GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Understand, Design, Act: Climate-proof your supply chain

Module 1:
Understand climate change

07. June 2018

Introduction

Katherine Selengia

Program Manager
Hanns R. Neumann Stiftung

Kealy Sloan

Project Manager
Sustainable Food Lab

Caroline Glowka

Program Manager
Global Coffee Platform

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Let's discuss today

- Collective Action Network Climate Smart Agriculture
- Online learning series
- Understanding climate change
- Questions and answers

By using ZOOM

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1. Click on "Raise Hand" button

If you want to **comment** or ask **questions**

2. Use the Q&A box

To **place your questions** and get feedback from to the panelists

3. We will silence your mic

To avoid undesired **background noises**. But you can always ask to speak!

4. Remember

This session is being recorded for archive purposes

GCP GOALS


1 NO POVERTY
5 GENDER EQUALITY
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
2 ZERO HUNGER
8 DECENT WORK AND ECONOMIC GROWTH
13 CLIMATE ACTION
Thriving & Sustainable Coffee Sector
1
IMPROVED LIVELIHOODS
2
FARMER PROSPERITY
3
CONSERVATION OF NATURAL RESOURCES

Get active
in the
Collective **A**ction **N**etwork

➡

Climate
Smart
Agriculture

The CSA enables:

- **Coffee farmers** to **adapt** and **build resilience** towards climate change and its consequences

- **Coffee sector partners** to formulate **concrete action** in building resilience towards climate change and its consequences for coffee

GCP partners in 2018

Alliance for Resilient Coffee

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CIAT

IITA Research to Nourish Africa

Sustainable Food Lab

Hanns R. Neumann Stiftung

Conservation International

World Coffee Research

root capital

www.allianceforresilientcoffee.org

Climate Catalogue

idh the sustainable trade initiative

Conservation International

Specialty Coffee Association

coffee & climate
enabling effective response

Global Coffee Platform
for a sustainable coffee world

Some of your thoughts on what to get out of the Learning Series

Olam Coffee

"**Partnerships and practices** to scale up CSA initiatives in coffee sector"

Solidaridad

"Hear from other experts on **cutting edge strategies**, technical & **financial models**, and **opportunities for collaboration**."

Nestlé

"**Improve my knowledge** to share with stakeholders and get more information to **support my point of view** with them."

VOLCAFE

"A **better understanding** of what diverse possibilities there are to actively address this issue, and a **functional network** with whom climate change and its implications can be tackled."

Some activities on climate change

"We will conduct scientific research trials to better define our possible **contribution to adaptation**"

"We consider it a significant risk. We address the risk through diversity of our supply base, funding for varietal R&D, and **support for farmers** to adopt climate-smart agricultural practices."

"Develop climate catalogue, **partner with others** to innovate and develop upscaling models"

"I believe climate risk is one of the most substantial elements facing the industry. Our organization currently has many direct **relationships with producers** in which we broadly discuss the threat, but I don't believe we integrate climate discussion or solutions as much as we should."

Objectives of the Learning Series

Understand climate change

Plan, implement, and scale effective CSA

Learn how to assess your supply chain risks

Convey the value of investment in CSA

Align your actions

Join concrete action

Path to Collective Action

Understanding climate change	Introduction
How is climate change affecting my supply chain?	Risk Profiles
How can I manage the effects climate change is having on my supply chain?	Tools
How can I scale up CSA?	Scale
How do I know my investment in CSA is working?	Monitoring
How can I convince my company and others to invest in CSA?	Business Case
How can collaboration work? Bringing action to origin!	Collaboration

▲ Modules

+ Climate Catalogue as resource

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Path to Collective Action

- Introduction
- Risk Profiles
- Tools
- Scale
- Monitoring
- Business Case
- Collaboration

+ Climate Catalogue as resource

Building Common Ground

- Understand
- Design
- Act

Collective action at origin!

Honduras

Uganda

Opportunities in Honduras and Uganda

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Honduras

Platform Agenda

Contribute to National Coffee Platform's agenda

Multi-stakeholder collaboration

Learnings & results will be shared with the sector

Progress will be measured

Uganda

Climate Change Working Group

The Experts

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Conservation International

Caroline Glowka

Global Coffee Platform

George Watene

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Daniele Giovannucci

Committee on Sustainability Assessment (COSA)

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Kealy Sloan

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Hanna Neuschwander

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Project Manager
Sustainable Food Lab

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THE FEED THE FUTURE ALLIANCE FOR RESILIENT COFFEE

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THE ARC CONSORTIUM

- Hanns R. Neumann Stiftung
- root capital
- CIAT
- WORLD COFFEE RESEARCH
- IITA — Research to Nourish Africa
- CONSERVATION INTERNATIONAL
- SUSTAINABLE FOOD LAB

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OUR GOAL

Increase uptake of Climate Smart Agriculture by:

Aligning	Aligning internally on what CSA is, from plot to policy, to provide unified, coherent guidance to the coffee sector
Creating	Generating **public goods,** including knowledge products and tools like: Country climate risk profile, on-farm climate vulnerability survey, etc
Testing	Offering **CSA piloting opportunities** in Guatemala, Honduras and Uganda, with ways for different coffee sector actors to get involved
Sharing	Investigating and sharing innovative ways to mainstream and scale CSA within business as usual

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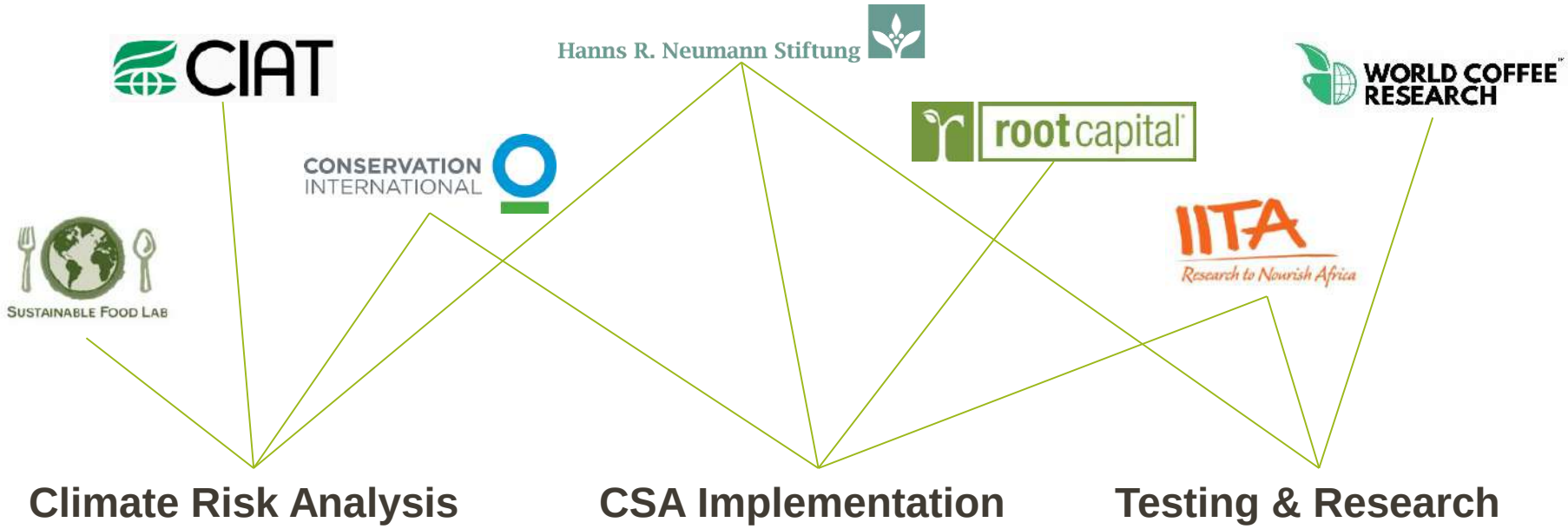
CIAT
Hanns R. Neumann Stiftung
WORLD COFFEE RESEARCH
root capital
CONSERVATION INTERNATIONAL
IITA
Research to Nourish Africa
SUSTAINABLE FOOD LAB
Climate Risk Analysis
CSA Implementation
Testing & Research

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CLIMATE SMART COFFEE

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The world is warming.

The rate of global warming is uneven.

Global rainfall is increasing.

The world is experiencing more extreme weather.

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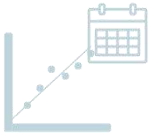
Weather atmospheric conditions at a particular place (air temp/ pressure, humidity, wind speed, cloudiness, precipitation)

Climate weather averaged over a long period of time (typically 30 years)

Climate variability variations in the current state of the climate (the amount of rainfall received from year to year; includes droughts, floods, and conditions that result from El Niño and La Niña events)



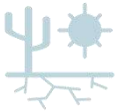
Climate change any significant change in climate that lasts for an extended period of time (typically decades) due to natural variability or human activity

Global warming

increase in average global temperature

Regional or local warming

can be caused by a change in land use and can exacerbate local climate conditions and extremes.



Climate hazards

potentially damaging weather events or phenomena (increasing temperatures, changes in rainfall patterns, more intense/frequent extreme storms, floods, wind, droughts)

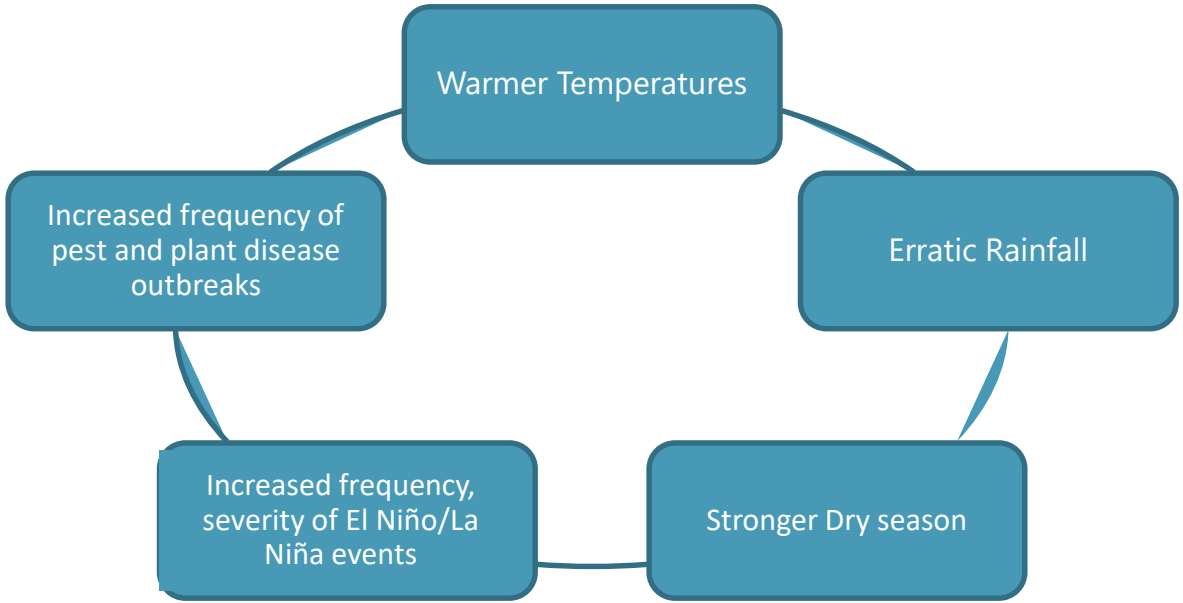
Climate impact

the effects of climate change in natural or human systems

CLIMATE RISKS TO COFFEE

Short-term shocks

Long-term stressors



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CLIMATE EFFECTS IN HONDURAS

Increase in adverse climatic events

- storms
- irregular rainfall
- increasing temperature range
- drought
- high temperatures
- high winds

Impact on coffee production

- more pests, disease and weeds
- post-harvest risks
- soil erosion
- irregular flowering

Coffee Suitability

- 45% of area potentially suitable under current conditions may become unsuitable even with adaptation
- 20% will require substantial adaptation to improve resilience
- 35% will only require incremental adaptation to improve resilience

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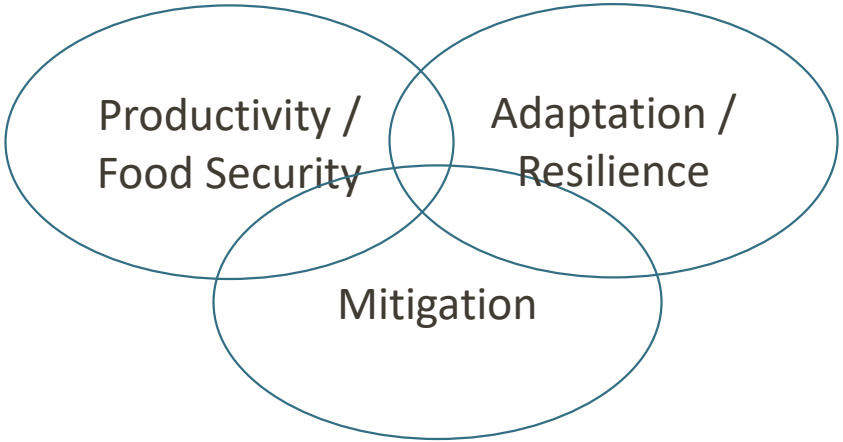
WHAT IS CLIMATE SMART AGRICULTURE?

Productivity: to increase agricultural productivity & incomes from crops, livestock and fish, without negatively impacting the environment

Adaptation: to reduce exposure of farmers to short-term shocks, and enhance their resilience to adapt and prosper in the face of shocks and longer-term stresses

Mitigation: to reduce or remove greenhouse gases

Climate Smart Agriculture is "agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes GHGs (mitigation), where possible, and enhances achievement of national food security and development goals"(FAO).



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WHAT DOES CSA LOOK LIKE?

Practices… …**implemented on-farm** to adapt to current climate variability

Strategies… **…implemented on- and off-farm**, within the cooperative, community or supply chain, that adapt to current climate variability and prepare for long-term climate change

Enablers… …**supported by actors on- and off-farm** to establish conditions needed to implement CSA strategies and to adopt CSA practices

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THINGS CAN BE TURNED AROUND

Name: Hermogenes Deras

Location: Sensentí, Ocotepeque, Honduras

Altitude (m.a.s.l.): 900

Adaptation practices:

2014

2015

	Adaptation	Tree Height	Tree Width	Bags of 60kg gb/ha	Quality	Income USD
A	Control	1.3	1.0	5.4	Estándar/78	704
B	Brachiaria Ruziziensis	1.6	1.3	11.0	Estándar/79	1,430
C	Brachiaria Ruziziensis y Gandul	1.7	1.3	16.5	HB (Duro)/80	2,295

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WHAT DOES CSA LOOK LIKE?

	Incremental Change	Systemic Change	Transformative Change
Practices…	Cover crops, fertilizers	Irrigation	Switch to Robusta
Strategies…	Organic matter management within the farm	On-farm diversification	Move away from coffee farming, or farming altogether
Enablers…	CSA extension, weather stations for better forecasting	Crop insurance, access to finance to support adaptation	Developing new value chains for new cash crop systems

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COMPANY INVESTMENT IN CLIMATE SMART AGRICULTURE

Supply and Reputation are key drivers for adaptation investments

Reputational Risks

- Deforestation
- Child Labor
- Water Management
- Farmer Poverty

Supply Risks

- Profitability of coffee
- Coffee quality
- Decreasing yields
- Area available for coffee production

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Company roles in smallholder adaptation

1. **Direct Service Providers**: ***Providing in-depth, direct farmer services***

2. Collaborators: ***Sharing the task of service provision via collaboration***

3. Catalysts: ***Sparking action in the sector level***

Private Sector Consultation on Climate Smart Agriculture

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Challenges to CSA Investment

- What is “climate smart”?
- Information needs to be easily accessible and usable
- Analytics and tools need to be targeted and simple
- Role of industry is critical but not complete
- Ongoing engagement and collaboration is critical for practice change
- Profitability comes first
- Farmer adoption is difficult

Private Sector Consultation on Climate Smart Agriculture

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Steps to Addressing Climate Change

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Olam in Uganda

Olam provides **direct services** to farmers and invests in CSA as a way to **secure supply**

Gain understanding of best practices

- Demonstration Plots
- Climate smart practices
- Weather stations

Improve uptake of CSA

- Farmer Segmentation
- Gender workshops
- Stepwise investment
- Monitoring information

Olam

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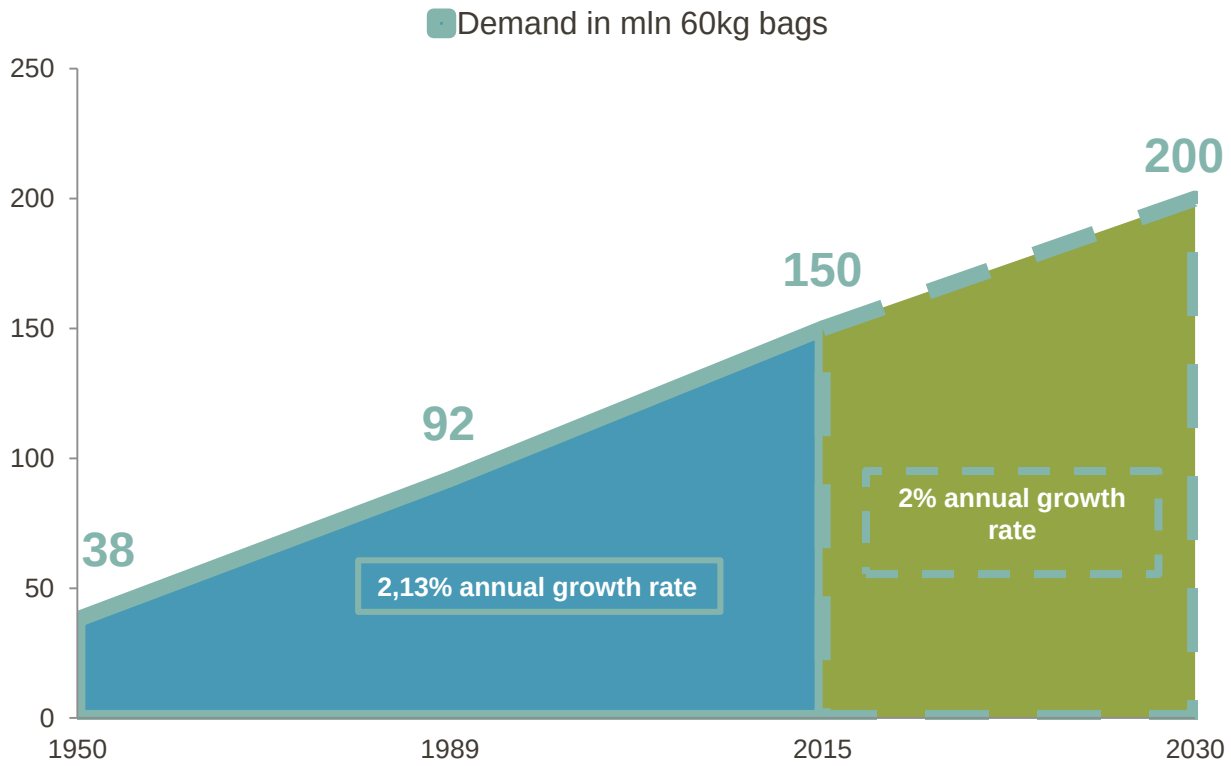
Future of Coffee



Source: NKG – Milano EXPO by MRN

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Resources

For more information, check out these resources:

CCAFs Climate-Smart Agriculture 101 website

CIAT, Green Line Consulting, IITA and Sustainable Food Lab, 2017: *Private Sector Consultation on Climate Smart Agriculture*

Feed the Future Alliance for Resilient Coffee *website*

Initiative for coffee&climate Sourcebook, 2015: *Climate Change Adaptation in Coffee Production*

Root Capital and Sustainable Food Lab, 2018: *Introduction to Measuring Smallholder Resilience in Agriculture Supply Chains*

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Questions

Do you have any questions, please?

Please raise your hand or post them in the Q&A box.

Next Modules

Duration: 75 minutes per module
Time: 3pm CEST | 9am EDT | 6am PDT

1	June 7th	Understanding climate change	Introduction
2	June 12th	How is climate change affecting my supply chain?	Risk profiles
3	June 28th	How can I manage the effects climate change is having on my supply chain?	Tools
4	July 19th	How can I scale up CSA?	Scale
5	September 27th	How do I know my investment in CSA is working?	Monitoring
6	October 25th	How can I convince my company and others to invest in CSA?	Business Case
7	November 8th December 6th	How can collaboration work? Bringing action to origin!	Collaboration

Link to CSA Learning Series

Participants of the Learning Series, Module 1

Lieke Guinee	Agri-Logic
Marie-Lisa Schmitz	ALDI SÜD
Pablo Fernandez Kolb	CIAT
João Paulo Costa Rodrigues	Coocacer Araguari
Daniel Oryem	Ecom Trading
Katrien Delaet	EFICO
Dorien Van Dun	EFICO NV
Lina Alejandra Lozano	Expocafé S.A.
Pedro Gonzalez	FNC
Susan Macdonald	Global Bright Futures
Kerstin Linne	Green Line Consulting
Jan von Enden	HRNS North America
Jesus Alvarado	ICADE
Jenny Kwan	IDH Sustainable Trade Initiative
Tharic Galuchi	Imaflora
Lydia Namutebi	Kawacom Uganda Limited
ASELE BENJAMIN	KAWACoM UGNADA LIMITED

Shannon Higgins	Mother Parkers Tea & Coffee
Marcus Laws	NCBA CLUSA
Igor Motar	Nestlé
Pablo Alvear	Rikolto
Thomas Delbar	Supremo
Jeronimo Bollen	Sustainable Harvest
Liam	Sustainable Harvest
Hannah Ward	Twin
Elizabeth Newman	USAID
Curt Reintsma	USAID
Pablo Ramirez	Winrock International
Katharina Plassmann	Yara International ASA
Nestor Meneses	
Williams Ferreira	
Tomasito	
Solidaridad Latinoamerica	
Alberto Ponce	

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CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Katherine Selengia
Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org

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Understand, Design, Act: Climate-proof your supply chain

Module 2:
How is climate change affecting my supply chain?

12. June 2018

Module 2: How is climate change affecting my supply chain?

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With:

Mark Lundy

CIAT

Theme Lead, Sustainable Food Systems
International Centre for Tropical Agriculture

Moderators

Caroline Glowka
Global Coffee Platform

Katherine Selengia
Hanns R. Neumann Stiftung

Kealy Sloan
Sustainable Food Lab

GLOBAL COFFEE PLATFORM
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Let's discuss today

- Online Learning Series
- Understanding Risk Profiles
- Questions and Answers

By using ZOOM

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▲ Modules

+ Climate Catalogue as resource

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Path to Collective Action

- Introduction
- Risk Profiles
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+ Climate Catalogue as resource

Building Common Ground

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Sustainable Food Lab

Module 2: How is climate change affecting my supply chain?

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Marc Lundy

CIAT

Theme Lead, Sustainable Food Systems
International Centre for Tropical Agriculture

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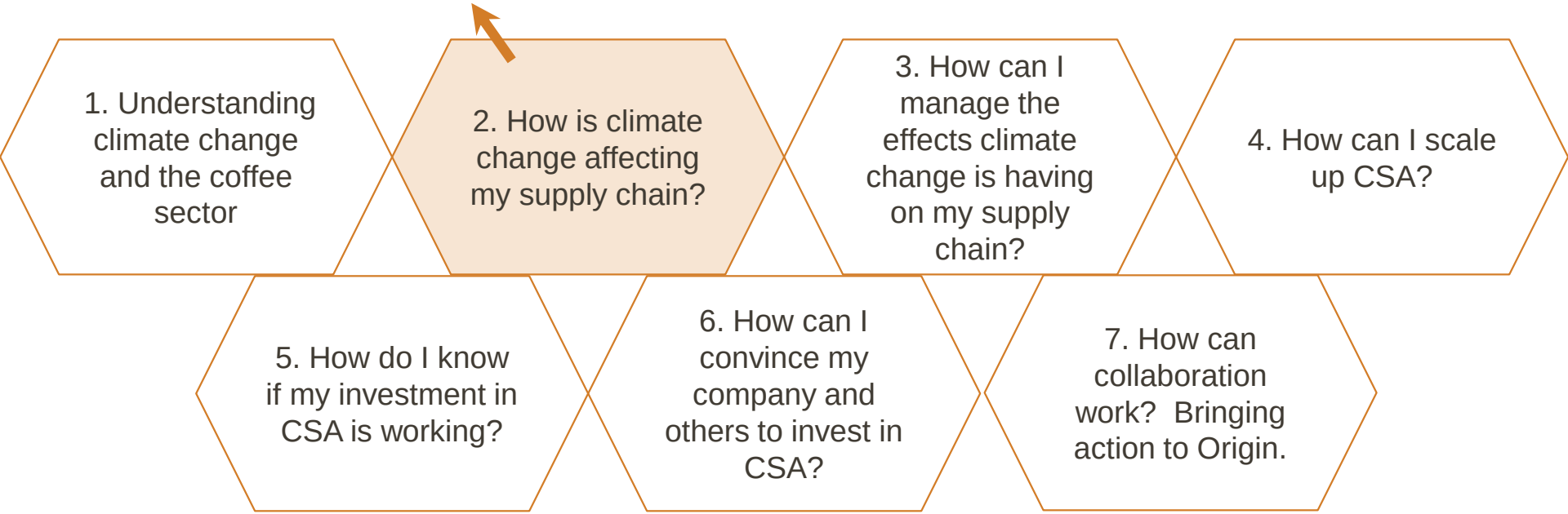
WHERE WE ARE IN THE WEBINAR SERIES

Learn more about the tools and resources available to assess risk and resilience in your supply chain and how to use them for decision-making.



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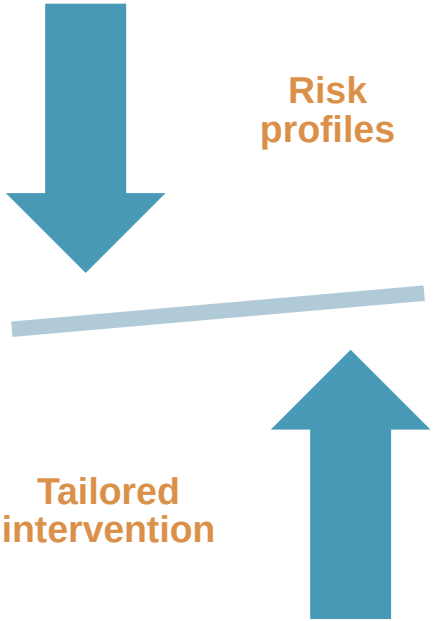
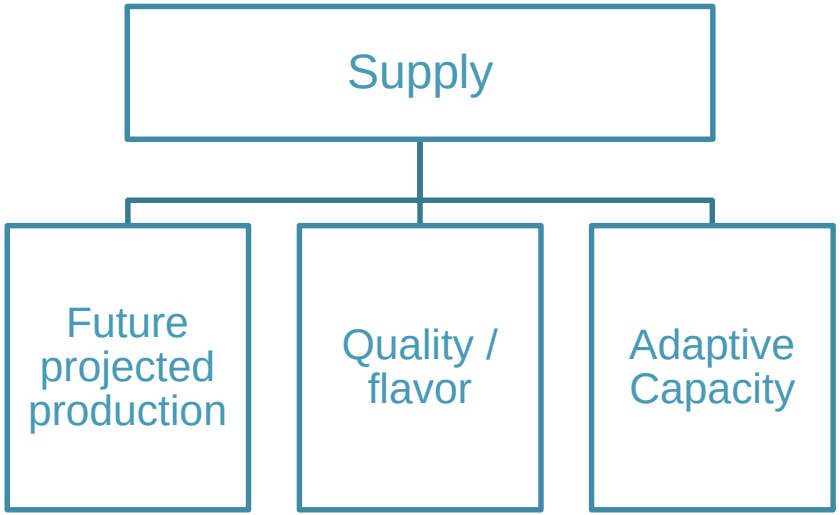
Learning objectives

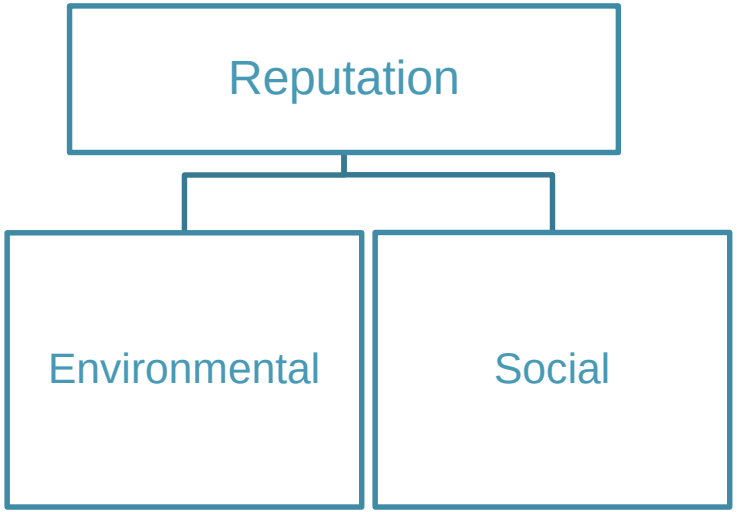
How is climate change affecting my supply chain?

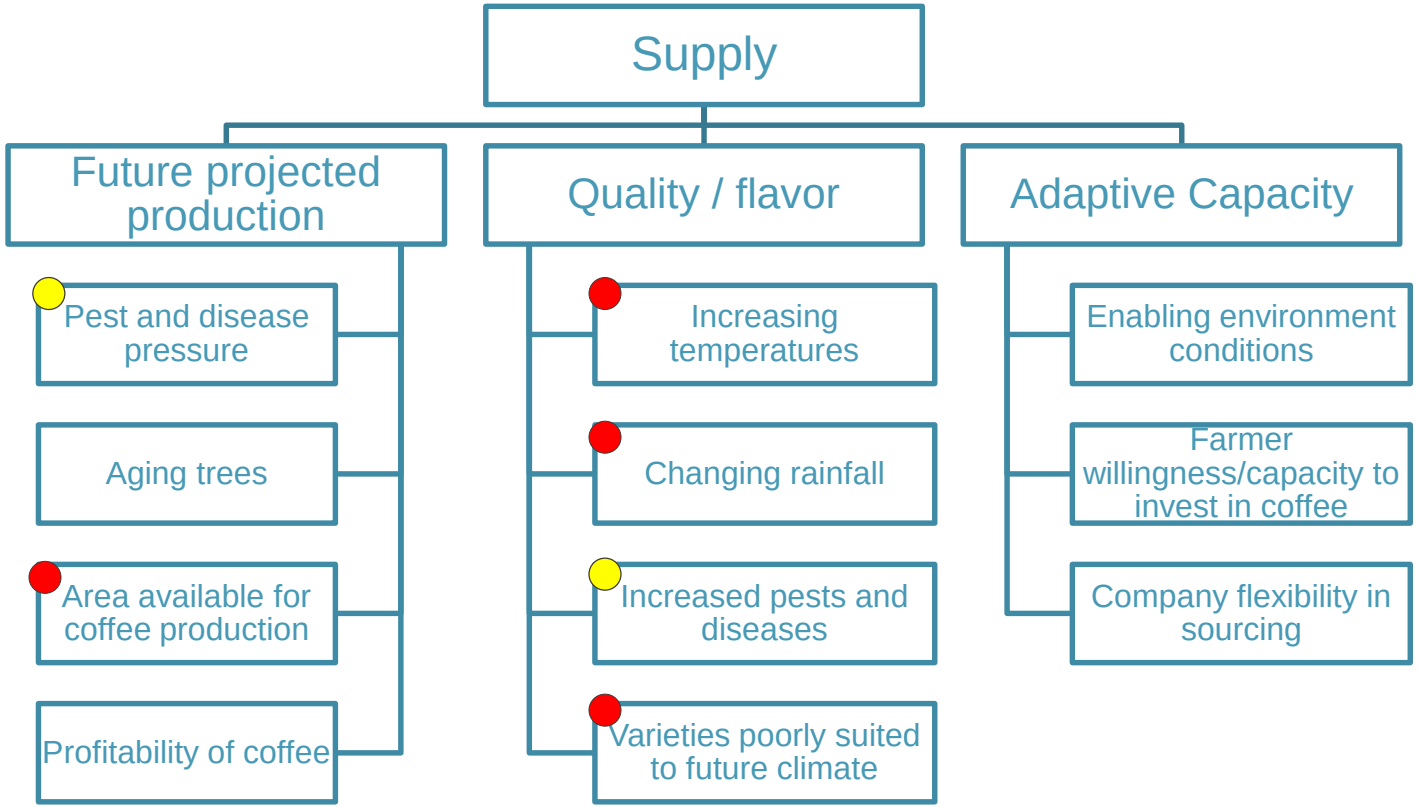
1. Understand how climate change is already affecting coffee production
2. Understand risk profiles and climate suitability maps and how they can be used
3. Understand how to determine farmer resilience in your supply chain
4. Understand how to manage climate risk in relation to farmer resilience



CLIMATE RISKS






Supply
Future projected production
Quality / flavor
Adaptive Capacity
Pest and disease pressure
Aging trees
Area available for coffee production
Profitability of coffee
Increasing temperatures
Changing rainfall
Increased pests and diseases
Varieties poorly suited to future climate
Enabling environment conditions
Farmer willingness/capacity to invest in coffee
Company flexibility in sourcing

Picture: N. Palmer

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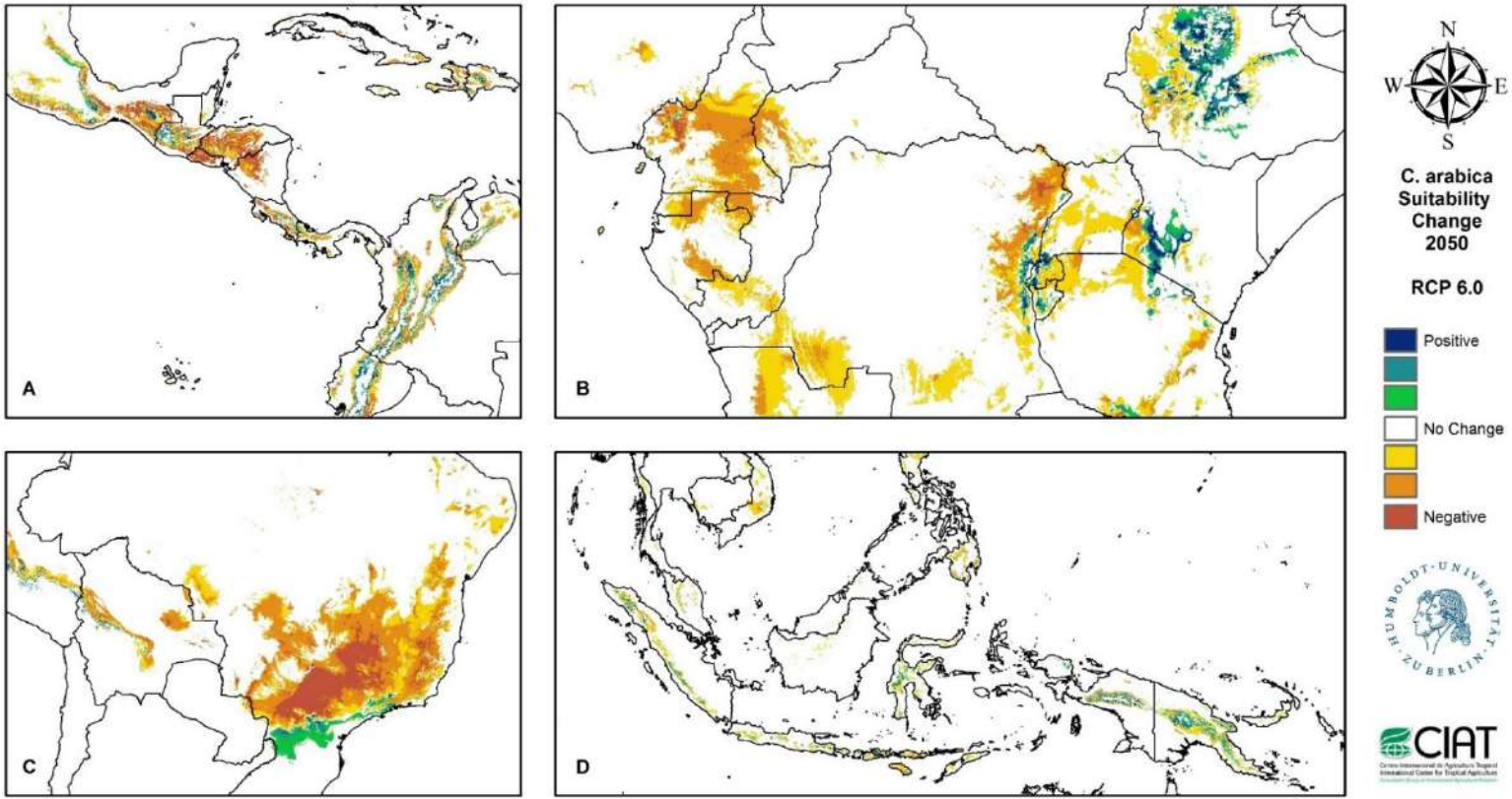

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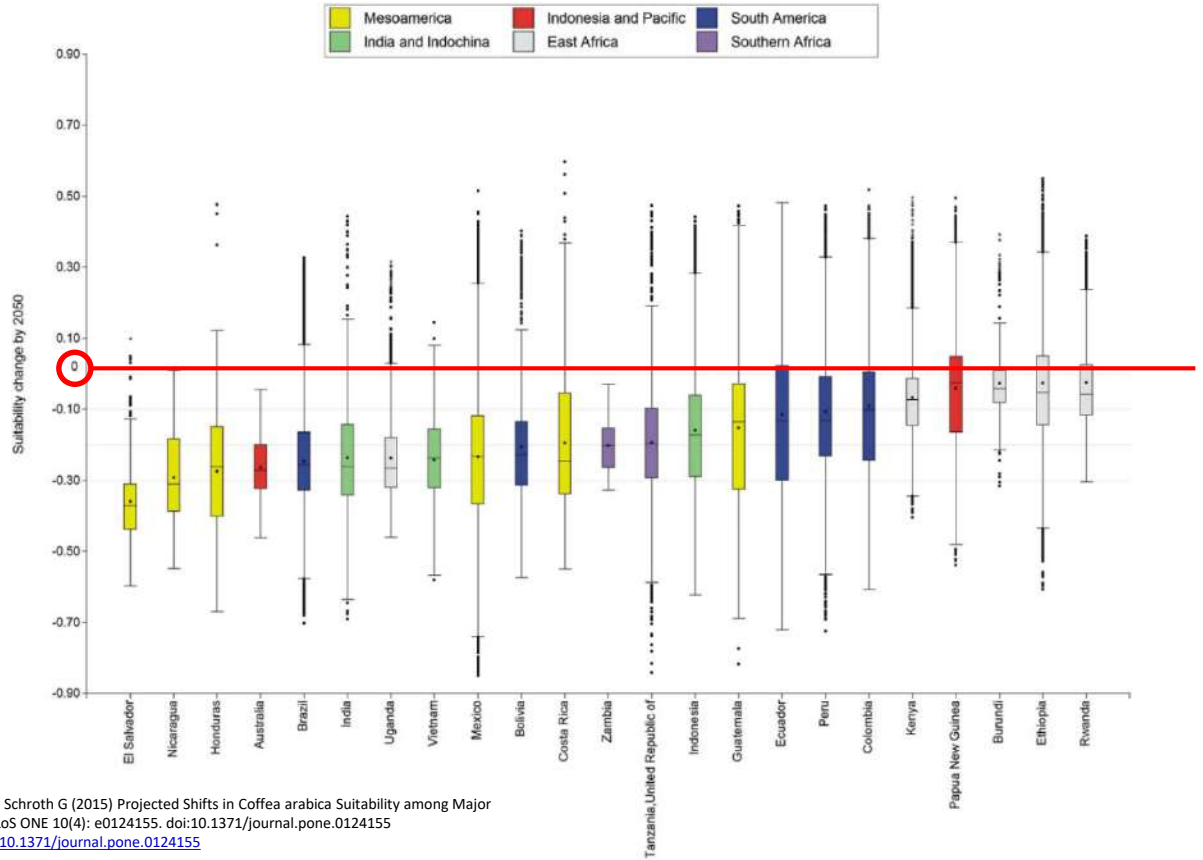
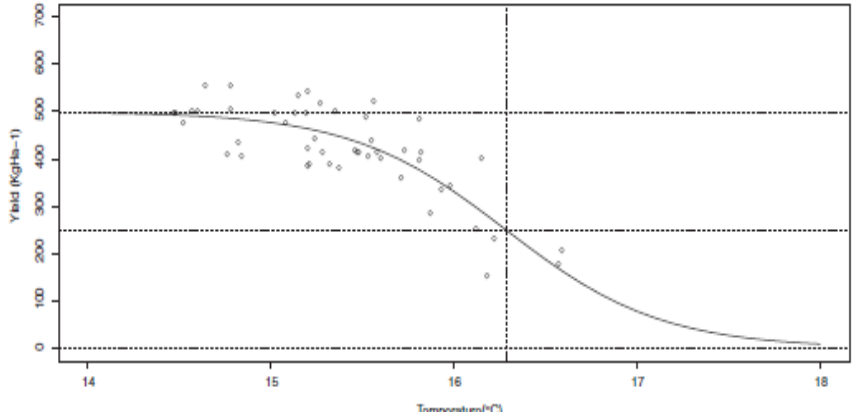
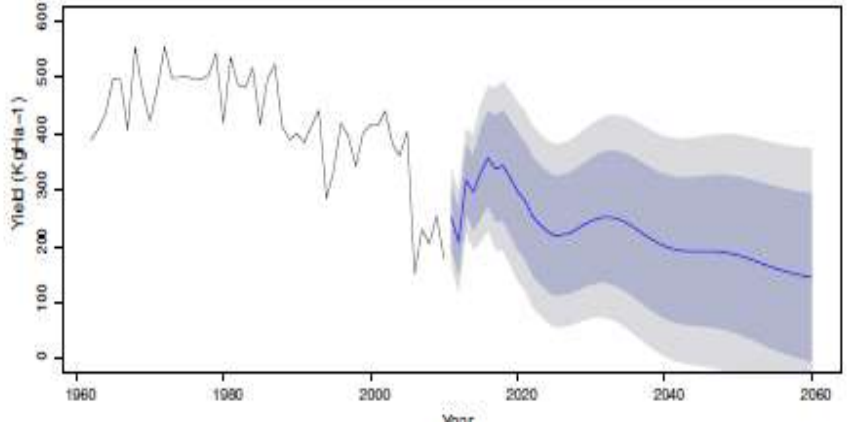


Ovalle-Rivera O, Läderach P, Bunn C, Obersteiner M, Schroth G (2015) Projected Shifts in Coffea arabica Suitability among Major Global Producing Regions Due to Climate Change. PLoS ONE 10(4): e0124155. doi:10.1371/journal.pone.0124155
http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0124155

We are already seeing impacts

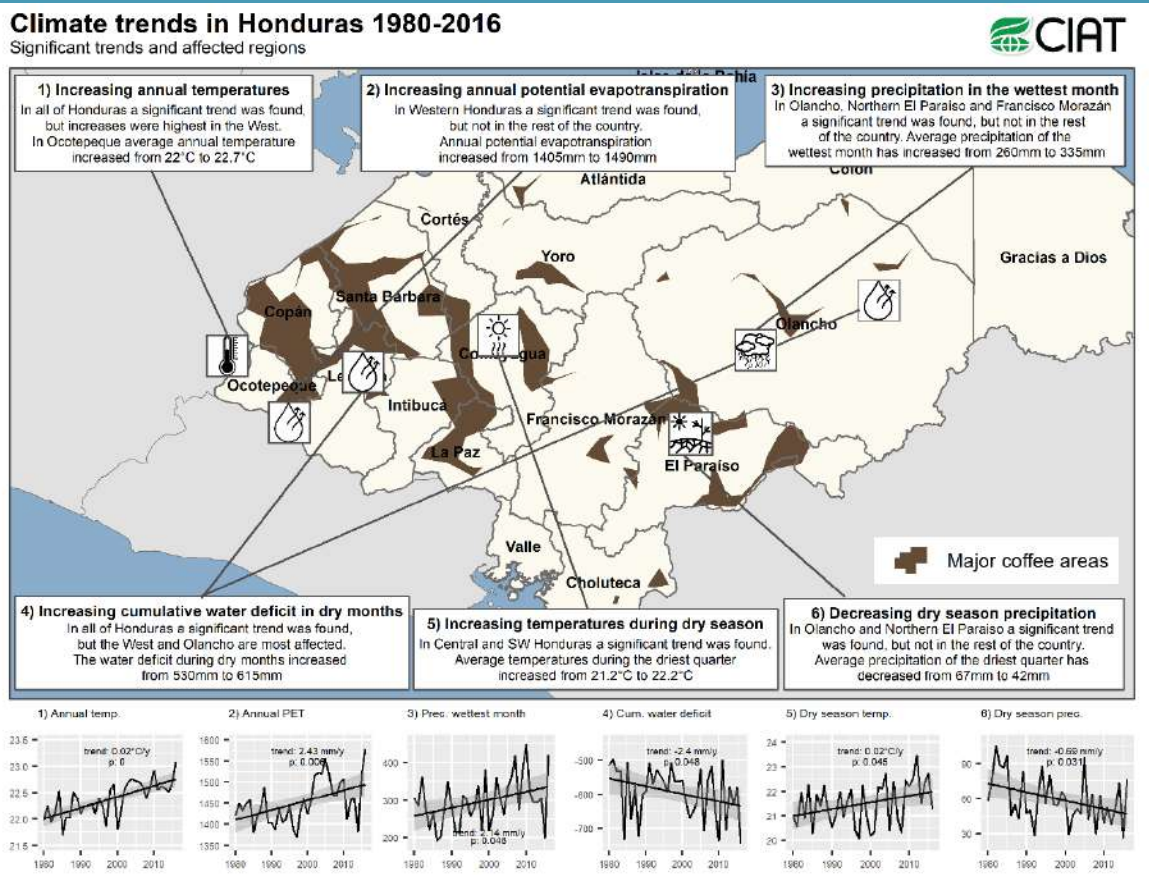




In Tanzania, every 1°C increase reduces yields by 137 kg/ha

Climate trends vary by space and time

- Precipitation more extreme throughout the year
- Higher temperatures
- Higher evapotranspiration



Key messages:

Climate change impacts are here now.

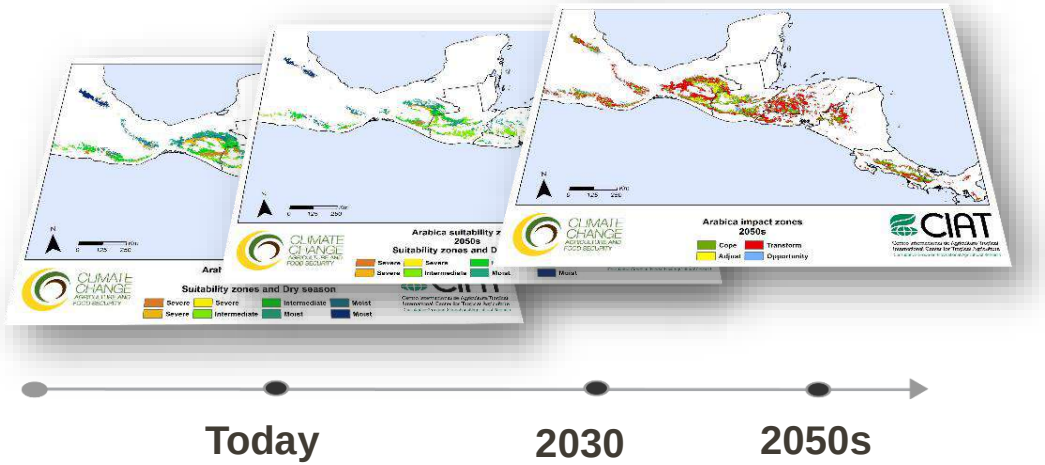
Climate change varies over space & time. This means tailored adaptation strategies.

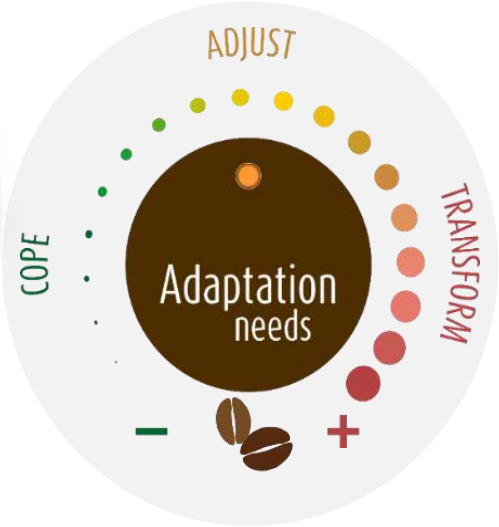
Projections based on business as usual (e.g. no action).

So, what can we do?

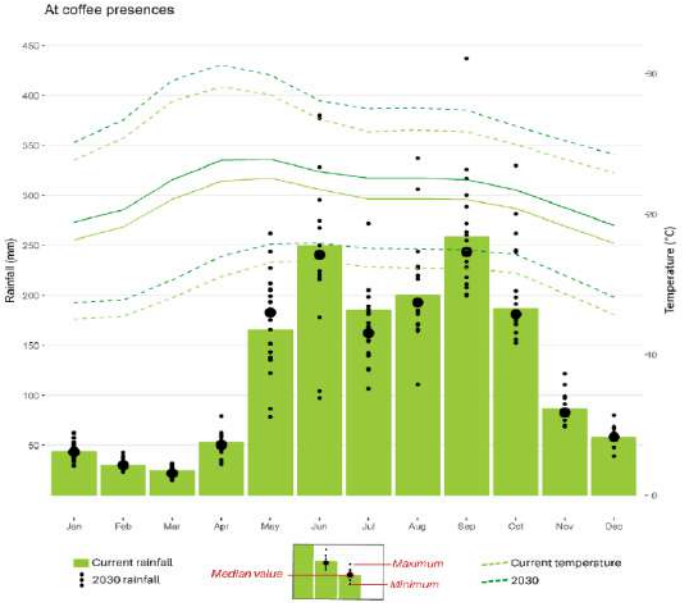
KEEP
CALM
AND
CARRY
ON

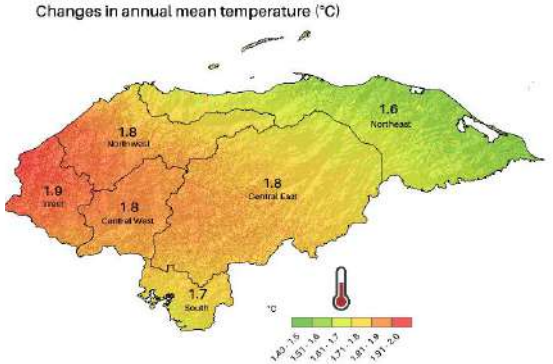
Map the impact gradient to understand the risk of climate change over time

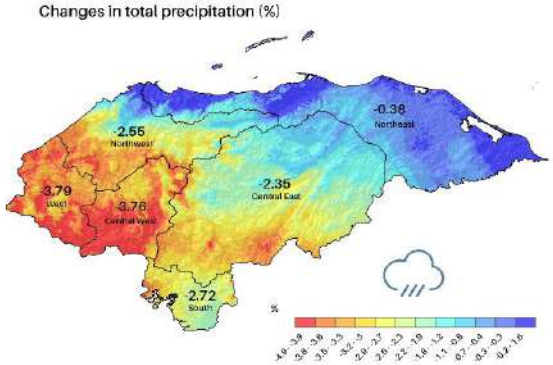




- Temperatures will continue to increase
- Precipitation changes differ by region and global climate models are uncertain







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CONCEPTUAL APPROACH

- Coffee is currently produced under good climatic conditions
- We can learn from these locations and evaluate future data
- Machine learning approach:
  - Complex climate data
  - Missing climate data
  - Insufficient coffee physiological knowledge
  - High future uncertainty of precipitation projections

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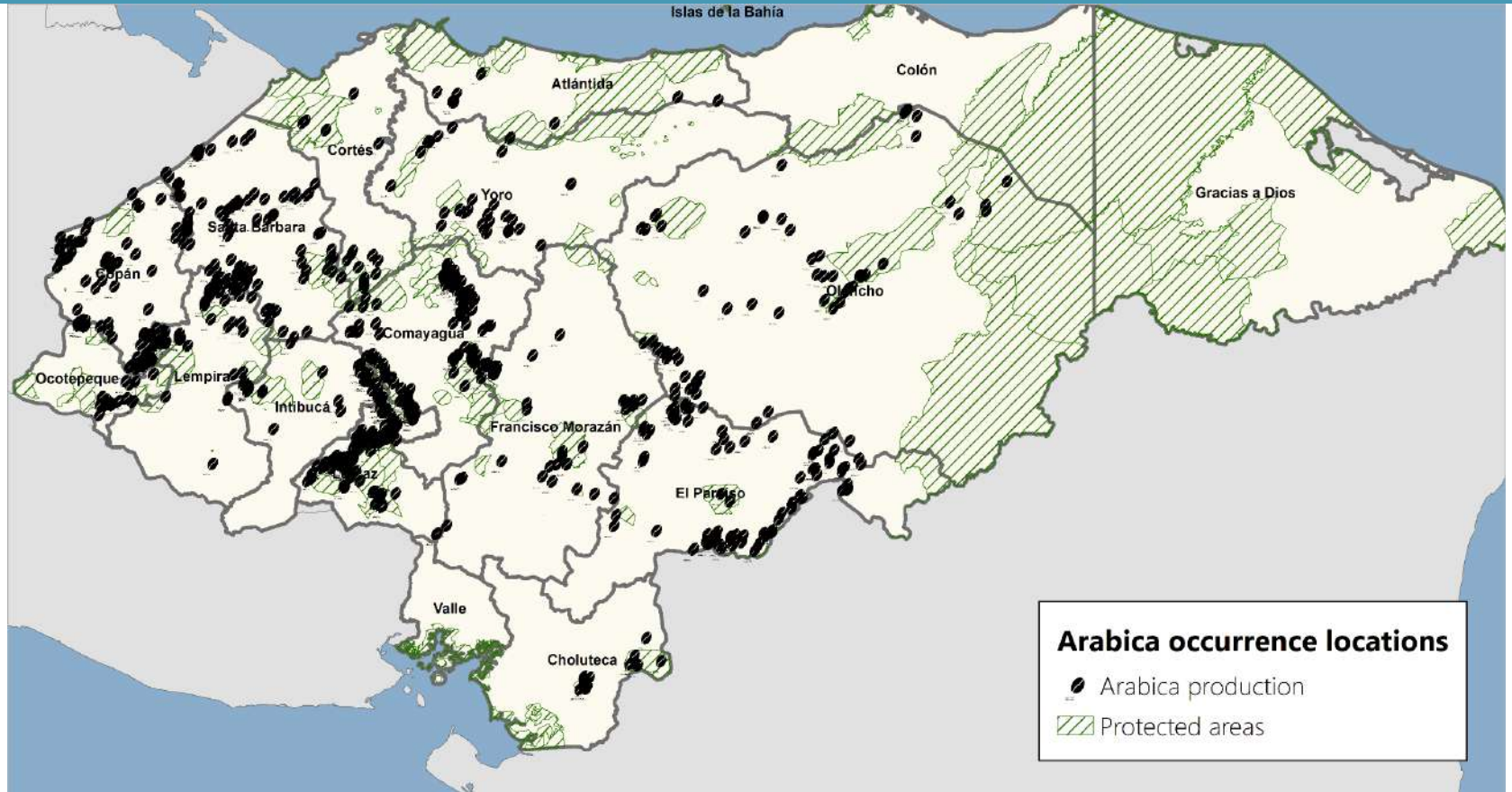
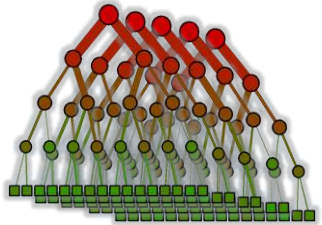


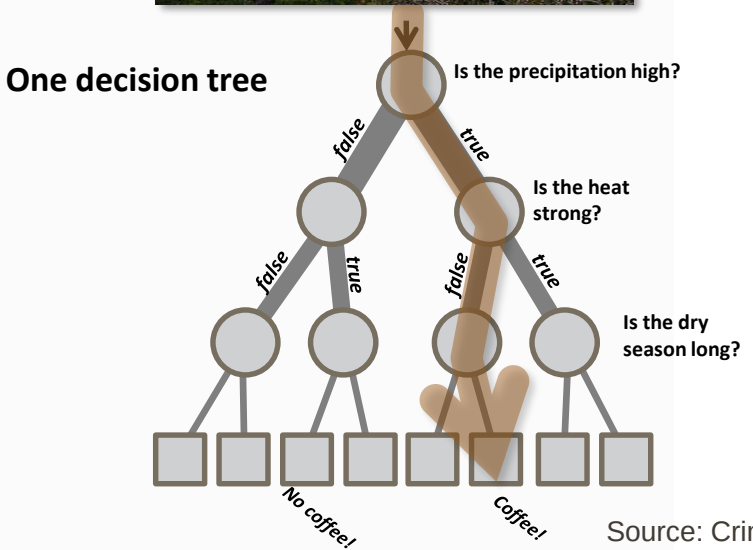
Type		Bioclimatic variables
Temperature	BIO 1	Annual mean temperature
	BIO 2	Mean diurnal range (mean of monthly (max temp - min temp)
	BIO 3	Isothermality (BIO2/BIO7) (*100)
	BIO 4	Temperature seasonality (standard deviation *100)
	BIO 5	Max temperature of warmest month
	BIO 6	Min temperature of coldest month
	BIO 7	Temperature annual range (BIO5-BIO6)
	BIO 8	Mean temperature of wettest quarter
	BIO 9	Mean temperature of driest quarter
	BIO 10	Mean temperature of warmest quarter
	BIO 11	Mean temperature of coldest quarter
Precipitation	BIO 12	Annual precipitation
	BIO 13	Precipitation of wettest month
	BIO 14	Precipitation of driest month
	BIO 15	Precipitation seasonality (coefficient of variation)
	BIO 16	Precipitation of wettest quarter
	BIO 17	Precipitation of driest quarter
	BIO 18	Precipitation of warmest quarter
	BIO 19	Precipitation of coldest quarter
	BIO 20	Number of consecutive months < 40mm precipitation

RANDOM FORESTS

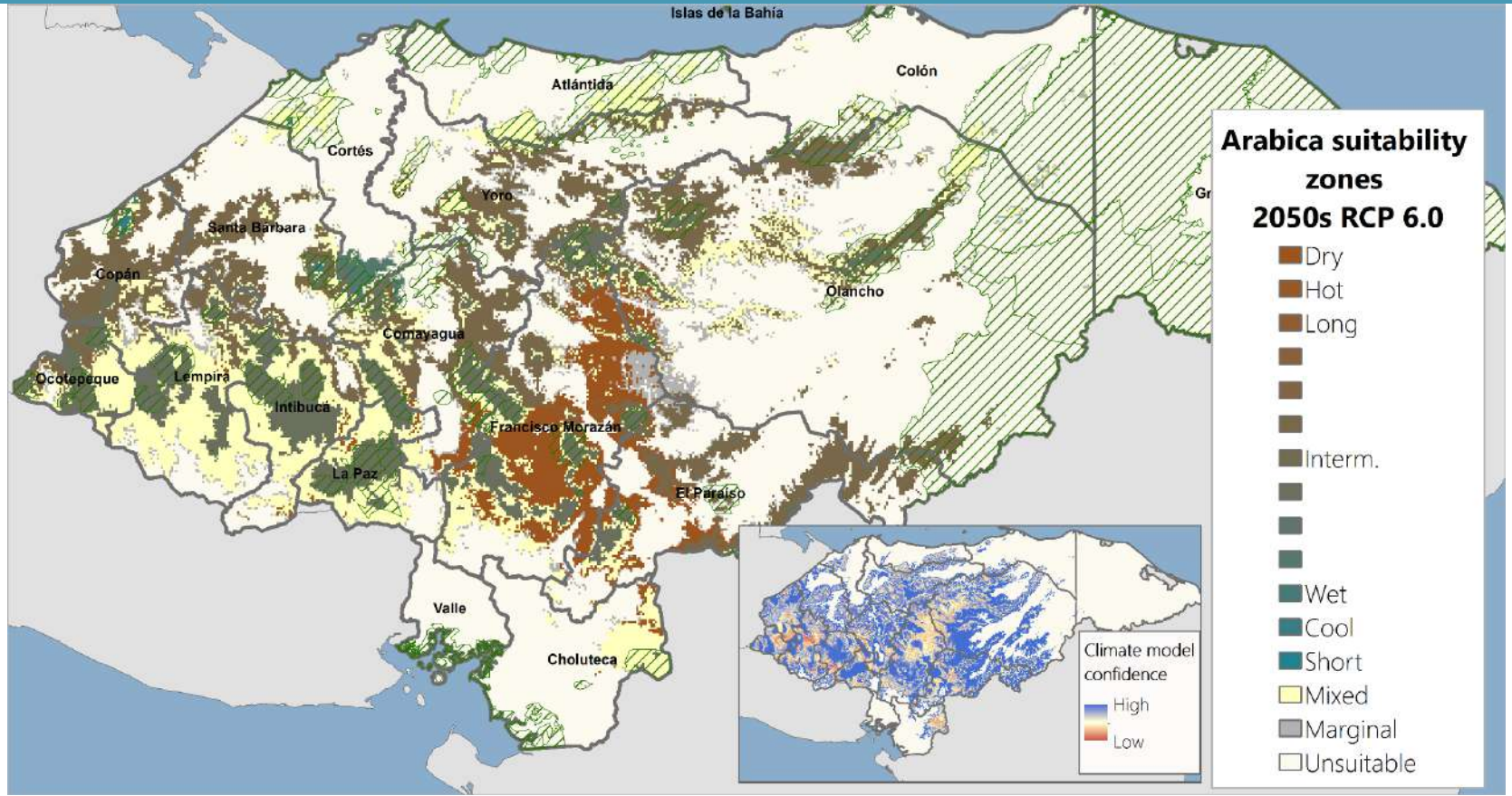
- A forest is an ensemble of trees. The trees are all slightly different from one another.



- The output is the mean classification
- Very robust against overfitting



Source: Criminisi et al 2013


Islas de la Bahía
Colón
Atlántida
Cortés
Yoro
Santa Barbara
Copán
Olancho
Comayagua
Ocotepeque
Lempira
Intibucá
Francisco Morazán
La Paz
El Paraíso
Valle
Choluteca
Arabica suitability zones 2050s RCP 6.0
Dry
Hot
Long
Interm.
Wet
Cool
Short
Mixed
Marginal
Unsuitable
Climate model confidence
High
Low

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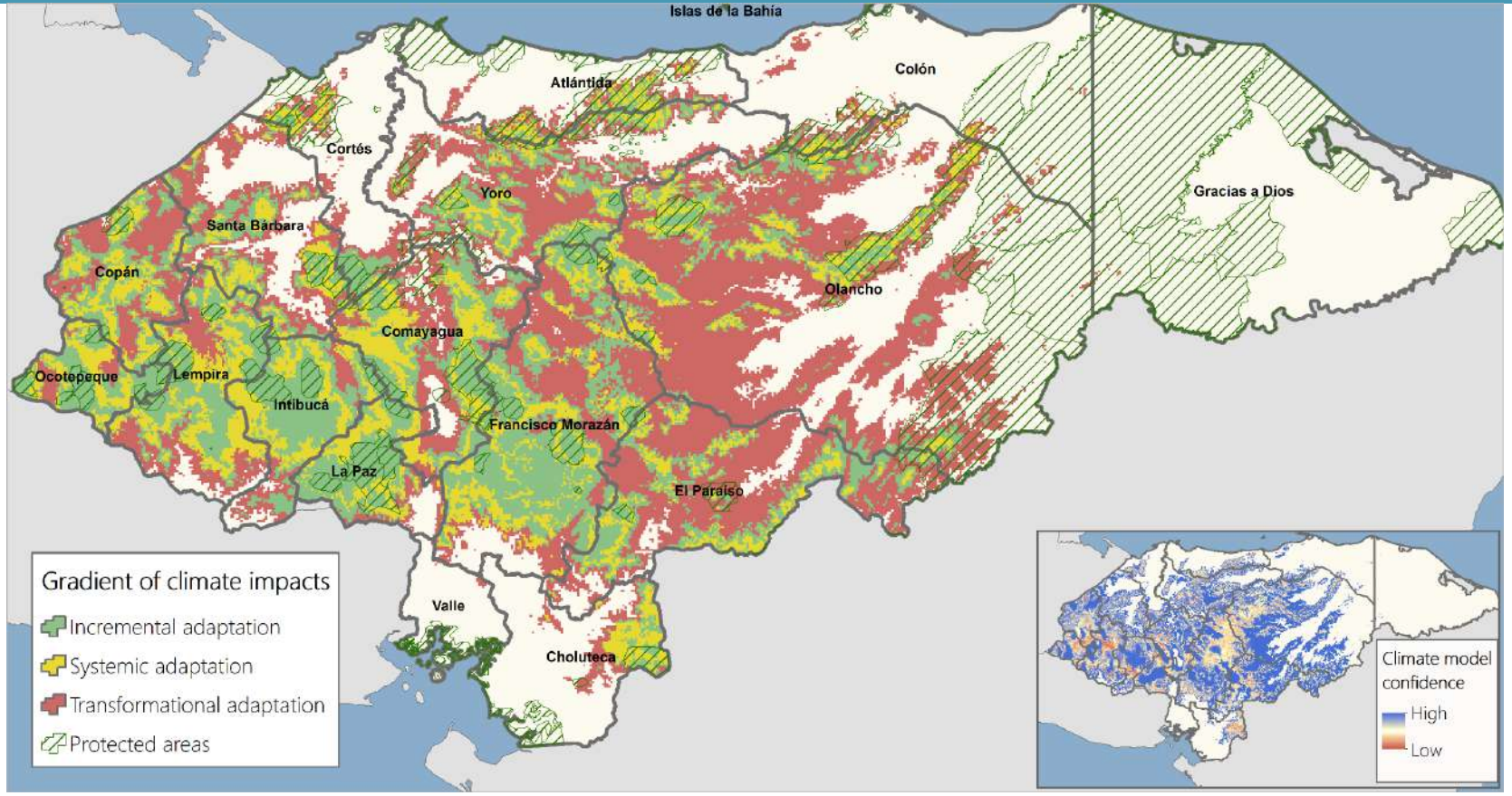
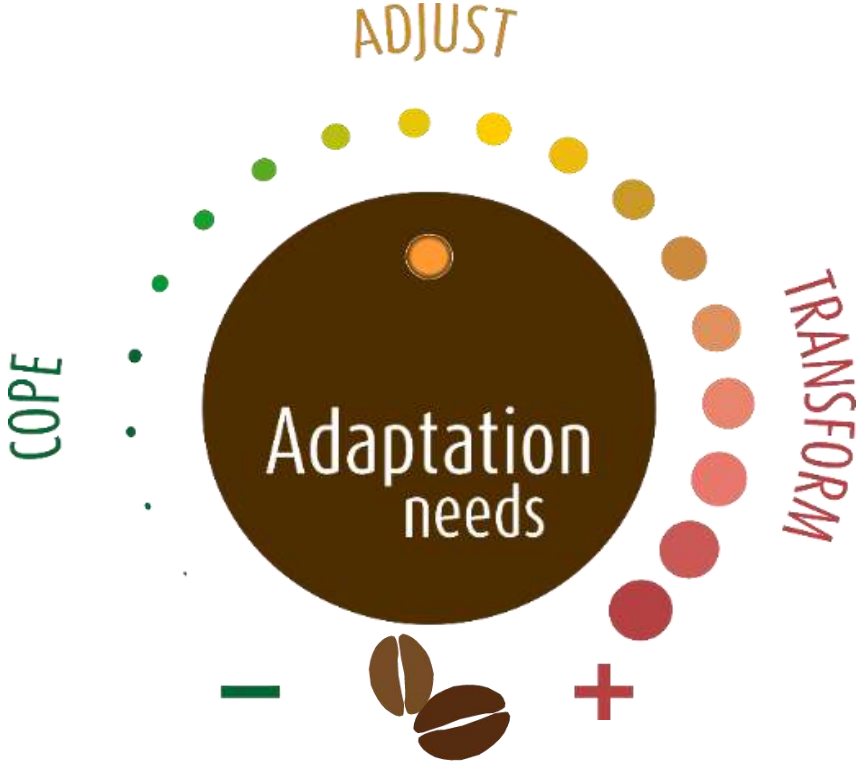
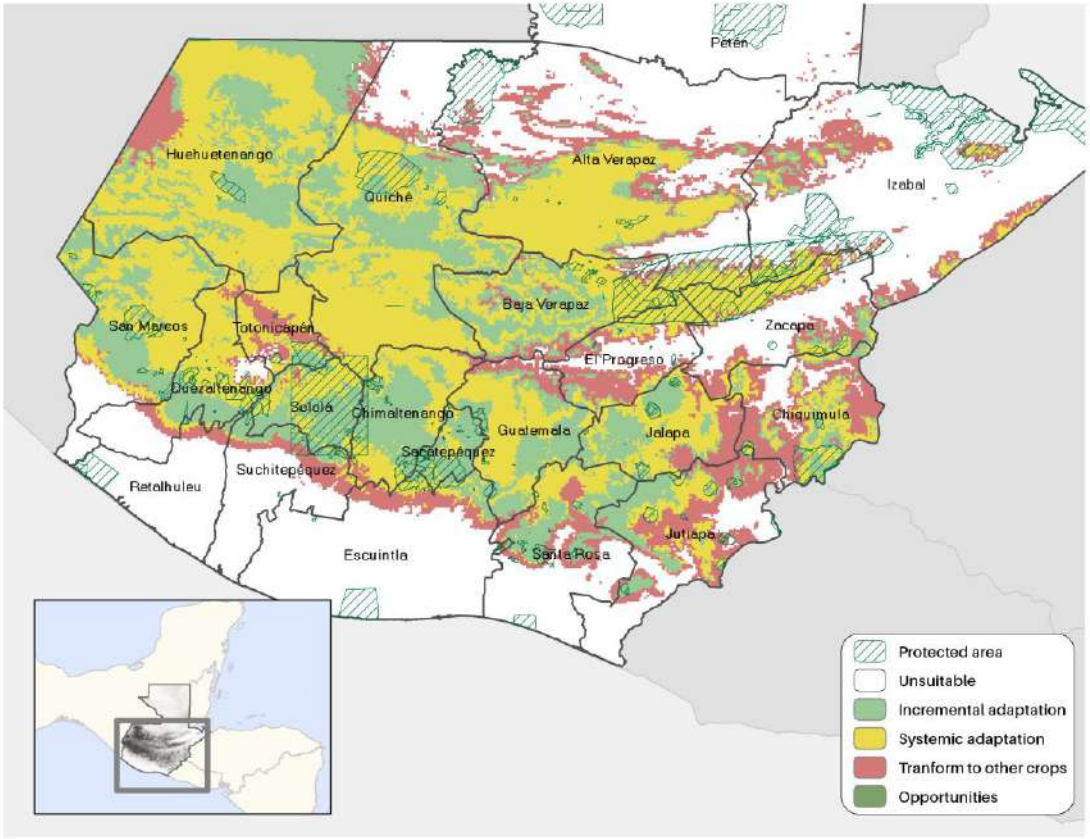


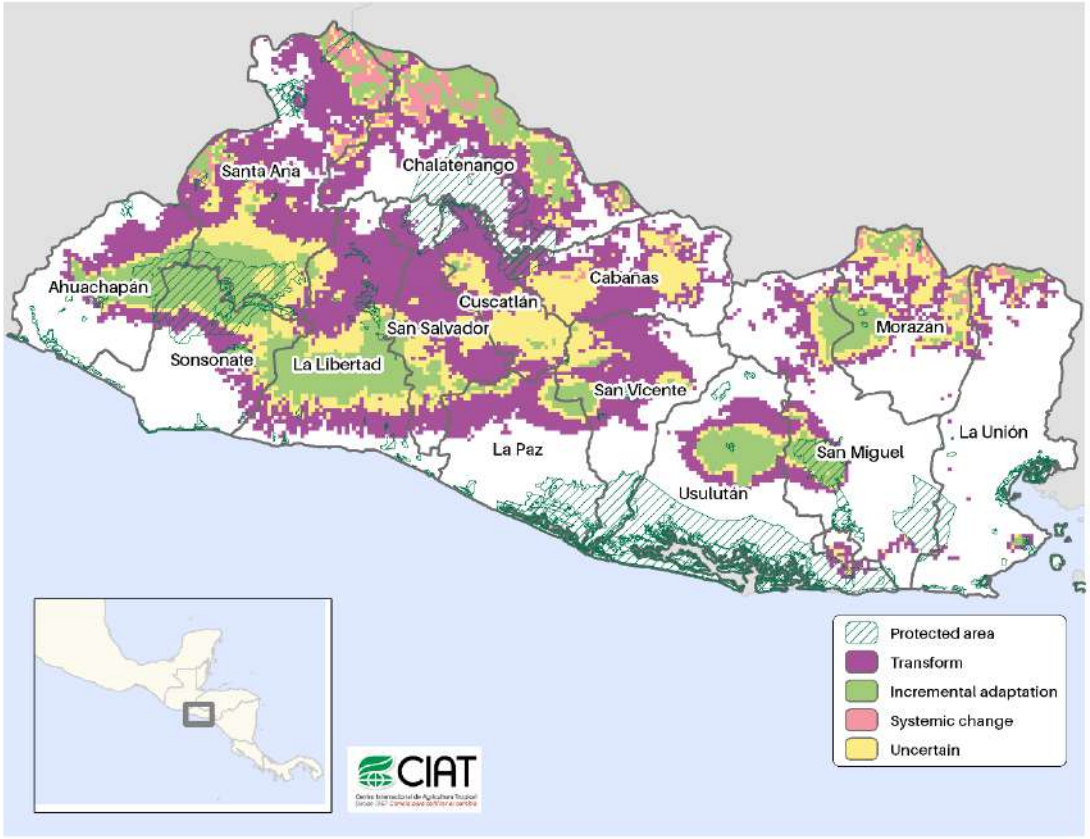
Incremental adaptation where climate is most likely to remain suitable and adaption will be achieved by a change of practices and ideally improved strategies and enablers

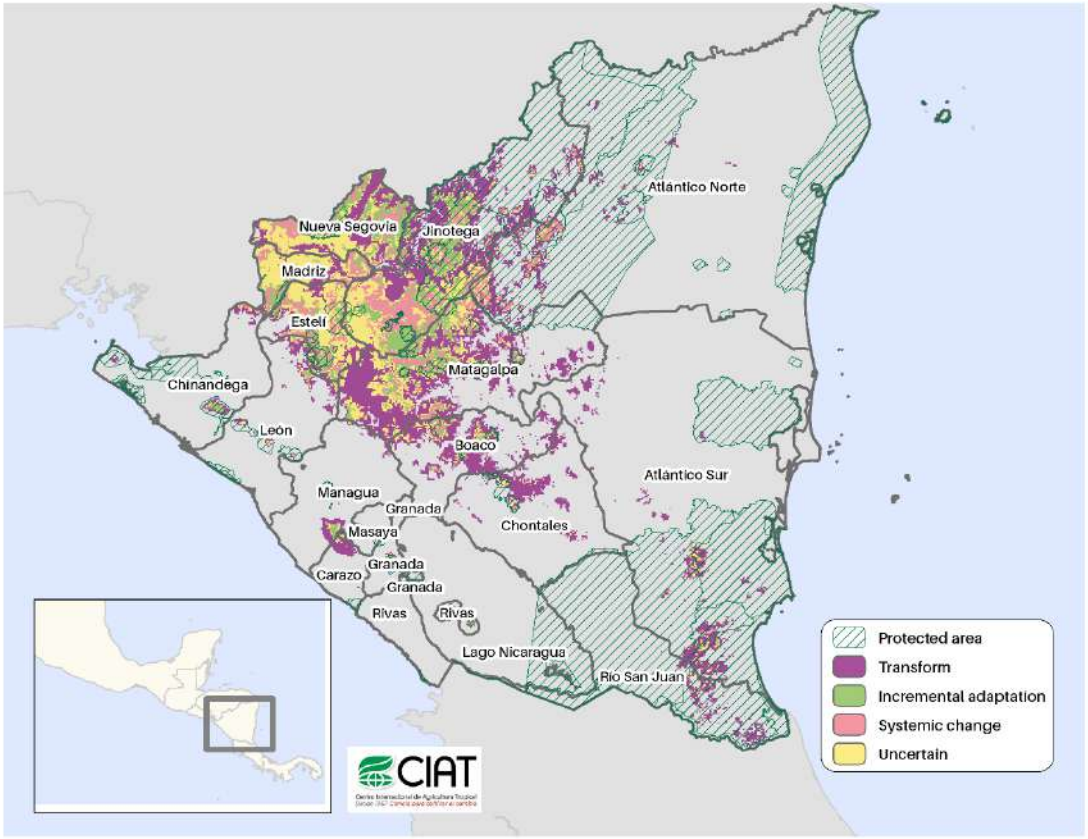
Systemic adaptation where climate is most likely to remain suitable but with substantial stress through comprehensive change of practices accompanied by changes of strategy and adequate enablers

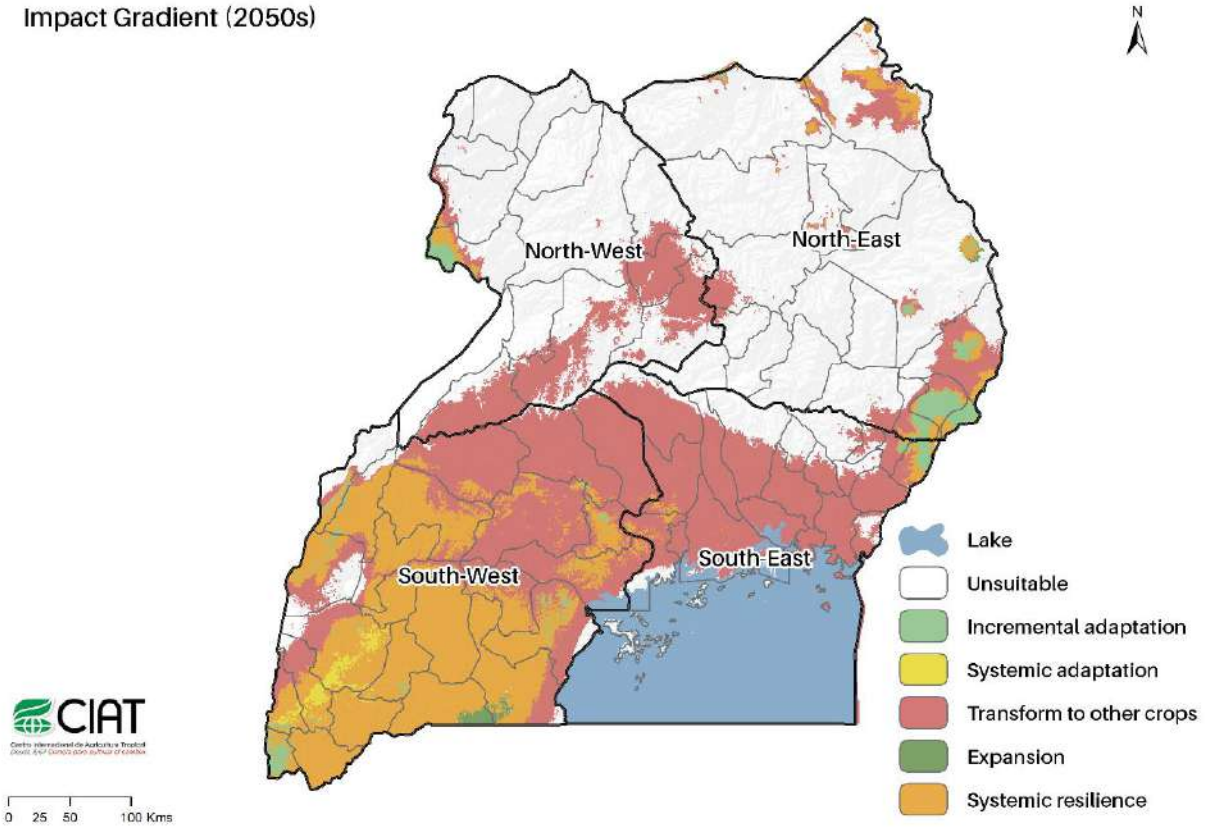
Transformational adaptation where climate is likely to make coffee production unfeasible, will require a focus on strategic change and adequate enablers as practices alone may be uneconomical




Petén
Huehuetenango
Alta Verapaz
Izabal
Quiché
Baja Verapaz
San Marcos
Totonicapán
Zacapa
El Progreso
Quezaltenango
Sololá
Chimaltenango
Guatemala
Jalapa
Chiquimula
Sacatepéquez
Suchitepéquez
Retalhuleu
Escuintla
Santa Rosa
Jutiapa
Protected area
Unsuitable
Incremental adaptation
Systemic adaptation
Tranform to other crops
Opportunities


Santa Ana
Chalatenango
Ahuachapán
Cabañas
Cuscatlán
San Salvador
Morazán
Sonsonate
La Libertad
San Vicente
La Unión
La Paz
San Miguel
Usulután
Protected area
Transform
Incremental adaptation
Systemic change
Uncertain
CIAT


Atlántico Norte
Nueva Segovia
Jinotega
Madriz
Estelí
Matagalpa
Chinandega
León
Boaco
Atlántico Sur
Managua
Granada
Chontales
Masaya
Granada
Carazo
Granada
Rivas
Rivas
Lago Nicaragua
Río San Juan
Protected area
Transform
Incremental adaptation
Systemic change
Uncertain
CIAT


Impact Gradient (2050s)
N
North-West
North-East
South-West
South-East
Lake
Unsuitable
Incremental adaptation
Systemic adaptation
Transform to other crops
Expansion
Systemic resilience
CIAT
0 25 50 100 Kms

SUMMARY

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CLIMATE SMART COFFEE IN HONDURAS

Honduras is now the largest coffee producer in Central America. Low cost of production, generation change, and institutional support resulted in an average annual production growth of 5%.

Most production is shaded at altitudes above 900masl. Many plantations were recently renovated but remain susceptible to major climate driven diseases.

Coffee production areas in Honduras have become drier and hotter over the past three decades. Annual temperatures have risen across the country, potential evapotranspiration increased and the distribution of precipitation has become more variable.

110,000 Families have coffee as primary income.

95% Of total production is produced by smallholders.

13% Of farmers are female-led

1/10 Workers are employed by coffee sector

70% Of coffee is produced by smallholders with farms with less than 2ha.

46 years Average age of farmers

Higher temperatures and reduced cloud cover will increase the water needs of the coffee crop, in which case water stress may rise despite unchanged water availability.

Easter Honduras
Olancho, El Paraíso, and Francisco Morazán will be more affected by climate change.

Central Honduras
In La Paz, Comayagua, and Yoro departments impacts will be relative lower, high systematic adaptations efforts are required.

West Honduras
In Lempira, Ocotepeque, Copan and Santa Barbara, Intermediate altitudes will require systematic changes to remain viable and low area will likely transform.

45% of the area that is potentially suitable under current conditions will become unsuitable for coffee production without adaptation.

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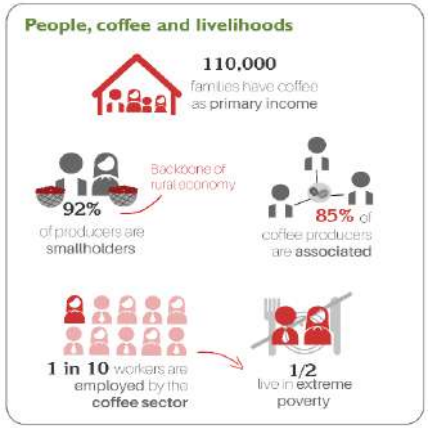

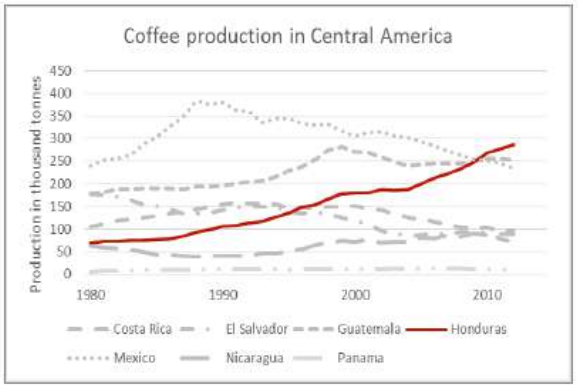

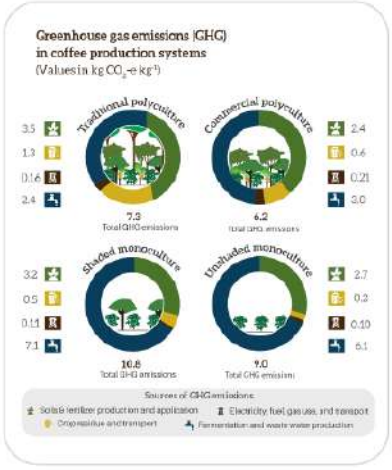

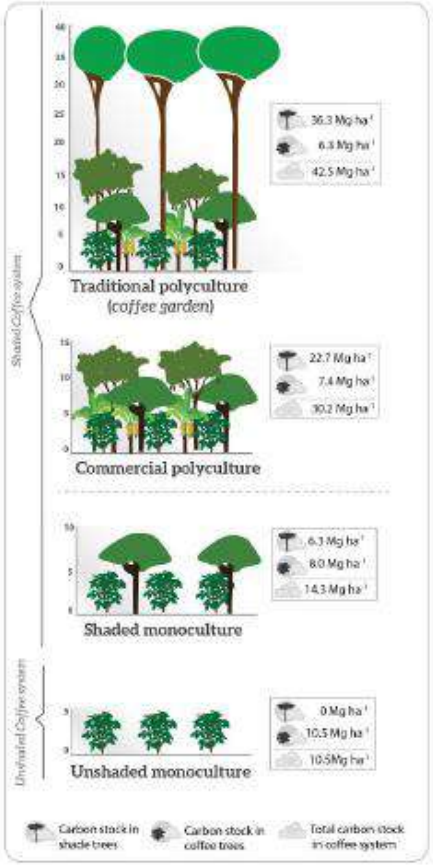

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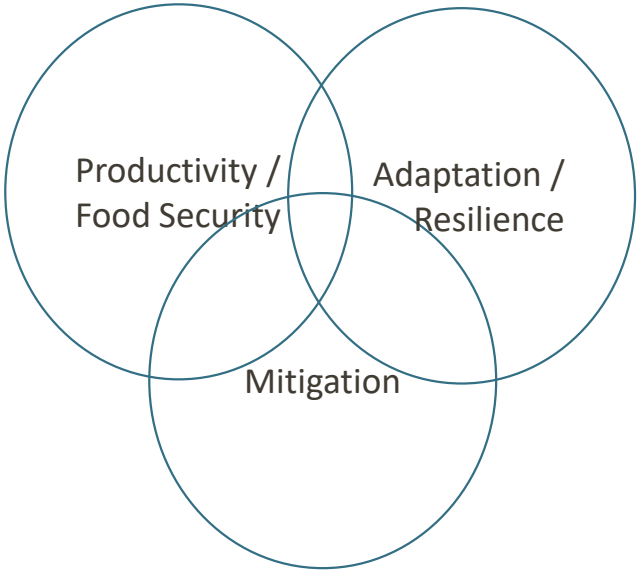
WHAT IS CLIMATE SMART AGRICULTURE?

Climate Smart Agriculture endeavors to improve the integration of **agriculture development** and **climate responsiveness**



- It's not about starting from scratch; it's about reevaluating what you're doing with a climate lens.
- With multiple goals, there will be trade-offs to manage.
- CSA must be context-specific.
- Vulnerable groups, incl. women, are disproportionately affected by climate. CSA must be inclusive.

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WHAT DOES CSA LOOK LIKE IN PRACTICE?

Practices

implemented on-farm to adapt to current climate variability (and to a lesser extent, prepare for climate change)

- Cover crops
- Shade management
- Distancing
- Trenches

Strategies

implemented on- and off-farm, within the producer organization, community or supply chain, that adapt to current & future climate

- Diversification
- Choosing resilient varieties
- Changing processing methods

Enablers

supported by actors on- and off-farm to establish the conditions needed to implement CSA strategies and to adopt CSA practices

- Financing
- Weather insurance
- Weather stations
- Innovations in payment terms to promote CSA

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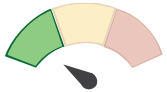
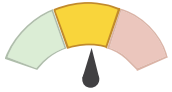
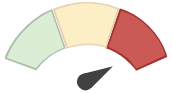
WHAT DOES CSA LOOK LIKE IN PRACTICE?







	Incremental Change	Systemic Change	Transformative Change
Practices	Cover crops, fertilizers	Irrigation, novel varieties, novel soil management	Switch to Robusta or other crops
Strategies	Organic matter management within the farm, conservation of riparian areas	On-farm diversification (e.g. new crops for subsistence or commercial use), different processing methods	Moving away from coffee farming, or farming altogether
Enablers	CSA extension, weather stations for better forecasting, carbon insetting, incentives for process & quality	Crop insurance (drought, hail), access to finance to support adaptation, carbon insetting	Developing new value chains for new cash crop systems

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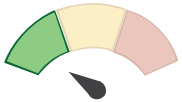

INCREMENTAL CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Cover crops, fertilizers, GAP	Good governance, transparent pricing & payment mechanisms, extension & credit	Good governance, transparent pricing & payment mechanisms	Traceability, transparent pricing & payment mechanisms
Strategies	Organic matter management within the farm, conservation of riparian areas	CSA adapted extension services, improved processing & post harvest, access to adapted germplasm	Product differentiation, carbon insetting	Product differentiation, carbon insetting
Enablers	CSA extension, weather stations for better forecasting, carbon insetting, incentivizing process vs quality	Quality differentials, cupping labs, CSA credit (R&R), access to adapted germplasm (WCR), weather stations information, knowledge management	Price differentials, access to adapted germplasm (WCR), information, knowledge management	Consistent price differentials, earmarks for WCR, information & knowledge management, transparent trade & payment processes

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SYSTEMIC CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Irrigation, novel varieties, novel soil management	Good governance, transparent pricing & payment mechanisms, extension & credit	Good governance, transparent pricing & payment mechanisms	Traceability, transparent pricing & payment mechanisms
Strategies	On-farm diversification (e.g. new crops for subsistence or commercial use), different processing methods	CSA adapted extension services, low-water processing, access to adapted germplasm, product diversification	Process-based differentiation (i.e. voluntary certifications), carbon insetting, volume incentives	Process-based differentiation (i.e. voluntary certifications), carbon insetting
Enablers	Crop insurance (drought, hail), access to finance to support adaptation	Adapted germplasm (WCR), weather stations information, knowledge management, crop insurance (drought, hail), access to finance to support adaptation	Access to adapted germplasm (WCR), information, knowledge management, crop insurance (drought, hail), access to finance to support adaptation	Earmarks for WCR, information & knowledge management, transparent trade & payment processes, carbon insetting

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TRANSFORMATIVE CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Switch to robusta, better adapted non-coffee crops	Good governance, transparent pricing & payment mechanisms, extension & credit for non-coffee crops	Good governance, transparent pricing & payment mechanisms for non-coffee crops	Traceability, transparent pricing & payment mechanisms for declining / disappearing coffee production
Strategies	Diversify livelihood strategies away from farming or out of farming entirely	Identify new crop options, provide access to technologies and training, build new commercial relationships	Identify new commercially viable crops to replace coffee	Diversify coffee sourcing regions
Enablers	Developing new value chains for new cash crop systems	Market information, commercial contacts with non-coffee buyers	Market information, commercial contacts with non-coffee buyers, access to adapted production technologies, credit and crop insurance	Information on other viable coffee regions for quantity and quality requirements

In conclusion

Take action now to minimize impacts.

Combine scientific insights with business incentives along the value chain.

Partnerships are critical.

Resilience is a long-term process.

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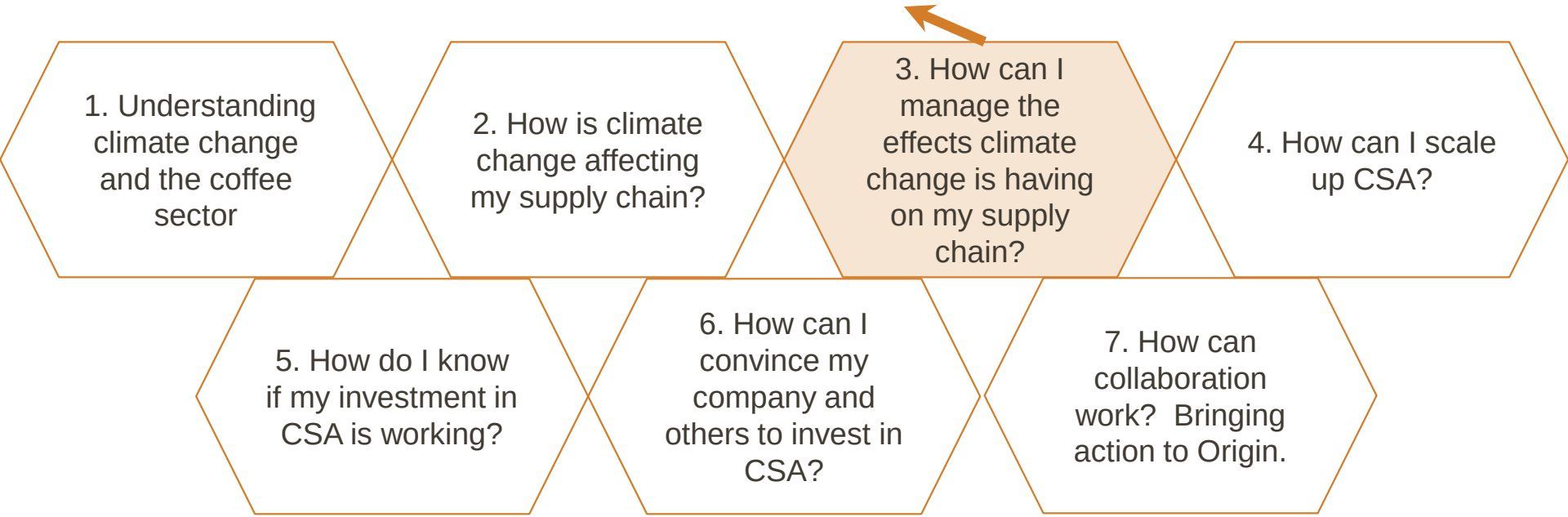
WHERE WE'RE HEADED

Learn about the tools, training materials and resources that support implementation of climate smart agriculture at the farm level, and the research that underpins them.



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Resources

Bunn C, Castro F, Lundy M (2017) The impact of climate change on coffee production in Central America. San Pedro Sula, Honduras

Bunn C, Läderach P, Ovalle Rivera O, Kirschke D (2015a) A bitter cup: climate change profile of global production of Arabica and Robusta coffee. Climatic Change 129:89–101. doi: 10.1007/s10584-014-1306-x

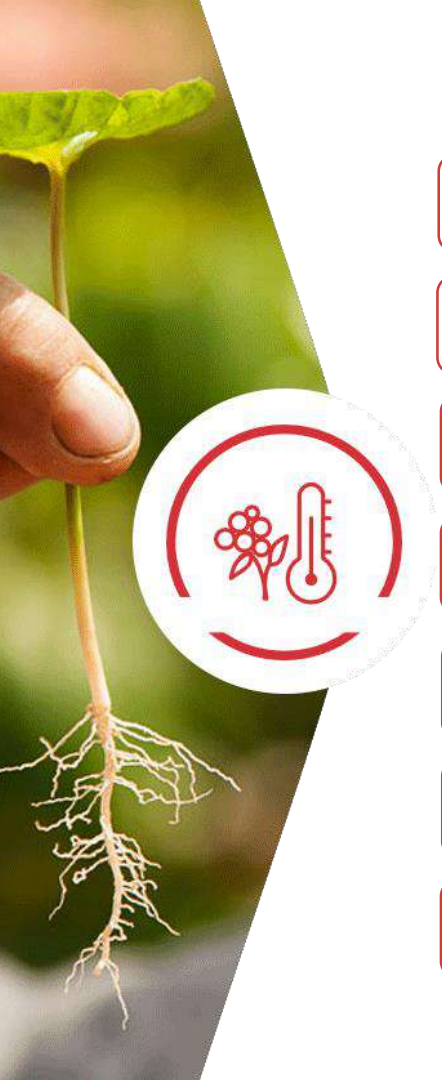
Bunn C, Läderach P, Pérez Jimenez JG, et al (2015b) Multiclass Classification of Agro-Ecological Zones for Arabica Coffee: An Improved Understanding of the Impacts of Climate Change. PLOS ONE 10:e0140490. doi: 10.1371/journal.pone.0140490

Ovalle-Rivera O, Läderach P, Bunn C, et al (2015) Projected Shifts in Coffea arabica Suitability among Major Global Producing Regions Due to Climate Change. PLOS ONE 10:e0124155. doi: 10.1371/journal.pone.0124155

Schroth G, Läderach P, Blackburn Cuero DS, et al (2015) Winner or loser of climate change? A modeling study of current and future climatic suitability of Arabica coffee in Indonesia. Regional Environmental Change 15:1473–1482. doi: 10.1007/s10113-014-0713-x

https://www.allianceforresilientcoffee.org/

Contact:
cbunn@cgiar.org
m.lundy@cgiar.org



Next Modules

Duration: 75 minutes per module
Time: 3pm CEST | 9am EDT | 6am PDT

1	June 7th	Understanding climate change	Introduction
2	June 12th	How is climate change affecting my supply chain?	Risk Profiles
3	June 28th	How can I manage the effects climate change is having on my supply chain?	Tools
4	July 19th	How can I scale up CSA?	Scale
5	September 27th	How do I know my investment in CSA is working?	Monitoring
6	October 25th	How can I convince my company and others to invest in CSA?	Business Case
7	November 8th December 6th	How can collaboration work? Bringing action to origin!	Collaboration

Link to CSA Learning Series

Particpants in Module 2

Lieke Guinee	Agri-Logic
Katharina von Knobloch	ALDI SüD
Carolin Ehrensperger	Bernhard Rothfos
Pablo Fernandez Kolb	CIAT
Fernando Rodriguez-Camayo	CIAT
Peter Baker	Climate Edge
Joel Castro	COHONDUCAFE
Daniele	COSA
Elena Serfilippi	COSA
Lina Alejandra Lozano	Expocafé S.A.
Elsebeth Nordlund	Fairtrade America
Pedro Gonzalez	FNC
Susan Macdonald	Global Bright Futures
Kerstin Linne	Green Line Consulting
Tessa Meulensteen	IDH
Jenny Kwan	IDH Sustainable Trade Initiative
Lydia Namutebi	Kawacom Uganda Limited
ASELE BENJAMIN	KAWACoM UGNADA LIMITED
Philip von der Goltz	List + Beisler GmbH
Nora Johnson	Massimo Zanetti Beverage USA
Marcus Laws	NCBA CLUSA
Marcelo Burity	Nestle
Wouter De Smet	Nestle ZAOA
Lars Wehmeier	Niehoffs Kaffeerösterei GmbH
Brenda Makona	Olam Tanzania Limited
Angela pelaez	Rgc coffee
Napoleon Molina	Rikolto
Dominique Mvunabandi	Severe Weather Consult Ltd
Solidaridad Colombia	Solidaridad
samuel.ricardo@supracafe.com	SUPRACAFE
Thomas Delbar	Supremo
Elizabeth Newman	USAID
Ana Carsalade	
Christian Kamburow	

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CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Katherine Selengia
Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org

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Understand, Design, Act: Climate-proof your supply chain

Module 3:

How can I manage the effects climate change is having on my supply chain?

28. June 2018

Module 3: How can I manage the effects climate change is having on my supply chain?

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for a sustainable coffee world

Danielle Knueppel
Global Coffee Monitoring Program Director
World Coffee Research

Katherine Selengia
Program Manager
Hanns R. Neumann Stiftung

Caroline Glowka
Global Coffee Platform

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Let's discuss today

- Understanding how to manage effects of climate change
  - Status of latest research
  - Tools
  - Farming practices
- Questions and Answers

By using ZOOM

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for a sustainable coffee world

1. Click on "Raise Hand" button

If you want to **comment** or ask **questions**

2. Use the Q&A box

To **place your questions** and get feedback from to the panelists

3. We will silence your mic

To avoid undesired **background noises**. But you can always ask to speak!

4. Remember

● REC

This session is being recorded for archive purposes

GCP partners in 2018

Alliance for Resilient Coffee

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Climate Catalogue

idh the sustainable trade initiative

Conservation International

Specialty Coffee Association

coffee & climate
enabling effective response

Global Coffee Platform
for a sustainable coffee world

Objectives of the Learning Series

Understand climate change

Plan, implement, and scale effective CSA

Learn how to assess your supply chain risks

Convey the value of investment in CSA

Align your actions

Join concrete action

Path to Collective Action

- Introduction
- Risk Profiles
- Tools
- Scale
- Monitoring
- Business Case
- Collaboration

+ Climate Catalogue as resource

Building Common Ground

- Understand
- Design
- Act

Collective action at origin!

Honduras

Uganda

Opportunities in Honduras and Uganda

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Honduras

Platform Agenda

Contribute to National Coffee Platform's agenda

Multi-stakeholder collaboration

Learnings & results will be shared with the sector

Progress will be measured

Uganda

Climate Change Working Group

The Experts

Celia Harvey

Conservation International

Caroline Glowka

Global Coffee Platform

George Watene

Global Coffee Platform

Daniele Giovannucci

Committee on Sustainability Assessment (COSA)

Danielle Knueppel

Global Coffee Monitoring Program

Kate Selengia

Hanns R. Neumann Stiftung

Mark Lundy

International Centre for Tropical Agriculture (CIAT)

Laurence Jassogne

International Institute for Tropical Agriculture (IITA)

Elizabeth Teague

Root Capital

Elena Serfilippi

Committee on Sustainability Assessment (COSA)

Kealy Sloan

Sustainable Food Lab

Module 3: How can I manage the effects climate change is having on my supply chain?

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

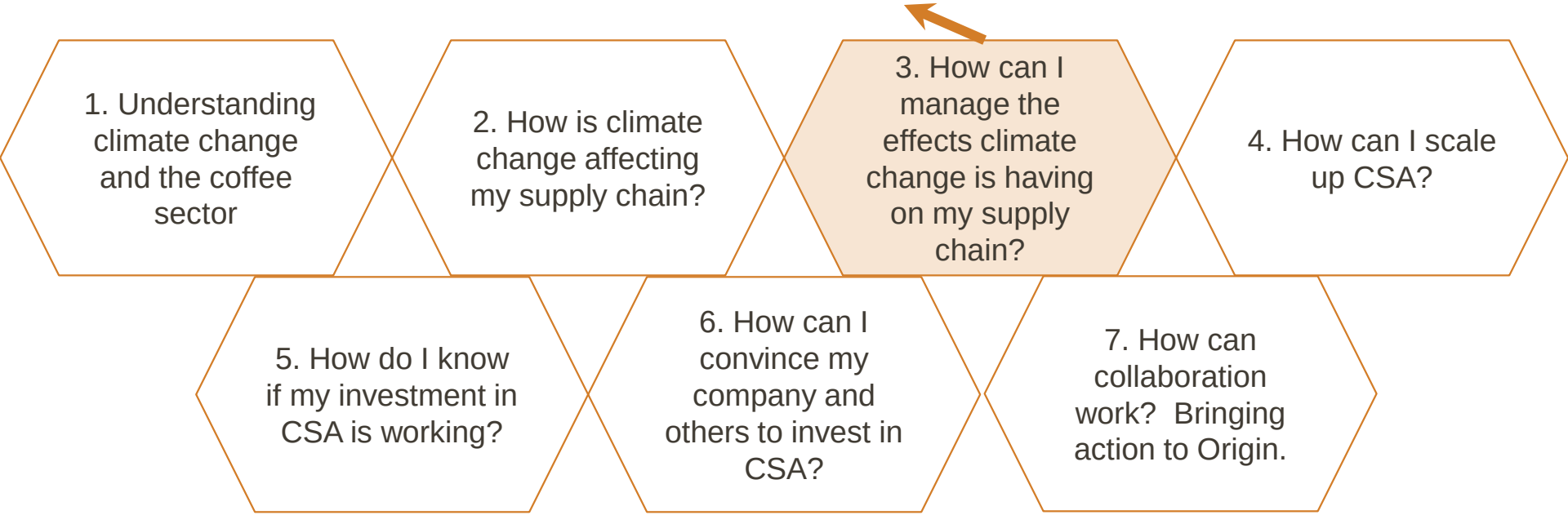
Danielle Knueppel
World Coffee Research

Katherine Selengia
Hanns R. Neumann Stiftung

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

WHERE WE'RE AT

Learn about the tools, training materials and research that support the implementation of climate smart agriculture at the farm level.



LEARNING OBJECTIVES

How can I manage the effects climate change is having on my supply chain?

- Understand the challenges in managing the effects of climate variability and climate change at the farm level.
- Understand research currently being conducted on CSA practices and strategies, including on resilient varieties
- Understand the c&c approach and toolbox, and how they can be used

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

CHALLENGES:

If climate is already affecting coffee, why isn't CSA more widely adopted?

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The U.S. Government's Global Hunger & Food Security Initiative

WHAT DOES CSA LOOK LIKE IN PRACTICE?

Practices

implemented on-farm to adapt to current climate variability (and to a lesser extent, prepare for climate change)

- Cover crops
- Shade management
- Distancing
- Trenches

Strategies

implemented on- and off-farm, within the producer organization, community or supply chain, that adapt to current & future climate

- Diversification
- Choosing resilient varieties
- Changing processing methods

Enablers

supported by actors on- and off-farm to establish the conditions needed to implement CSA strategies and to adopt CSA practices

- Financing
- Weather insurance
- Weather stations
- Innovations in payment terms to promote CSA

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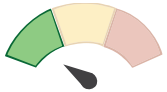
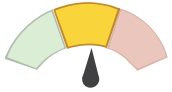
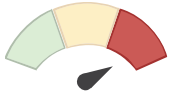
The U.S. Government's Global Hunger & Food Security Initiative

WHAT DOES CSA LOOK LIKE IN PRACTICE?







	Incremental Change	Systemic Change	Transformative Change
 *Practices*	Cover crops, fertilizers, etc	Irrigation, novel varieties, novel soil management, etc	Switch to Robusta or other crops, etc
 *Strategies*	Organic matter management within the farm, conservation of riparian areas, etc	On-farm diversification (e.g. new crops for subsistence or commercial use), different processing methods, etc	Moving away from coffee farming, or farming altogether, etc
 *Enablers*	CSA extension, weather stations for better forecasting, carbon insetting, incentives for process & quality, etc	Crop insurance (drought, hail), access to finance to support adaptation, carbon insetting, etc	Developing new value chains for new cash crop systems, etc

BUT WHICH PRACTICES, STRATEGIES, & ENABLERS?

- Cash flow
- Appetite for risk
- Reliance on coffee
- Access to:
  - Inputs
  - Equipment
  - Training
  - Weather data
  - Infrastructure
  - Financing

- Altitude
- Slope
- Shade
- Soil type
- Soil cover
- Pests & diseases
- Plant variety

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RESEARCH:

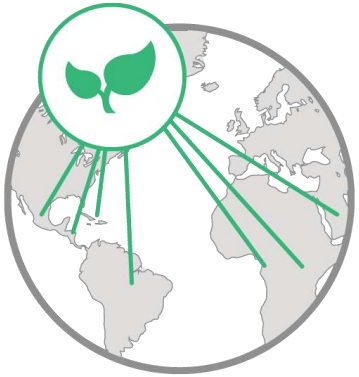
What do we already know about which CSA practices and strategies are working? What research is in progress?

WORLD COFFEE RESEARCH™

Demand is rising. Climate change is putting unprecedented pressure on farmers and the landscape—while globalization gives coffee farmers other opportunities for how to make a living.

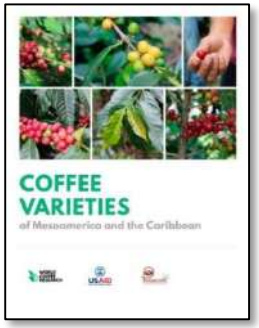
By 2050, need to double world production, but suitable land will decline by half.

Regional Breeding Hubs
F1 hybrids



Global network of trial sites

New standards



Decision tools

Using advances in agricultural science, it is possible to dramatically improve coffee yields, coffee quality, climate resilience, and farmer livelihoods.

For example, new F1 hybrid varieties have shown:

- Tolerant to diseases and pests
- 22-46% yield increases
- Capable of scoring 90+
- Climate resilient
- More profit per hectare

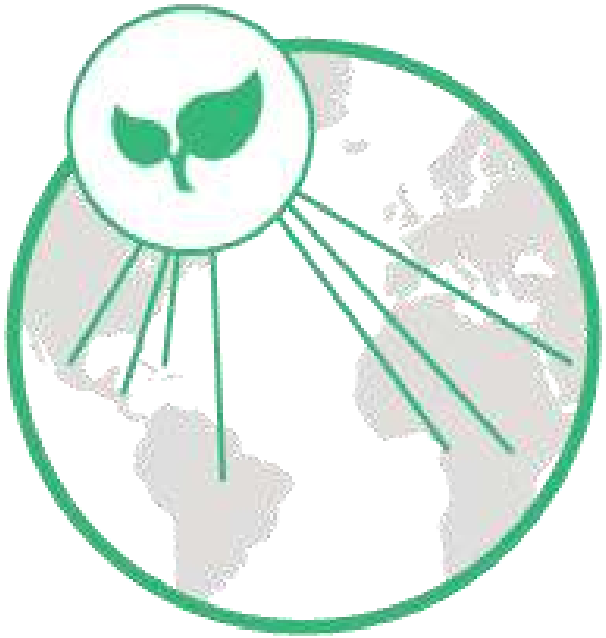
It’s not enough
To create new varieties

The best variety in the world doesn’t help the farmer…

- **if it’s not tested in local conditions**
- **if he or she doesn’t know about it**
- **if it isn’t a good plant**
- **if he or she isn’t convinced of its value, and can’t get a loan to renovate their farm**

IMLVT

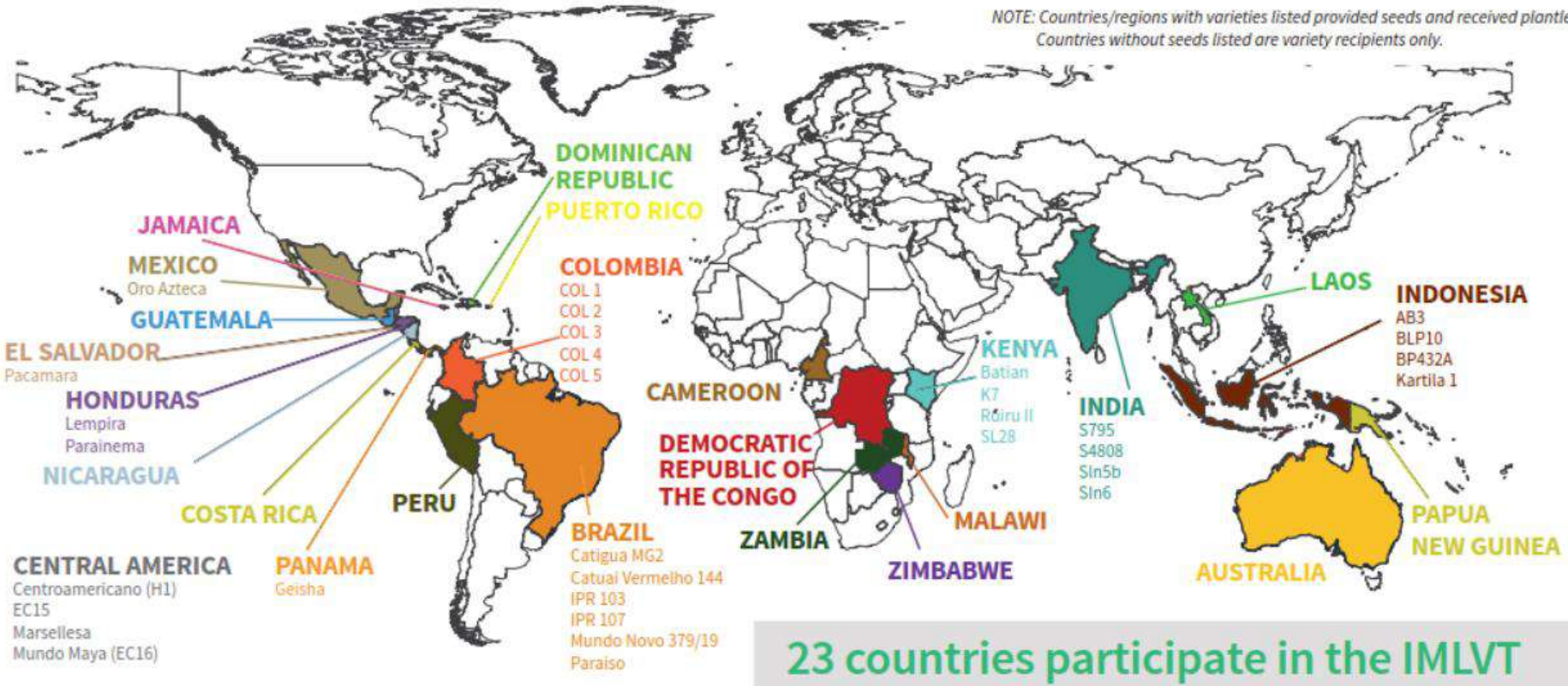
INTERNATIONAL
MULTI
LOCATION
VARIETY
TRIAL



The best variety in the world doesn't do a farmer any good **if it's not tested in local conditions**.

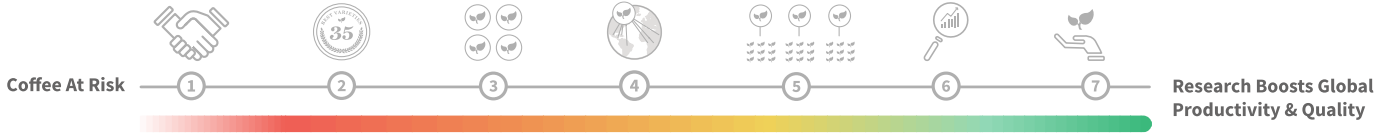
Winner of the 2016 SCA Sustainability Award

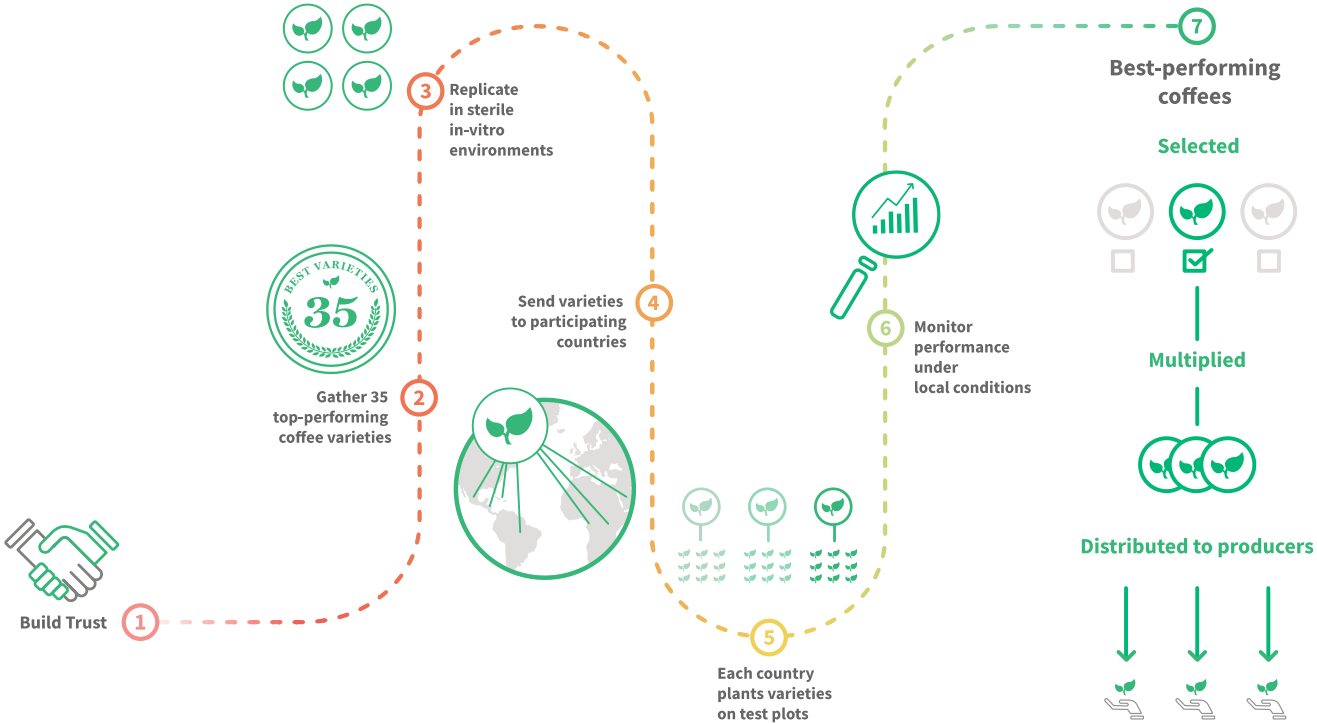
PARTNER COUNTRIES



23 countries participate in the IMLVT

IMLVT HOW IT WORKS





Major frost in Laos
6 February
2.1˚C at 7 am

Majority of plants severely damaged—“blackened”

BUT all F1 hybrids (H1, EC15, EC16) were undamaged

The best variety in the world doesn't do a farmer any good **if he or she doesn't know about it**.

First-ever global coffee variety catalog

Online, free, open-source
50,000 people reached in 9 countries

varieties.worldcoffeeresearch.org

CENTROAMERICANO *H1*

Very high yielding with very good quality potential. Well-adapted for agroforestry.

Appearance

STATURE
Dwarf/Compact

LEAF TIP COLOR
Green

BEAN SIZE
Large

Agronomics

OPTIMAL ALTITUDE
5°N to 5°S: >1000m
5–15°N and 5–15°S: >700m
>15°N and >15°S: >400m

QUALITY POTENTIAL AT HIGH ALTITUDE
Very Good

YIELD POTENTIAL
Very High

COFFEE LEAF RUST
Resistant

COFFEE BERRY DISEASE (CBD)
Tolerant

NEMATODES
Susceptible

YEAR OF FIRST PRODUCTION	Year Two
NUTRITION REQUIREMENT	Very High
RIPENING OF FRUIT	Average
CHERRY-TO-GREEN-BEAN OUTTURN	Very High
PLANTING DENSITY	3000–4000 (using single stem pruning)
ADDITIONAL AGRONOMIC INFORMATION	Requires careful nutrition for roots to become established, avoiding too much nitrogen (N). An important note about F1 hybrids: Seeds taken from hybrid plants *will not have the same characteristics as the parent plants*. This is called "segregation." It means that the child plant will not look or behave the same as the parent, with potential losses of yield, disease resistance, quality, or other agronomic performance traits. The variety should only be reproduced through clonal propagation and purchased from trusted nurseries.

Genetics

LINEAGE	T5296 x Rume Sudan
GENETIC DESCRIPTION	F1 Hybrid (Introgressed)

Availability

BREEDER	CIRAD-CATIE-ICAFE-IHCAFE-PROCAFE-ANACAFE
INTELLECTUAL PROPERTY RIGHTS	This plant is in the public domain in Costa Rica, El Salvador, Guatemala and Honduras; outside of these countries, permission should be requested from PROMECAFE.
This variety is available through the WCR Verified™ program.	

The best variety in the world doesn’t help the farmer **if it isn’t a good plant.**

We train and certify nurseries to ensure they are producing genetically pure and healthy plants.

WCR Verified

The first global standard to certify that coffee seed producers and plant nurseries are producing healthy and genetically pure plants.

Nursery Standards
The nursery follows best practices for raising healthy, disease-free plants.

Genetic Purity
The coffee variety has been identified using World Coffee Resources DNA fingerprinting so farmers can be certain they are buying the correct variety.

Education
The nursery makes information about the agronomic performance of different varieties available to farmers so they can make an informed choice.

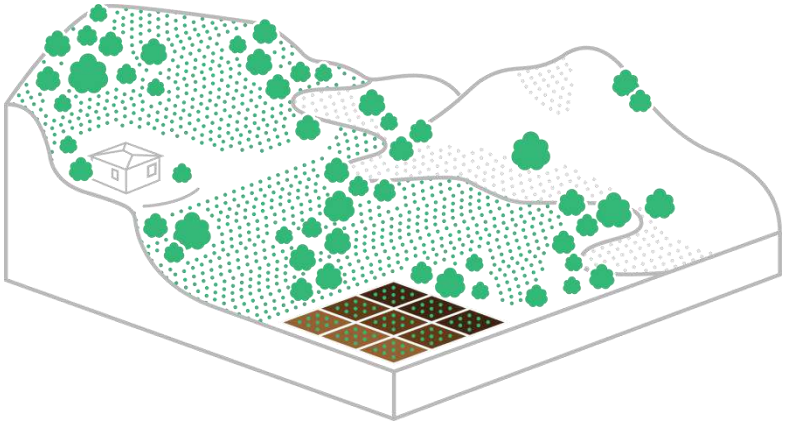
Breeder's Rights
The nursery gives credit to breeders and their rights are respected.

Absolutely. Farmers deserve to be able to trust that they are buying

- Plants that are healthy
- Plants that are genetically correct (the “true” variety)

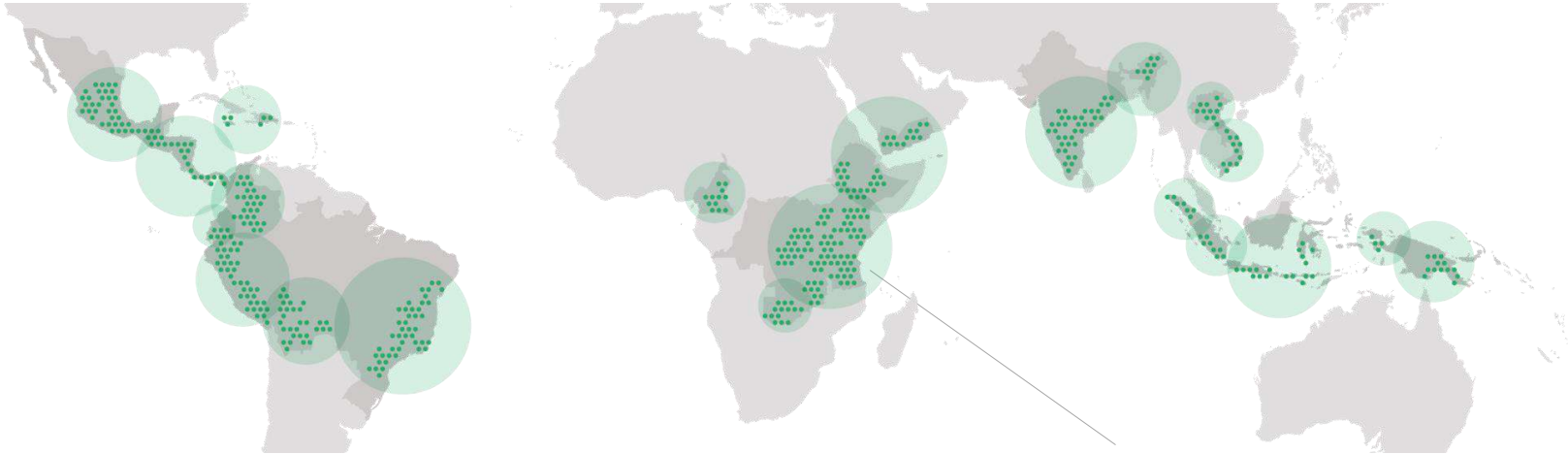
The best variety in the world doesn't help the farmer **if she or he isn't convinced of its value, and can't get a loan to renovate their farm.**

Global Coffee Monitoring Program

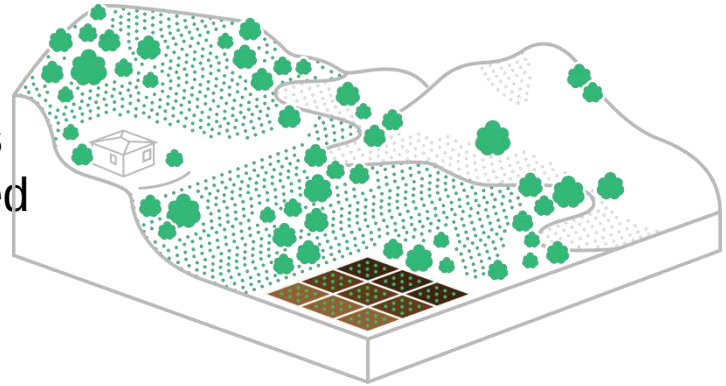


Test in farmer fields

The Global Coffee Monitoring Program (GCMP) is a network of hundreds of On-Farm Technology Trials (OFTTs)…



Each trial plot is located directly in farmer fields
Producers see and feel the impact of using improved varieties and agronomic practices.



Focus on varieties and realistic, profitable CLIMATE SMART practices

Farmer's most important assets:

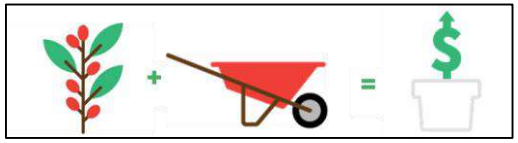
- plants
- soils

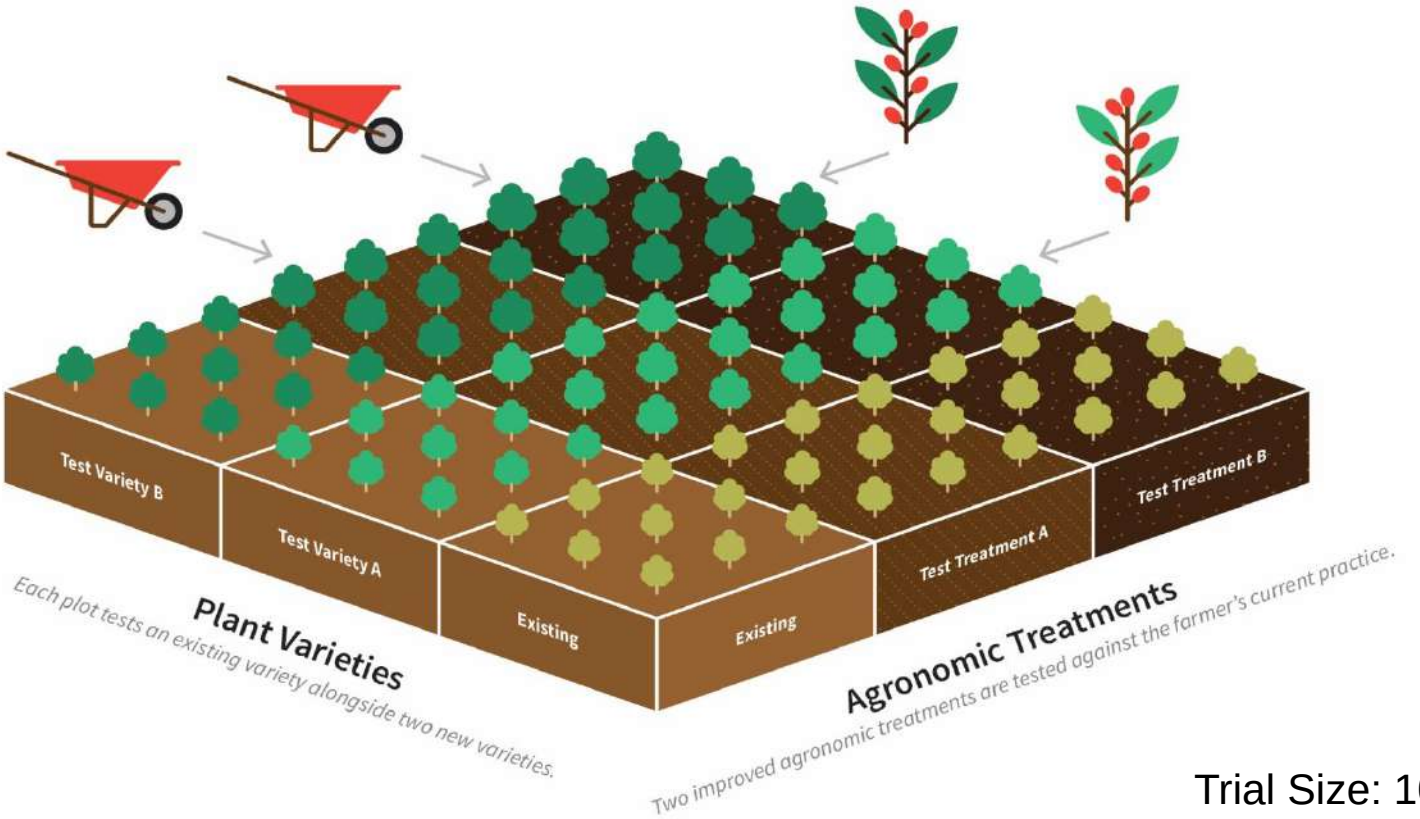
But often, varieties are **outdated** and soils are **depleted**. Sooner or later this leads to a downward production spiral.

- Consequence… coffee unattractive. Farmers eventually leave coffee farming altogether.

- **Adoption** of improved **varieties** and **agricultural practices** can substantively increase a **farm's profitability**, keeping farmers in coffee.

Design of an On-Farm Technology Trial





Trial Size: 1000m² -- 5000m²

Coffee Varieties for OFTTs

- Considerations -- altitude, yield, pest and disease tolerance, cup quality and availability
- *Control varieties*
  - typically or currently used in farms
- *Variety A (national varieties)*
  - selected from the most promising, best performing national varieties
- *Variety B (regional varieties)*
  - the best performing and most promising in the region (i.e., Batian in East Africa)

Examples of Climate Smart Agronomic Treatments

- Appropriate for the type of farm
- address limitations
- Farmers are interested in testing
- Farmers would continue after the trial

Training and Communication with Partner Agronomists

* WhatsApp Groups to communicate, ask and share

Standardized Data Collection

- Basic farm characteristics
- GPS location
- Socioeconomic data
- Soil analysis and pH
- Daily Temperature and Rainfall

- Field Operations (labor, inputs, costs)
- Early vegetative growth
- Pest and disease
- Yield (output)
- Bean and Cup quality




Estimated number of new Arabica OFTTs per Country and Year

- Robusta OFTTs starting in 2020

	2016	2017	2018	2019	2020	2021	2022	2023	Total
El Salvador	3	3	14	10					30
Guatemala		7	15	10	10				42
Costa Rica		3	13	5					21
Nicaragua		5	19	15	15	10			64
Honduras			20	15	15	10			60
Panama			10						10
Mexico			5	15	20	20			60
Jamaica			3	7					10
Puerto Rico			8	8	8				24
Dominican Republic					10				10
Peru			14	15	20	15			64
Colombia				10	10	10			30
Brazil				10	10	10	10		40
Rwanda			25	15	15	10			65
Uganda			19	20	15	15			69
DRC			15	15	15	15			60
Burundi					10	10	10		30
Kenya				10	10	10			30
Ethiopia				20	20	20	20		80
Zambia				6					6
Malawi				5	5	5	5		20
Zimbabwe					10	10			20
India				10	15	15	15		55
Indonesia				10	15	15	20		60
Laos					5	10	5		20
China					20	20	20	20	80
Philippines				15	15	10	10		50
Vietnam				5	15	20	20	15	75

Benefits of Participating and Outcomes

Lifting Profitability

Through rigorous monitoring of costs, labor inputs, and yield and price increases for farmers according to different farming systems, the trial will provide unparalleled data for improving farm profitability and helping farmers secure small loans.

Monitoring Platform

The trial will serve as a global monitoring platform to track the impact of climate change on the quality and production of coffee as well as the movement of diseases and pests around the world.

Smarter Farming

This network of hundreds of scientifically designed plots will result in significant advances in knowledge about coffee variety performance, soil treatments, and farming practices.

Global Benefit

For the coffee industry as a whole, the trial will accelerate the adoption of new varieties that are high quality, disease resistant, and higher yielding and will enable investment in large-scale renovation projects. This will provide an overall boost to the global supply of high quality coffee.


WORLD COFFEE RESEARCH™

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SOLUTIONS:

What tools can we use to design and implement a CSA at the farm level?
How can you select the CSA practices, strategies and enablers appropriate for your context?

The initiative for coffee&climate

Launched in 2010 in 4 key producing regions

>35,000 producers reached

>400 extensionists trained

We've been working to…

Understand which practices and strategies work in which contexts. **(c&c case studies)**

Share that information publicly. **(c&c toolbox)**

Help producers and producer organizations to select appropriate practices and strategies and implement. **(c&c approach)**

coffee&climate toolbox

get the c&c sourcebook

home | find a tool | see the evidence | submit a tool | english | español | português | tiếng việt

welcome to the c&c toolbox

In response to the needs of coffee farmers, the c&c toolbox was developed as an open online platform to effectively tackle climate change. The c&c toolbox is a compilation of tools, climate maps, case studies, guidelines and further training materials that equip farmers and farming communities with valuable information. It provides a platform to exchange knowledge on known and innovative adaptation practices which we develop alongside some of the world's leading climate experts and bridge the gap between science and farmer know-how.

discover the c&c toolbox and start taking action now.

search the c&c toolbox

FIND

latest tools and case studies

tool

On-Farm Climate Monitoring

Measuring and recording the air and soil temperature on your farm has become much cheaper, allowing plot level temperature and humidity to be measured, logged [...]

▸ case studies ▸ pictures
▸ further information

case study

Case Study – Rainwater Harvesting – Tanzania

Case Study - Rainwater Harvesting - Tanzania | pdf | 681.51 KB

tool

Monitoring Devices

Because of climate change and increasingly extreme weather events (especially during El Niño) the need to quantify what happens in coffee plots becomes ever more [...]

▸ pictures ▸ further information

title newest

filter by

Cover Crops

Cover crops refer to a wide ra... sown to cover bare ground –

more systematic change – e.g. switch to Robusta, other crops including annuals, horticulture

▸ case studies ▸ pictures

last updated on Oct. 30th, 2017

Gypsum Application to Soil

With certain types of soil, such as those found in the Cerrado region of Brazil, application of large quantities of gypsum (calcium sulfate) to the [...][...] read more ...

▸ pictures

last updated on Oct. 22nd, 2017

Use of Mycorrhizae in Seedlings and Nursery

Adding mycorrhizae to the soil of seedlings in polybags for both coffee and shade trees can improve root nutrition, because mycorrhizal fungi feeds on the [...][...] read more ...

▸ case studies ▸ pictures

last updated on Oct. 22nd, 2017

Biochar

Biochar is another name for charcoal, produced by heating wood or other vegetable-based materials in an oxygen-restricted chamber. The fine carbon skeleton left after this [Erh[...] read more ...

▸ pictures

last updated on Oct. 13th, 2017

Climatic Zoning

For planning purposes it is useful to determine which coffee lands can be categorized as optimal, sub-optimal or unsuitable and how these have been changing [...][...] read more ...

▸ pictures

last updated on Oct. 13th, 2017

1 2 3 4

topics

- adapt / diversity
- carbon sequestration
- decision
- diagnostics
- implementation
- management practices
- post harvest
- rehabilitation
- risk analysis

» show all topics

climate hazards

- air humidity
- drought
- hail
- rain
- temperature
- winds and cloudiness

» show all climate hazards

countries

content types

- booklet / brochure
- case studies
- info sheet

Case Studies: measurement indicators & equipment

Stress
Temperature
Relative humidity
Lightness
Vegetative growth
Erosion

Root development: width and length
Temperature of the soil
Soil humidity & fertility
Mortality


60 cm
140 cm

Case Study 1:
Practice in C. America

Demoplot Location: Sensentí, Ocotepeque, Honduras

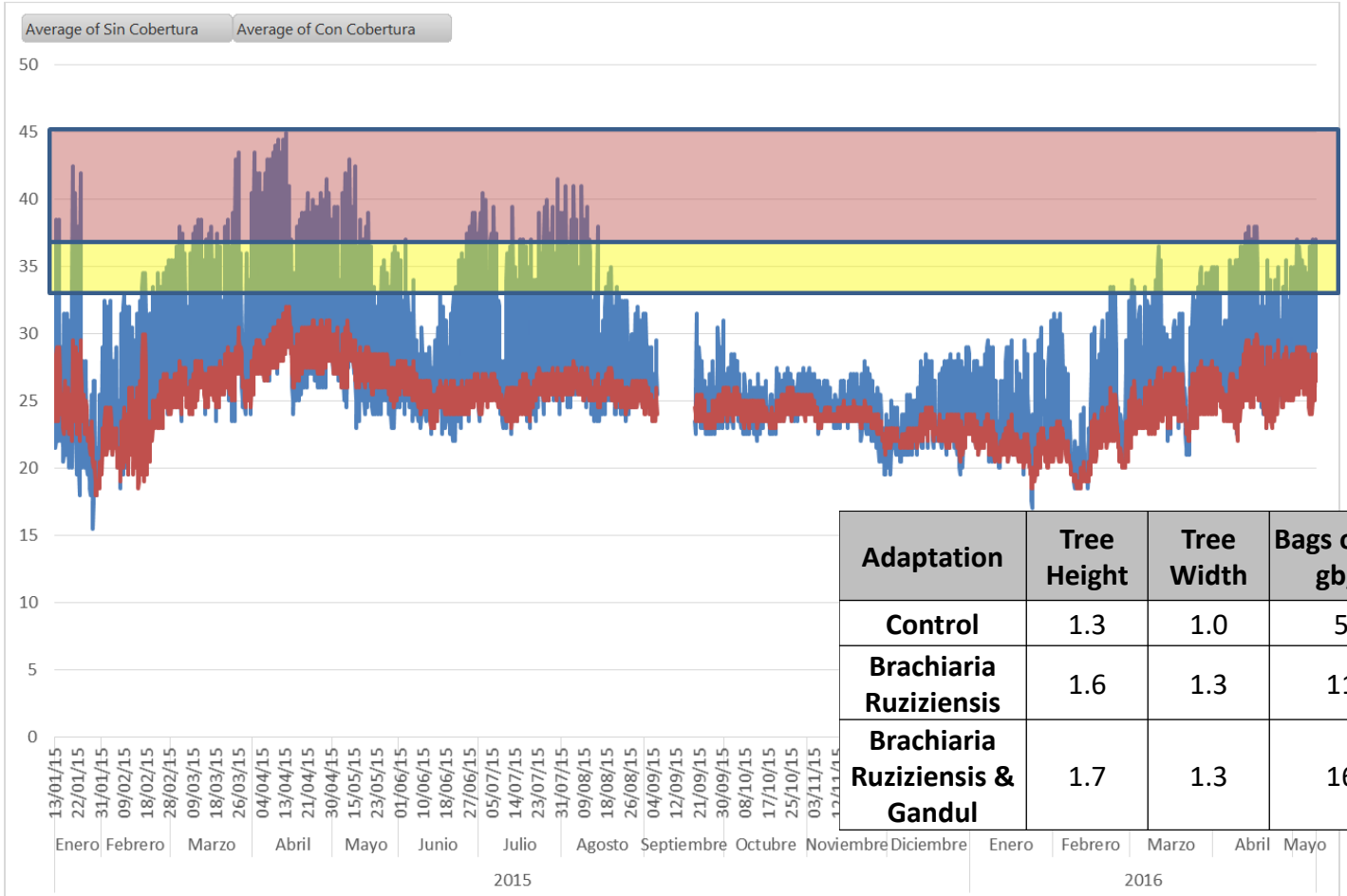
Altitude (m.a.s.l.): 900

Age of the plant: 4 years (est. Sept 2012)

Climate hazard: High temperature and drought

Impacts: Poor root and foliage development, poor fruit filling, flower abortion, dead plants

CSA practices:
- Cover crop (Brachiaria)
- Temporary shade (Gandul)



Adaptation	Tree Height	Tree Width	Bags of 60kg gb/ha	Quality	Income USD
Control	1.3	1.0	5.4	Estándar/78	704
Brachiaria Ruziziensis	1.6	1.3	11.0	Estándar/79	1,430
Brachiaria Ruziziensis & Gandul	1.7	1.3	16.5	HB (Duro)/80	2,295

Case Study 2: Practice in Vietnam

Water-saving irrigation technique in the Central Highlands

No cost to implement, saves $$ on water and fuel

Trialed with 17 farmers and 3 agronomists, scaled with 900+ farmers

All farmers reduced water use by 30%

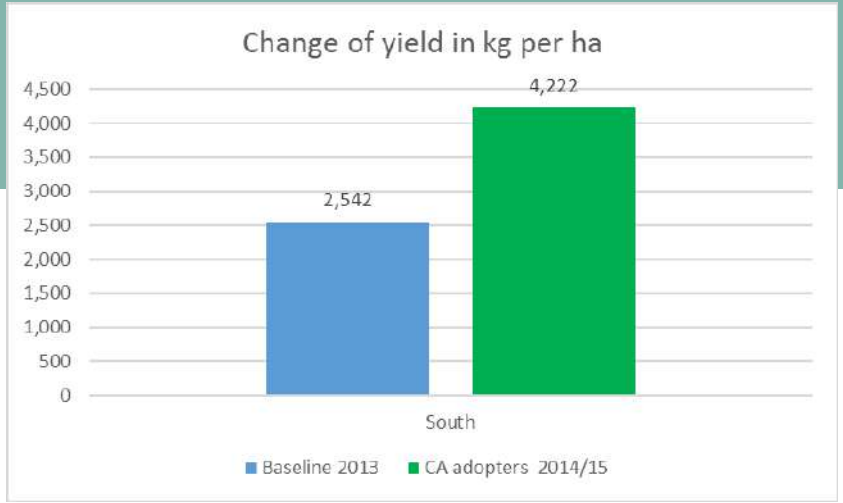
Case Study 3: Strategy in Tanzania

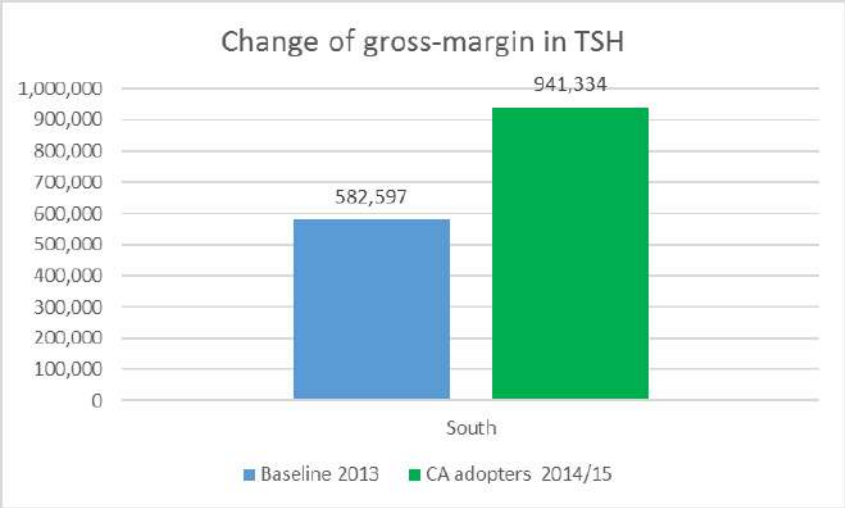
Conservation agriculture on maize production within coffee farming systems in Mbeya

Trialed with 200 farmers

Results:

- Maintained soil structure by preventing erosion
- Increased yields 25%-100% in first season
- Diversified farmer income, reducing risk of crop failure & ensuring food security
- Spillover of soil conservation practices from coffee e.g. mulching
- Reduced loss of top-soil leads to a long-term perspective for cultivation





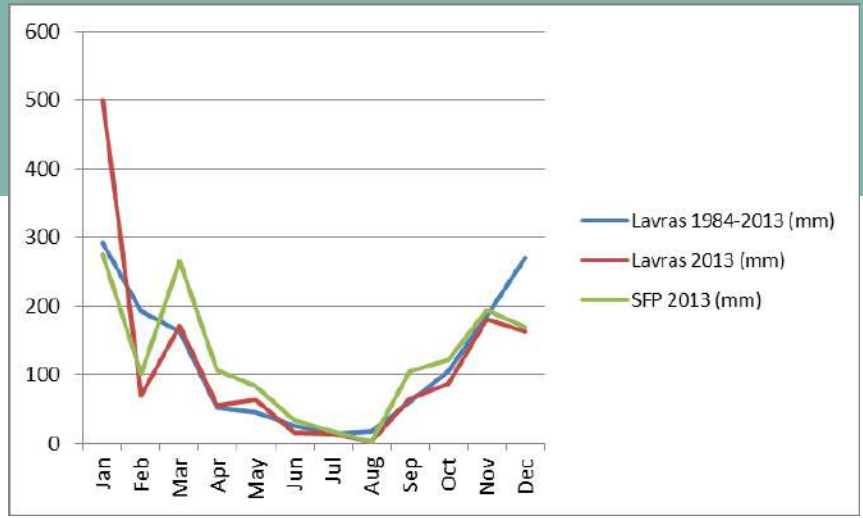
Case Study 4: Enabler in Brazil

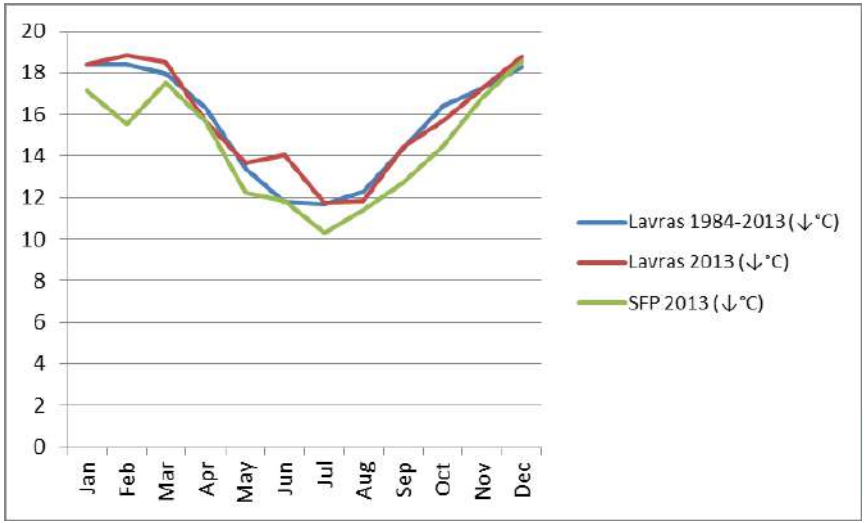
Weather data collection in 4 communities of Sao Francisco de Paula

4 producers measure daily rainfall & temperature (max. and min.) + weather datasheets (collected monthly and entered into database by technicians).

Results:

- Improved knowledge of local climate & effects on the coffee system
- Development of community-based weather experts
- Technicians compare local data collected with historical weather station data





How do we develop a climate adaptation plan?

Increase in adverse climatic events

- storms
- irregular rainfall
- increasing temperature range
- drought
- high temperatures
- high winds

Impact on coffee production

- more pests, disease and weeds
- post-harvest risks
- soil erosion
- irregular flowering

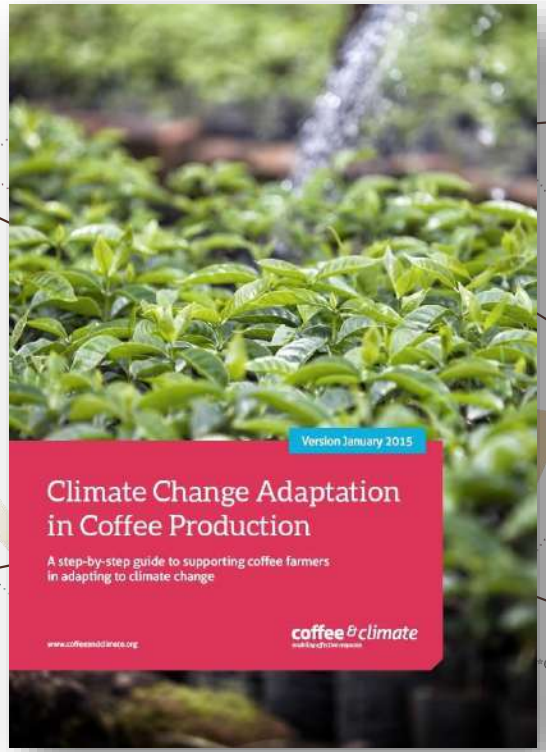
Coffee Suitability

- 45% of area potentially suitable under current conditions may become unsuitable even with adaptation
- 20% will require substantial adaptation to improve resilience
- 35% will only require incremental adaptation to improve resilience

The c&c approach

- Cost/benefit analysis
- Measurement of adaptive capacity, resilience
- Participatory evaluation
- Case studies

- Farmer Field Schools
- On-farm trials (incl OFTTs)
- Demonstration plots
- Data collection

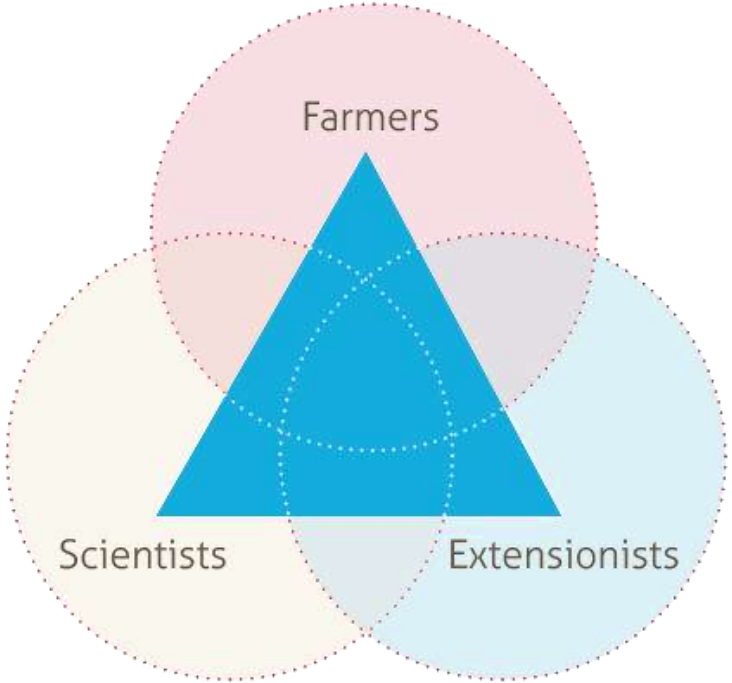


- Intro to CC
- CIAT climate maps & country reports
- c&c toolbox

Triangulation:
- Farmer diagnostic
- Focus group discussions
- Climate witness workshops
- Scientific information

- Collection of adaptation options
- Framework for prioritization
- Plan for implementation
- Development of indicators

Triangulation of risk assessments



Adaptation planning

Acceptability

How open are producers to applying this practice or strategy?

Affordability

Can the producer afford to apply this practice or strategy? Is there financing available?

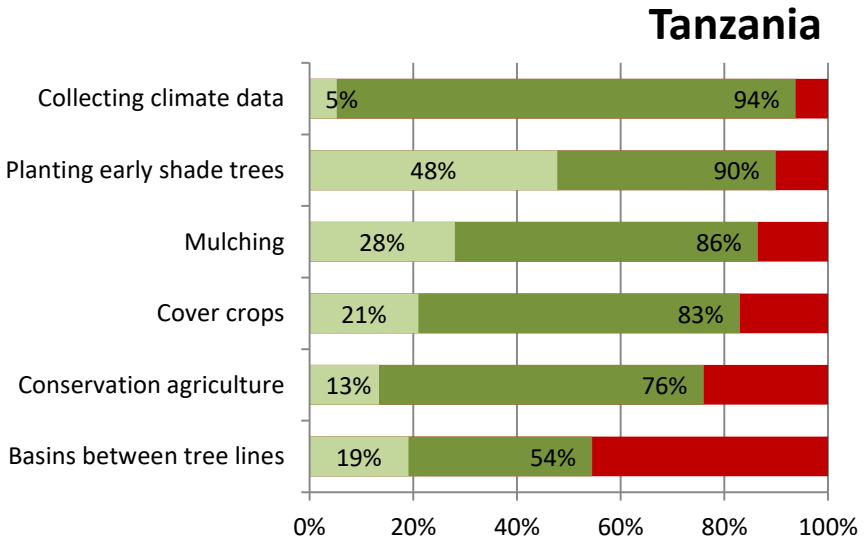
Timing

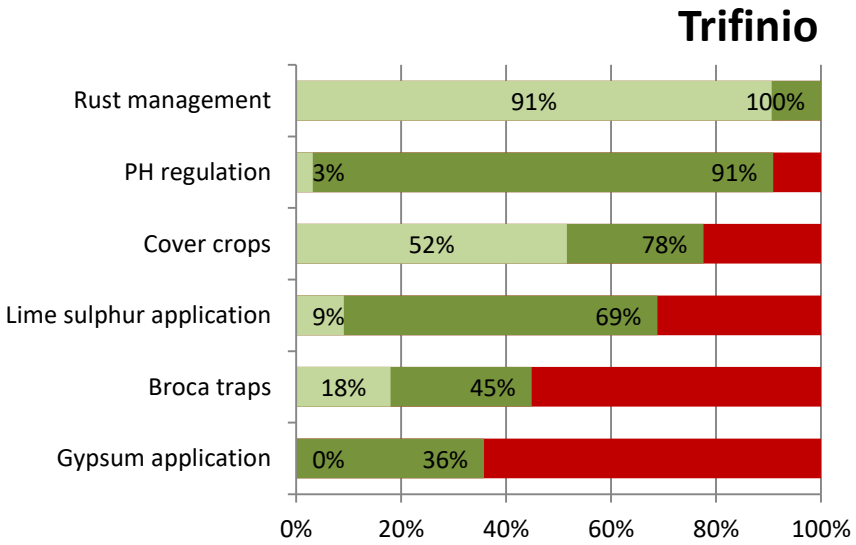
How long will this practice or strategy take to yield results?

Urgency

How urgent is the climate threat to which this practice or strategy responds?

Adoption rates after 2 years





Source: Farmer field book data 2013 and 2014

Building extensionists' capacity

Launch workshop

We lead a workshop for your extension team, introducing the c&c approach, establishing expectations and deliverables

1 week

Step 1: Setting the Scene

We lead data collection, with support from your team

~1 month (not including development of country climate risk profile)

Step 2: Assessment of climate challenges

We lead field meetings with producers and technicians, with support from your team

~2 months

Step 3: Adaptation planning

We develop adaptation plans with your team and producers

~1 month

Step 4: Adaptation Implementation

Your team leads farmer field schools, demo-plot exchanges and data collection, with backstopping from us

~2 years

Step 5: Lessons learned

We lead assessment and development of case studies, with support from your team and producers

Annually

Why consider this approach within your supply chain?

Proof of concept: Evidence-based results (case studies, demo and validation plots)

Scaleable model: ToT curriculum, workshop formats, can integrate with existing extension message

Open source: Knowledge hub and regional knowledge management mean you continue to benefit from latest findings

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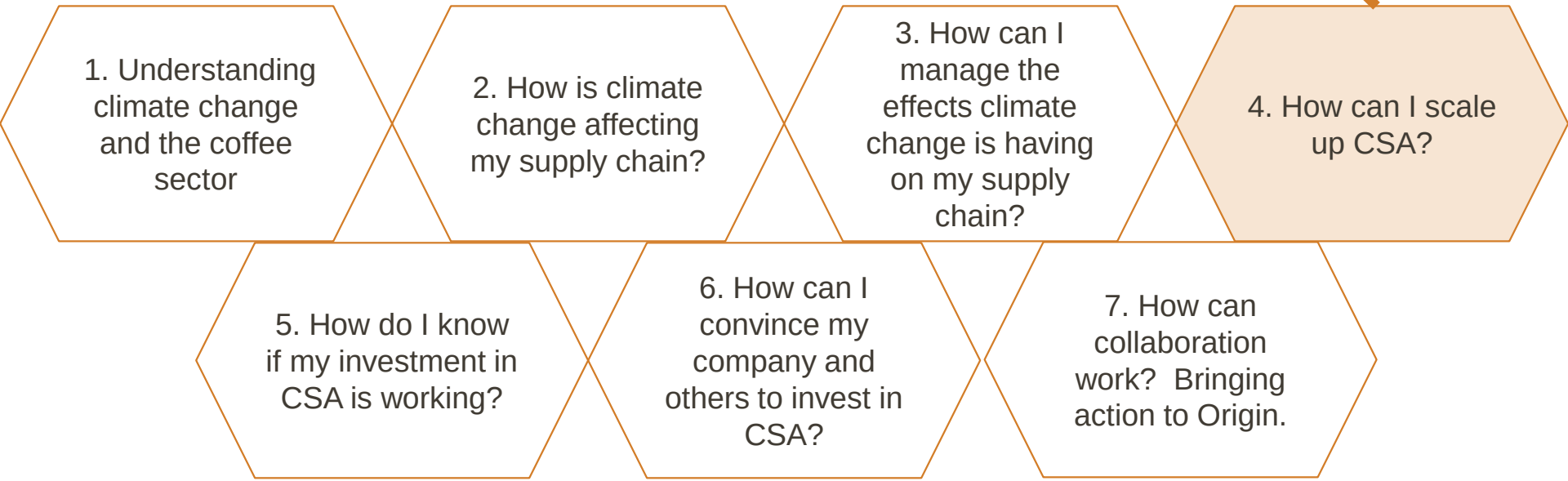
The U.S. Government's Global Hunger & Food Security Initiative

WHERE WE'RE HEADED

Learn about innovative ways to "de-risk" CSA for the farmer and the private sector, and the potential for financing approaches to CSA.



RESOURCES

- Coffee&climate toolbox, with Sourcebook and case studies: toolbox.coffeeandclimate.org
- WCR Website: worldcoffeeresearch.org
  Interactive Variety Catalog: varieties.worldcoffeeresearch.org
- Paper on Agro-ecological Zones for Arabica Coffee: https://worldcoffeeresearch.org/work/agro-ecological-zones-arabica-coffee/
- Global Coffee Conservation Strategy: https://worldcoffeeresearch.org/work/global-coffee-strategy/

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Q & A

Contact Details

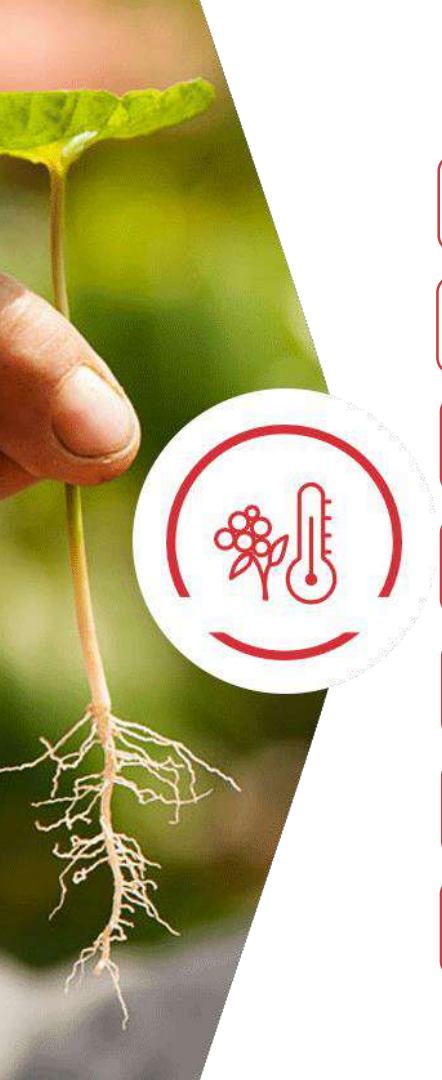
GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Danielle Knueppel

World Coffee Research
danielle@worldcoffeeresearch.org

Katherine Selengia

Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org



Next Modules

Duration: 75 minutes per module
Time: 3pm CEST | 9am EDT | 6am PDT

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5	September 27th	How do I know my investment in CSA is working?	Monitoring
6	October 25th	How can I convince my company and others to invest in CSA?	Business Case
7	November 8th December 6th	How can collaboration work? Bringing action to origin!	Collaboration

Link to CSA Learning Series

Particpants in Module 3

Alexandre Dutheil	
Ana Carsalade	
Andreas Kirk	ØNSK
ASELE BENJAMIN	KAWACoM UGNADA LIMITED
CAROLINA JARAMILLO GIRALDO	Empresa de Pesquisa AgropecuÃ¡ria de Minas Gerais (Epamig-Sudeste)
Chris Davidson	Atlas Coffee Importers
Dorien Van Dun	EFICO NV
Jan von Enden	HRNS North America
Katharina Plassmann	Yara International ASA
Katrien Delaet	EFICO
Kim Elena Ionescu	Specialty Coffee Association
Lars Wehmeier	Niehoffs Kaffeerösterei HmbH

Lydia Namutebi	Kawacom Uganda Limited
Marcus Laws	NCBA CLUSA
Napoleon Molina	Rikolto
Nicole Gobeth	Solidaridad
Pablo Ruiz	HRNS
Pauline Vaskou	Tesco PLC
Pedro Gonzalez	FNC
Peter Baker	Climate Edge
Philip von der Goltz	List + Beisler GmbH
Reena Eddiks	Volcafe
Susan Macdonald	Global Bright Futures
Tessa Meulensteen	IDH
Tharic Galuchi	Imaflora
Thomas Delbar	Supremo
cmahugu	Founder

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for a sustainable coffee world

CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Katherine Selengia
Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org

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Understand, Design, Act: Climate-proof your supply chain

Module 4:
How can I scale up climate smart agriculture?

19. July 2018

Module 4: How can I scale up Climate Smart Agriculture?

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Elizabeth Teague

Senior Social & Environmental Performance Manager

Root Capital

Laurence Jassogne

Systems Agronomist

International Institute of Tropical Agriculture (IITA)

Moderators

Caroline Glowka
Global Coffee Platform

Katherine Selengia
Hanns R. Neumann Stiftung

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for a sustainable coffee world

Let's discuss today

- Challenges of scaling climate smart agriculture
- Solutions
- Questions and Answers

By using ZOOM

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1. Click on "Raise Hand" button

If you want to **comment** or ask **questions**

2. Use the Q&A box

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To avoid undesired **background noises**. But you can always ask to speak!

4. Remember

● REC

This session is being recorded for archive purposes

Path to Collective Action

- Introduction
- Risk Profiles
- Tools
- Scale
- Monitoring
- Business Case
- Collaboration

+ Climate Catalogue as resource

Building Common Ground

- Understand
- Design
- Act

Collective action at origin!

Honduras

Uganda

Opportunities in Honduras and Uganda

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Honduras

Platform Agenda

Contribute to National Coffee Platform's agenda

Multi-stakeholder collaboration

Progress will be measured

Learnings & results will be shared with the sector

Uganda

Climate Change Working Group

Opportunities in Honduras and Uganda

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Honduras

Platform Agenda

Short survey

July

Call with interested stakeholders

September

Country workshops

October

Turn committment into action

November

Uganda

Climate Change Working Group

The Experts

Bambi Semroc

Conservation International

Caroline Glowka

Global Coffee Platform

George Watene

Global Coffee Platform

Daniele Giovannucci

Committee on Sustainability Assessment (COSA)

Danielle Knueppel

World Coffee Research

Kate Selengia

Hanns R. Neumann Stiftung

Mark Lundy

International Centre for Tropical Agriculture (CIAT)

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Elizabeth Teague

Root Capital

Elena Serfilippi

Committee on Sustainability Assessment (COSA)

Kealy Sloan

Sustainable Food Lab

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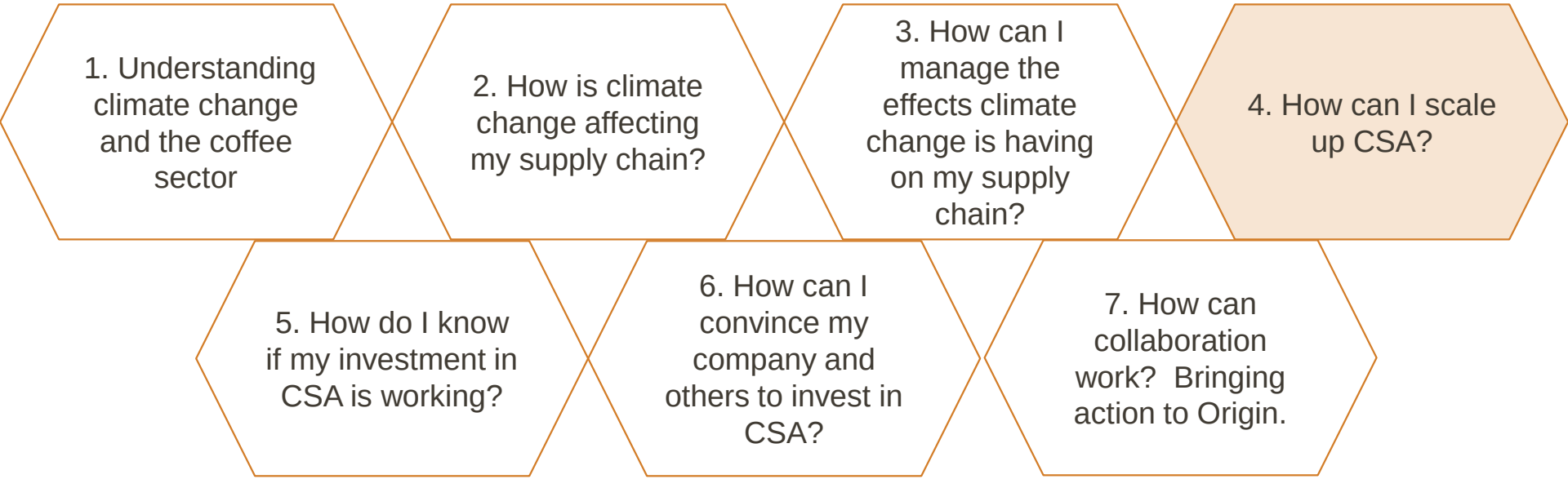
WHERE WE'RE AT

Learn about the tools, training materials and research that support the implementation of climate smart agriculture at the farm level.



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CHALLENGES:

If climate is already affecting coffee, why isn't climate-smart agriculture more widely adopted?

How can I help scale climate-smart agriculture within my supply chain?

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LEARNING OBJECTIVES

How can I scale up climate-smart agriculture, particularly at the base of my supply chain?

- Understand challenges in achieving scaled adoption of climate-smart agriculture, particularly at the farm level

- Learn about a training strategy ("stepwise investment pathways") to promote higher adoption of climate-smart practices among smallholder farmers

- Learn about pathways to finance adoption of climate-smart practices, with a focus on finance to/from local businesses purchasing coffee from smallholder farmers

KEY THEMES

How can I scale up climate-smart agriculture, particularly at the base of my supply chain?

- Go small before you go big.
- Consider multiple scaling pathways.
- Look for opportunities to leverage existing technical assistance and finance pathways to achieve scale.

Levels of intervention
Plant
Plot
Farm/household
Community/landscape
Markets
Institutions
Policy

Practices: GAPs, irrigation

Strategies: diversification

Enablers: insurance, microfinance

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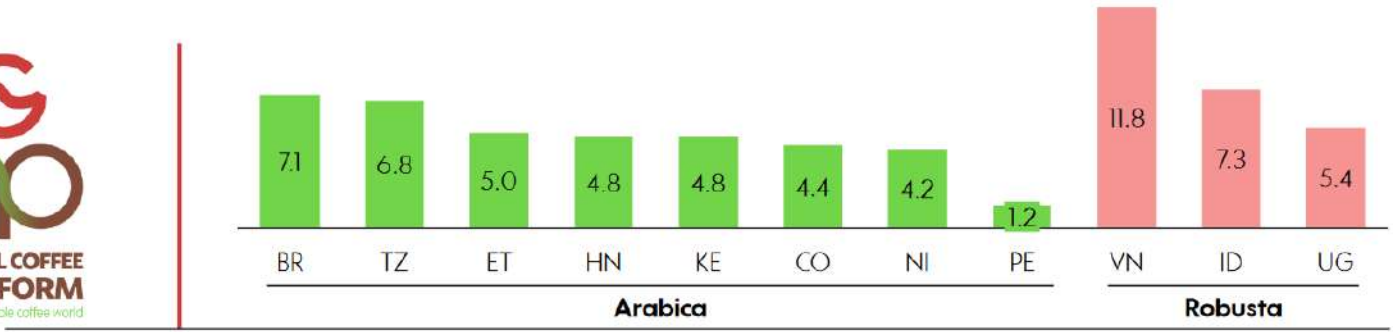
CURRENT COFFEE NET INCOME PER HECTARE

Current farmer net income per ha from coffee (Hundreds US$ / ha)



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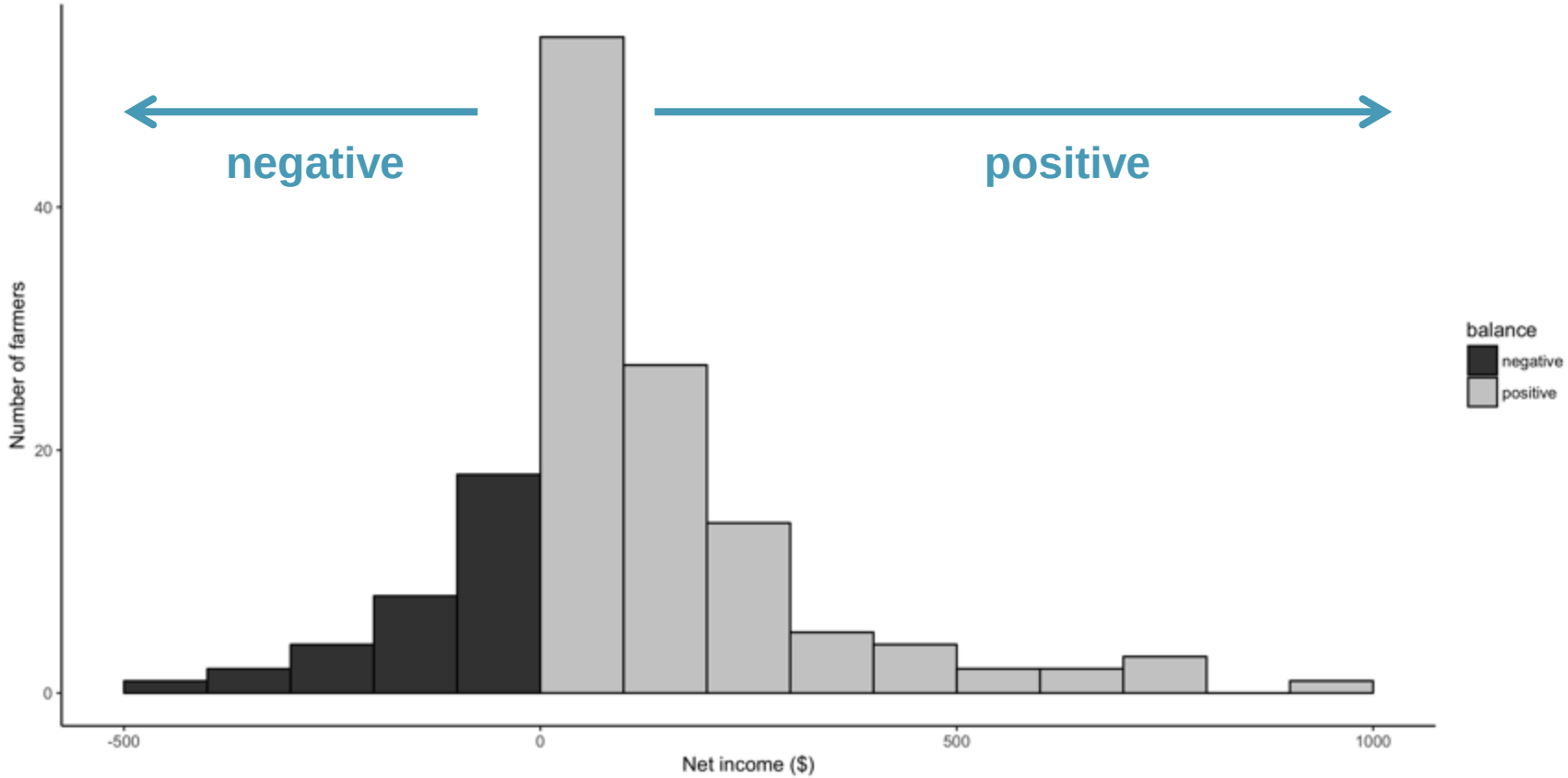
# of farmers in selected farmer type	129k	220k	2000k	96k	571k	235k	42k	132k	573k	507k	1161k

- Relatively high yields and low costs make coffee more profitable in countries such as Brazil and Vietnam, despite lower prices
- Overall, the number of farmers in Brazil and high yields make it the leader in coffee production, though farming is less profitable for farmers (Arabica, <10ha, un-mechanized, in Minas Gerais)
- Farmers may struggle with rising production costs. For example, in Colombia, despite high yields and prices, profitability is lower due to high costs


negative
positive
Number of farmers
40
20
0
-500
0
500
1000
Net income ($)
balance
negative
positive

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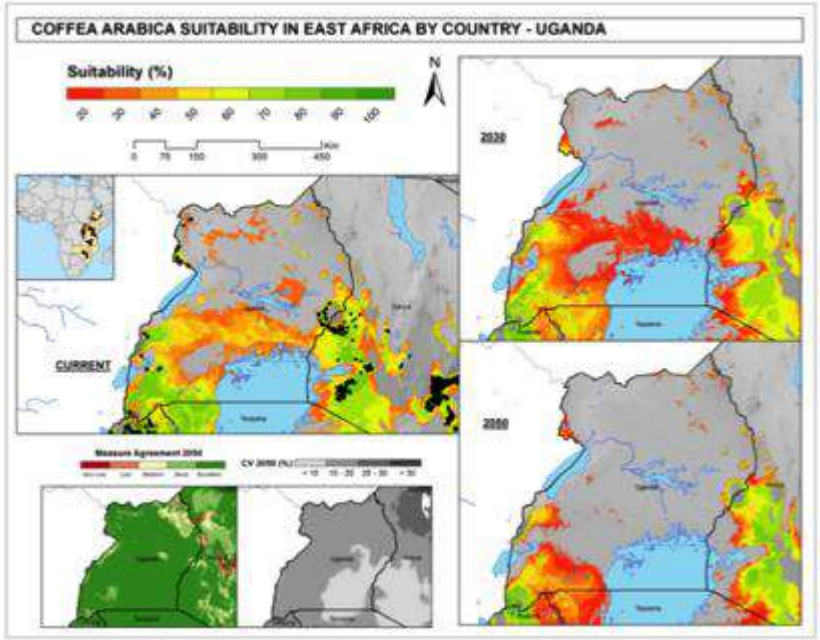
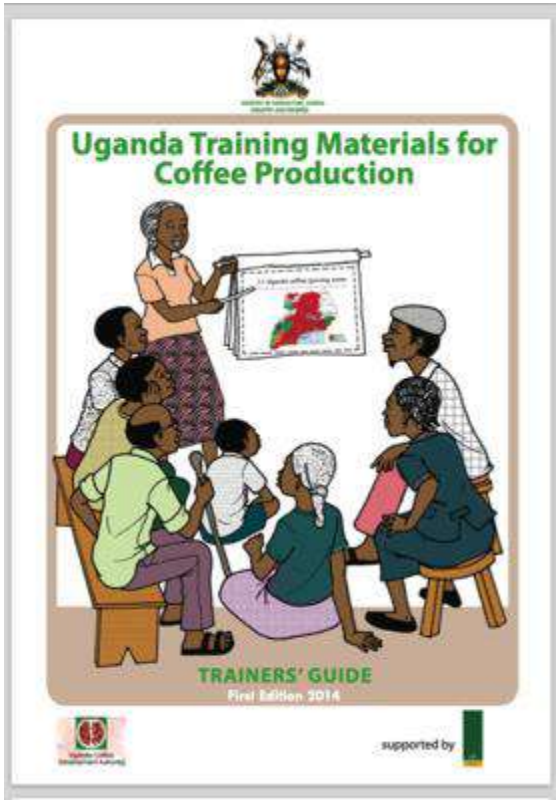
Changes expected by 2050



How am I going to pay the next school fees???

Stepwise



Although farmers are often trained in best practice, they cannot afford best practice

There is a lot of "mal-investments"

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Stepwise pathways are:

- Developed participatory, using expert knowledge
- Site specific
- Tested in the field using trials
- Include cost x benefit analysis


Step 1
Mechanical weeding
Phased stumping
Pruning
De-suckering
De-capping
Shade tree planting
Phased construction of water harvesting structures
Intercropping with legumes
Intercropping with bananas
Manure
Step 2
Step 1+
De silting trenches
Planting grass along trenches
Gap filling
Cultural pest and disease control
Mulching
Step3
Step 1 + Step 2 +
Planting soil conservation structures (hedge rows)
Coffee tree training-used in gap filling & the stumped ones
Managing hedge rows
Step 4
Step 1 + Step 2 + Step 3 +
Chemical pest and disease control
Inorganic fertilizer (basal and foliar)
Irrigation (drip, micro basins, water harvesting ditch)
0.2-0.5
0.3 - 1
1.5
2
Expected yield (FAQ/tree/year)

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We already see big differences in trials

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Learning sites

Stepwise

ANGLE COFFEE PRODUCERS
Co-operative Union

In partnership with

Hanns R. Neumann Stiftung

Olam

Kawacom
UGANDA LIMITED

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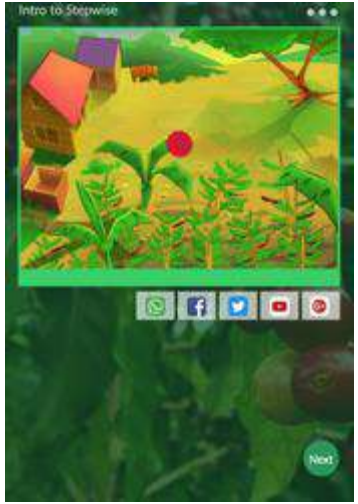
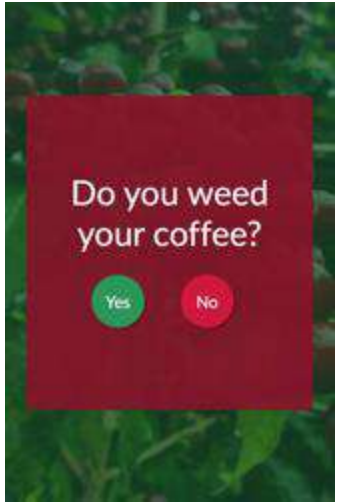
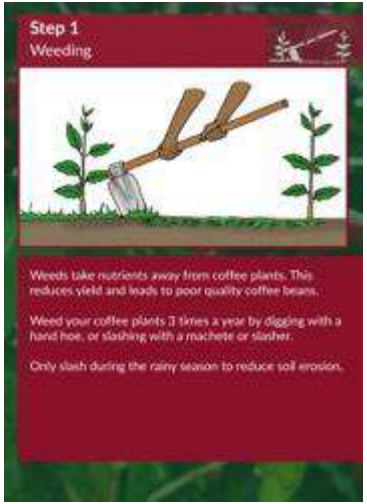
Stepwise







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How do we finance scaled climate-smart agriculture?


root capital

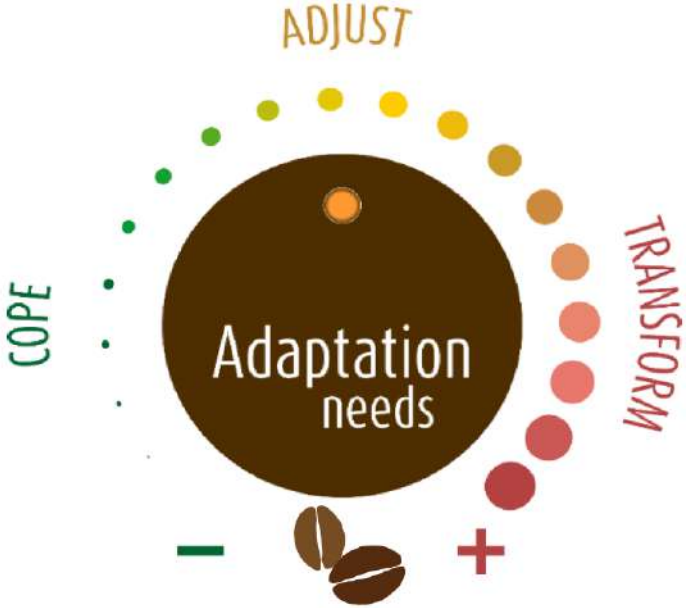
Different climate-smart investments will require different types of capital.

Financial risk and cost to serve

Incremental adaptation where climate is most likely to remain suitable and adaption will be achieved by a change of practices and ideally improved strategies and enablers

Systemic adaptation where climate is most likely to remain suitable but with substantial stress through comprehensive change of practices accompanied by changes of strategy and adequate enablers

Transformational adaptation where climate is likely to make coffee production unfeasible, will require a focus on strategic change and adequate enablers as practices alone may be uneconomical



Small-to-medium-sized enterprises can be a vehicle for funding climate-smart agriculture at scale.

- **Enterprises → farmers**
  - Non-cash investments (goods and services)
  - Microcredit
- **Financial institutions → enterprises**
- **Buyers → enterprises**

Scaling climate-smart agriculture through enterprise investments in farmers: Technical assistance

Hanns R. Neumann Stiftung

coffee & climate
enabling effective response

root capital

Scaling climate-smart agriculture through enterprise investments in farmers: Technical assistance

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coffee & climate
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root capital

Demonstration plots to show the value of specific climate-smart practices, like:

- Cover cropping
- Mulching

Scaling climate-smart agriculture through enterprise investments in farmers: Inputs

Scaling climate-smart agriculture through enterprise investments in farmers: Microcredit for renovation and rehabilitation

For details, refer to:

[“Renovation & Rehabilitation for Resilience Coffee Farms: A Guidebook for Roasters, Traders, and Supply Chain Partners”]

Scaling climate-smart agriculture through credit for enterprises: Loans for climate-smart equipment or infrastructure

Scaling climate-smart agriculture through investments in enterprises: Pricing incentives from buyers

KEY THEMES

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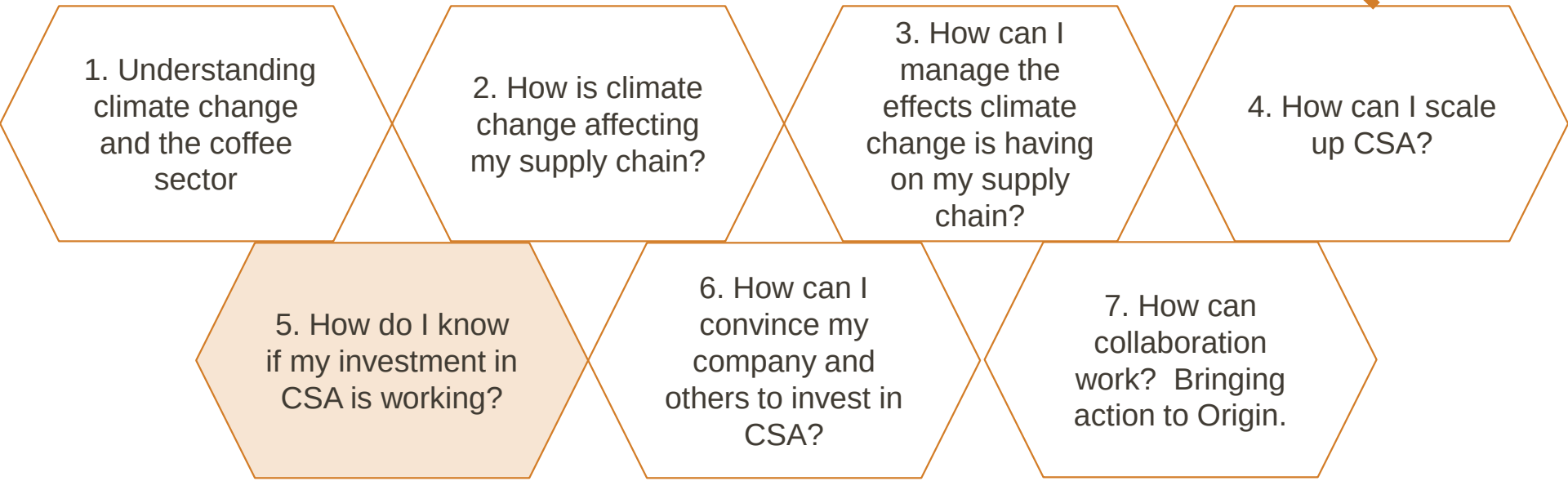

RESOURCES

- Coffee&climate toolbox, with Sourcebook and case studies: toolbox.coffeeandclimate.org
- "Taking life step-by-step: incrementally adopting climate-smart agricultural practices," Onno Giller (IITA), CCAFS website
- "Renovation & Rehabilitation for Resilience Coffee Farms: A Guidebook for Roasters, Traders, and Supply Chain Partners," Dalberg Advisors, with support from USAID's Bureau for Food Security, on behalf of the Sustainable Coffee Challenge
- "Financing Farm Renovation: How to Build Resilience Using a Blend of Capital," Root Capital

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Questions & Answers

Module 4: How can I scale up Climate Smart Agriculture?

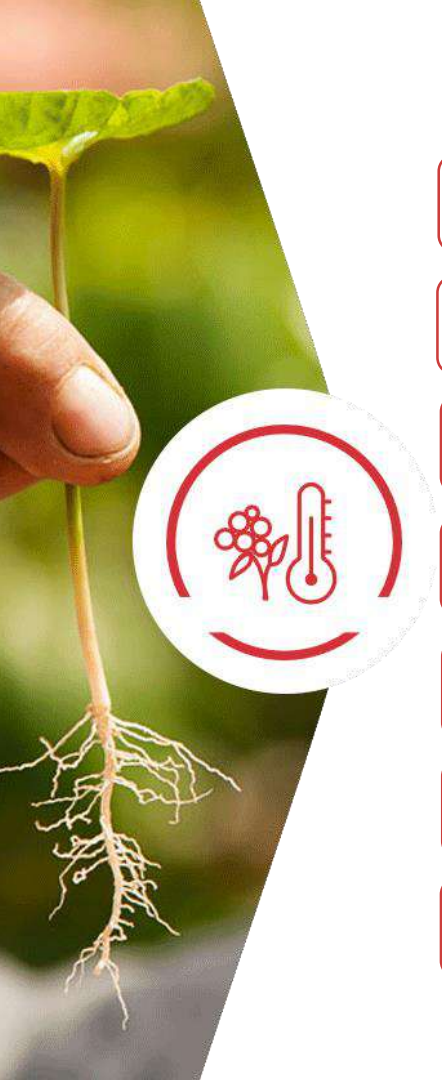
GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Elizabeth Teague

Senior Social & Environmental Performance Manager
Root Capital
eteague@rootcapital.org

Laurence Jassogne

Systems Agronomist
International Institute of Tropical Agriculture (IITA)
l.jassogne@cgiar.org



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Link to CSA Learning Series

Particpants in Module 4

Ana Carsalade	
Anna SNIDER	University of Wisconsin
Disha Chandra Mohan	
Dorien Van Dun	EFICO NV
Elena Cioffi	
elena serfilippi	COSA
Elizabeth Newman	USAID
Gina Canales	Jacobs Douwe Egberts
Graham Mitchell	Sustainable Innovations Inc
Jaime Baena Tovar	FNC
Katharina von Knobloch	ALDI SüD
Kim Coburn	Equal Exchange
Nguyen truc bong son	1957
Pedro Gonzalez	FNC
Susan Macdonald	Global Bright Futures
Thomas Delbar	Supremo

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Katherine Selengia
Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org

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Understand, Design, Act: Climate-proof your supply chain

Module 5:

How do I know my investment in climate smart agriculture is working?

27. September 2018

Module 5: How do I know my investment in Climate Smart Agriculture is working?

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Kealy Sloan
Project Manager
Sustainable Food Lab

Daniele Giovannucci
President
Committee on Sustainability Assessment (COSA)

Pablo Ruiz
Manager Latin America
Hanns R. Neumann Stiftung

George Watene
Program Manager
Global Coffee Platform

Bambi Semroc
Vice President, Sustainable Markets and Strategy
Conservation International

Moderators

Caroline Glowka
Global Coffee Platform

Katherine Selengia
Hanns R. Neumann Stiftung

Let's discuss today

- Measuring impact at
  - Farm level
  - Sector level
  - Landscape level

By using ZOOM

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for a sustainable coffee world

1. Click on "Raise Hand" button

If you want to **comment** or ask **questions**

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Path to Collective Action

- Introduction
- Risk Profiles
- Tools
- Scale
- Monitoring
- Business Case
- Collaboration

+ Climate Catalogue as resource

Building Common Ground

- Understand
- Design
- Act

Collective action at origin!

Honduras

Uganda

Opportunities in Honduras and Uganda

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Honduras

Platform Agenda

Survey conducted

Discussion with interested survey stakeholders

Direct outreach in countries to discuss tangible projects

Get committment

Uganda

Climate Change Working Group

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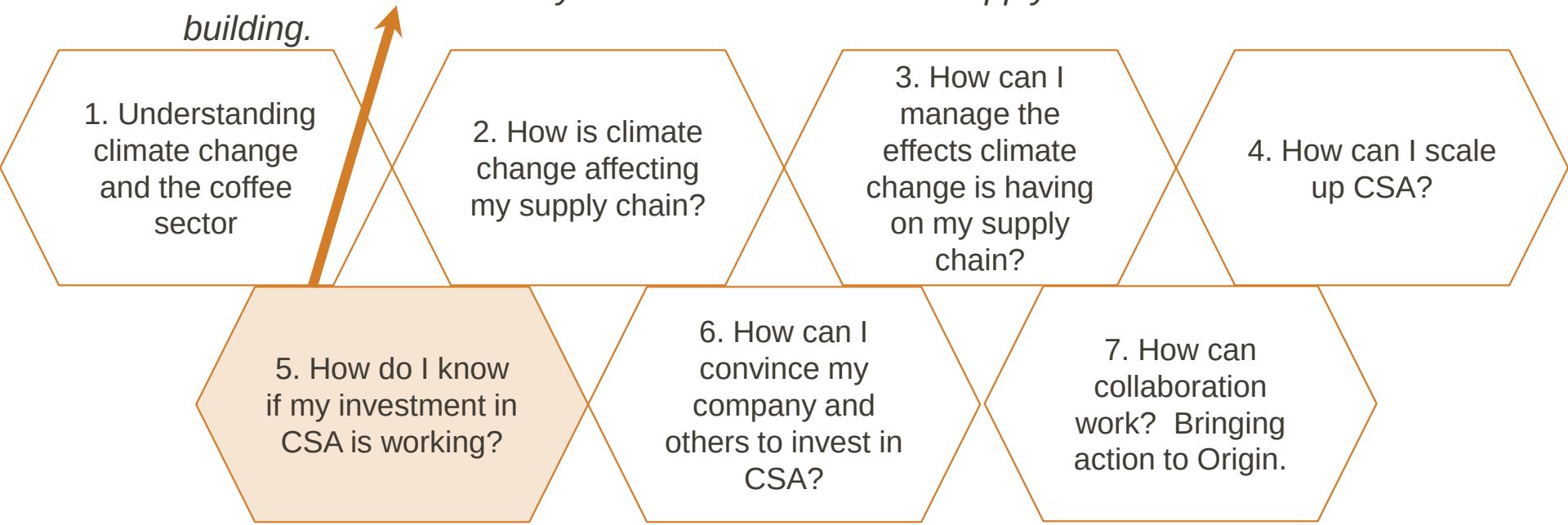
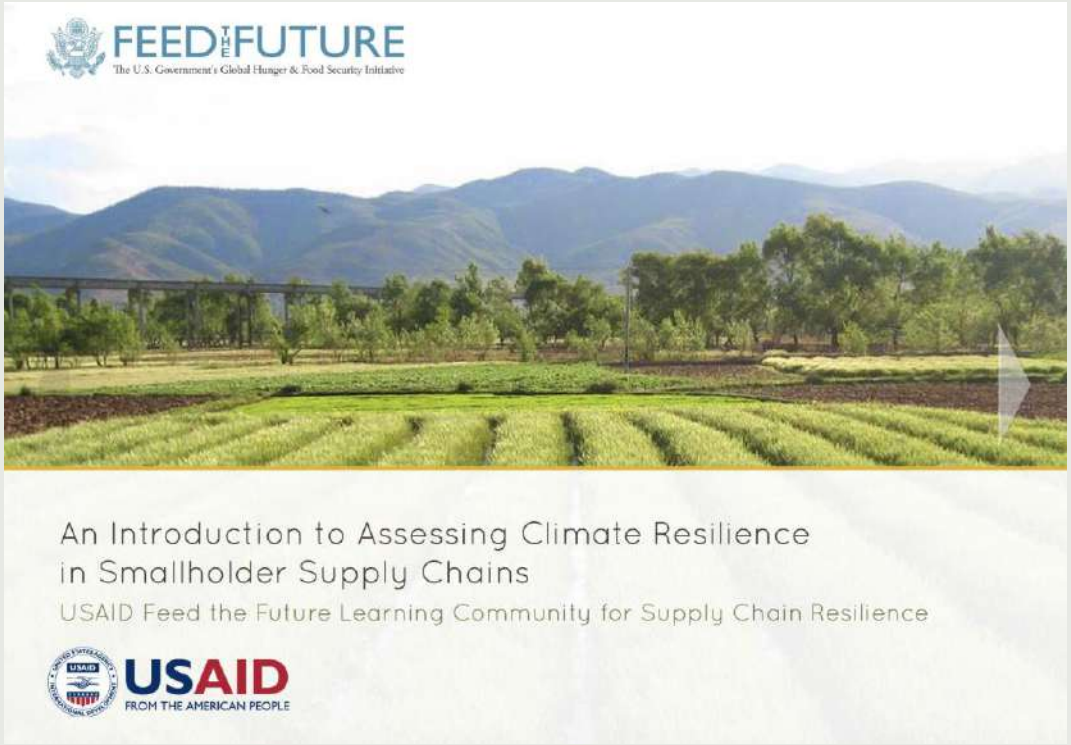
WHERE WE'RE AT

Get to know climate resilience indicators and monitoring & evaluation tools for CSA and understand how they can be used to monitor supply chain risk and resilience building.

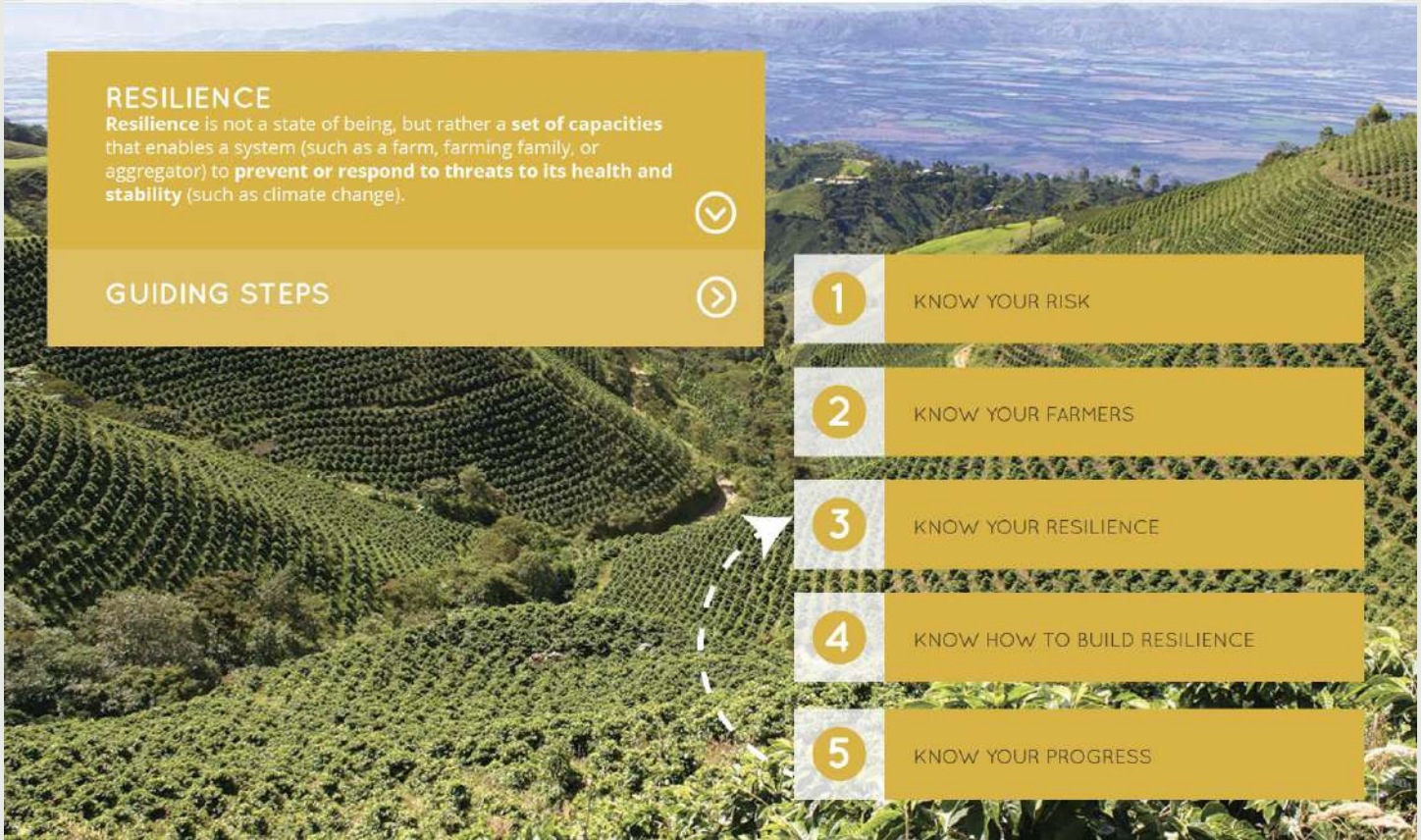


Assessing Climate Resilience in Smallholder Supply Chains



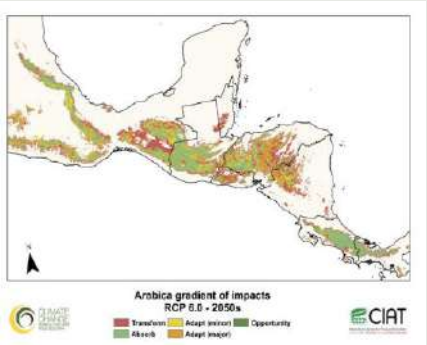
To read the full Guide, visit: https://sustainablefoodlab.org/5612-2/

5 Steps to Measuring Smallholder Resilience

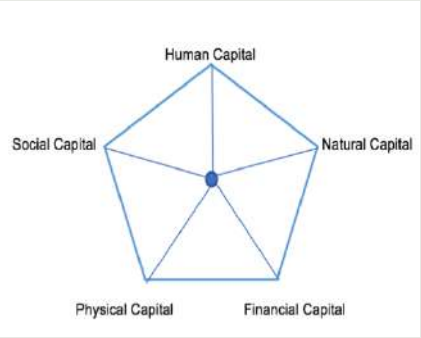


Steps 1-2: Know your risk and know your farmers

Know your risk

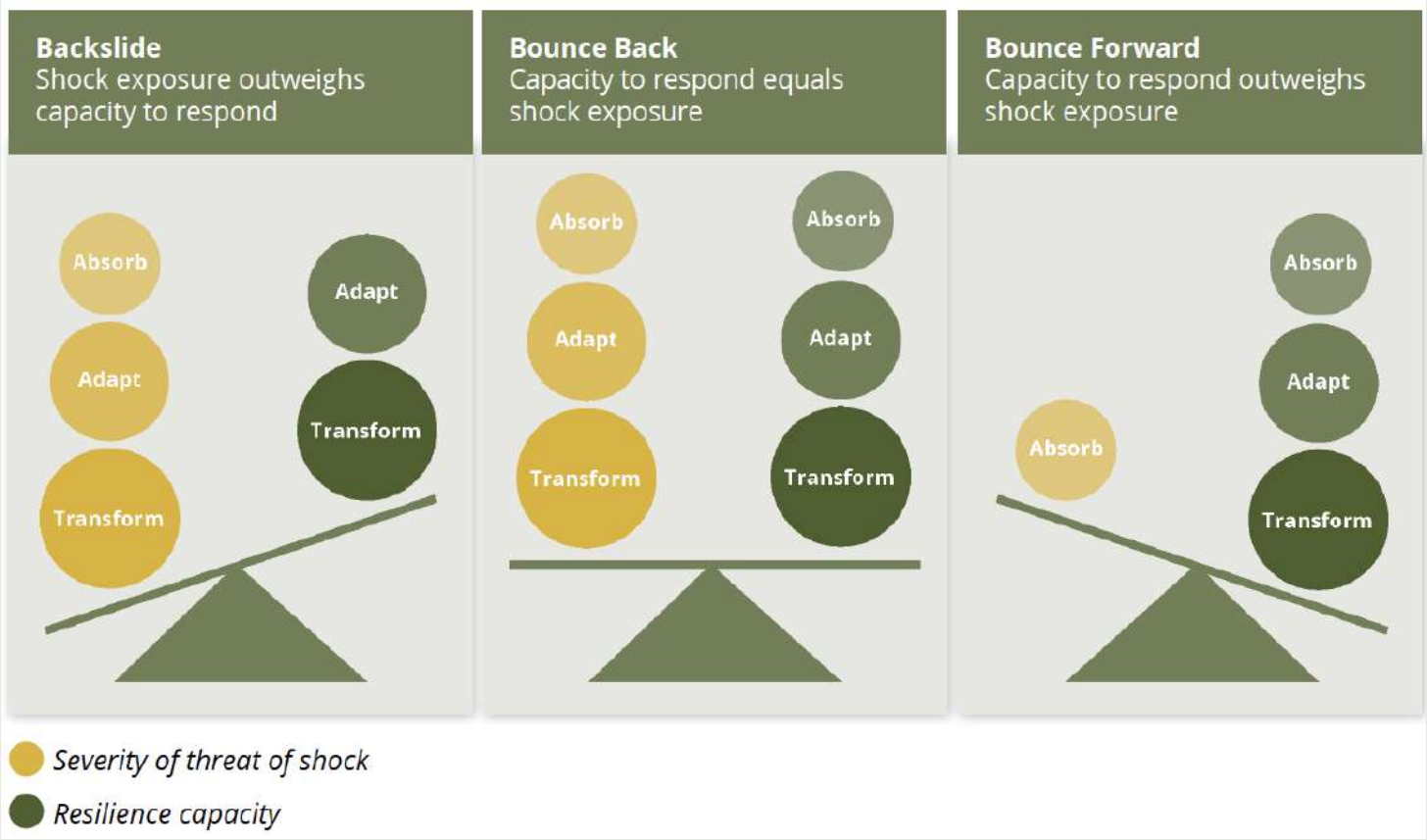


Know your farmers



		Financial Capital	Human Capital	Natural Capital	Physical Capital	Social Capital
Farm Level	**Absorptive Capacity**	Net income/ poverty level	Food security and nutrition	On-farm soil health	Access to early-warning Systems	Access to informal safety nets
	Adaptive Capacity	Use of credit	Use of relevant climate smart agricultural practices	Access to "climate-ready"[18] varieties of focus crop	Access to climate change projections	Access to knowledge-sharing groups re: climate change
	Transformative Capacity	Saving sufficient for on-farm investment	Innovation potential	Access to quality planting material for alternative, climate-ready crops	Access to alternative, climate-ready value chains	Quality of enabling environment

Step 3: Know your resilience in the face of climate risk



Step 4-5: Know how to build resilience and know your progress

Designing interventions with monitoring in mind makes for more effective monitoring and more successful interventions

Climate Smart Agriculture: Ensuring useful outcomes

GCP Webinar- 2018

Giovannucci & Serfilippi

COSA Committee On Sustainability Assessment

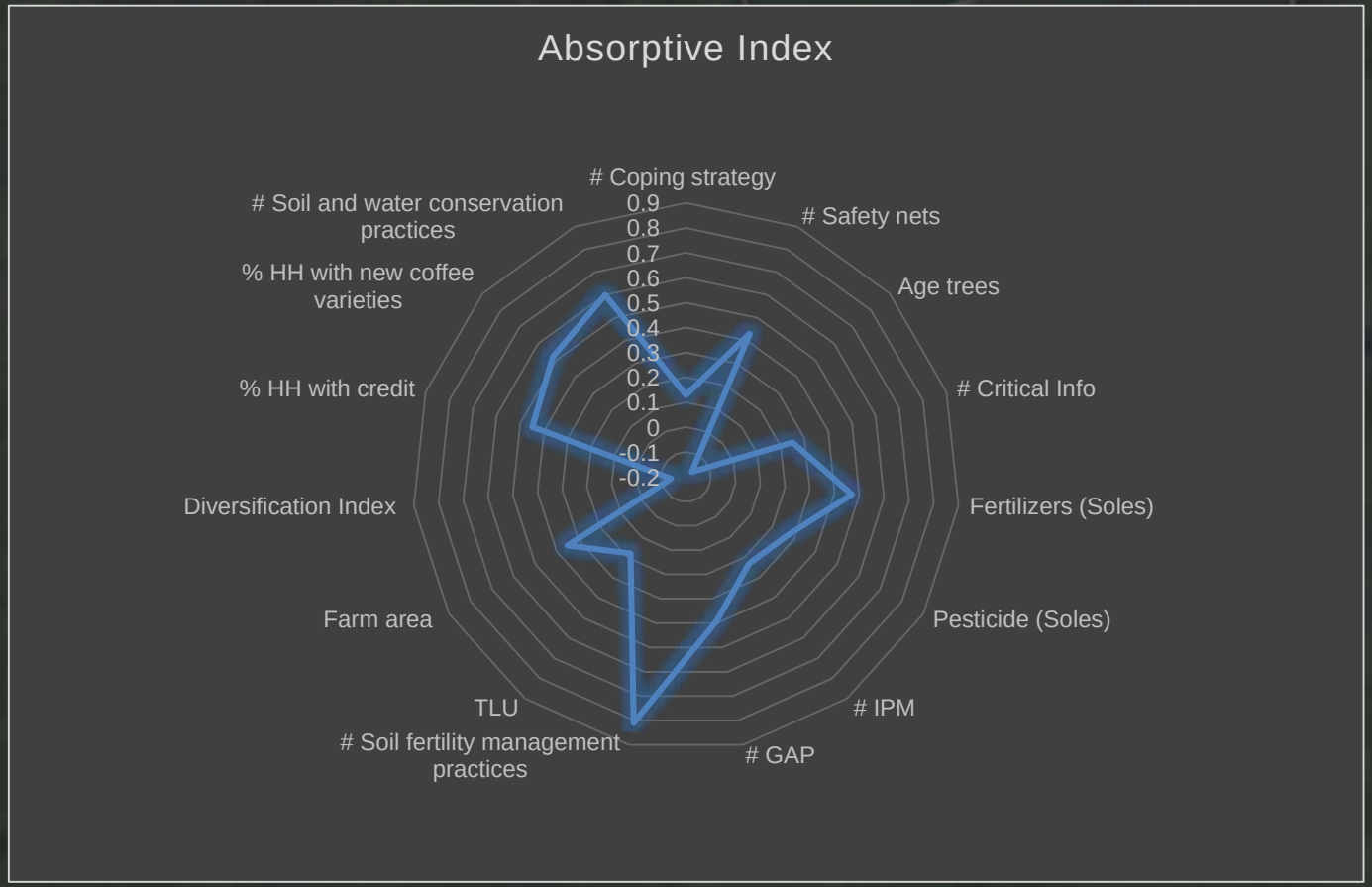
Resilience Tools

Resilience

SIMPLIFY intrinsic complexity

	Capacity	Capital	Core Element	Indicator	Description
S Social	Transformative	**Physical**	Basic Services	Access to ICT	Availability of phone, TV/radio, internet
	Absorptive	**Socio Political**	Safety nets	Access to Informal Safety Nets	Availability of support in case of necessity (food, work, cash)
E Economic	Adaptive	**Financial**	Diversification	Diversified Crops & Livelihood	Number of other crops or animal products produced for sale or consumption
	Adaptive	**Financial**	Savings	Savings tools	Types of household savings tools (cash, group, bank)
E Environmental	Adaptive	**Natural**	Conservation	Erosion	Severity and prevalence of observed erosion on farm (in relation to slope)
	Adaptive	**Natural**	Tree Density	Forestation	Number and types of trees planted or removed and amount of land area altered

Dynamic Sustainability Indices make it easier



COSA Committee On Sustainability Assessment

Resilience Toolkits

Resilience **Basic Set**

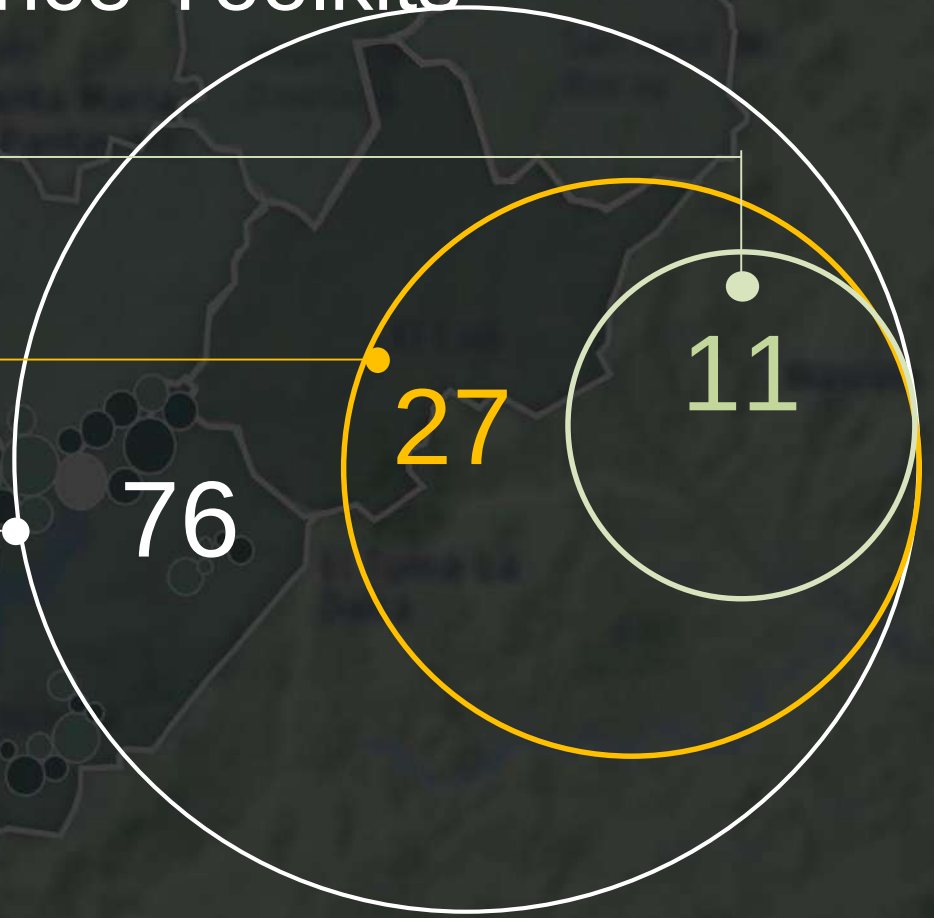
- Key shocks & coping

Resilience **Core Set**

- Hot Spots

Resilience **Full Set**

- Changes in resilience over time
- Attribution of changes



COSA Committee On Sustainability Assessment

Resilience Tools for Landscapes

CONSERVATION INTERNATIONAL

CIAT
Centro Internacional de Agricultura Tropical
International Centre for Tropical Agriculture

Lutheran World Relief

CRS
CATHOLIC RELIEF SERVICES

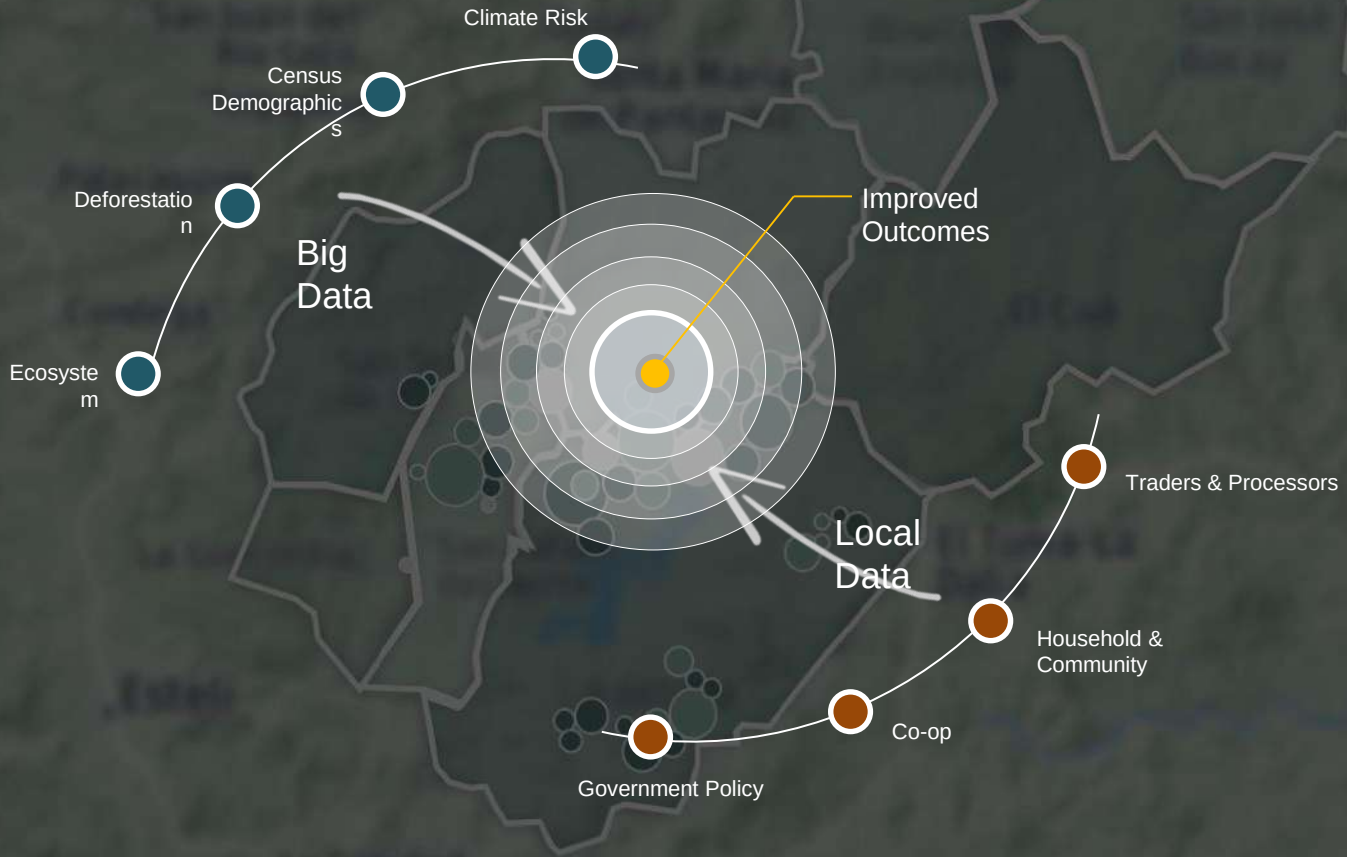
USDA
United States Department of Agriculture

SUSTAINABLE FOOD LAB

rootcapital®
GROWING RURAL PROSPERITY

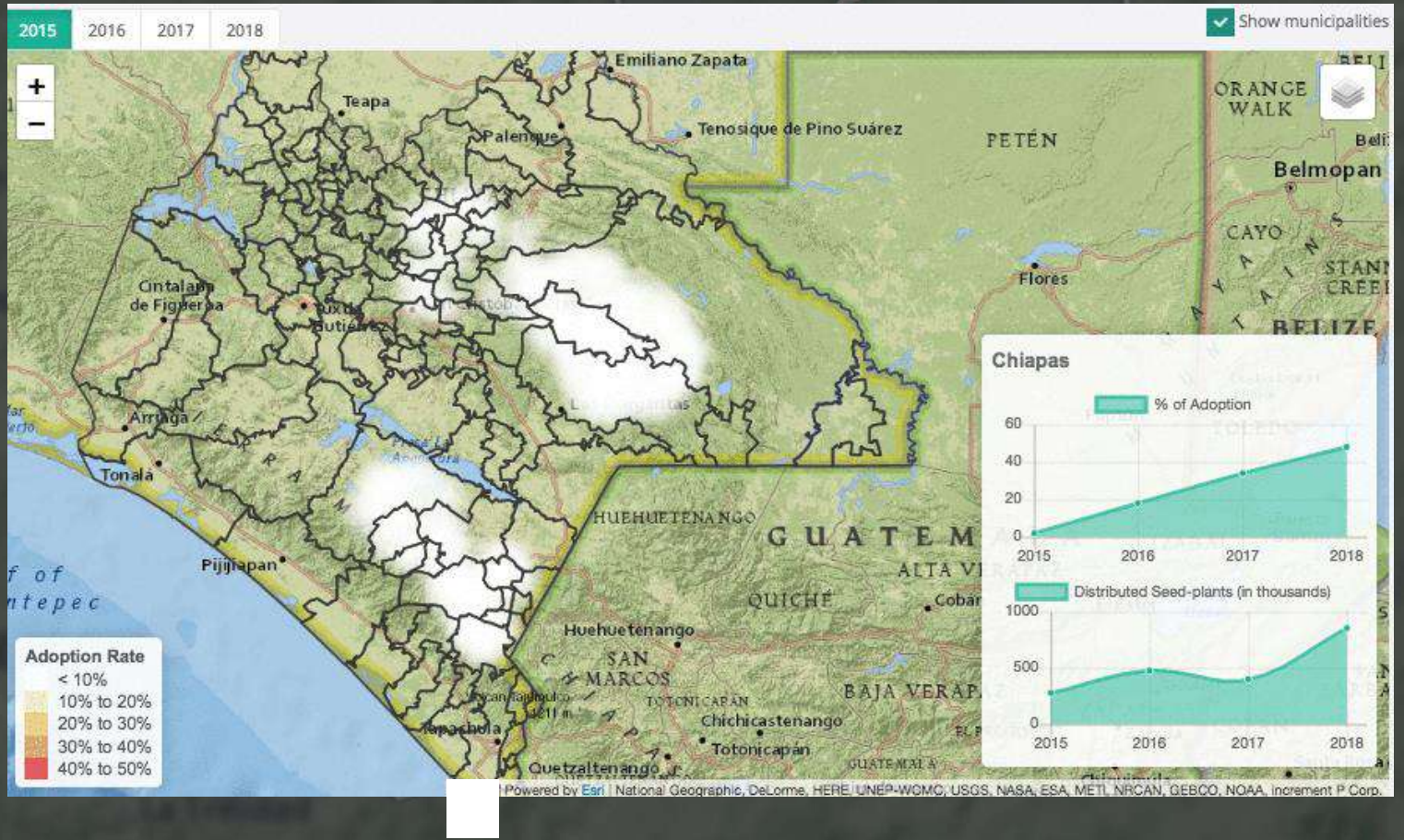
RMEL | CoP

Dynamic Sustainability



COSA | Dynamic Sustainability

Functional data



Mexico sample

COSA | Dynamic Sustainability

Engaging Stakeholders in the Data

COSA Committee On Sustainability Assessment

Objective: Practical tools for managing resilience

Pragmatic

1

Key insights on critical points

Low cost

2

No barriers to use

Simple

3

Easier shared learning to be scaleable

Let's collaborate! the COSA team

CLIMATE VULNERABILITY TOOL FOR COFFEE

ON-FARM CLIMATE VULNERABILITY TOOL

- Assesses on-farm (agronomic) vulnerability according to:
  - Exposure (climate risks)
  - Sensitivity (on-farm conditions)
  - Adaptive Capacity (agronomic practices and economic characteristics)

- Survey questions are designed specifically to measure relevant conditions for coffee production. Currently, questions are tailored to the Trifinio region of Guatemala and Honduras where the tool has been developed.

- Available in SurveyCTO for data collection with smartphones

SURVEY COMPONENTS

- Farmer characterization
- Farm administration
- Technical assistance and networks
- Climate and extreme events
- Pest & Diseases
- **Soil management**
- Crop management
- Forest & Water

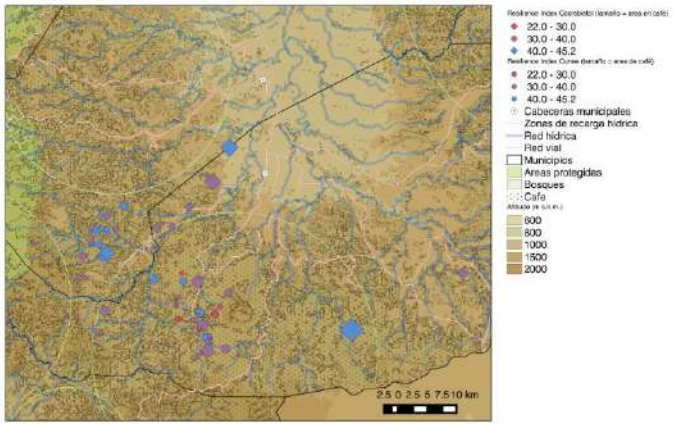
Examples of conditions evaluated in soil management:

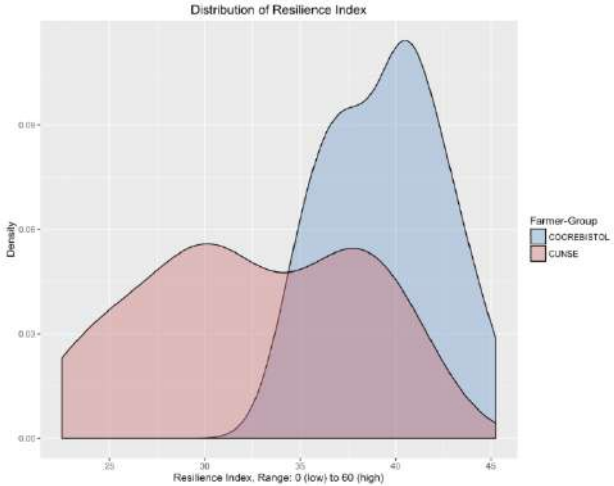
- **Slope**
- **Erosion**
- **Planting using contour lines**
- **Live barriers**
- **Cover crops**

RESULTS

- Determine the climate events that farmers perceive are affecting them most
- Understand the climate impacts generated by the climate events
- Identify practices that farmers are adopting (or not)
- Evaluate results at farm, farmer organization, altitude, community or municipality
- Private sector is able to understand climate risks in their sourcing regions

RESULTS





c&c piloting in two coops of Honduras

OPPORTUNITIES

- Pilot the tool in your location in partnership with the ARC project
- Understand climate vulnerability in coffee production better
- Aggregate data to better understand how farmers are being affected by climate and how they are currently responding (and identify gaps)


GLOBAL COFFEE
PLATFORM
MEASURING IMPACT
THE 15 COMMON INDICATORS

In 2017, the GCP and Sustainable Coffee Challenge jointly developed with partners and members and launched a Sustainability Progress Framework for the coffee sector. Eight (8) common outcomes have been identified.

These include: income, access, equality, water quality, forests, purchase of sustainable coffee, productivity and quality

A set of **common metrics** were also proposed, which could facilitate collective progress measurement on key outcomes and reporting.

The GCP further facilitated **prioritization of indicators for reporting** and settled at 15 aspirational common indicators through voting, SDG rationalization and a Board advisoryworking group. The success of this reporting on common indicators very much depends on the engagement of a broad base of stakeholders.

Common indicator work is an extension of aligning how we measure the common outcomes in the Sustainability Progress Framework.

ECONOMIC (prosperity)

	issue/ core elements (focus area of sustainability)	SDG	Indicators (characteristics considered over time)
EC1	Profit	2.3	Net income from coffee
EC2	Yield	2.3	Productivity improvement to optimal target
EC3	Costs	2.4	Optimization of cost per kg to optimal target
EC4	Chain efficiency/ returns distribution	9.3	Share of FOB price to farmer
EC5	Sustainable purchases	12.6	• Volume of sustainable purchases by buyer and as a proportion of total • Change in amount bought year to year

Global 1st At collective level

SOCIAL (improved wellbeing / livelihoods)

	issue/ core elements (focus area of sustainability)	SDG	Indicators (characteristics considered over time)
SO1	Poverty	1.2	% of households below national poverty lines
SO2	Wages	8	Proportion of workers earning at least minimum wage Proportion of workers earning living wage where defined
SO3	Child labour	8.7	No. of Child labour monitoring and remediation systems in regions of high risk of Child Labour No. of children identified in unacceptable labor conditions No. of instances of child labor remediated
SO4	Hunger	2	Number of Days Without Food
SO5	Labour practices	8.7	No. and % of farmers trained in Labour Practices No. and % of workers trained in Labour Practices

ENVIRONMENTAL (conserve nature)

	issue/ core elements (focus area of sustainability)	SDG	Indicators (characteristics considered over time)
EN1	Forest and ecosystem protection	15.1	Area of, high deforestation risk (could be remotely checked) Area of (high) deforestation & encroachment vs baseline (or year before?)
EN2	Fertilizer use	2.4	Optimised fertiliser application based on soil analyses
EN3	Water	6.4	Water use optimization for efficiency in litres per KG to optimal target
EN4	Pest control / hazards	12.4 .5	Optimised use of pesticide/ agrochemical usage through IPM
EN5	Soil	2.4	Adoption of soil management practices

Why Common indicators

- Guide on choice of areas to measure
- Help in common message of the change we are making towards sustainability
- Learn from measurement to help on our improvement strategies

STATUS

1. Four indicators are the first **Common Indicators** to pilot:

   (i) Sustainable purchases- EC5,
   (ii) Yield- EC2,
   (iii) Wages- SO2,
   (iv) Water use- EN3.

1. Only **Sustainable purchases is** piloted by all for 2018, the other three are voluntary and will be worked on in innovative ways with interested members, also to test the reporting tool. Deforestation will be innovatively looked at in collaboration with Global Forest watch

2. Information about all **15 high-level aspirational** Common Indicators will be shared within membership and sector for orientation and further consultation. The application of the further indicators (beyond the above four) has no fixed time period. Their composition might change as a result from pilot projects.

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ASSESSING COFFEE AT A LANDSCAPE LEVEL

Bambi Semroc

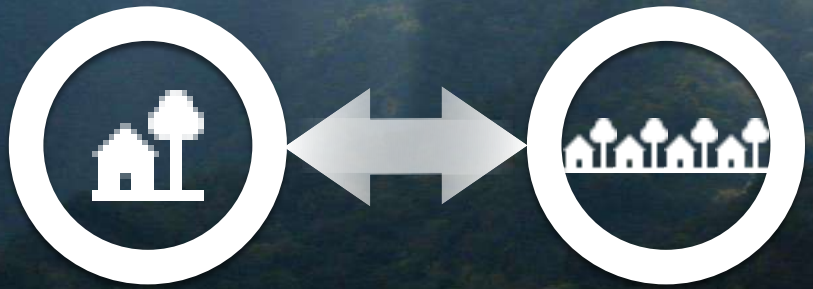
September 29, 2018

CONSERVATION INTERNATIONAL

FEED the FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

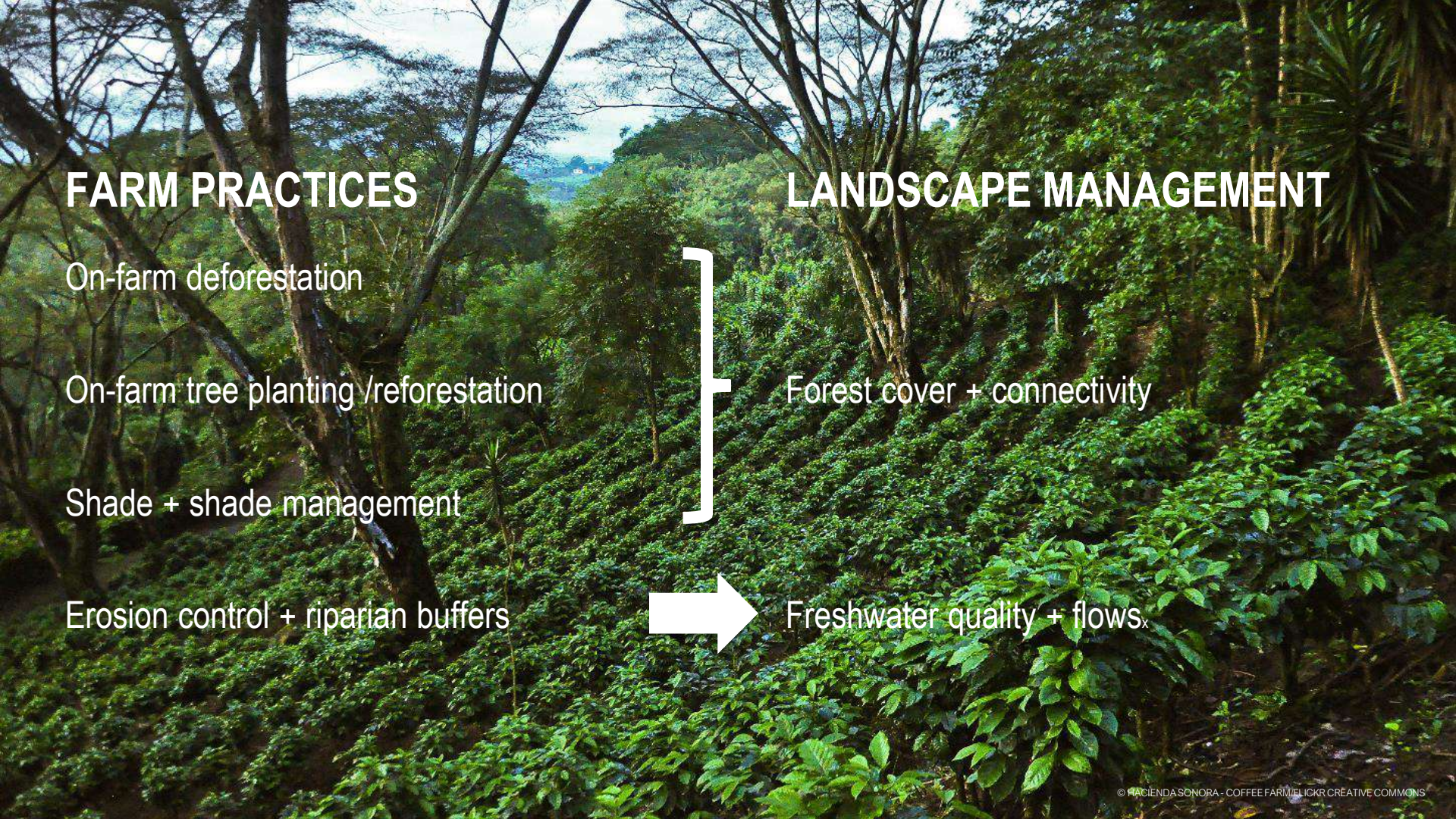
USAID
FROM THE AMERICAN PEOPLE

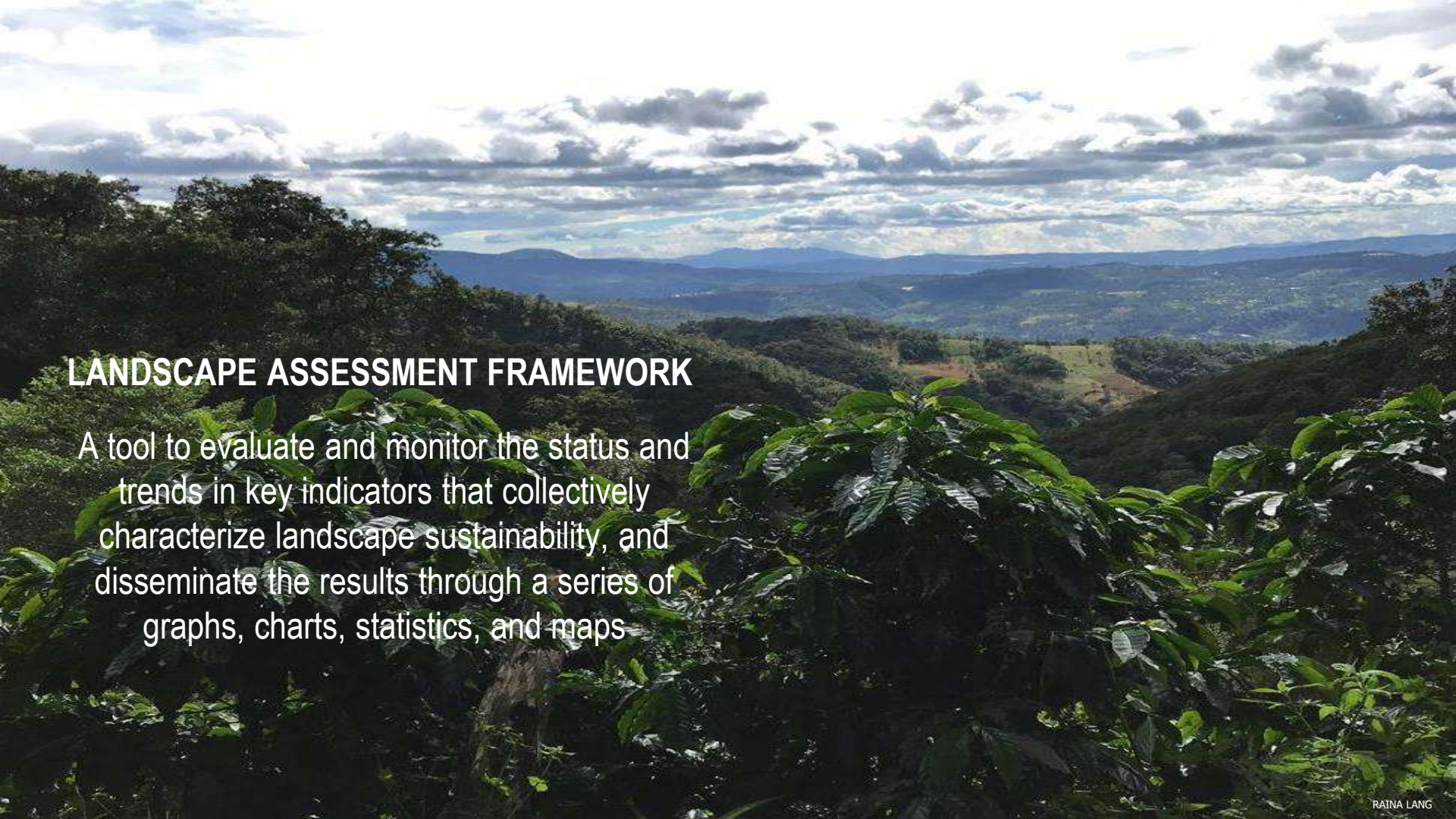
A NEW WAY OF THINKING



IN A SUSTAINABLE LANDSCAPE

- Natural ecosystems and resources are conserved or restored
- Agricultural systems are economically viable and resilient to climate change
- Rural livelihoods and well-being of all social groups are improved
- Local decision-making processes are inclusive and equitable


FARM PRACTICES
LANDSCAPE MANAGEMENT
On-farm deforestation
On-farm tree planting /reforestation
Shade + shade management
Forest cover + connectivity
Erosion control + riparian buffers
Freshwater quality + flows
© HACIENDA SONORA - COFFEE FARM/FLICKR CREATIVE COMMONS



LANDSCAPE ASSESSMENT FRAMEWORK

A tool to evaluate and monitor the status and trends in key indicators that collectively characterize landscape sustainability, and disseminate the results through a series of graphs, charts, statistics, and maps

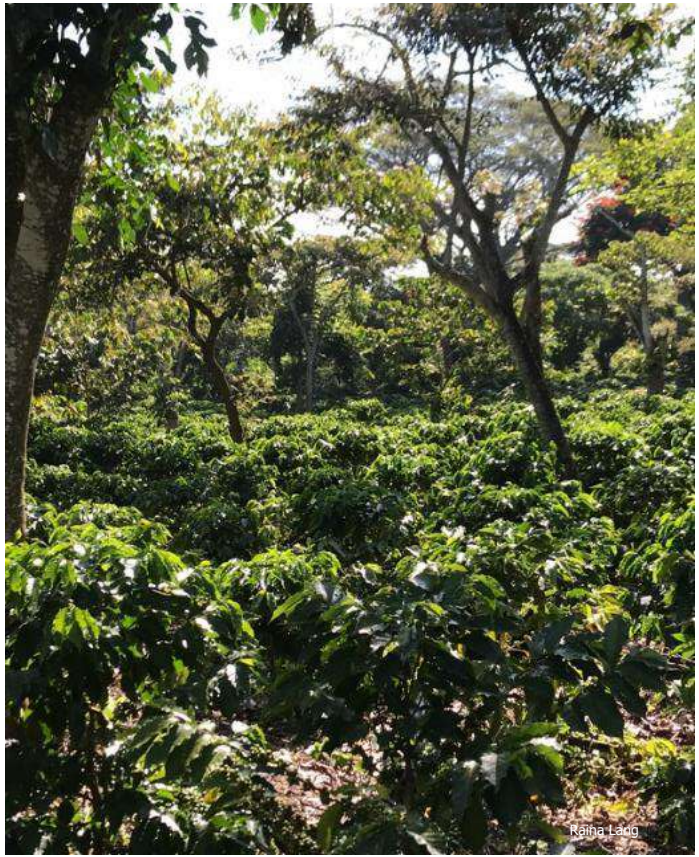
RAINA LANG

STEPS

- A desk review of existing data
- The creation of an online dashboard to present initial findings
- A field visit to the landscape, which includes interviews with local actors as well as ground truthing of satellite images
- An analysis of the landscape and production presented in a summary card.

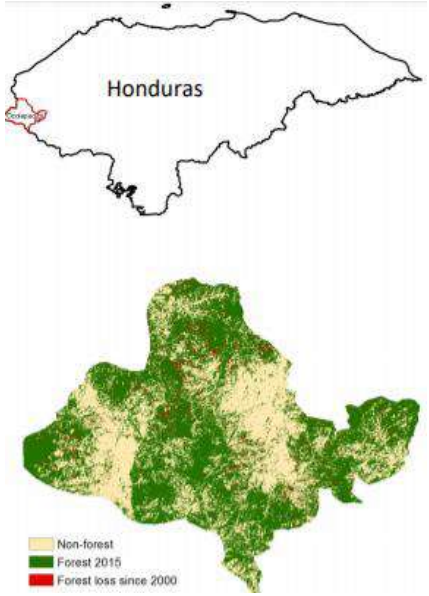
OCOTEPEQUE, HONDURAS

- Mountainous region in western Honduras with approximately 150,000 residents.
- Relatively dense forest cover
- Continued deforestation due to agricultural expansion and urbanization.
- Agriculture, esp. coffee, is the primary economic activity.
- Part of the Trifinio Biosphere Reserve, which spans portions of Honduras, Guatemala, and El Salvador.

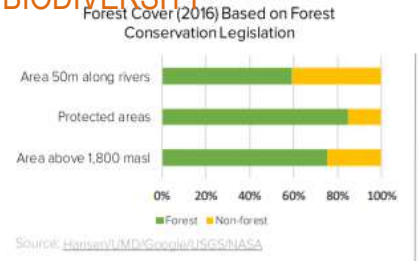


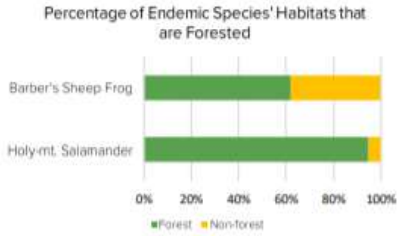
OCOTEPEQUE RESULTS

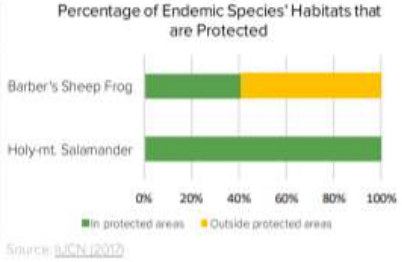
LAND USE CHANGE



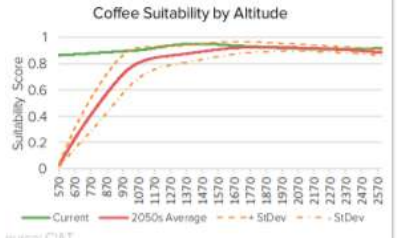
FOREST COVER + BIODIVERSITY

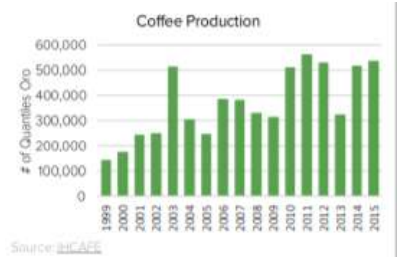




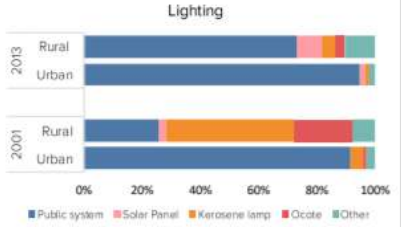


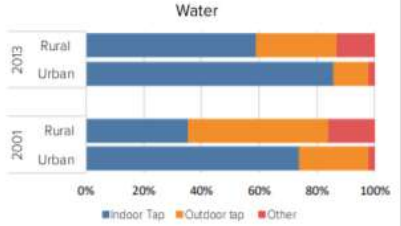
PRODUCTION

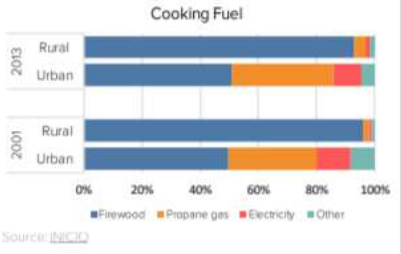




HUMAN WELL-BEING

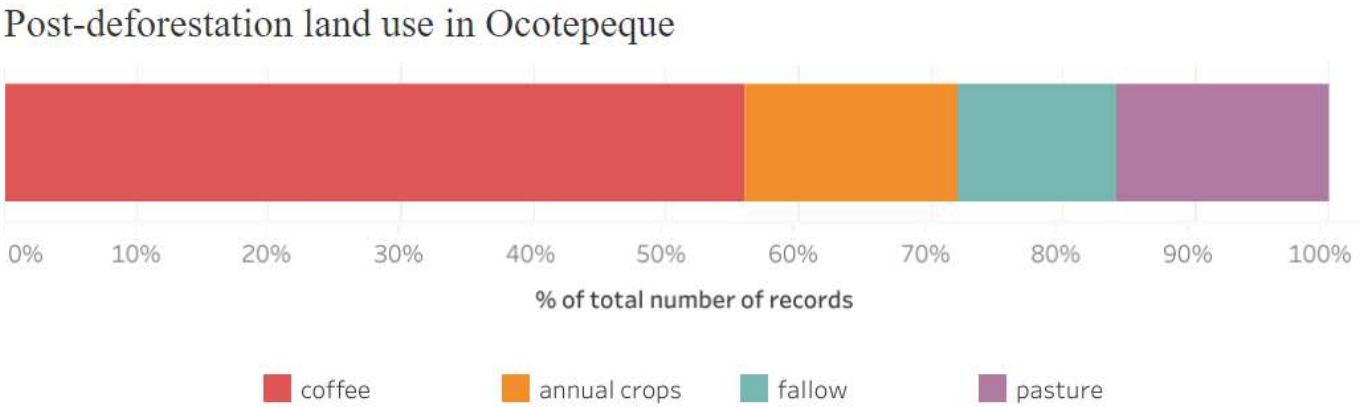






FOREST LOSS

In Ocotepeque, 57% of land that was previously deforested now has coffee growing on it.



The post-deforestation data was created by generating 50 random points within the area that had forest loss since 2000. Those random points were visually classified using high-resolution images. Approximately 20% of the points were verified on the ground; the accuracy was 80%.

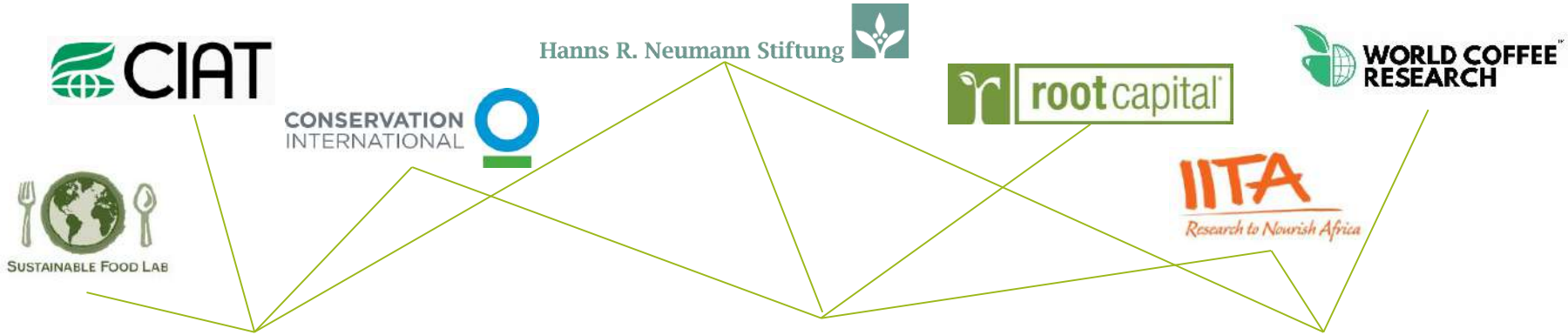

Niel Palmer

IDENTIFIED NEEDS

- More efficient cook stove program to reduce dependency on firewood
- Reforestation of areas above 1800masl and within 50 m of rivers to improve compliance with forest policies
- Fire control to avoid forest and coffee losses
- Potential for youth-targeted programs to sustain coffee production
- Promote farm renovation to optimize productivity and reduce climate vulnerability
- Technology to streamline data collection
- Promote crop diversification to reduce vulnerability

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Questions & Answers



Climate Risk Analysis

- Country Risk Profiles
- Landscape Assessments
- On-Farm Climate Vulnerability Assessments

CSA Implementation

- coffee&climate Approach
- Stepwise Investment Pathways

Testing & Research

- On-Farm Technology Trials
- Farmer Segmentation Analysis

HOW TO WORK WITH ARC: KNOW WHAT YOU WANT?

- *A la carte:* Apply one or more tools within your supply chain(s).
  - We'll do the heavy lifting.

- *Combo platter:* Incorporate one or more tools into your own sustainability approach (in one or more locales).
  - We'll work side by side with you, to make sure our tools fit in seamlessly with your existing work.

- *The whole enchilada:* Develop a full project with us, from start to finish.

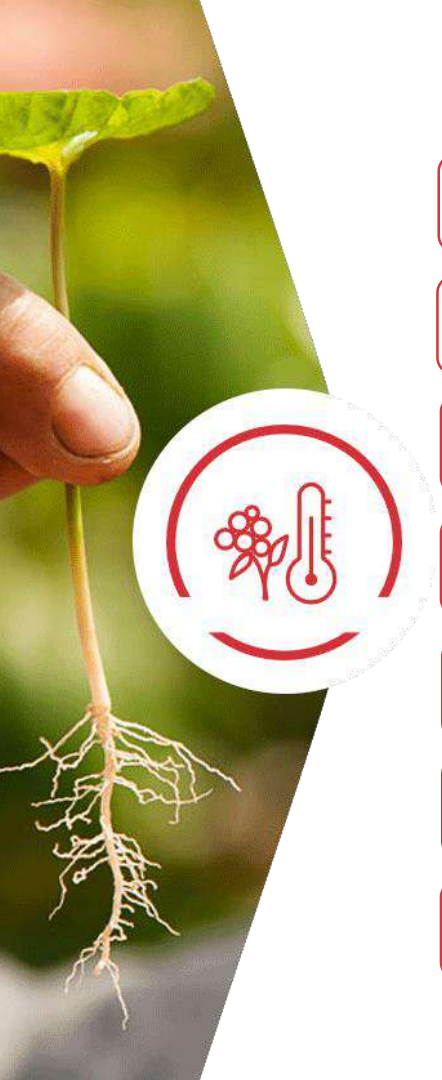
HOW TO WORK WITH ARC:
NOT SURE WHAT YOU WANT?

- Help us expand our reach within Honduras, Guatemala and Uganda with more farmers and more CSA activities
- Choose your own farmer organization(s) and locations for us to launch CSA activities

GCP and ARC are aligned on this approach

As lead organization of ARC, HRNS will coordinate on behalf of the consortium.

Contact **Kate Selengia (katherine.Selengia@hrnstiftung.org)** to get the conversation started.



Next Modules

Duration: 75 minutes per module
Time: 3pm CEST | 9am EDT | 6am PDT

1	June 7th	Understanding climate change	Introduction
2	June 12th	How is climate change affecting my supply chain?	Risk Profiles
3	June 28th	How can I manage the effects climate change is having on my supply chain?	Tools
4	July 19th	How can I scale up CSA?	Scale
5	September 27th	How do I know my investment in CSA is working?	Monitoring
6	October 25th	How can I convince my company and others to invest in CSA?	Business Case
7	November 8th December 6th	How can collaboration work? Bringing action to origin!	Collaboration

Link to CSA Learning Series

Participants in Module 5

Susan	Mcdonald	Global Bright Future
PedroF.Gonzalez		Café de Colombia
Marcus	Laws	NCBA
Hubert		COSA
Fredeline	Joseph	
Raina	Lang	Conservation International
Sylvia	Calfat	COSA
Louise	Salinas	COSA
Fernando	Rodriguez	CGIAR
Patrick	Kerr	COSA
Pablo	Fernandez Kolb	CIAT
Elena	Serfilippi (COSA)	COSA
Elizabeth	Teague	Root Capital
Tessa	Meulensteen	IDH
Martin	Kangi	Ecom Trading
Lydia	Namutebi	Ecom Trading
Kim	Elena Ionescu	SCA
Jerónimo	Bollen (Sustainable Harvest)	Sustainable Harvest
Pavel	Muñoz	COSA
Jan	von Enden	Hanns R. Neumann Stiftung
NapoleónMolina		Rikolto
Paloma	Silva	Louis Dreyfus
Graham		Sustainable Innovations
Lars Wehmeier		Niehoff Kaffee

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Katherine Selengia
Hanns R. Neumann Stiftung
katherine.selengia@hrnstiftung.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Understand, Design, Act: Climate-proof your supply chain

Module 6:
How can I convince my company and others to work on CSA?

25. October 2018

Module 5: How can I convice my company and others to invest in CSA?

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

Kealy Sloan
Project Manager
Sustainable Food Lab

Monica Firl
Director of Sustainability
CoopCoffees

Mark Lundy
Theme Lead, Sustainable Food Systems
International Centre for Tropical Agriculture

Piet van Asten
Agronomy Head – Coffee Plantations – Vice President
Olam International

Meredith Taylor
Sustainability Manager
Counter Culture Coffee

Moderator

Caroline Glowka
Global Coffee Platform

Let's discuss today

- **How to align climate risk to core business** to design and get buy-in to an integrated climate strategy
- **Tools to use:** cost of inaction, exposure mapping, and CSA practices, strategies and enablers
- **How do other companies encourage investment in CSA:**
  - Counter Culture Coffee
  - Cooperative Coffees
  - Olam International, Ltd.

By using zoom

1. Click on “Raise Hand” button

If you want to **comment** or ask **questions**

2. Use the Q&A box

To **place your questions** and get feedback from to the panelists

3. Your mic is silenced

To avoid undesired **background noises**. But you can raise your hand to speak!

4. Remember

This session is being recorded for archive purposes

Path to Collective Action

- Introduction
- Risk Profiles
- Tools
- Scale
- Monitoring
- Business Case
- Collaboration

+ Climate Catalogue as resource

Building Common Ground

- Understand
- Design
- Act

Collective action at origin!

Honduras

Uganda

Opportunities in Honduras and Uganda

Honduras

Platform Agenda

Resilient coffee, reforestation, water conservation, waste water management Western Honduras

Survey conducted

Discussion with interested survey stakeholders

Direct outreach in countries to discuss tangible projects

Get committment

Uganda

Climate Change Working Group

Challenge

Sector actors need to build systems that meet increasing demand while remaining profitable and sustainable in the face of climate change. Long-term investments needed for adaptation do not always align well with business models and funding cycles, especially when prices/margins are low

---

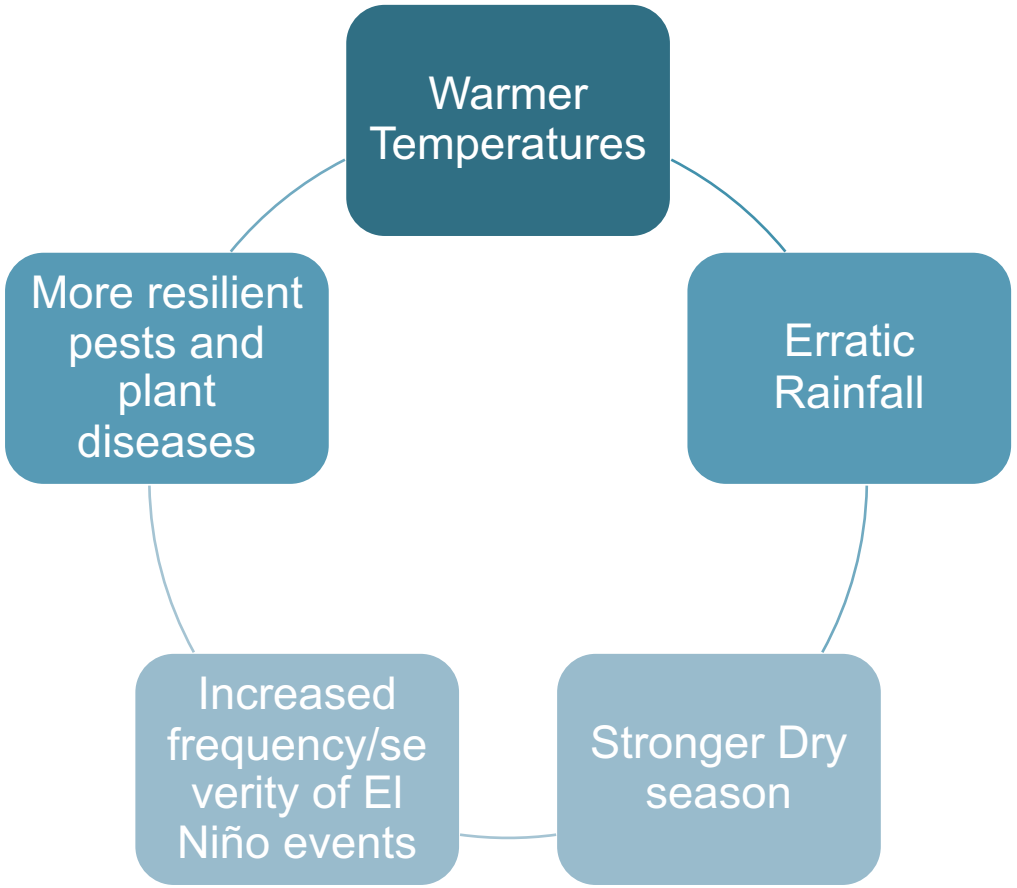
Climate Smart Agriculture

1. *Productivity: increasing volume produced*
2. *Adaptation: Enhancing resilience of producers and supply chains*
3. *Mitigation: Reducing Emissions*

Adapted from Sadler, M. 2015. The Role of Resilient Supply Chains in the Face of Climate Change

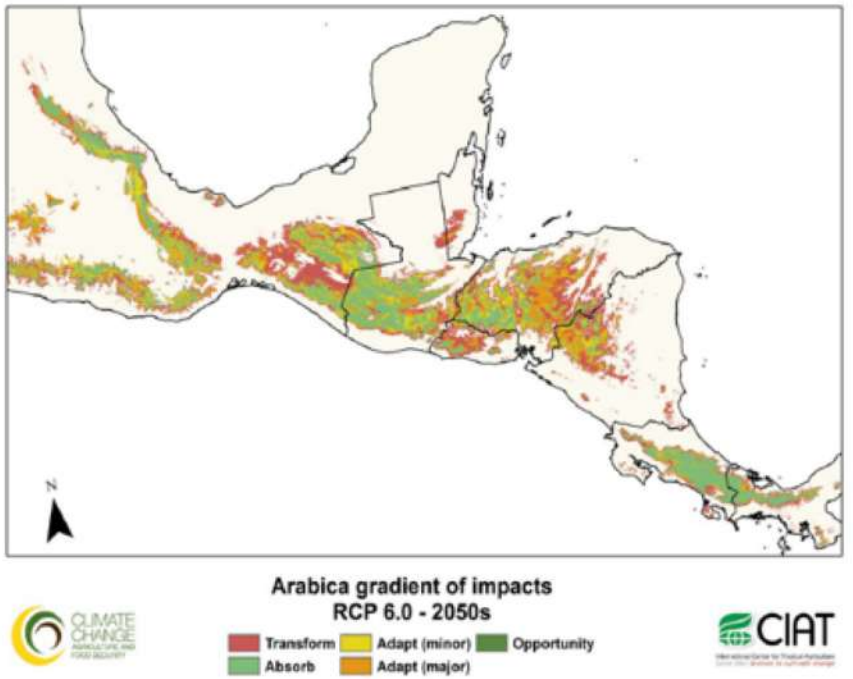
2a

ADAPTATION: Climate change impacts **coffee *producers*** in both the short and long-term



Short-term shocks

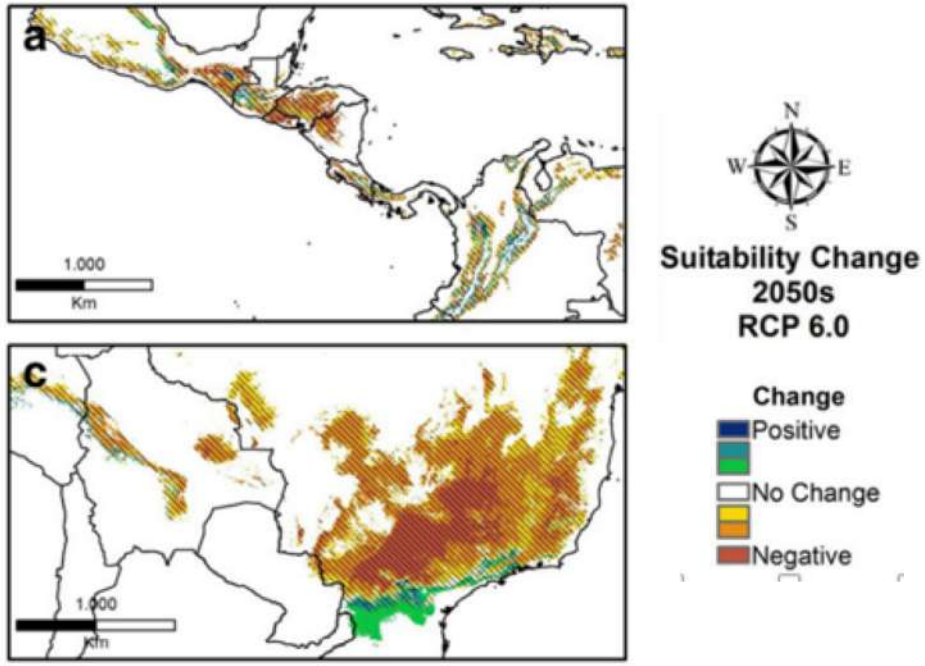
Long-term stressors



2b ADAPTATION: Climate change impacts ***coffee companies*** *in the short and long-term*

Short term: Price volatility → **Medium Term:** Increasing cost structure → **Long-term:** security of supply

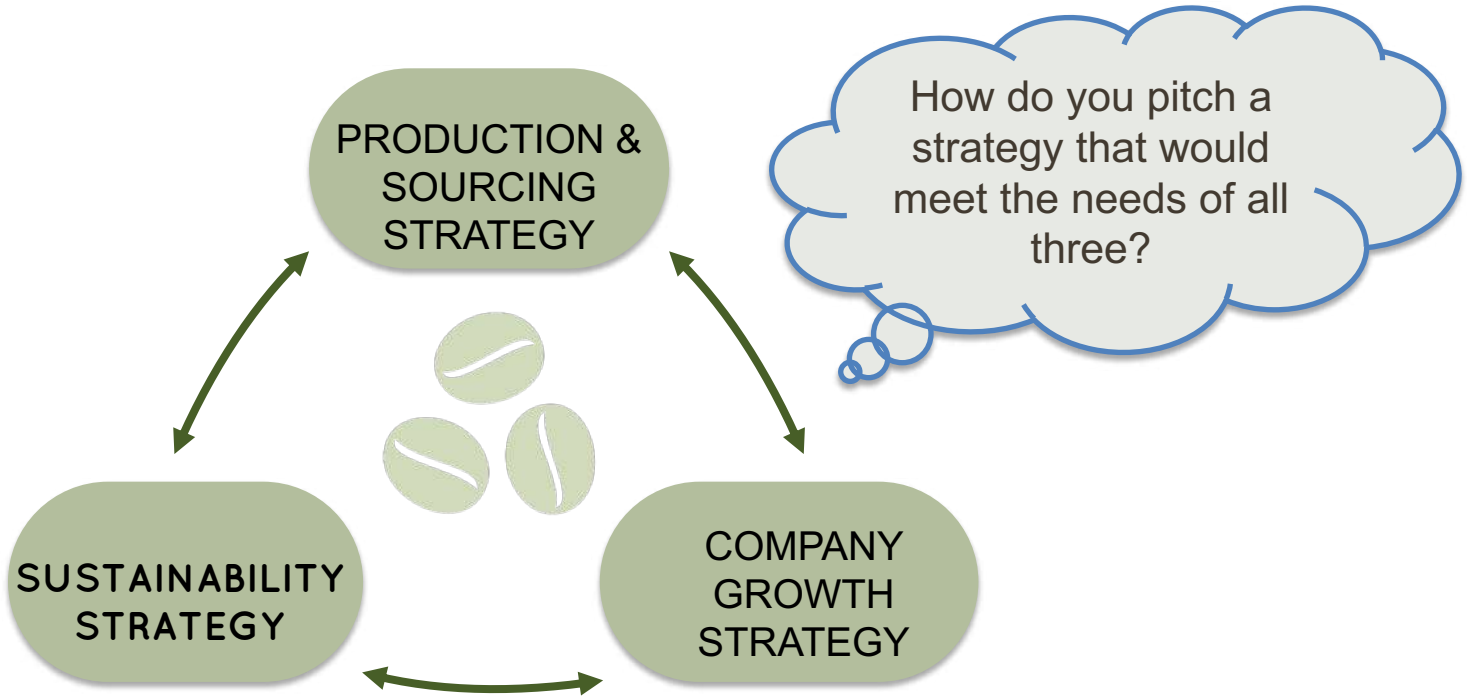
Financial Times, "Coffee Industry Warned of Volatile Prices" April 2017



Bunn, C., Läderach, P., Ovalle Rivera, O. et al. Climatic Change (2015) 129: 89. https://doi.org/10.1007/s10584-014-1306-x

Approach

Connect climate change with the bottom line of coffee business



How are other food and beverage companies looking at investing in climate change adaptation?

From 2016-2017 interviews conducted by Sustainable Food Lab

The challenge

Shifting sourcing regions is a current strategy to mitigate risk, but in the future, there will be fewer places to which one can shift.

Ellen Silva, General Mills

The potential payoff

Carbon is at the heart of livelihoods. When soil is depleted, when there is erosion and deforestation, the result is poverty. If we develop sustainable farming practices…we can have a double impact on poverty reduction and the climate.

Bernard Giraud, Groupe Danone

The need for collaboration

The point is to get to a critical mass of activity to move the needle on challenges you can't solve by yourself.

Duncan Pollard, Nestle

The Business Case

More CEOs understand the topic, and that the cost of inaction is higher than the cost of action. As a result, the industry is galvanizing and organizing itself.

Paul Polman, Unilever
From WeMeanBusinessCoalition.org

Understand the Cost of Inaction

Northwest of the cocoa belt will no longer be suitable for cocoa.

Without adaptation, farmers will give up cocoa or lose their crop to drought.

Annual losses of 60-100%.

In traditional cocoa regions climate will remain suitable but hazards have to be expected.

Without adaptation, increased pest and disease pressure, and drought cause

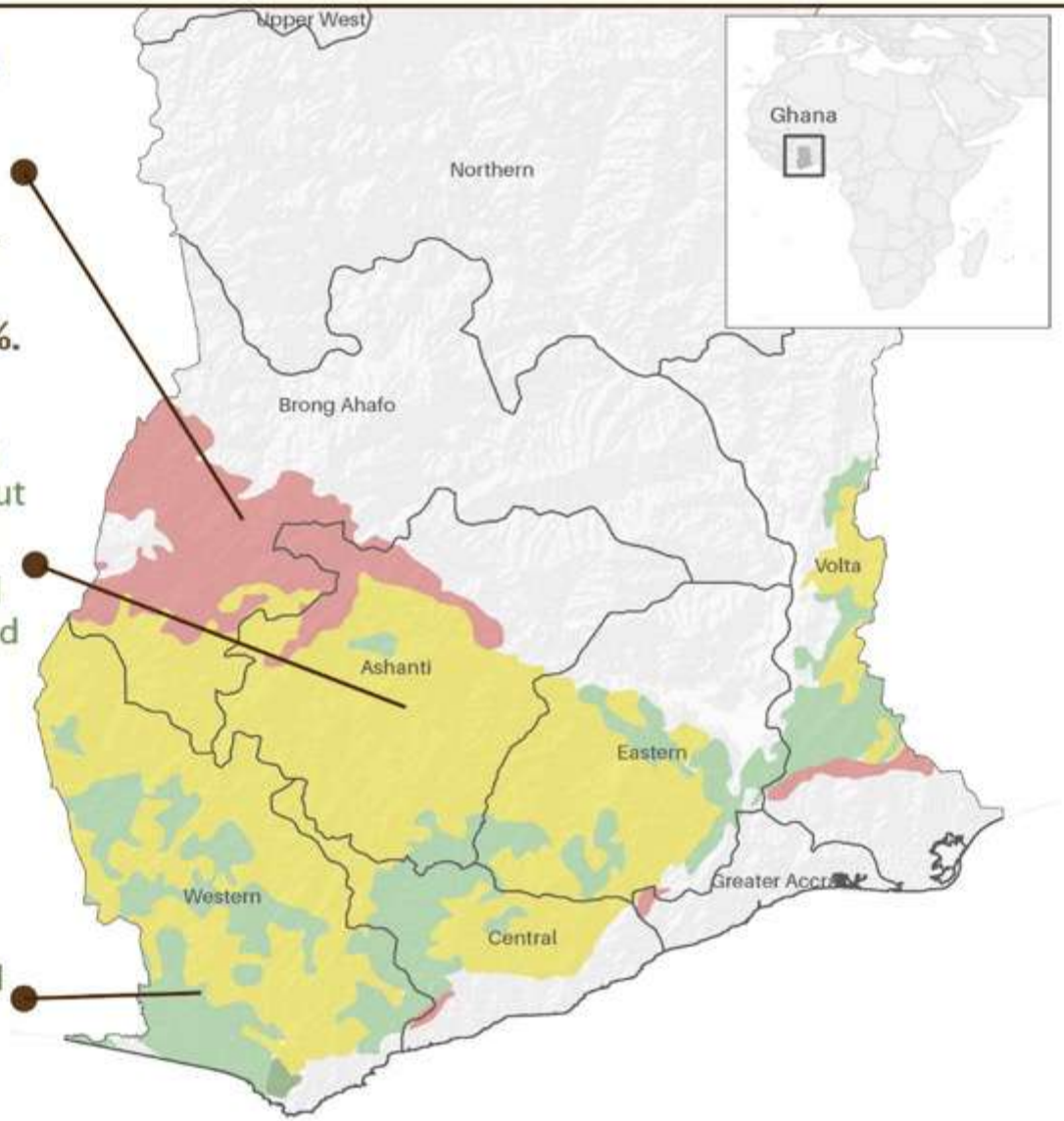
losses of 30-50%.

Western region

Climate will remain highly suitable.

Without adaptation, increased pest and disease pressure causes

losses of 10-20%.



Cocoa production can only be sustained with a well-directed adaptation effort

820,000MT 550,000MT

Potential losses amount to 1/3 of current production, or 270,000 metric tons.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The U.S. Government's Global Hunger and Food Security Initiative
Action differs depending on:
• Supply chain role
• Climate risk
• Coffee segment

Sustainability of Supply , Reputation and Quality are key drivers for CSA investment

LONG-TERM SUPPLY

REPUTATIONAL RISKS

Quality

General Drivers for Sustainability and CSR investments

- SHAREHOLDER/ CUSTOMER PRESSURE
- BUYER REQUIREMENTS
- LICENSE TO OPERATE
- LEGAL COMPLIANCE
- CO-FUNDING OPPORTUNITIES
- AVOIDED REGULATION
- IMPROVED LEGISLATION
- IMPROVED STAKEHOLDER RELATIONS
- NGO ADVOCACY
- COST SAVING

Decide on your entry point to start the conversation on climate risk and resilience

Entry points vary for different companies

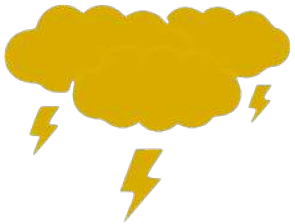
WATER RISK

LONG TERM SUPPLY

REPUTATION

DEFORESTATION

COMMUNITY CONFLICT



MICRO-CLIMATE

LEGAL COMPLIANCE

Quality

What role does your company play?

1. **Direct Service Providers**: *Providing in-depth, holistic direct farmer services.*

What are the most serious weather related challenges farmers face and what are the corresponding climate smart **practices** to promote resilience? How do you get farmers to adopt these **practices**?

2. Collaborators: *Sharing the burden of service provision via collaboration.*

*How to leverage resources to provide knowledge and support to build climate resilience **strategies**?*

3. Catalysts: *Sparking action in the sector at a high level with a light touch on-the-ground.*

*What are the major climate risks that farmers face in the long-term and what are the **enablers** needed to build resilience? How do we get the information and resources to farmers/service providers across geographies?*

Climate adaptation concerns the entire value chain

Practices

implemented on-farm to adapt to current climate variability (and to a lesser extent, prepare for climate change)

- Cover crops
- Shade management
- Distancing
- Trenches

Strategies

implemented on- and off-farm, within the producer organization, community or supply chain, that adapt to current & future climate

- Diversification
- Choosing resilient varieties
- Changing processing methods

Enablers

supported by actors on- and off-farm to establish the conditions needed to implement CSA strategies and to adopt CSA practices

- Financing
- Weather insurance
- Weather stations
- Innovations in payment terms to promote CSA

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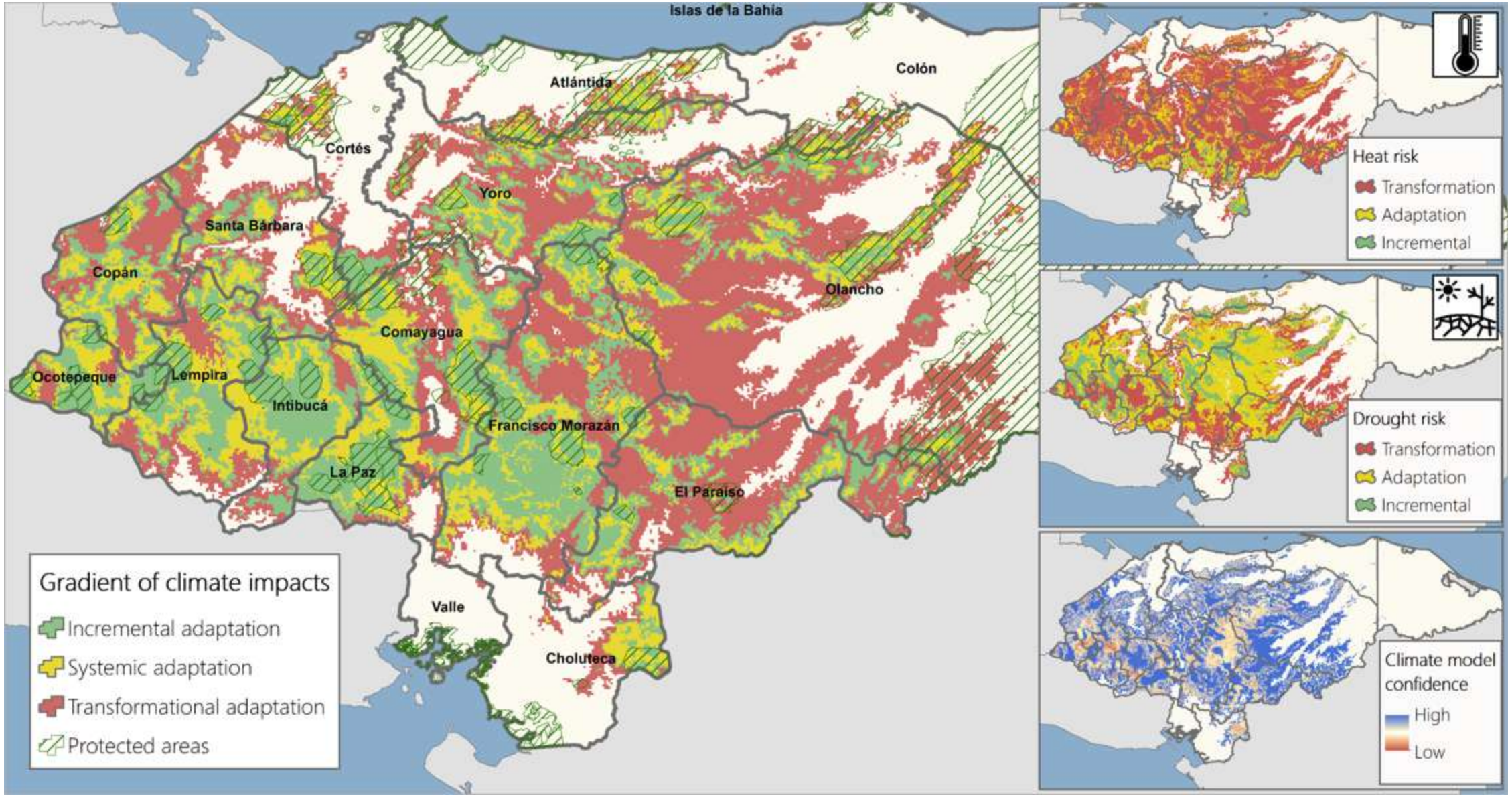
Understand the climate risk faced in your company's supply chain(s)

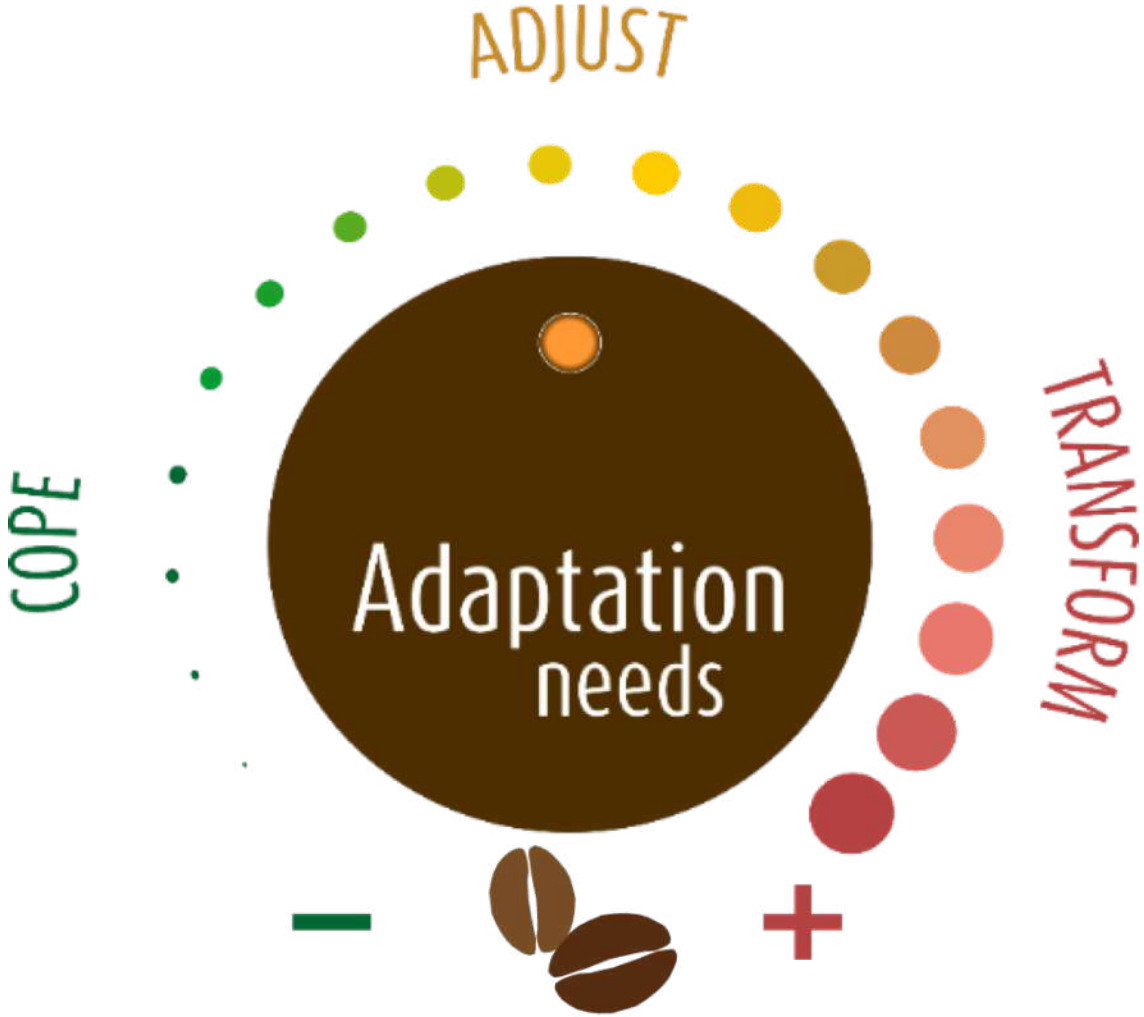


Understand how climate risk informs the level of adaption needed

Incremental adaptation where climate is most likely to remain suitable and adaption will be achieved by a change of practices and ideally improved strategies and enablers

Systemic adaptation where climate is most likely to remain suitable but with substantial stress through comprehensive change of practices accompanied by changes of strategy and adequate enablers

Transformational adaptation where climate is likely to make coffee production unfeasible, will require a focus on strategic change and adequate enablers as practices alone may be uneconomical



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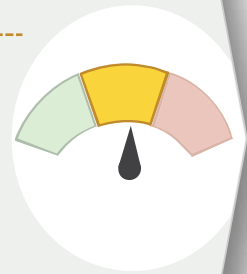
SYSTEMIC CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Irrigation, novel varieties, novel soil management	Good governance, transparent pricing & payment mechanisms, extension & credit	Good governance, transparent pricing & payment mechanisms	Traceability, transparent pricing & payment mechanisms
Strategies	On-farm diversification (e.g. new crops for subsistence or commercial use), different processing methods	CSA adapted extension services, low-water processing, access to adapted germplasm, product diversification	Process-based differentiation (i.e. voluntary certifications), carbon insetting, volume incentives	Process-based differentiation (i.e. voluntary certifications), carbon insetting
Enablers	Crop insurance (drought, hail), access to finance to support adaptation	Adapted germplasm (WCR), weather stations information, knowledge management, crop insurance (drought, hail), access to finance to support adaptation	Access to adapted germplasm (WCR), information, knowledge management, crop insurance (drought, hail), access to finance to support adaptation	Earmarks for WCR, information & knowledge management, transparent trade & payment processes, carbon insetting



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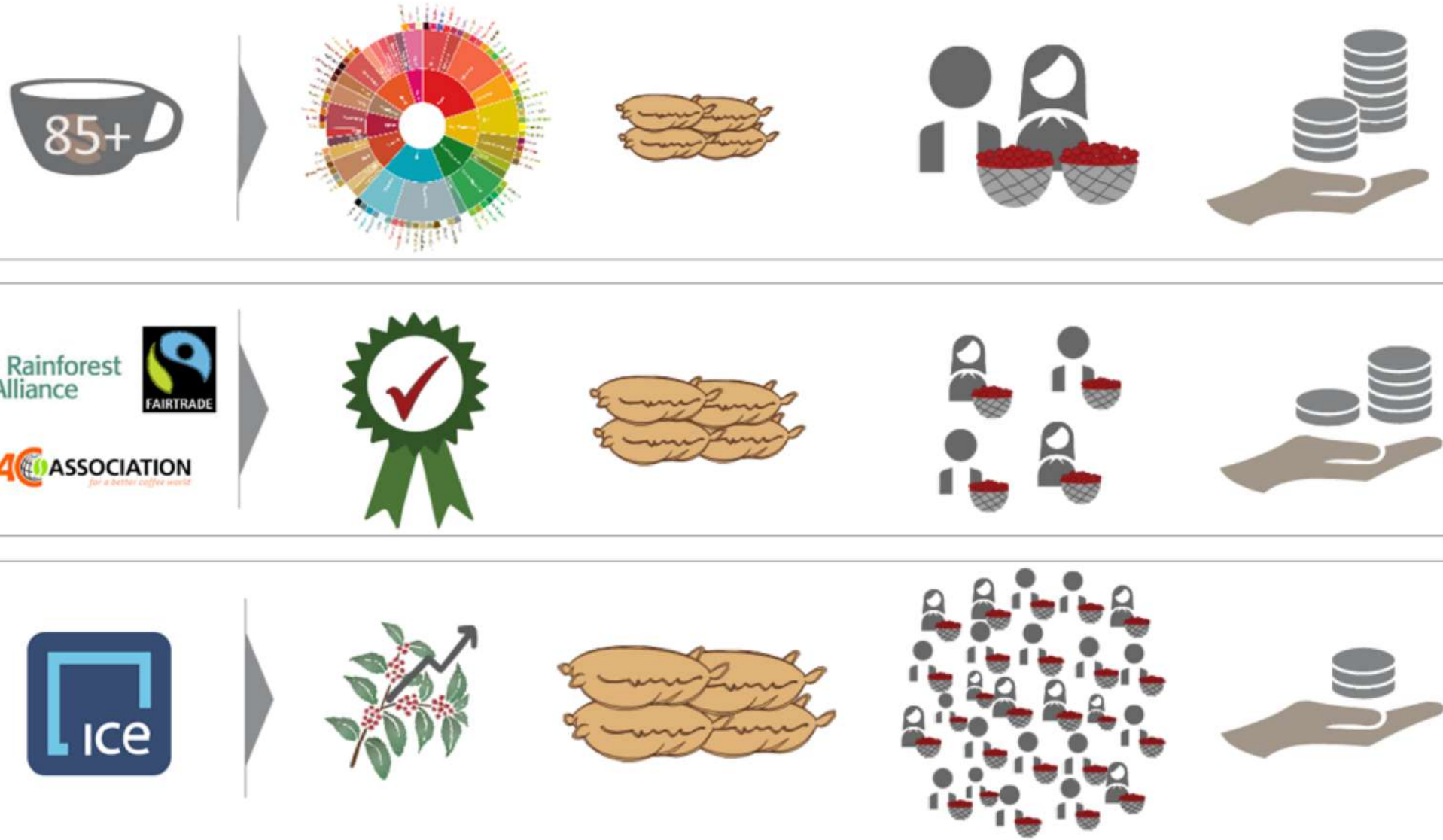
Understand how the coffee segment affects strategy design



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How three companies approach investment in climate-smart agriculture

Meredith Taylor, Counter Culture Coffee

Monika Firl, Coop Coffees

Piet van Asten, Olam International

- Counter Culture drivers for CSA investment: Quality and Protection of long-term supply

- Quality investment strategy: Reduce farmer risk

- Sustainability investment strategy: Farmer-identified interventions
- Goal: Build price of CSA practices into price for coffee

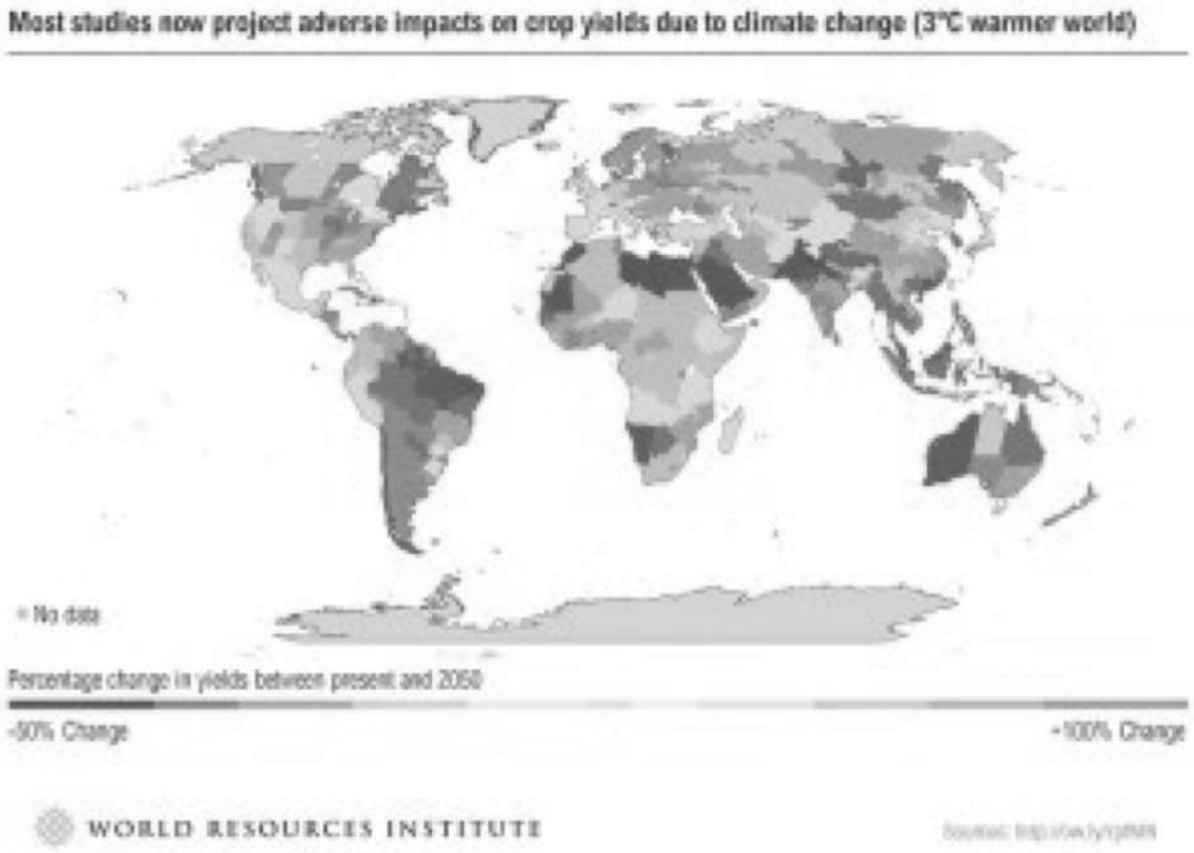
- Challenges:
  - How much does it cost to do x practice?
  - How do you know x practice is being done?
  - Price traceability
  - Measuring ROI when the goal is avoided loss

FAIR, ORGANIC, DIRECT

… a green coffee importing cooperative, committed to building and supporting "Fair and Direct" trade relationships that benefit small-scale farmer families, their communities and exporting organizations.

Monika Firl, Director of Sustainability

RISING TEMPERATURES AND ERRATIC WEATHER CAUSE MASSIVE LOSS OF PRODUCTION CAPACITY IN COFFEE GROWER REGIONS



- Of the 25 million coffee farmers/workers around the world, the vast majority are smallholders and depend almost entirely on coffee for their livelihood.

- Recent industry research predicts, some 50 % of current coffee regions would no longer be suitable for production by the year 2050, due to climate change.

COOP COFFEES "CLIMATE ENGAGEMENT" TIMELINE

2013 - 2014

Jan to March: devastation seen during staff and roaster travels, and reports back from producers; **June to July**: BoD proposal and vote agreeing to set a .05/lb "Roya Premium"- raised nearly $45K in 6 mos; **Aug to March**: funds support 10 projects based on proposals submitted by producers.

INVITED TO JOIN COFFEE FARMER RESILIENCY FUND

2014 – 2017 with Root Capital / Progreso Match Fund

CC invests $300,000 leveraged to some $635,000 supporting 11 producer cooperatives in five countries – with projects such as: field renovation, learning and exchange around improved and regenerative organic practices, and hiring organically trained and orientated agronomists to strengthen producer coops' technical teams.

FRAMING OUR WORK TO ENGAGE WITH GLOBAL ISSUES




2017 – 2020

The **“Carbon, Climate and Coffee Initiative”** is becoming an important part of our collective identity. Generating a producer support fund through a .03/lb “Carbon Tax” on all imports, allows us to invest in ecological solutions to climate challenges, and is an example of genuine commitment take responsibility for our carbon footprint, while supporting local communities – both at home and abroad.

WORKING TOGETHER FOR A BETTER FUTURE IN COFFEE

For more information, please visit:

www.coopcoffees.coop

How does Olam invest in CSA?

- Train farmers through our own field teams
- Provide some knowledge/inputs/credit - go digital
- Provide access to knowledge through our LBAs
- Through R&D in our own coffee plantations & upstream
- Leverage partnerships (CCAFS, SFL, Univ, NGOs)

Why do Olam teams invest in CSA?

- Olam visibility as leader sustainability
  - Leadership vision – because it's the right thing
  - Customer demand – stickiness and premiums
  - Shareholders – create long term value
- Improving stakeholder relations in sourcing area – 'license'
- Co-funding opportunities to access knowledge/services

Resources

- Climate-Smart Coffee in Honduras - country brief

https://cgspace.cgiar.org/handle/10568/97530

- The economic case for climate action in West-African cocoa production - Cost of Inaction Ghana

https://cgspace.cgiar.org/handle/10568/97167

- Impact of climate change on coffee in Central America

https://cgspace.cgiar.org/handle/10568/93348

- A Bitter Cup: climate change profile of global production of Arabica and Robusta coffee

https://cgspace.cgiar.org/handle/10568/53031

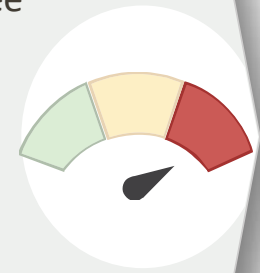
Sadler, M. 2015. The Role of Resilient Supply Chains in the Face of Climate Change

INCREMENTAL CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Cover crops, fertilizers, GAP	Good governance, transparent pricing & payment mechanisms, extension & credit	Good governance, transparent pricing & payment mechanisms	Traceability, transparent pricing & payment mechanisms
Strategies	Organic matter management within the farm, conservation of riparian areas	CSA adapted extension services, improved processing & post harvest, access to adapted germplasm	Product differentiation, carbon insetting	Product differentiation, carbon insetting
Enablers	CSA extension, weather stations for better forecasting, carbon insetting, incentivizing process vs quality	Quality differentials, cupping labs, CSA credit (R&R), access to adapted germplasm (WCR), weather stations information, knowledge management	Price differentials, access to adapted germplasm (WCR), information, knowledge management	Consistent price differentials, earmarks for WCR, information & knowledge management, transparent trade & payment processes

TRANSFORMATIVE CHANGE

	FARMER	PRODUCER ORGANIZATION	TRADER	ROASTER
Practices	Switch to robusta, better adapted non-coffee crops	Good governance, transparent pricing & payment mechanisms, extension & credit for non-coffee crops	Good governance, transparent pricing & payment mechanisms for non-coffee crops	Traceability, transparent pricing & payment mechanisms for declining / disappearing coffee production
Strategies	Diversify livelihood strategies away from farming or out of farming entirely	Identify new crop options, provide access to technologies and training, build new commercial relationships	Identify new commercially viable crops to replace coffee	Diversify coffee sourcing regions
Enablers	Developing new value chains for new cash crop systems	Market information, commercial contacts with non-coffee buyers	Market information, commercial contacts with non-coffee buyers, access to adapted production technologies, credit and crop insurance	Information on other viable coffee regions for quantity and quality requirements



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Questions?

Next Modules

Duration: 75 minutes per module
Time: 3pm CEST | 9am EDT | 6am PDT

1	June 7th	Understanding climate change	Introduction
2	June 12th	How is climate change affecting my supply chain?	Risk Profiles
3	June 28th	How can I manage the effects climate change is having on my supply chain?	Tools
4	July 19th	How can I scale up CSA?	Scale
5	September 27th	How do I know my investment in CSA is working?	Monitoring
6	October 25th	How can I convince my company and others t invest in CSA?	Business Case
7	November 8th December 6th	How can collaboration work? Bringing action to origin!	Collaboration

Link to CSA Learning Series

GLOBAL COFFEE PLATFORM
for a sustainable coffee world

CSA Learning Series

Kealy Sloan
Sustainable Food Lab
ksloan@sustainablefood.org

Caroline Glowka
Global Coffee Platform
glowka@globalcoffeeplatform.org