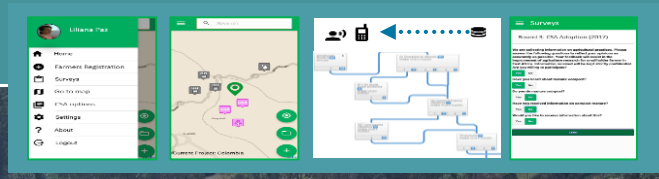
Monitoring outcomes of CSA options in Doyogena Climate-Smart village, Ethiopia

***Osana Bonilla-Findji**, CCAFS Flagship on Climate-Smart Agricultural Technologies and Practices*

EU-Project: Building livelihoods and resilience to climate change in East & West Africa



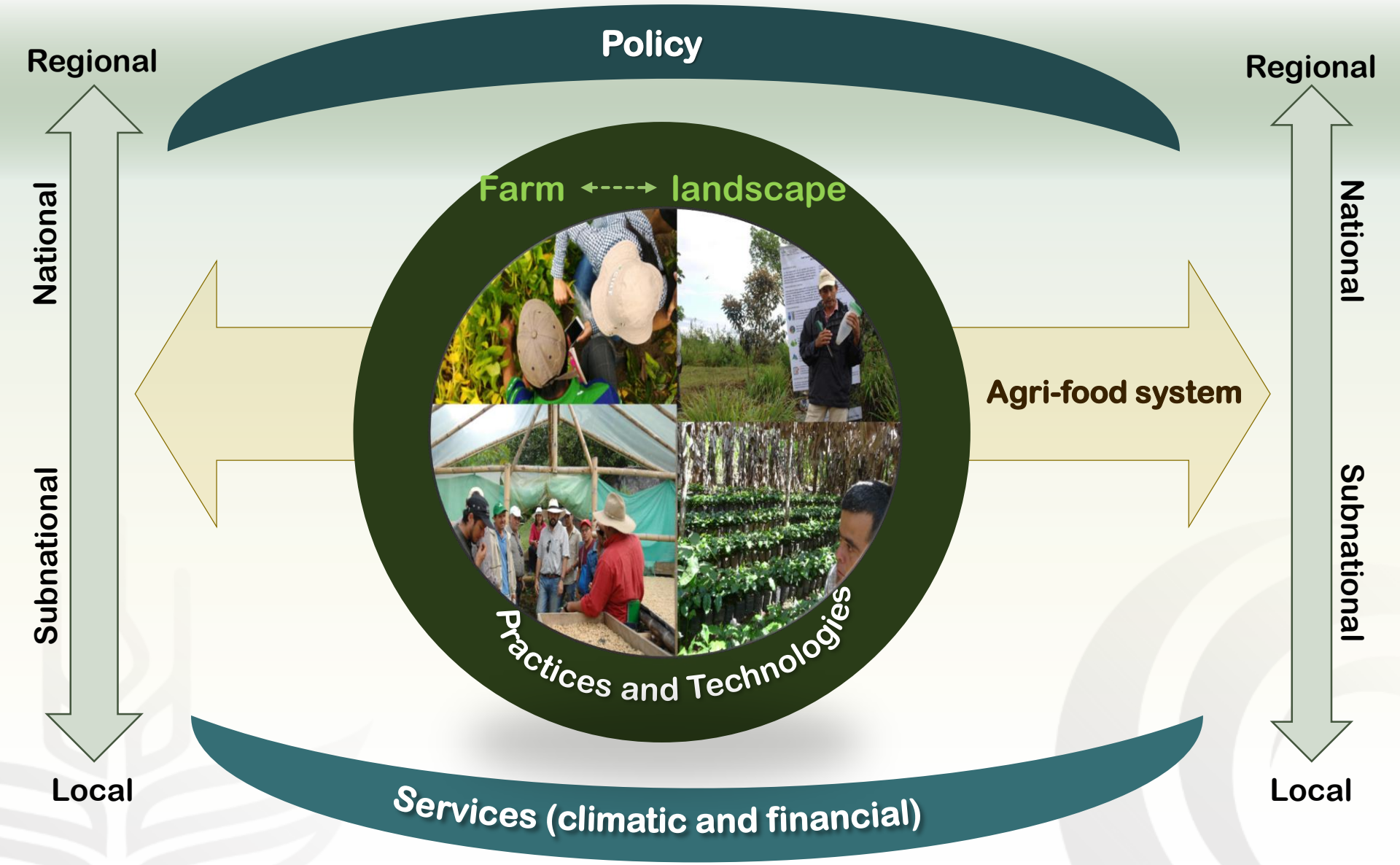
Hosanna, October 28th 2019

The CSA approach is proposed as a solution **to transform and reorient agricultural systems**, to ensure **food security under** the new realities of climate change.

FAO 2013

Short (incremental) → long term (transformational) changes

Systemic and Integrated approach



Historical climate deal

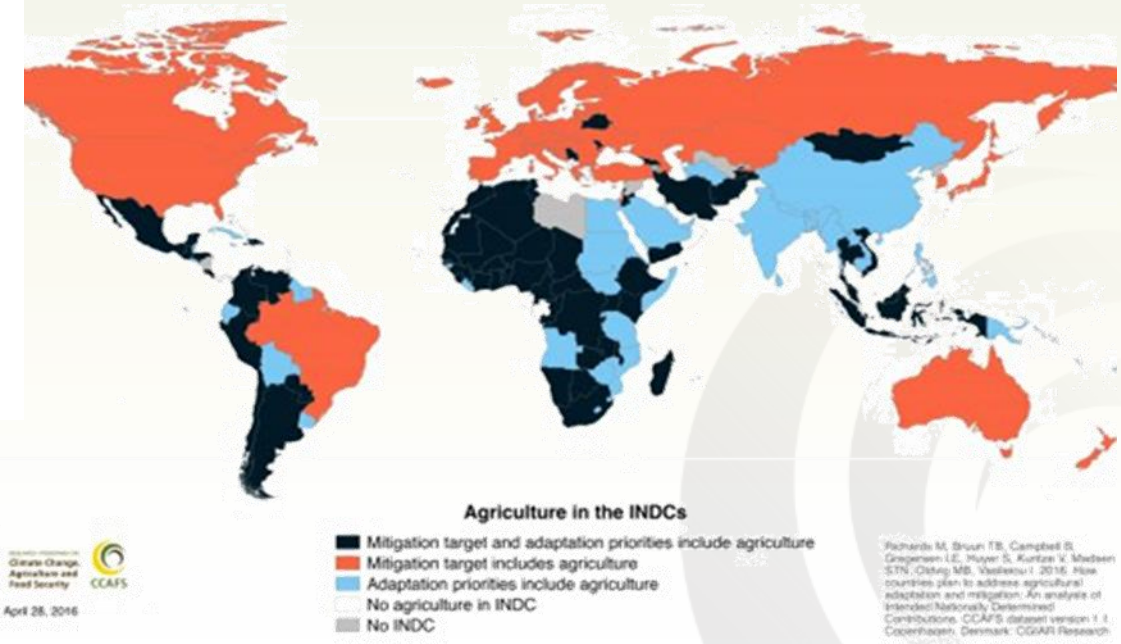
CLIMATE ACTION TRACKER

limit to 1.5 ^{0}C

Intended Nationally Determined Contributions

* 200 nations agreed to pursue efforts to **limit global warming to 1.5 degrees**

- ✓ **opened the door** for more adaptation and mitigation in the agriculture sector.
- ✓ **Increased the demand** for supporting prioritization of CSA related interventions and **measuring progress**



Goal of mobilizing **$100 billion a year** by 2020 through 2025

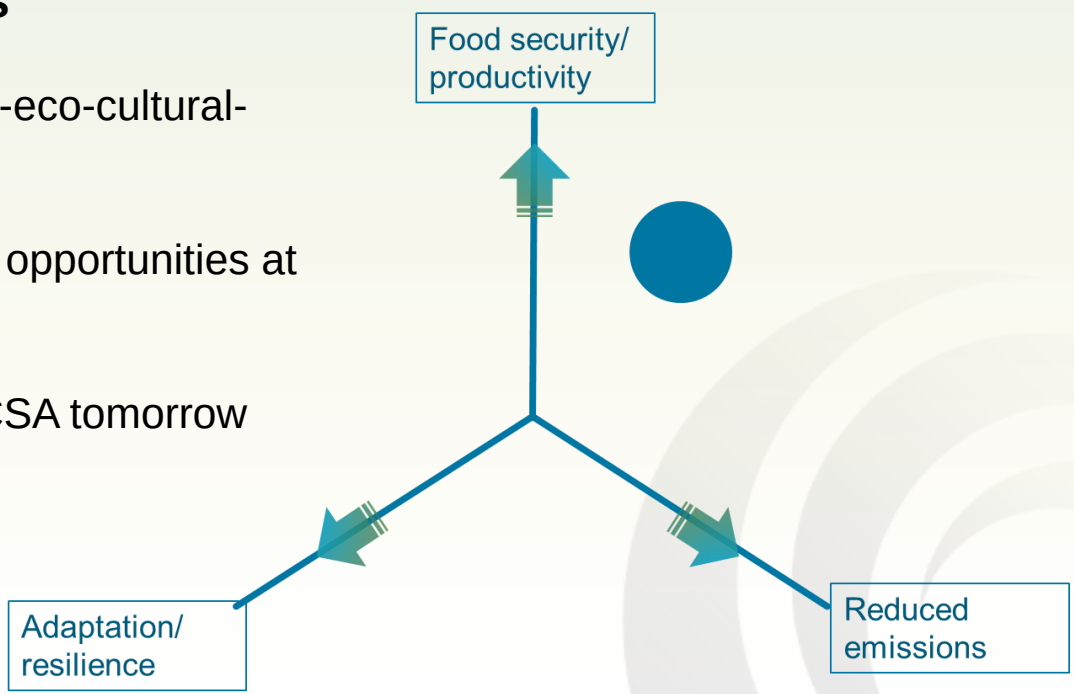
CSA Complexity and Uncertainty

Complexity associated with diversity in:

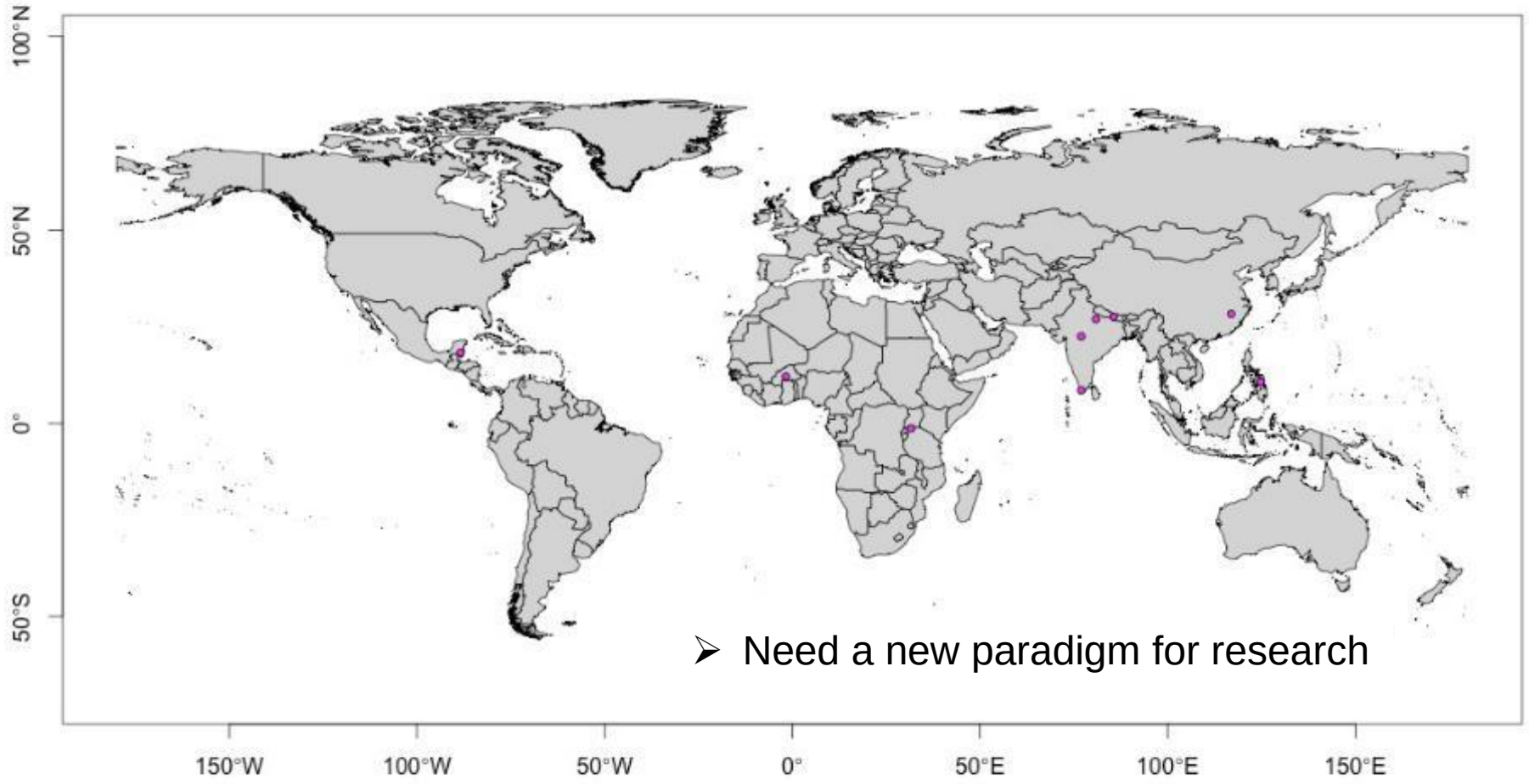
1. Interventions (micro to macro level)
2. Productive systems and target households types
3. Target objectives and impacts (from increase in soil organic matter to diversity in diet), and trade-offs

Information and evidence gaps

- Impacts = CSA Practices x Socio-eco-cultural-environmental contexts
- Need to identify best winners and opportunities at landscape and territorial level
- CSA options today might not be CSA tomorrow



Studies with indicators for all three components of CSA

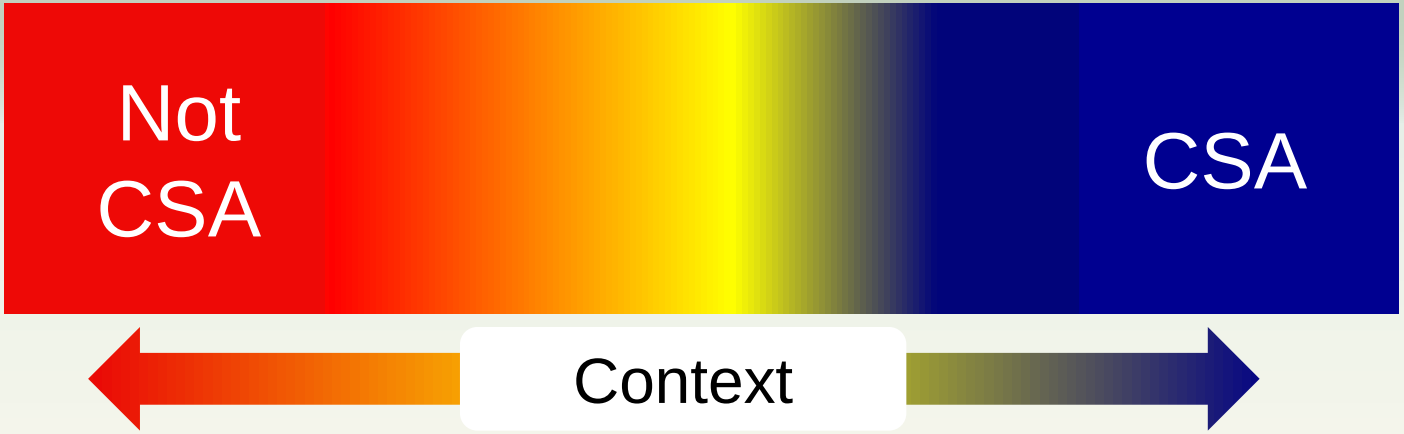


- Need a new paradigm for research

Random sample of 815 studies

Rosenstock et al. unpublished

No blanket recommendations

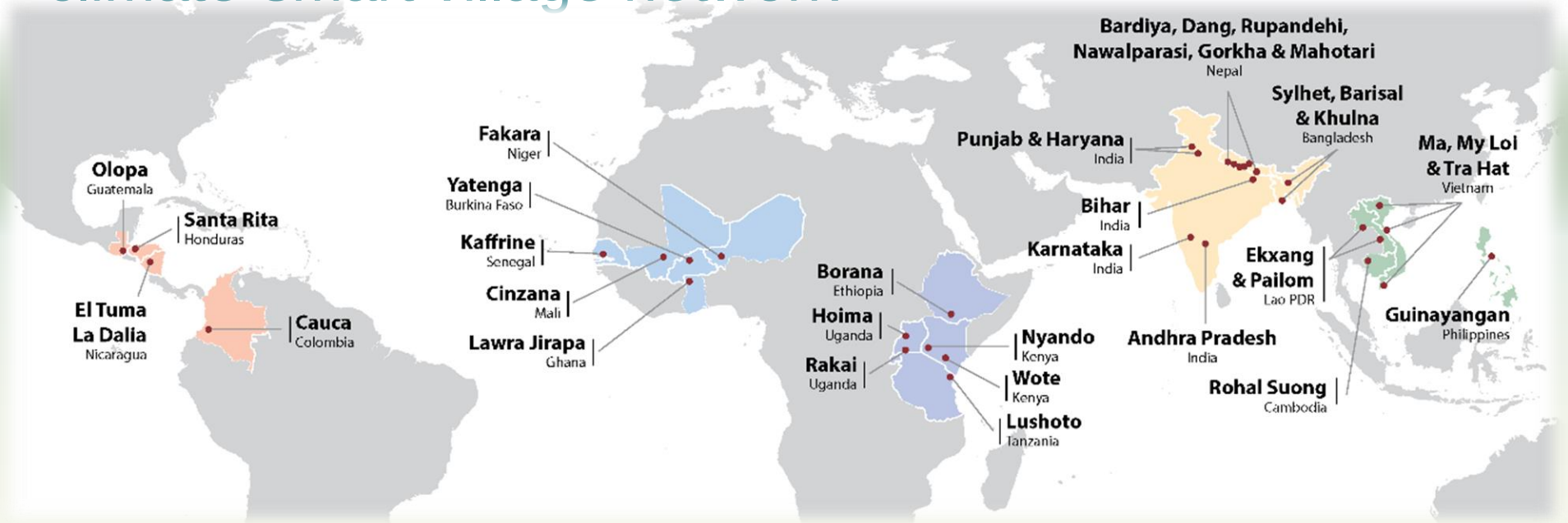


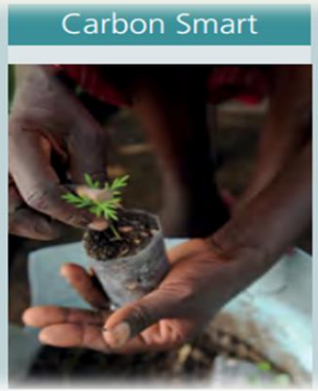
Many practices/programs/policies can be CSA **somewhere**

But **none** are likely CSA everywhere

Rosenstock et al. unpublished

Field based evidence building: the CCAFS climate-smart village network





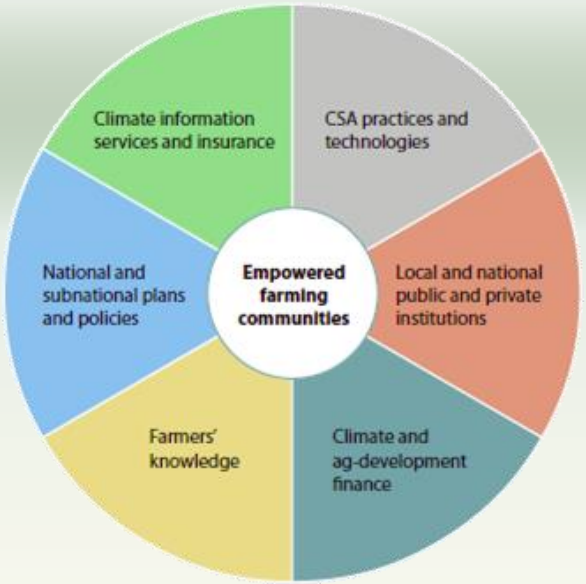
* > de 50 opcion tested

Non CSA ? CSA

Where? When?

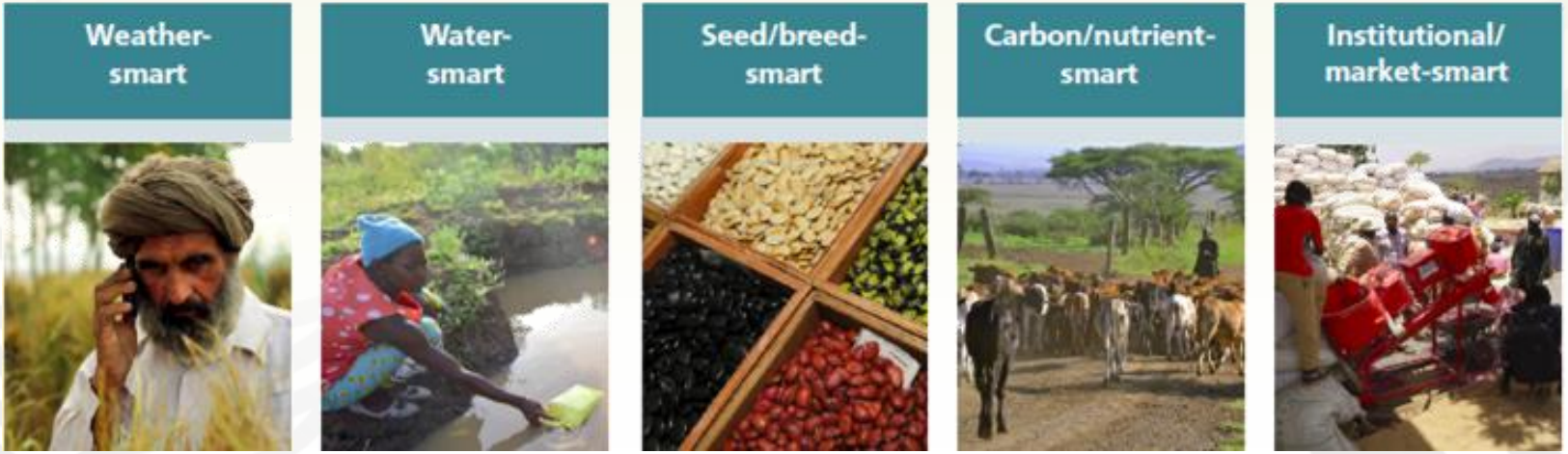
Objectives of the CSV AR4D approach

1. **To test** through participatory methods technological and institutional **CSA options**
2. **Do research on different enabling environments to promote CSA adoption and scaling out and up** (addressing financial/incentives mechanisms and barriers)
3. **Drawing lessons** for policy makers from local to global levels.



CSV components

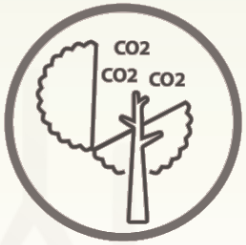
Types of climate-smart options



Expected outputs in the Climate-Smart Villages

1. Increase in agricultural production and food security
2. Increase in farmer's income

3. Stability of income in events of climatic risks
4. Enhanced adaptive capacity to climate shocks
5. Climate and agri-development finance



6. Low carbon development

7. Convergence of government programs

Global momentum still building for CSA

GACSA SAVE THE DATE
GLOBAL ALLIANCE FOR CLIMATE-SMART AGRICULTURE

500 million farmers globally

NEPAD TRANSFORMING AFRICA

25 million by 2025

CIAT and CCAFS engage with partners around the world to scale out CSA

CSA Country Profiles

CSA - Plan

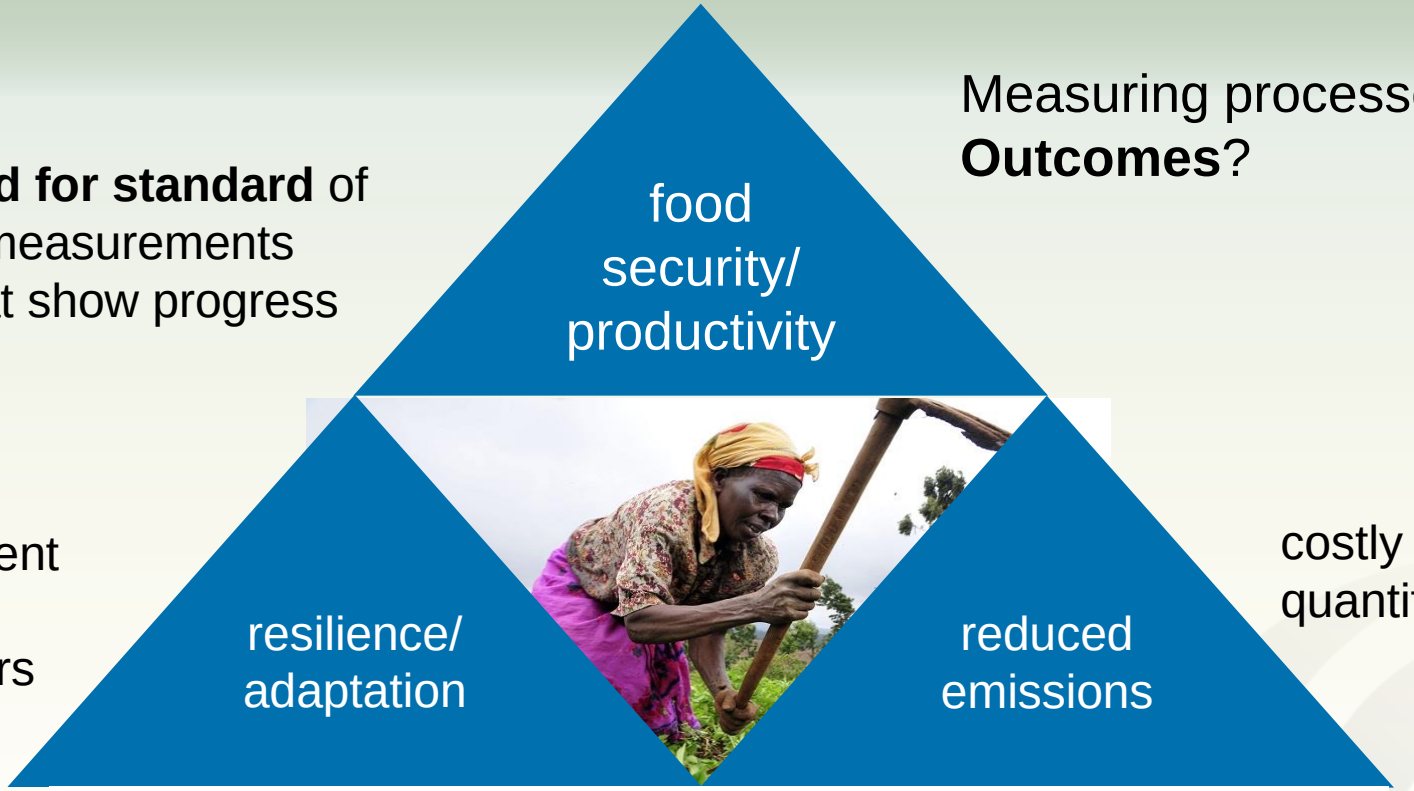
Monitoring: Key aspect that stands into the way to turn this building momentum into efficient, effective and sustainable action

The issue with CSA metrics

✓ CSA is emerging as a mechanism for coherent and coordinated action

Need for standard of measurements that show progress

Measuring processes or **Outcomes**?



agreement on core indicators

costly to quantify

Integrated framework to monitor CSA outcomes in the field

Associated set of **standard indicators** **+** rapid and reliable **ICT-based data collection instrument** to systematically assess and monitor:

1 CSA Adoption (community level)

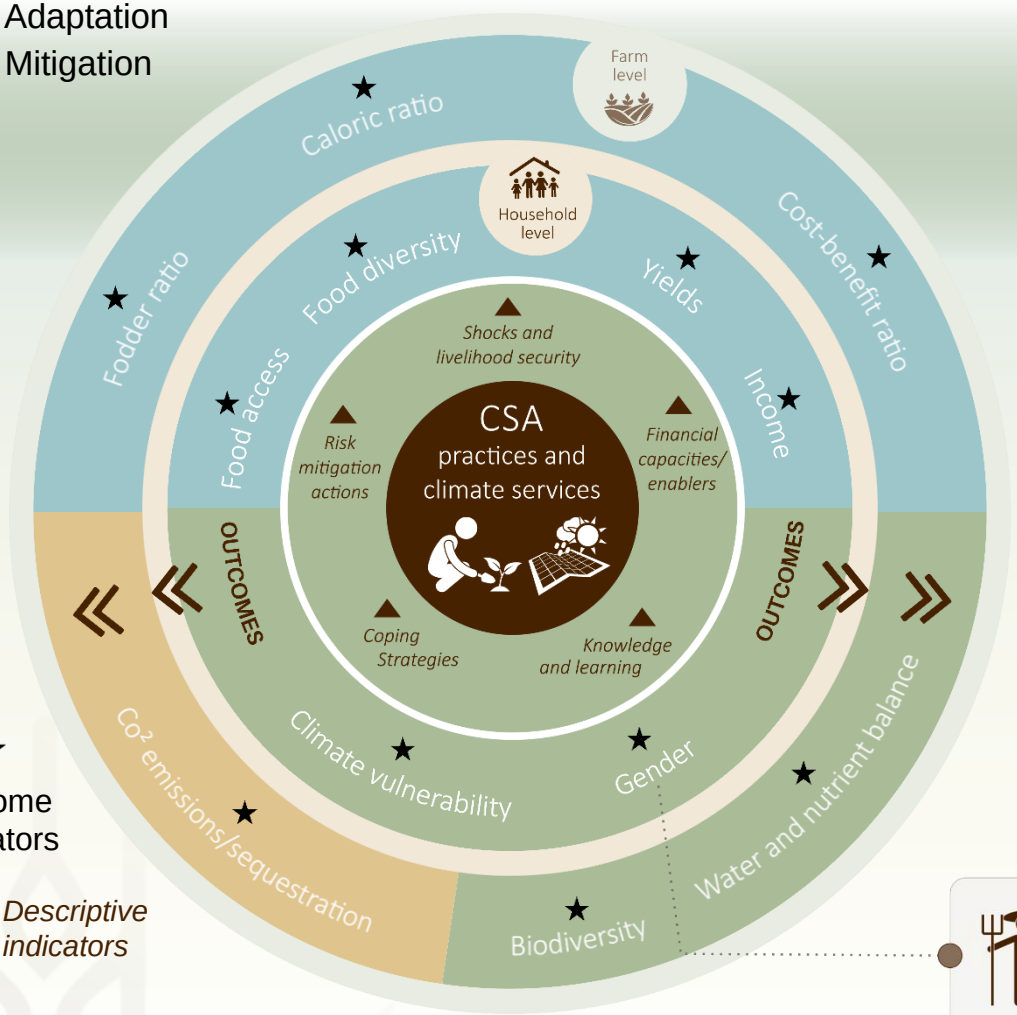
2 CSA effects on Food security and livelihoods (household level)

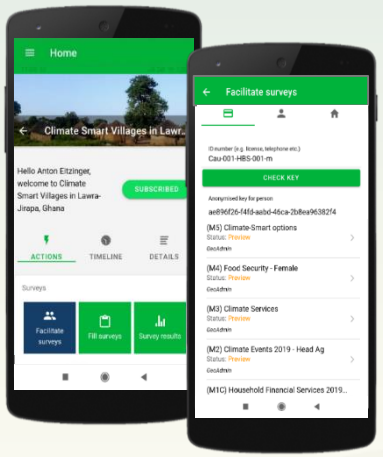
3 CSA effects on Farm performance

Integrated CSA framework

CSA Pillars covered

- Productivity/food security
- Adaptation
- Mitigation





Solid and flexible questionnaire tailored, calibrated and validated (9 countries across 5 regions)

★ Outcome indicators

▲ *Descriptive indicators*

- Participation in CSA adoption/dis-adoption decision making
- Participation in implementation of CSA practices
- Control over CSA generated resources
- Labor time

Adapted icons from: Adrien Coquet, Alexandr Cherkinsky, Brand Mania, Delwar Hossain, Gan Khoon Lay, Martin Vanco Luis Prado, REVA,; from Noun Project.

Community and Household level

- Indicators on **specific CSA adoption and CIS access/use**
- **10 core outcome indicators** to track perceived effects of CSA adoption at hh level

Productivity/ Food security	Adaptation/ Resilience	Gender
Production	Climate vulnerability	Level of participation in decision making on CSA
Agricultural income		Participation on CSA implementation
Food access		Labor
Food diversity		Access/control over resources
		Participation in decision making on dis-adopting CSA

Household level

- Additional range of **complementary descriptive indicators** associated with drivers, enabling and constraining factors.

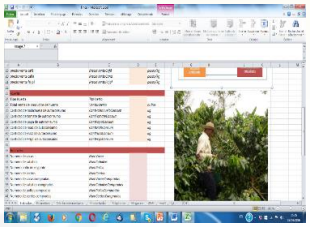
Shocks	Food security	Adaptation/ Resilience
Frequency of events affecting agricultural income	Food source share	Main income source (Ag/ non-agricultural) Changes in agricultural income source share (on/off-farm)
Frequency of climate-related events affecting agricultural income	Fulfillment of basis needs	**Absorptive capacities** - Coping strategies - Financial enablers: • Saving capacity • On-farm investment capacities (gral and with climate intention) • Access to credit (gral and with climate intention) • Access to ag. insurance (gral and with climate intention • Access to financial servicers from buyers/providers
	HH food Insecurity Access Score (HFIAS)	**Adaptive capacities** - Risk Mitigation actions in farming activities (types, drivers) - CIS induced changes in cropping activities - Knowledge and learning: • CSA level of knowledge • Capacity to use CIS • Trainings (CSA, CIS, value chains)
	HH food Insecurity Access Prevalence (HFIAP)	**Innovation capacities** - Types; drivers (Autonomous vs climate induced)

Farm level indicators

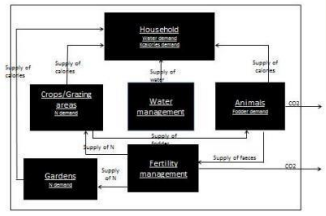
- 7 indicators to assess CSA performance, synergies and trade-offs

Pillar	Indicador	Metrics
Productivity	Caloric ratio of the farm (%)	Caloric supply/Caloric demand x 100
	Fodder ratio of the farm (%)	Fodder supply/Fodder demand x 100
	Cost benefit ratio (%)	Benefit/Cost x 100
Adaptation	Biodiversity index (%)	Based on Gobbi, J., Casasola, F., 2003.
	Water balance (%)	Water supply/water demand x 100
	Nutrient balance (%)	Nutrient supply/nutrient demand x 100
Mitigation	Emission/Sequestration of CO_2	CoolFarmTool

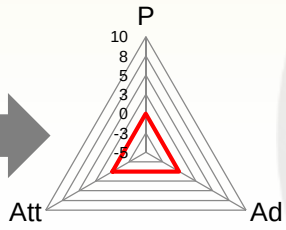
Conventional survey +



Farm model =>

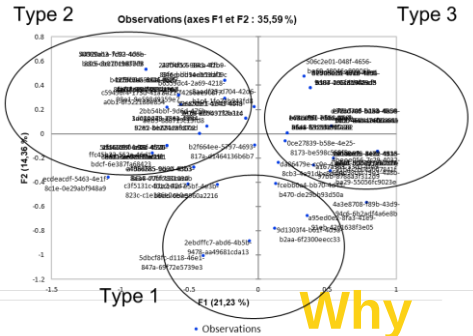


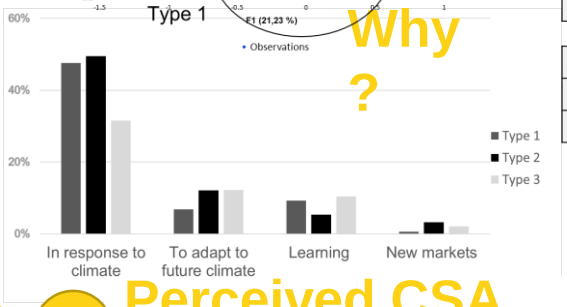
Prospective assessment of Synergies and tradeoffs



Application

1 Who adopts what?

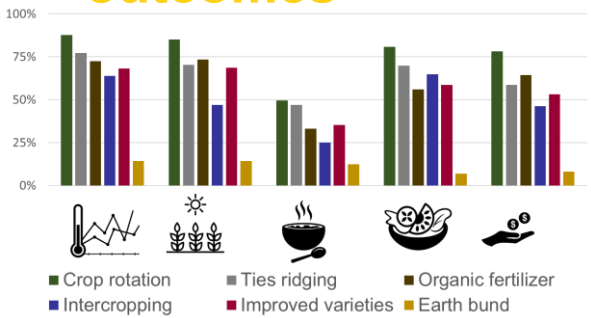




Why ?

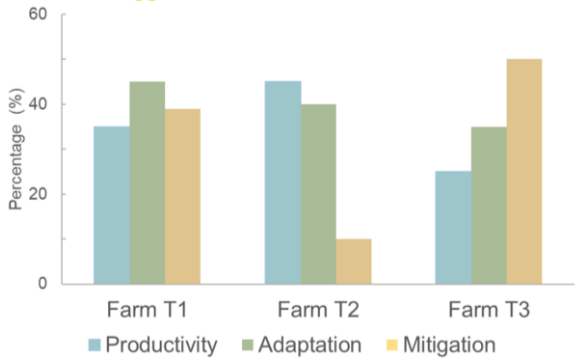
	Crop rotation	Ties ridging	Organic fertilizer	Intercropping	Improved varieties	Earth bunds
Adopting hh (#)	181	170	157	133	141	31
Male-headed	94%	88%	83%	68%	74%	18%
Female-headed	97%	90%	80%	73%	70%	7%
Type 1 (14%)	93%	96%	67%	48%	81%	52%
Type 2 (46%)	100%	98%	90%	67%	86%	10%
Type 3 (39%)	88%	74%	80%	80%	55%	9%

2 Perceived CSA outcomes



4 Farm performance

Synergies and trade-



4

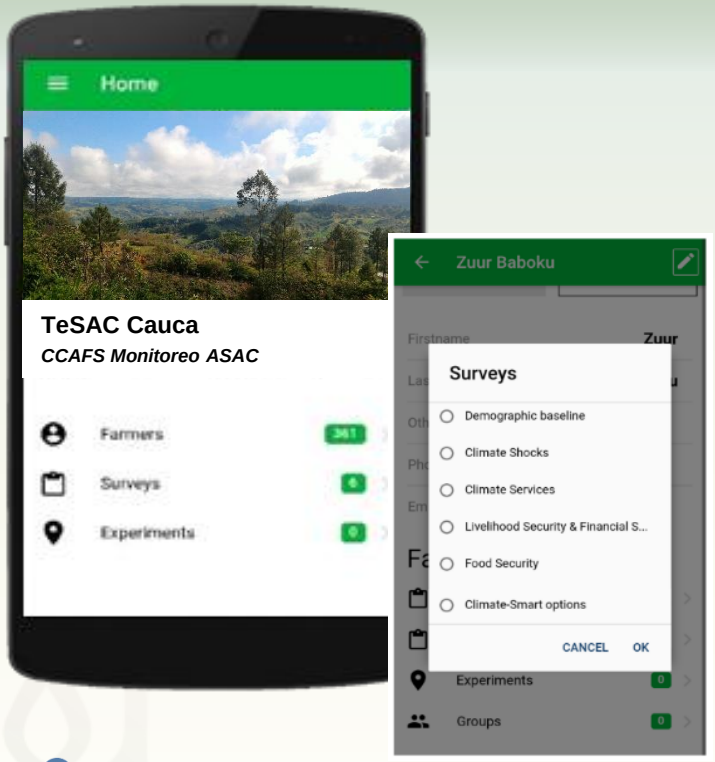
Adapted icons from: B farias, BGBOXXX Design, Brand Mania, Creative Stall, Gan Khoon Lay, Jenie Tomboc, Joni, Parkjisun, ProSymbols, Rohith M S, Sahua D, Seuk Eumeu,; from Noun

How we record data?

Design and data collection

Simple surveys in an App made of different **modules:**

Who responds?



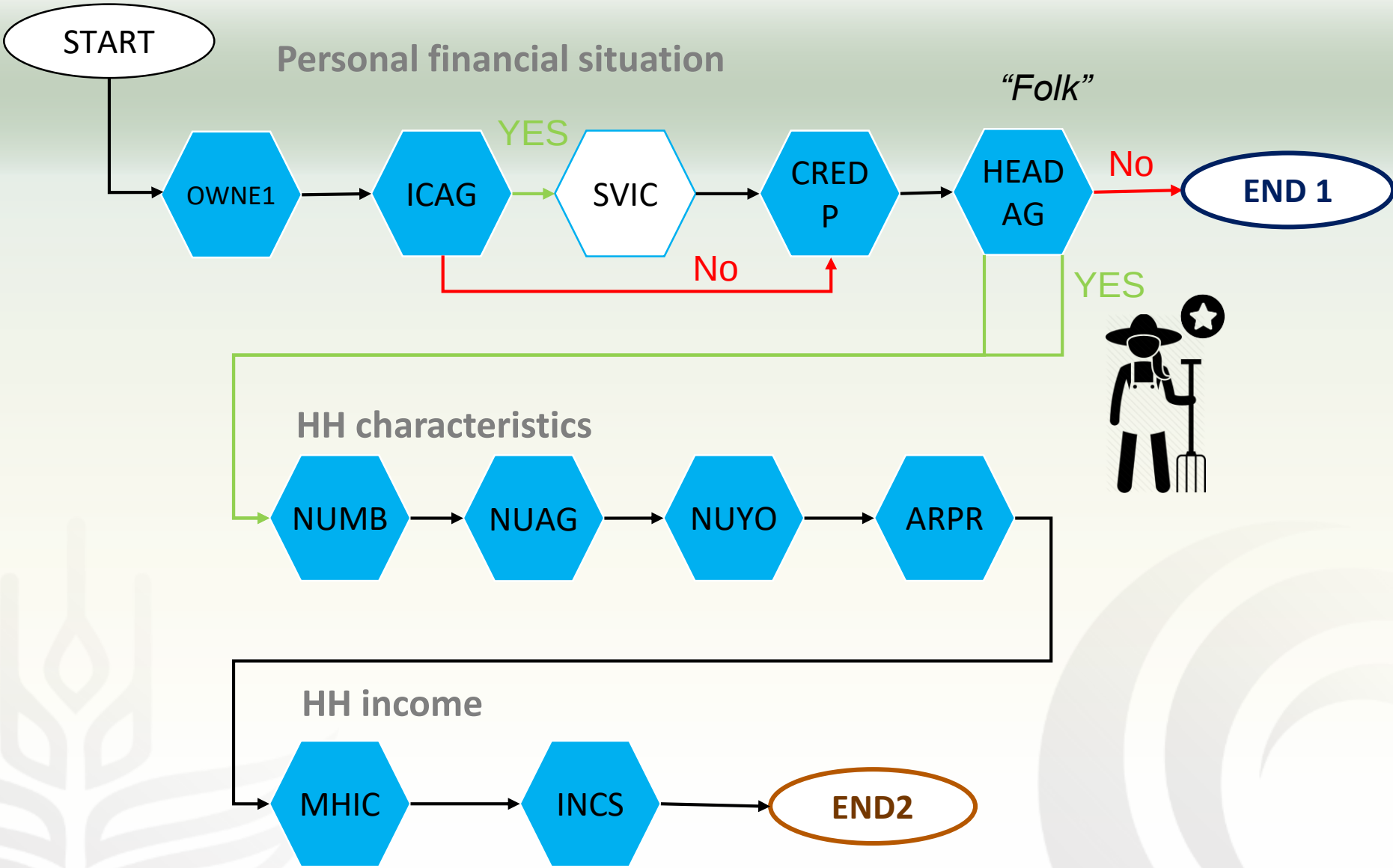
- 1a. Demographic
- 1b. Farming system
- 1c. Financial services

- 2. Climate shocks
- 3. Climate info services
- 4. Food Security
- 5. CSA Practices

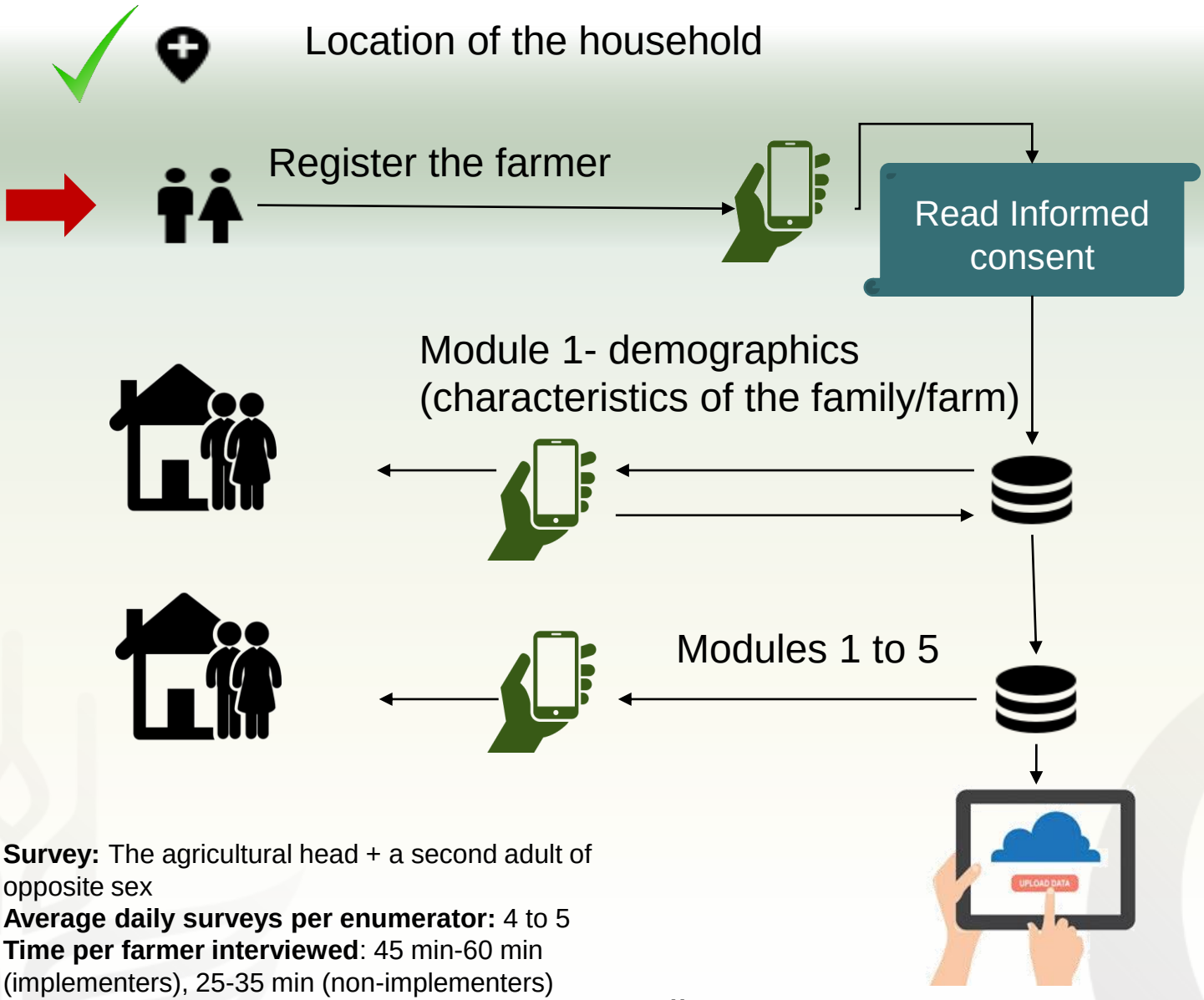
*<u>In each household</u>: Two people involved in agricultura are interviewed.

* One must be the MAIN person in charge of the on-farm agricultural work

Survey (Tree type)



Data collection process



- **Survey:** The agricultural head + a second adult of opposite sex
- **Average daily surveys per enumerator:** 4 to 5
- **Time per farmer interviewed**: 45 min-60 min (implementers), 25-35 min (non-implementers)

Daily connect to INTERNET to send the data

Regional trainings and implementation

2018' CSV monitoring trainings and implementations

Guatemala
CATIE
Olopa (April)
*26

*30 **Honduras**
CATIE
Santa Rita (April)

Nicaragua
CATIE
Tuma La Dalia (April)
*35

Colombia
Ecohabitats
Cauca (February)

Ghana
CSIR-SARI
Lawra-Jirapa (2017)
* 60

India and Nepal
CIMMYT and Li-Bird
Nawalparasi (November)
*34

Bangladesh
World Fish
Barisal and Khulna
(December)
*42

*36
Uganda
NARO
Hoima (September)

Vietnam and Philippines
CIAT, ICRAF, IIRR
(2019 implementation)

. 24 CSA practices and technologies
. 10 with mitigation potential

Sampling reach: 1563 1326 1368

*** CSA Calculator sampling (farm level)**

Training + Implementation steps (Ghana)

2 months

Preparation: F2, CCAFS Region, Local CSV coordinator & Partner

Days in the field

1 **Build local capacity**

Training 7 **local enumerators** for data collection

Days in the field

2 **Meet with community**

3 **Test data collection instruments**

4 **Adjust with feedback**

(1 night)

Day 6 on

5 **Start full data collection**

(11 days)

Advantages of the new CSA Monitoring framework

- Standard, cost effective tool
- Real time data collection
- Global applicability and flexibility
- Application of the three CSA lenses
- Multi-level scope: Estimates both farm performance, livelihood outcomes and gender dimensions

Preparatory process in Doyogena

1. Identification of prioritized CSA options

CSA practices

1. Terraces + Desho grass: Soil and water conservation with biological measure
2. Controlled grazing
3. Improved wheat seeds – (high yield, disease resistance & early maturing)
4. Improved beans seeds – (High yield)
5. Improved potato seeds – (High yield, tuber size)
6. Cereal/potato—legume crop rotation (N fixing & Non N fixing)
7. Residue incorporation for Wheat or Barley
8. Green Manure: vetch and/or lupin during off-season (N fixing In Time)
9. Improved breeds for small ruminants
10. Agroforestry (woody perennials and crops; fallow)
11. Cut and carry

Climate events

1. Heavy rains
2. Irregular rains
3. Storms/strong winds
4. Low temperatures
5. Frost
6. Drought




Preparatory process in Doyogena

2. Questionnaire “tailoring”

- Ethnic groups
- Crops, animals, trees
- “hunger months
- Area units
- Availability of climate information services (types)
- Type of access to financial services (Individual/hh level)

3. Informed consent “tailoring”

Preparatory process in Doyogena

4. List of targeted households and IDs coding

Household ID DOY - 01 - 001

For Registration

CSVsite - Community# - # (three decimal)

Communities names

01 – Tula
02 - Suticho
03 - Gewada
04 - Cholola2
05 – Tachignaw Genjo
06 - Duna
07 – Gatame 1

Village-Name	VILLID	HH type curent year	Main agricultural person - Head AG (First)		Gender
			First Name	Family Name	Male or Femal
Tula	1	BEN	Almaz	Alemu	Female
Tula	1	BEN	Degefech	Gebre	Female
Tula	1	BEN	Abayneh	Lentiso	Male
Gatame	7	ADD	Zeleke	Abiyo	Male
Gatame	7	ADD	Dagefe	Tesfaye	Male
Gatame	7	ADD	Fikire	Azaza	Male

5. Define field team and survey plan

1 Supervisor (Expert in the CSA monitoring tool)

- Provides local technical support, follow up and quality ocntrol of enumerators work.
- **Daily** meets with all, recording # of HH sampled by each/where and ensures data syncronization (e-sending)
- Gathers all field Sheets with comments and sends final report to CIAT

Enumerators (men and women)

- Get lists of households to be visited from supervisor
- Complete their Field Sheets,
- Report to supervisor and synchronize daily

Aimed proportion
50:50

TARGET

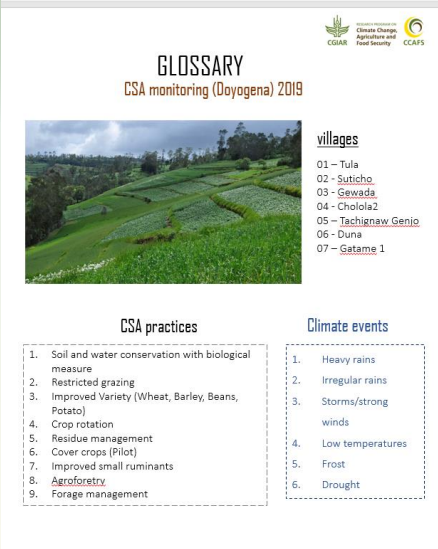
	Villages names	# of BEN households	# of ADD households
#01	Tula	20	0
#02	Suticho	20	0
#03	Gewada	20	0
#04	Cholola 2	20	0
#05	Tachignaw Genjo	20	0
#06	Duna	20	0
#07	Gatame 1	20	20
		140	**20**

Total listed HH	**160**

1 Household IDs (identifiers)

Village-Name	VILLID	Household NONBENress - ID	HH type curent year	Main agricultural person - Head AG (First)		Gender
				First Name	Family Name	Male or Female
Tula	1	DOY-01-001	BEN	Almaz	Alemu	Female
Tula	1	DOY-01-002	BEN	Degefech	Gebre	Female
Tula	1	DOY-01-003	BEN	Abayneh	Lentiso	Male
Tula	1	DOY-01-004	BEN	Gebre	Chafamo	Male
Tula	1	DOY-01-005	BEN	Chufamo	Gebre	Male
Tula	1	DOY-01-006	BEN	Matewos	Lobango	Male
Gatame 1	7	DOY-07-001	ADD	Zeleke	Abiyo	Male
Gatame 1	7	DOY-07-002	ADD	Dagefe	Tesfaye	Male
Gatame 1	7	DOY-07-003	ADD	Fikire	Azaza	Male
Gatame 1	7	DOY-07-004	ADD	Yohanis	Wataro	Male
Gatame 1	7	DOY-07-005	ADD	Bizunesh	W/Kidan	Female

2 Guide of the CSA practices covered



3 Field Sheet (guide + recording notes)

							Modules to be filled								
Village-Name	VILLID	Household NONBENress - ID	HH type curent year	Main agricultural person - Head AG (First)		Gender	M1.A	M1.B	M1.C (head)	M2	M3	M4 (if femal	M5	Survey time	Comments - Remarks (completed; incompleted because ... etc)
				First Name	Family Name	Male or Femal									
Tula	1	DOY-01-001	BEN	Almaz	Alemu	Female	X	X	X	X	X	X	X		
Tula	1	DOY-01-002	BEN	Degefech	Gebre	Female	X	X	X	X	X	X	X		
Tula	1	DOY-01-003	BEN	Abayneh	Lentiso	Male	X	X	X	X	X		X		
Gatame	7	DOY-07-001	ADD	Zeleke	Abiyo	Male	X	X	X	X	X		X		
Gatame	7	DOY-07-002	ADD	Dagefe	Tesfaye	Male	X	X	X	X	X		X		
Gatame	7	DOY-07-003	ADD	Fikire	Azaza	Male	X	X	X	X	X		X		

Thank you!

More information: o.bonilla@cigar.org

Final validation of climate events and practices for Doyogena 2018 with enumerators

Climate shoks in Doyogena

1. Heavy rains
2. Irregular rains
3. Storms/strong winds
4. Low temperatures
5. Frost
6. Drought

Practices in Doyogena





1. Terraces + Desho grass (Soil and water conservation with biological measure)
2. Controlled grazing
3. Improved wheat seeds
   - Yield, disease resistance: Hidase, Huluka, Kingbird, Shorma varieties
   - Yield, disease resistance + early maturing: Ogolcho, Kekeba varieties
4. Improved beans seeds
   - Yield: CS20DK, Dosha, Gebelcho varieties
5. Improved potato seeds
   - Yield, tuber size: Gudene, Jalene, Belete varieties
6. Crop rotation: Cereal/potato - legume (N fixing & Non N fixing)
7. Residue incorporation for Wheat or Barley
8. Green Manure vetch and/or lupin during off-season (N fixing In Time)
9. Improved breeds for small ruminants
10. Agroforestry fallow (woody perennials and crops)
11. Cut & Carry




Agenda

October 28th	
8:30	* Opening and teams introductions * Context and background on the CSV site, CCAFS work and key partners (Gee) • Introduction to CSV monitoring plan objectives and design (Osana) • Detailed explanation on the prioritized CSA practices (Inter Aide)
10:30	*break*
10:45	• Quizz / exercises on the identification of proper CSA practice • Introduction to The App (Anton)
12:30	*Lunch break*
13:30- 17:00	• Downloading into the cell phones and practical exercises • Detailed presentation of the Modules and practical exercices by teams
October 29th	
8:30 – 12:30	• (Continuation) Detailed presentation of the Modules and practical exercices by teams
12:30	*Lunch break*
13:30 – 17:00	• (Continuation) Detailed presentation of the Modules and practical exercices by teams

Agenda

Ocober 30th	
8:30	• (Continuation) Detailed presentation of the Modules and practical exercices by teams
10:30	*break*
10:45	• (Continuation) Detailed presentation of the Modules and practical exercices by teams
12:30	*Lunch break*
13:30- 17:00	• Field practice with “Dummy farmers” • De-briefing and feedback
October 31th	
8:30 – 12:30	• De-briefing and feedback • Team/ Field practice
12:30	*Lunch break*
13:30 – 17:00	• Starting real implementation • De-briefing and feedback
November 1st	
8:30 – 12:30	• (Continuation) Monitoring implementation practice with real questionnaire • De-briefing and feedback

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS

Questions & Answers

Illustrative results

Reach

342 hh

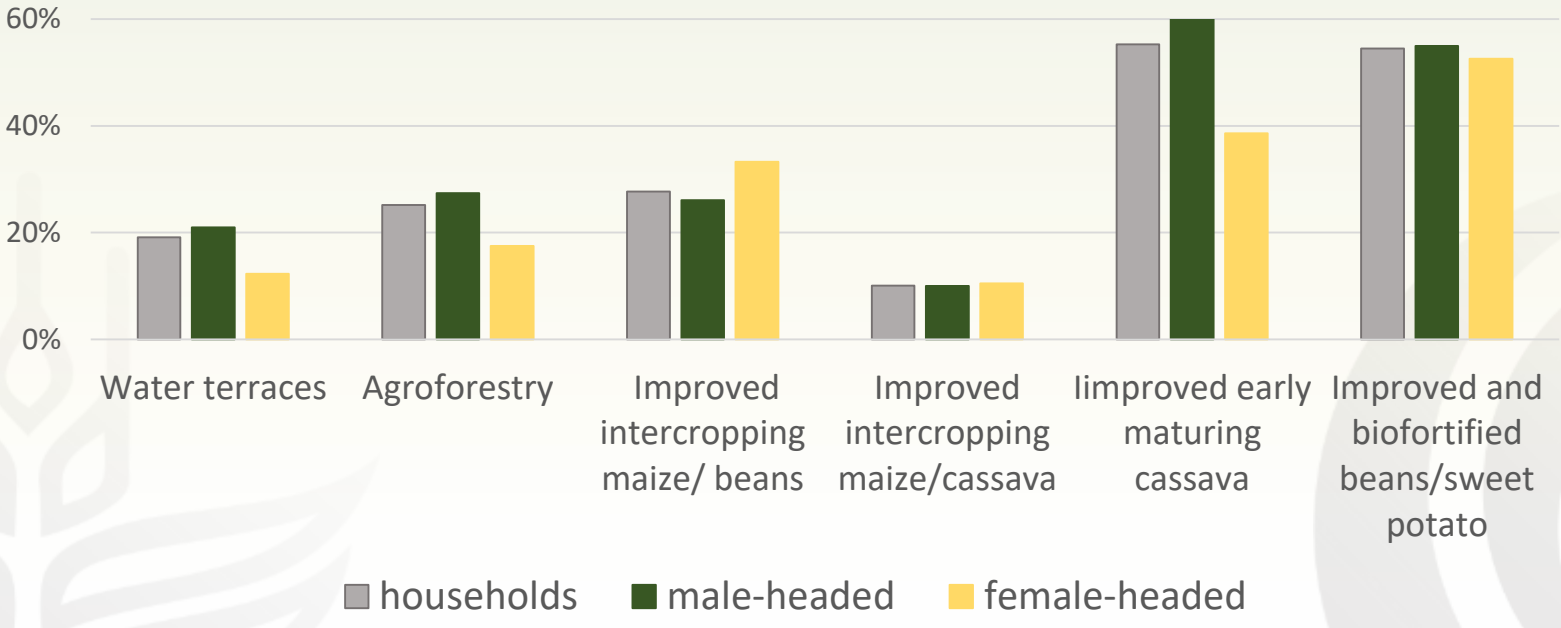
78% 22%

Climate effects

71%

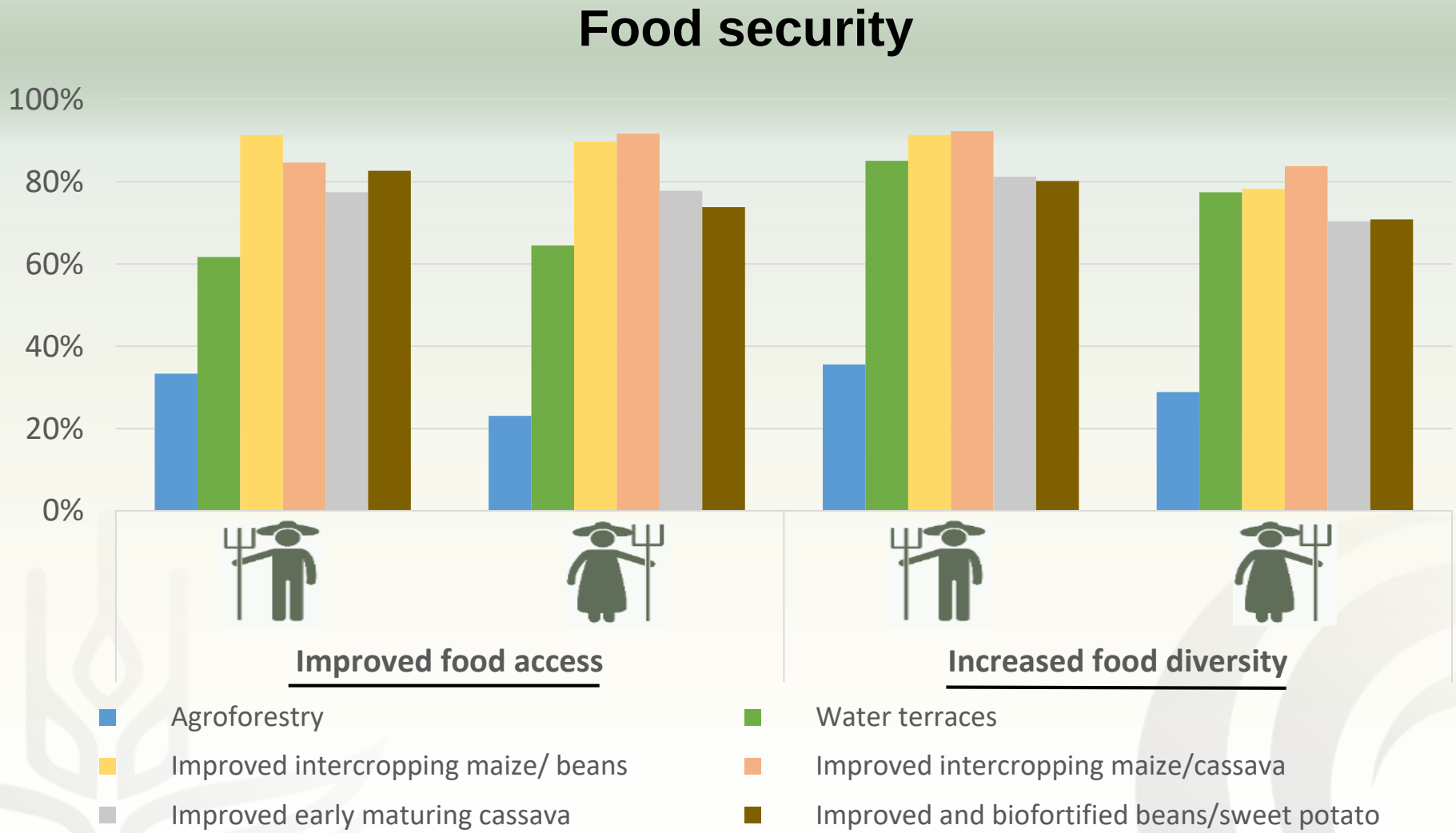
CSA Adoption

83% 74%



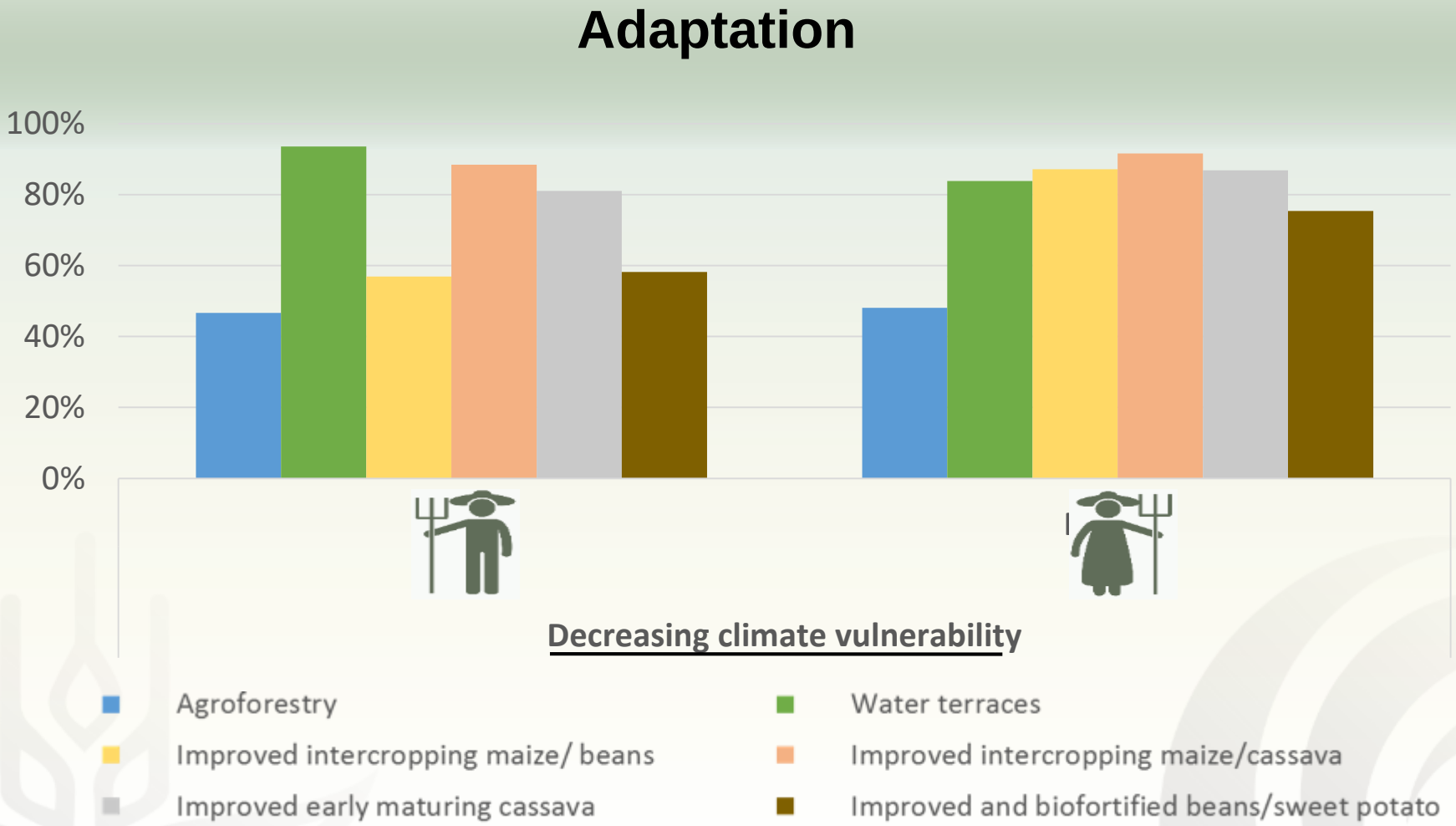
CSA Outcomes

Perceived effect of CSA practices



CSA Outcomes

Perceived effect of CSA practices



CSA Outcomes

Perceived effect on gender