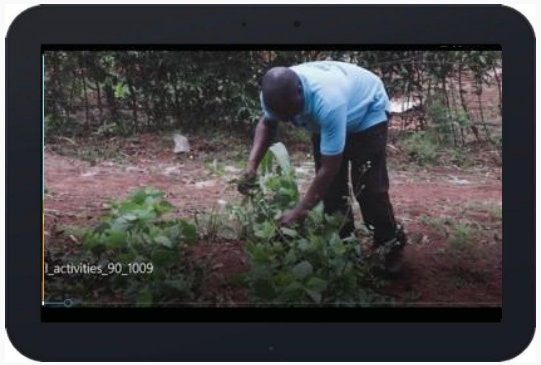
CropSelector

1 What crops to grow?



ActivityCalender

2 When to grow these crops



Best Practice Movies

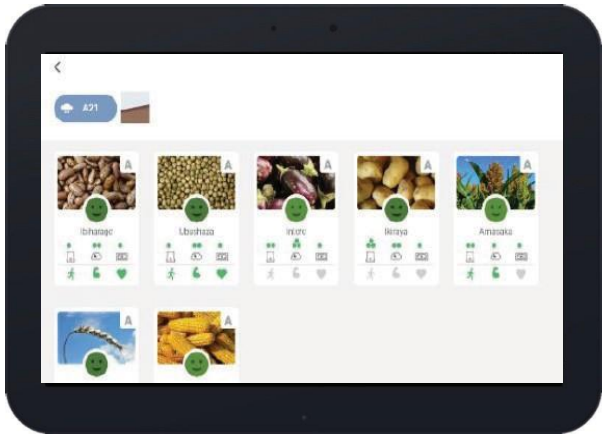
3 How to grow these crops?

Netherlands Space Office

G4AW GEODATA FOR AGRICULTURE AND WATER

Weather
(9 days and saisonal)

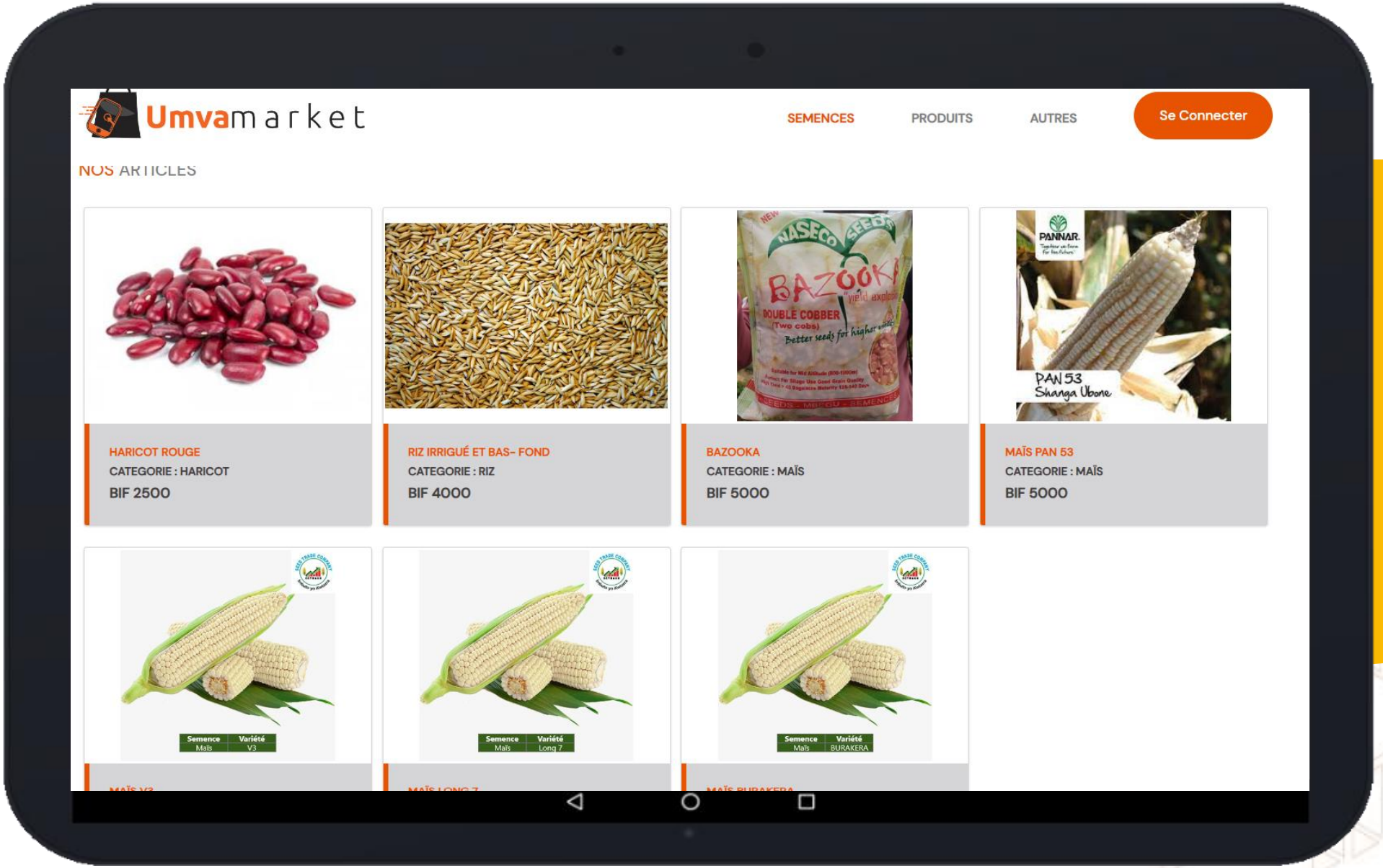
AgriCoach linked to the input market



CropSelector

Online inputs markets

eBanking platform connected to MFI


Umvamarket
SEMENCES
PRODUITS
AUTRES
Se Connecter
NOS ARTICLES
HARICOT ROUGE
CATEGORIE : HARICOT
BIF 2500
RIZ IRRIGUÉ ET BAS- FOND
CATEGORIE : RIZ
BIF 4000
BAZOOKA
CATEGORIE : MAÏS
BIF 5000
MAÏS PAN 53
CATEGORIE : MAÏS
BIF 5000
Semence Variété
Maïs V3
Semence Variété
Maïs Long 7
Semence Variété
Maïs BURAKERA

Scaling results: digital fertiliser purchases

550 000 bags

of fertilizer and seeds sold,

5 Mio USD

Total value of purchases

Holistic approach

A single platform that are used for :

1. Social inclusion and cohesion grassroots social
2. Household empowerment and communities
3. Strengthen financial inclusion
4. Digitization of information to facilitate awareness
5. Connexion to services (collaboration and coordination)
6. Improved transparency and traceability of activities
7. Financial Services via MFIs Linked to the UMVA Platform
8. Facilitation of monitoring and evaluation in "real time"

Priorities are determined by stakeholders, taking into account local knowledge and building on existing activities and infrastructure.

Brarudi

MEMBRE DU GROUPE HEINEKEN

HEINEKEN

Market Linkages : Local supply of white Sorghum

- Local supply of white sorghum
- Direct payment to farmers
- Improving quality and quantity

15.000

Farmers Connected

Market connexion/services: Local sourcing of sorghum

Enabling Brarudi to source from the domestic market

- By registring delivery, quality controle and
- payment in a transparent manner

WFP
Programme Alimentaire Mondial
PAM

Market Linkages :
Local sourcing for school canteens WFP

- Local Sourcing of Maize, Rice and Beans
- To counter parallel selling
- Direct and transparent payment to farmers
- Connection to financial services

10.000

Farmers Connected

Business model (Burundi):Package of services

01 Licence Fees

02 Transactions and commissions

03 Remittences.

1.000.000
Households registred

800 Agents
Serving the community

Activated in G50 :

450.000 Households

11 Provinces
52 Communes
1108 Collines

Scaling to :

600.000 households
~ 3 millions people

Vision For The Future

Burundi

Move away from the traditional way of working towards:

- Supporting partners in data driven policy making and evaluation e.g. Health sector in Burundi
- Support development partners to scale their impact.
- Co-design of eServices. First mile is bridged!

Outside Burundi

Scaling and sharing of proven solutions and methods e.g. in a license model in:

- Burkina Faso
- Uganda
- D.R Congo

Barriers to digital inclusion

Barriers to digital inclusion that lead to the gender gap

Female farmers are less likely than male farmers to:

Barriers to overcome: Access

Access to technology

- woman have direct access to technology in the G50, they are part of the group meetings, can handle the tablet, and have access to services and training content.
- Inclusiveness is a base principle of the G50 approach: everybody has access to the G50 groups, nobody is excluded.

Barriers to overcome: Access

The G50 groups are a gender inclusive environment: woman are direct participants in groups.

4 2 % of our G50 group members are female (2 8 % youth)

28%
Youth

42%
Female

Socially included via the G50 approach

Barriers to overcome: Access

3. Leadership

•To assure woman feel included it is important to represent them in leadership roles The G50 group consist self-elected

•group leaders. Woman and youth are well represented :

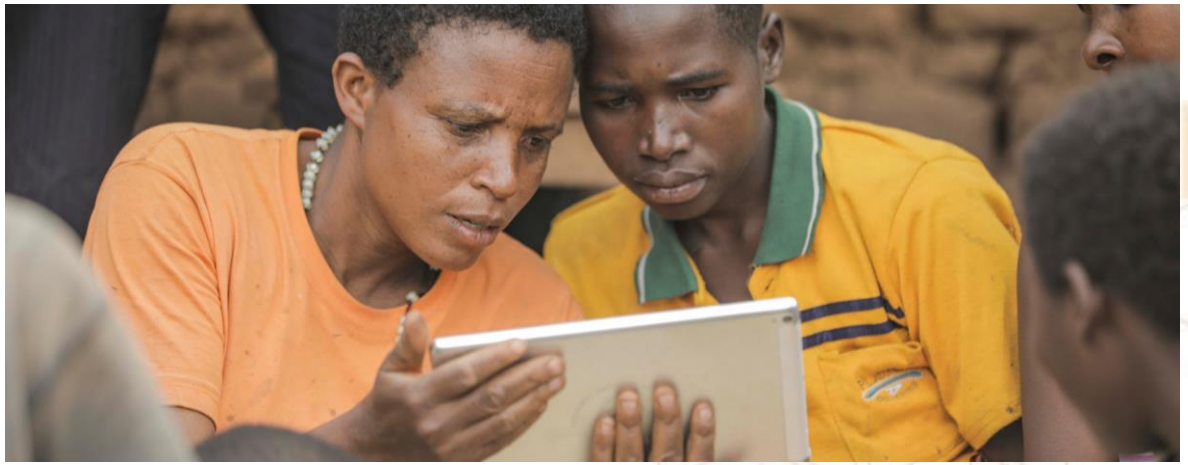
•4 1 % of the group leaders are female, and

5 3 % are youth.

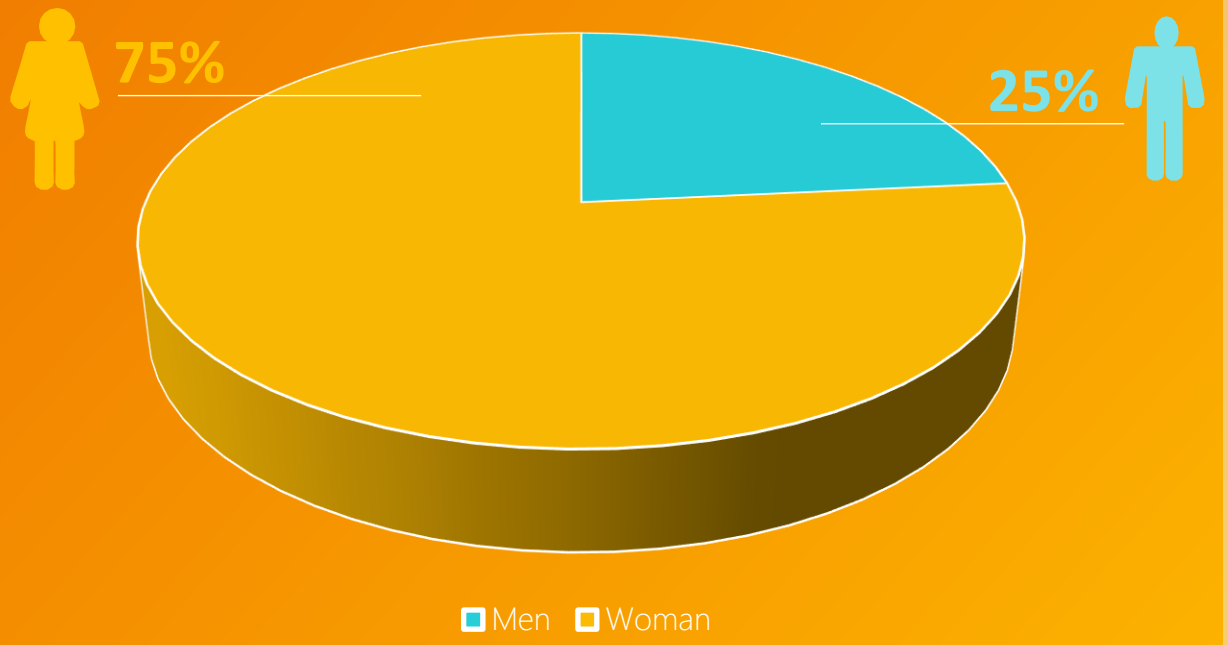
Barriers to overcome: Affordability

- The costs of the use of the tablet and platform are shared by the group, resulting in lower costs per person.

- AUXFIN asks for a small contribution that is affordable for farmers, and only requests this contribution when the costs outweigh the benefit for farmers.



Barriers to overcome:
Knowledge and skills



The degree of participation for woman was regarded as active (25%) to highly active (66%). For men this was more spread out: moderately active (36%), active (31%) to very active (32%).

Barriers to literacy and numeracy skills are overcome with the G50 approach

- The group members help each other, usually the group leader and some other members can read and will facilitate the use of the tablet.
- The groups are supported by a field agent
- All trainings are provided in video format, no reading skills needed

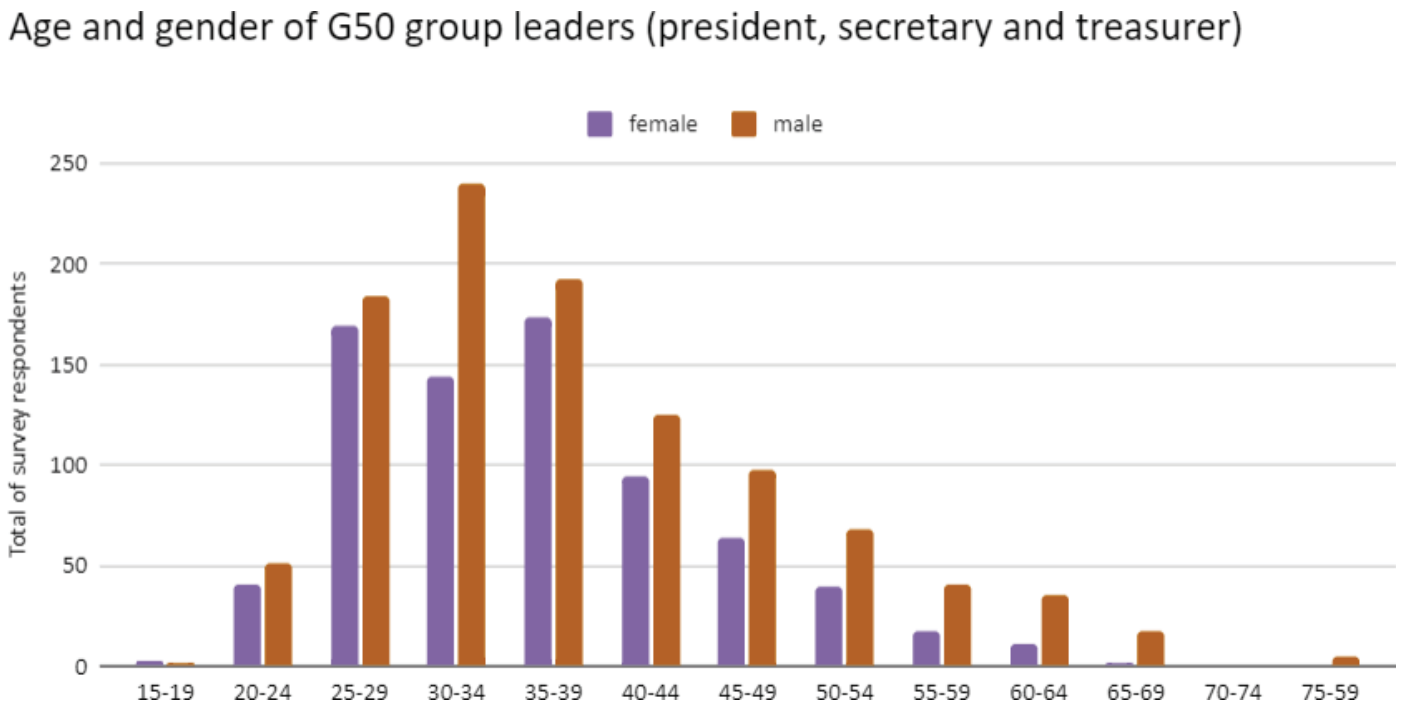
75% 75% of respondents regarded woman as most active

A surveys with 552 respondents **indicated that the active participation in the groups is higher for females than for males.**

Barriers to overcome: Safety and security

Safety and security

The fact that woman are most active participants testifies that woman feel save to use the technology.
Another aspect to help with safety and security of woman is to assure woman are well represented in leadership



Barriers to overcome:
Relevance

- Based on their needs (collected from evaluations),
- Designed with them (user centred designed),
- Content adopted to their situation

50%

Regarding gender, we aim for a minimum of 50% female representation in the content of the applications on the UMVA platform.
This is to assure that woman can identify with what is presented to them, feel it is made for them and therefore feel they can address these issues, just like the women they see represented in the movies.

Barriers to overcome: Relevant

In the first years we did not pay enough attention to this, but since a few years this is a minimum condition. This translates to :

Woman in movies

Female Avatar

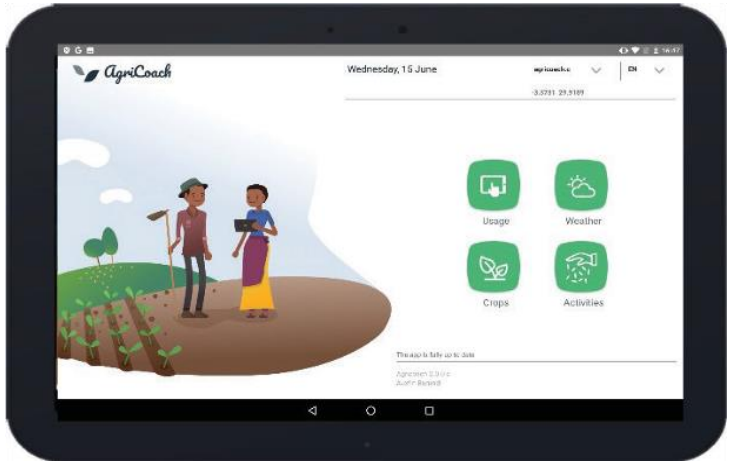
Examples based on Female perspective

Female voices in voice-overs

Barriers to overcome: Relevance

- An important lesson learned for us is that besides representing female figures, it is just as important that the woman included in content are of the same socio-economic class.

- During our evaluations it became obvious that woman (but also men) react most strongly to videos of people who look like them and have similar lives. The most important factor is that farmers can identify with them: based on their appearance and what they talk about (examples of their lives). This can even be animated figures, as long the lives of these characters are similar to the farmers lives



Barriers to overcome: Relevance

Attention is also paid to represent woman in leadership roles in images and avatars

First the media team presented two males in leadership, this is corrected to one woman, one man.

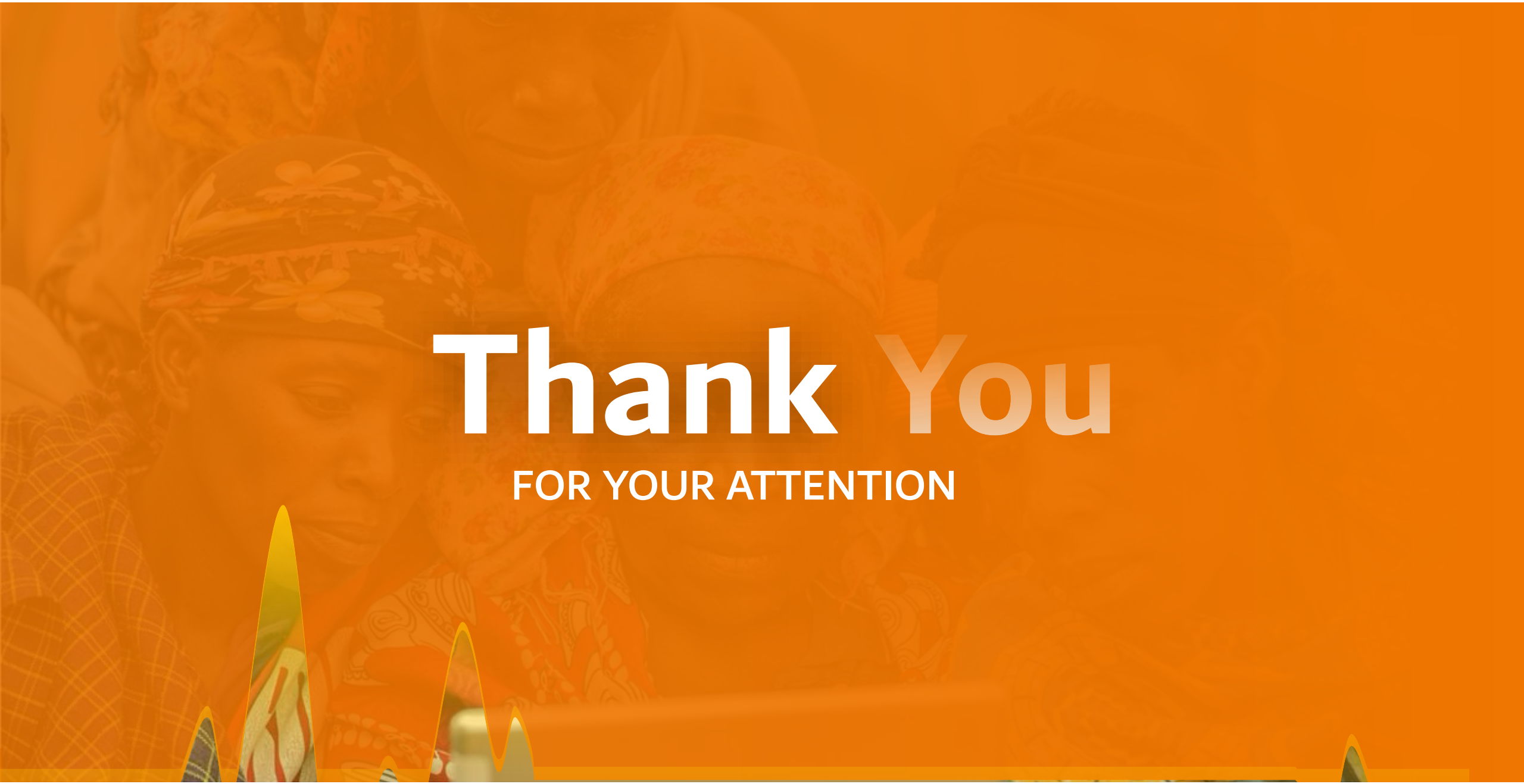
Get in Touch

10, Boulevard du japon
Bujumbura BURUNDI

+257 68 000 880

email

Yannick.chokola@auxfin.com


Thank You
FOR YOUR ATTENTION

The Role of Public Organizations, the Private Sector, Civil Society in the successful Development and Upscaling of DCAS – Group Discussions Part 1

GLOBAL CENTER ON ADAPTATION

AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

aqualinks

Weather Impact

Group discussion

To support climate resilience for smallholder agriculture in Southern Africa

27th – 28th of September 2023

4 Questions – 5 Roles

Every corner is used to discuss a different DCAS Question:

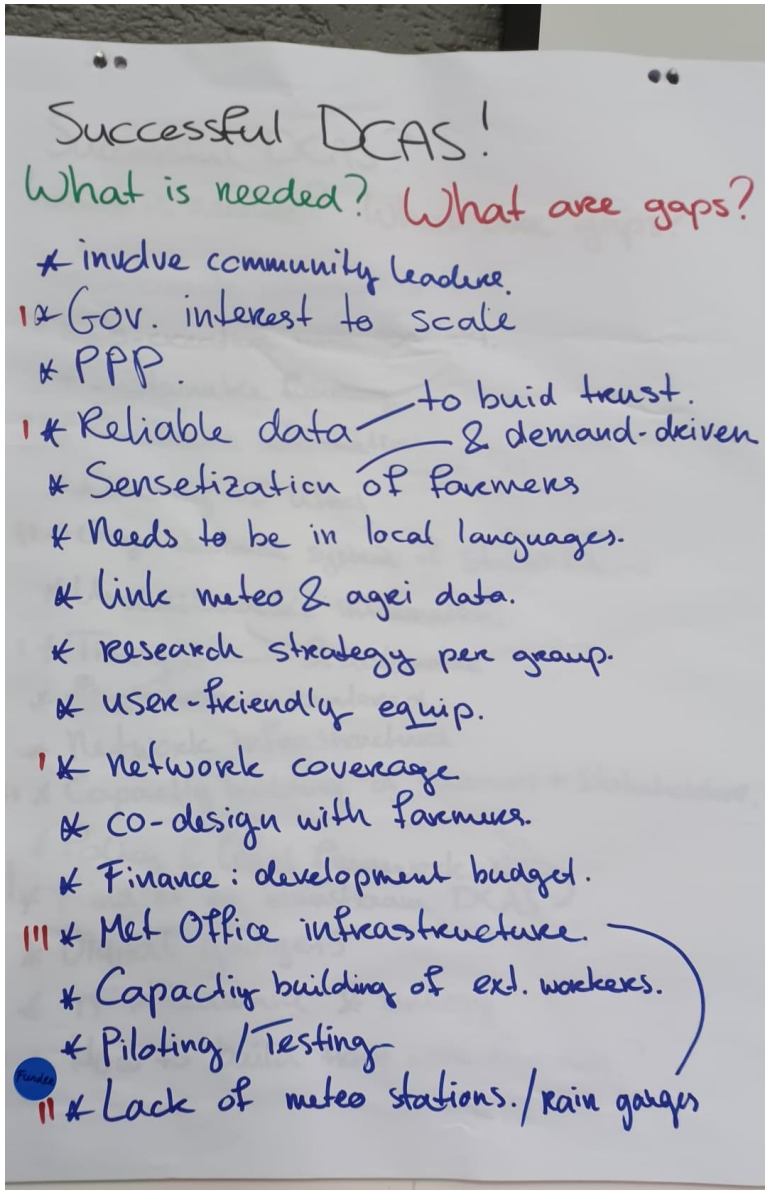
- **Successful DCAS**: What is needed? What are current gaps? - *Stefan*
- What **technical capacity and resources** are needed locally for DCAS? - *Janina*
- **Financial side**: How do we keep DCAS sustainable and alive? - *Marieke*
- **Farmer ♥ DCAS**: How to market DCAS to farmers and ensure uptake and trust in it? - *Sue*

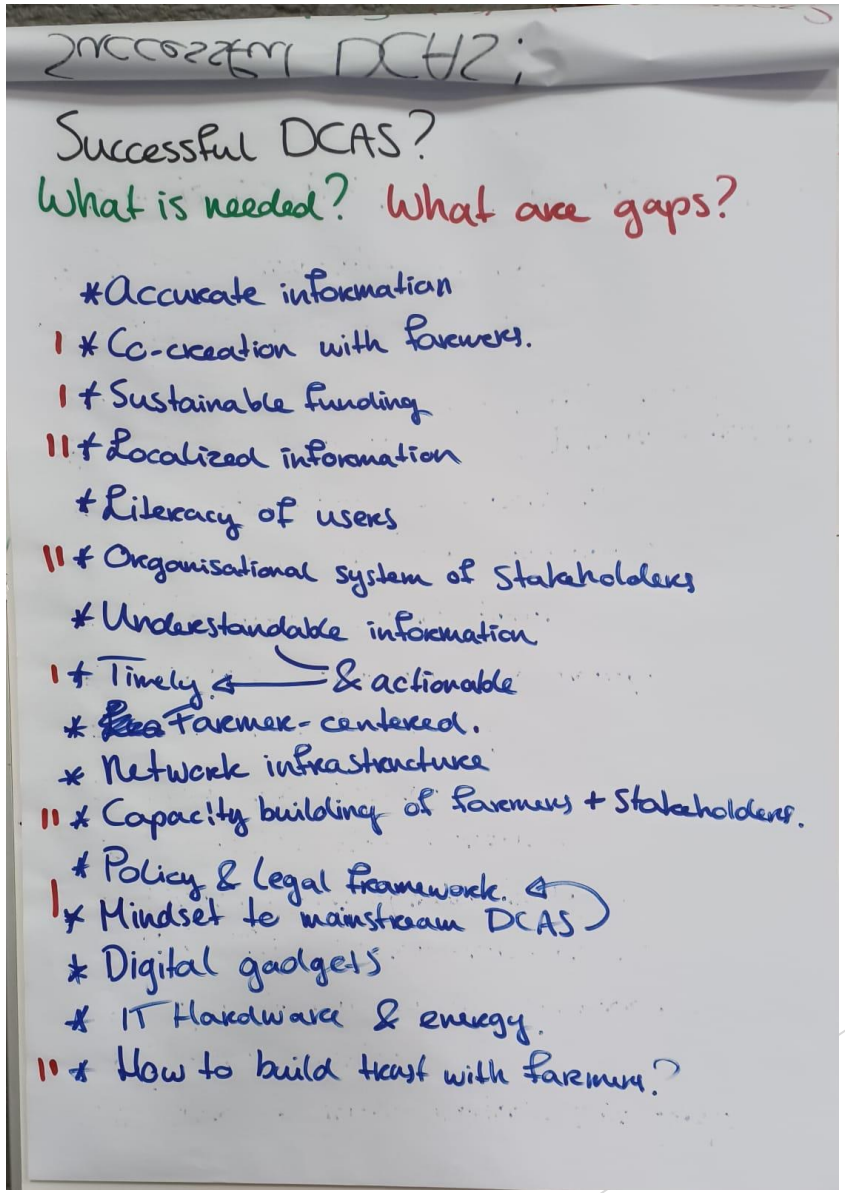
- Answer the question from a specific role:

Agricultural Ministry
Meteorological Agency
Private Company
Funding organisations
Smallholder farmer

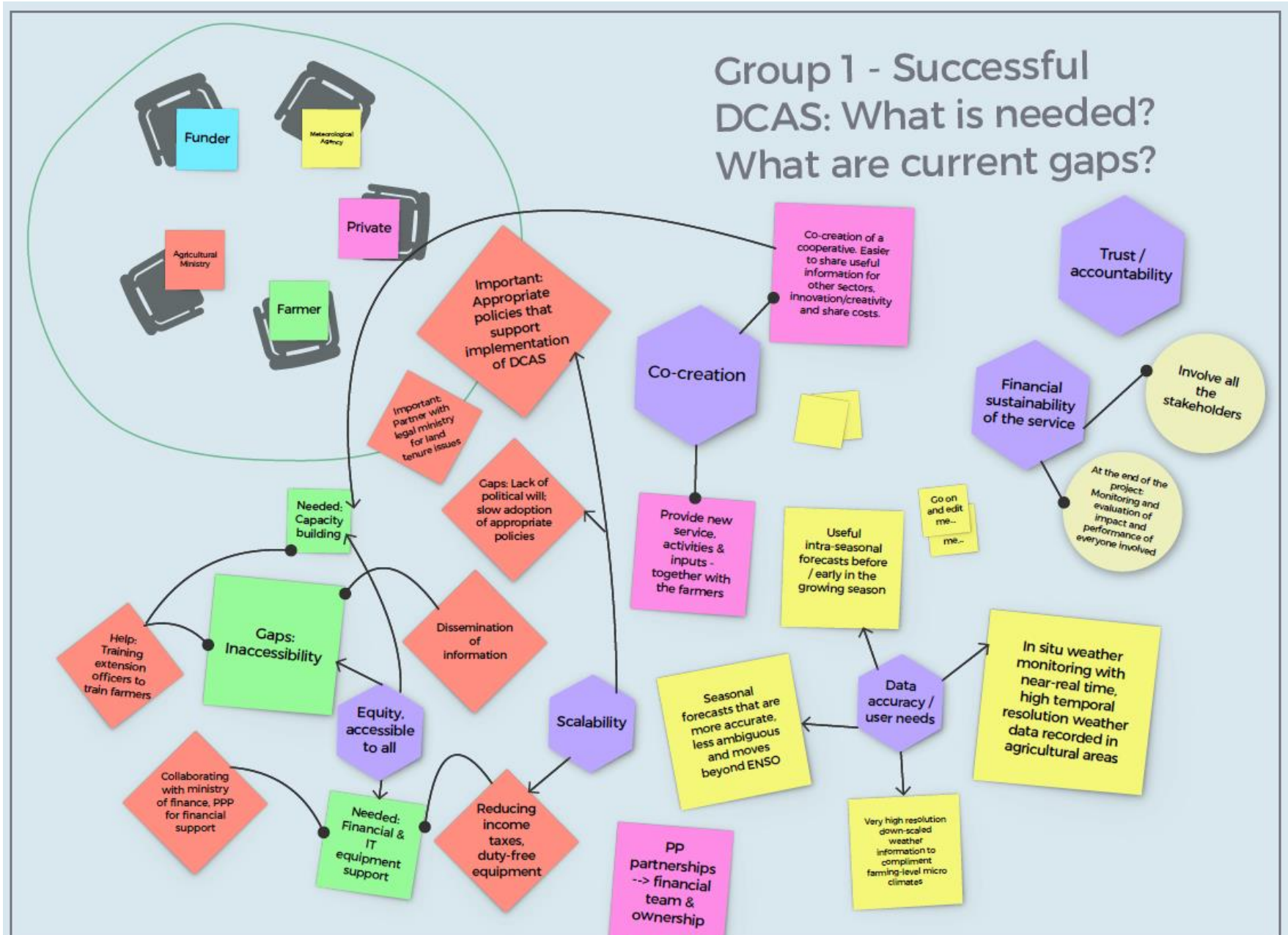
- 3 rounds of 20 minutes, rotate to different questions every round

On-site: Q1 – Successful DCAS

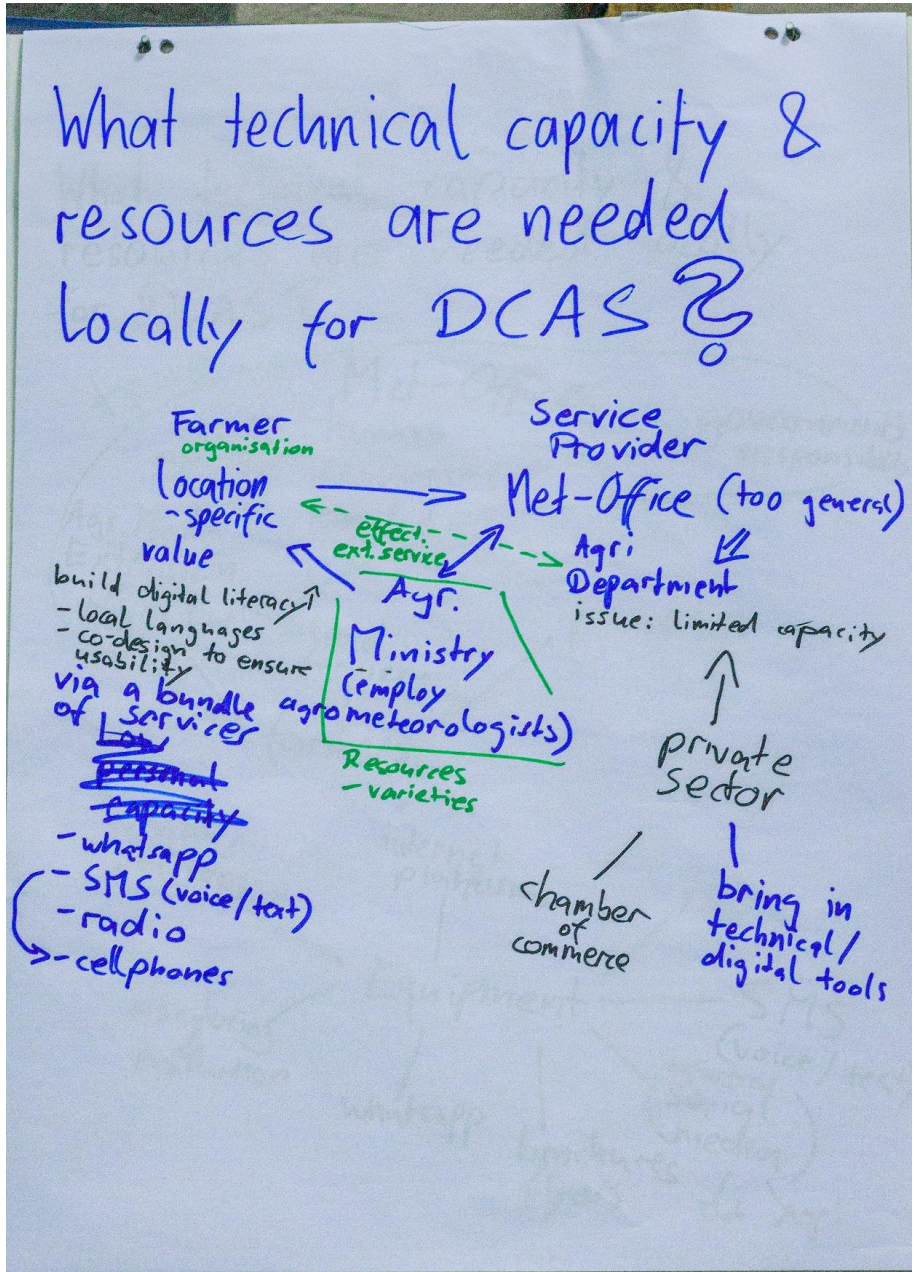




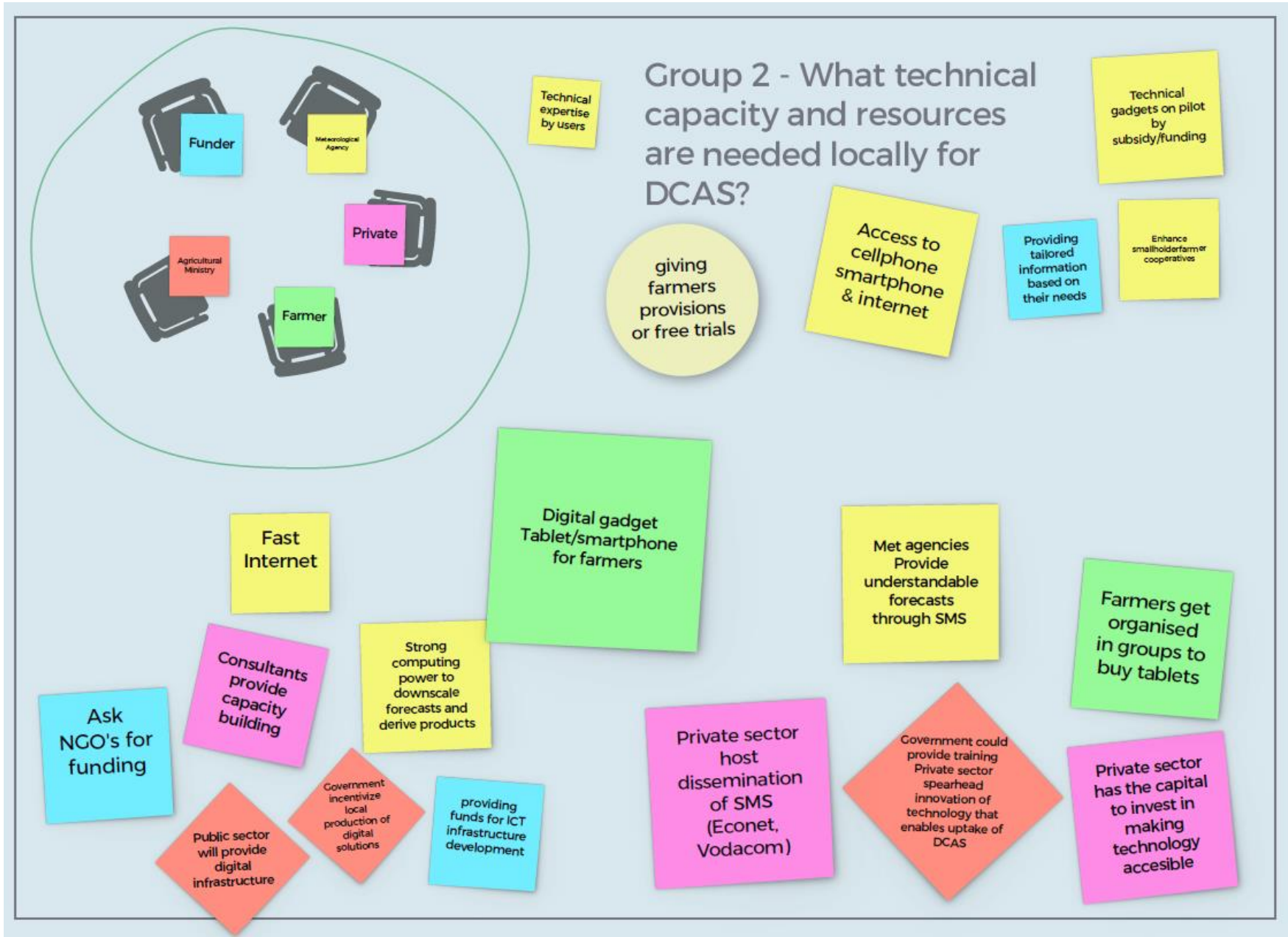
Online: Q1 – Successful DCAS



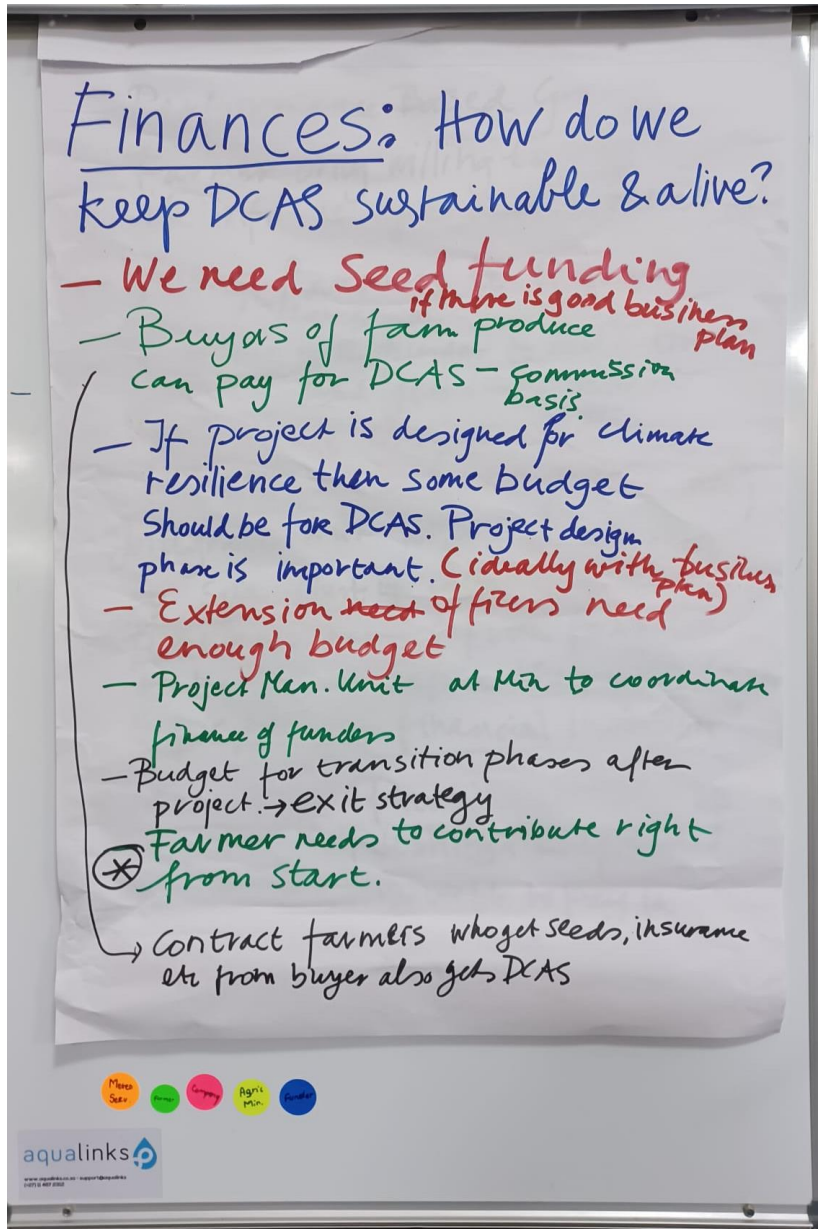
On-site: Q2 – technical resources

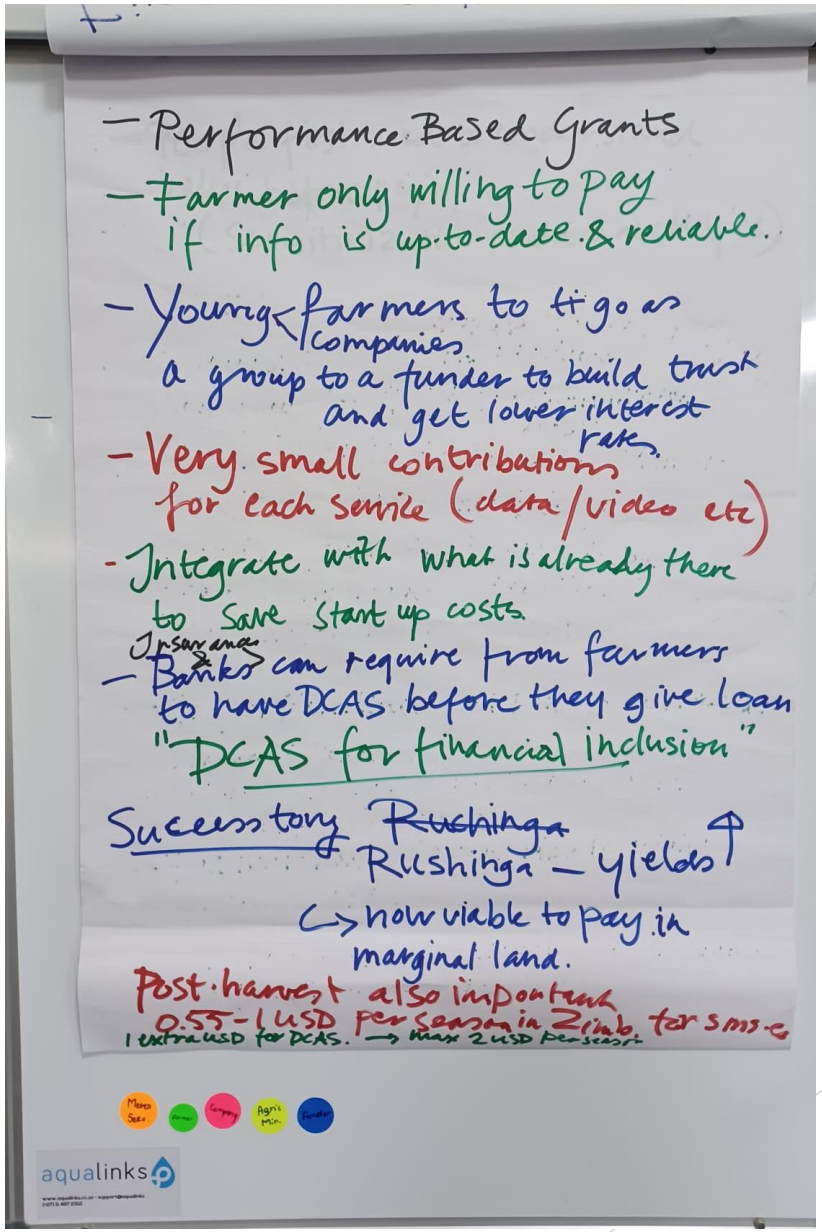


Online: Q2 – technical resources

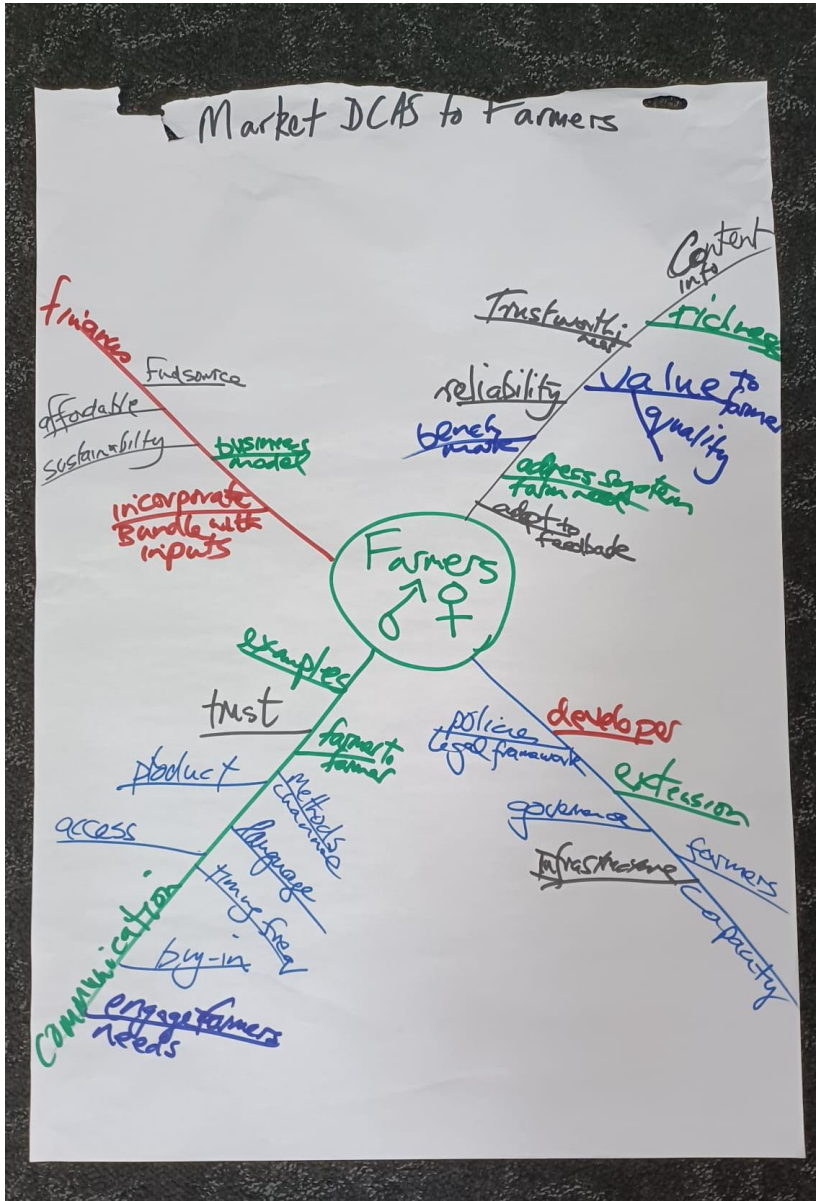


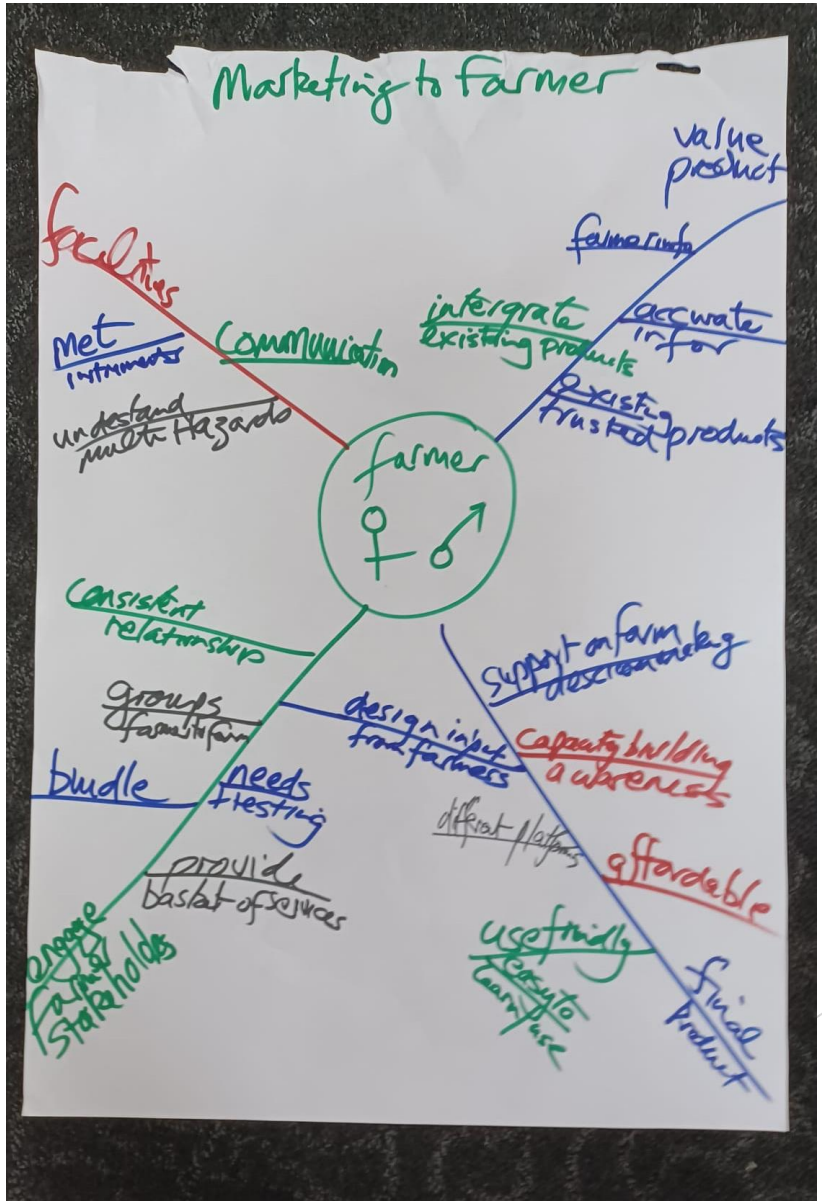
On-site: Q3 – finances



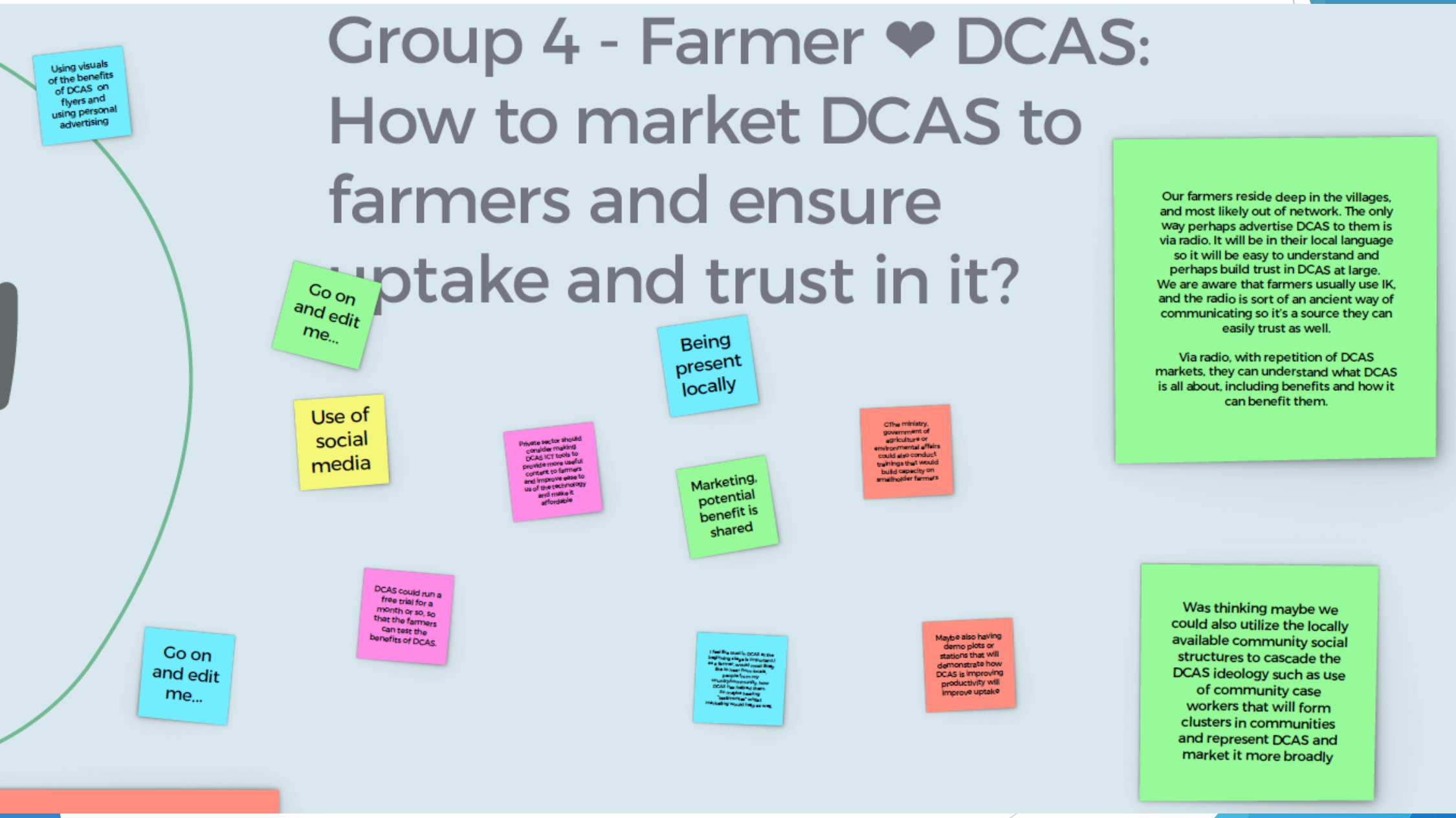


On-site: Q4 – Marketing





Online: Q4 – Marketing (Part 1)



Online: Q4 – Marketing (Part 2)