



RESEARCH PROGRAM ON
**Climate Change,
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Food Security**



CCAFS: Phase 2


Overview

Climate challenges

Overarching theory of change

Program implementation





A billion people go hungry
Another billion suffer nutrient deficiencies
Another billion over-consume

In 15 years there will be another billion
people to feed

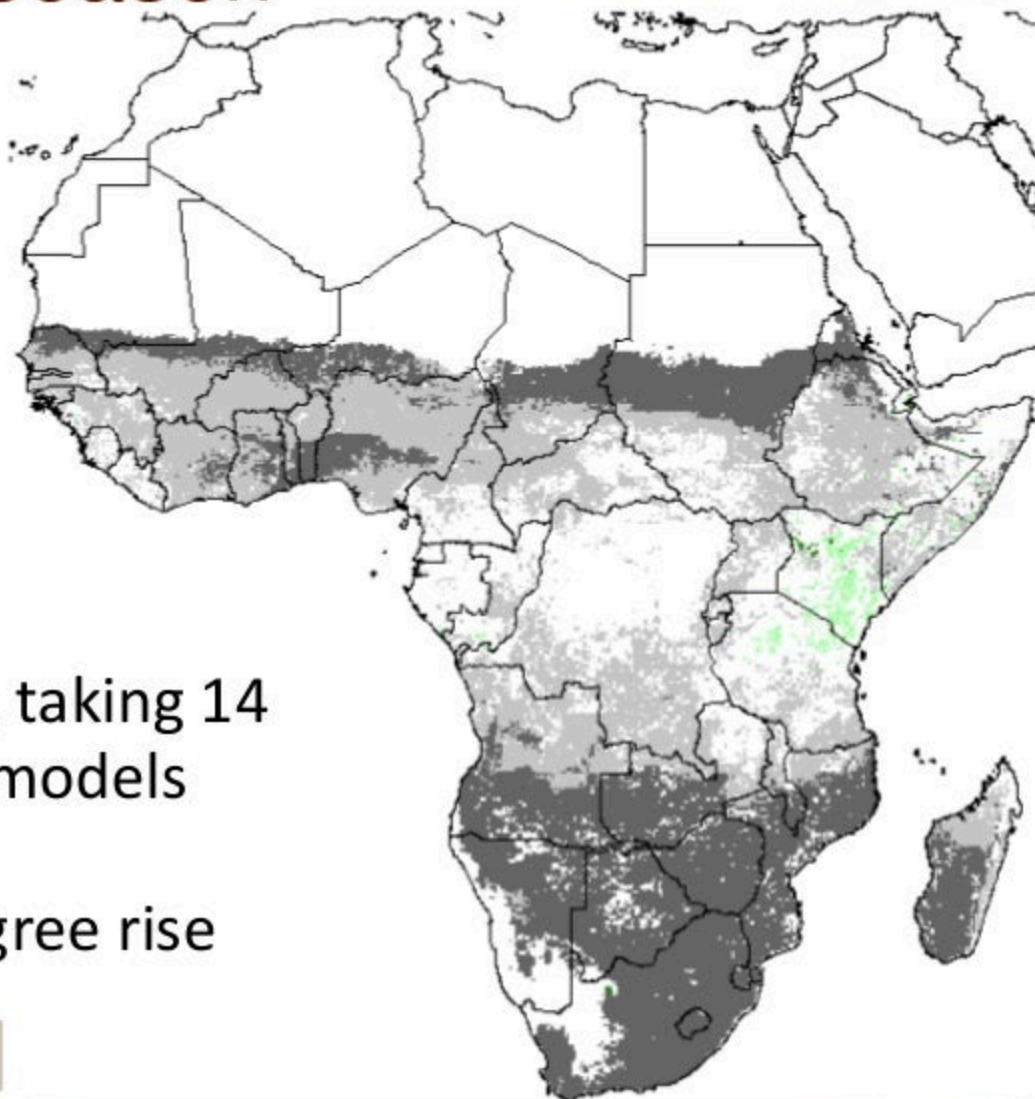
Length of growing season



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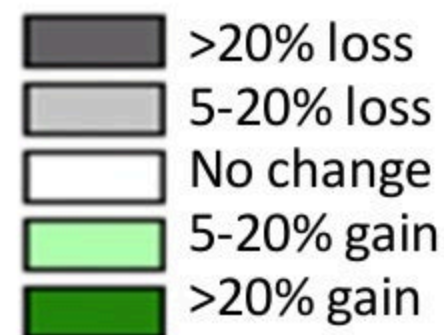


Led by



To 2090, taking 14
climate models

Four degree rise



Weather catastrophes



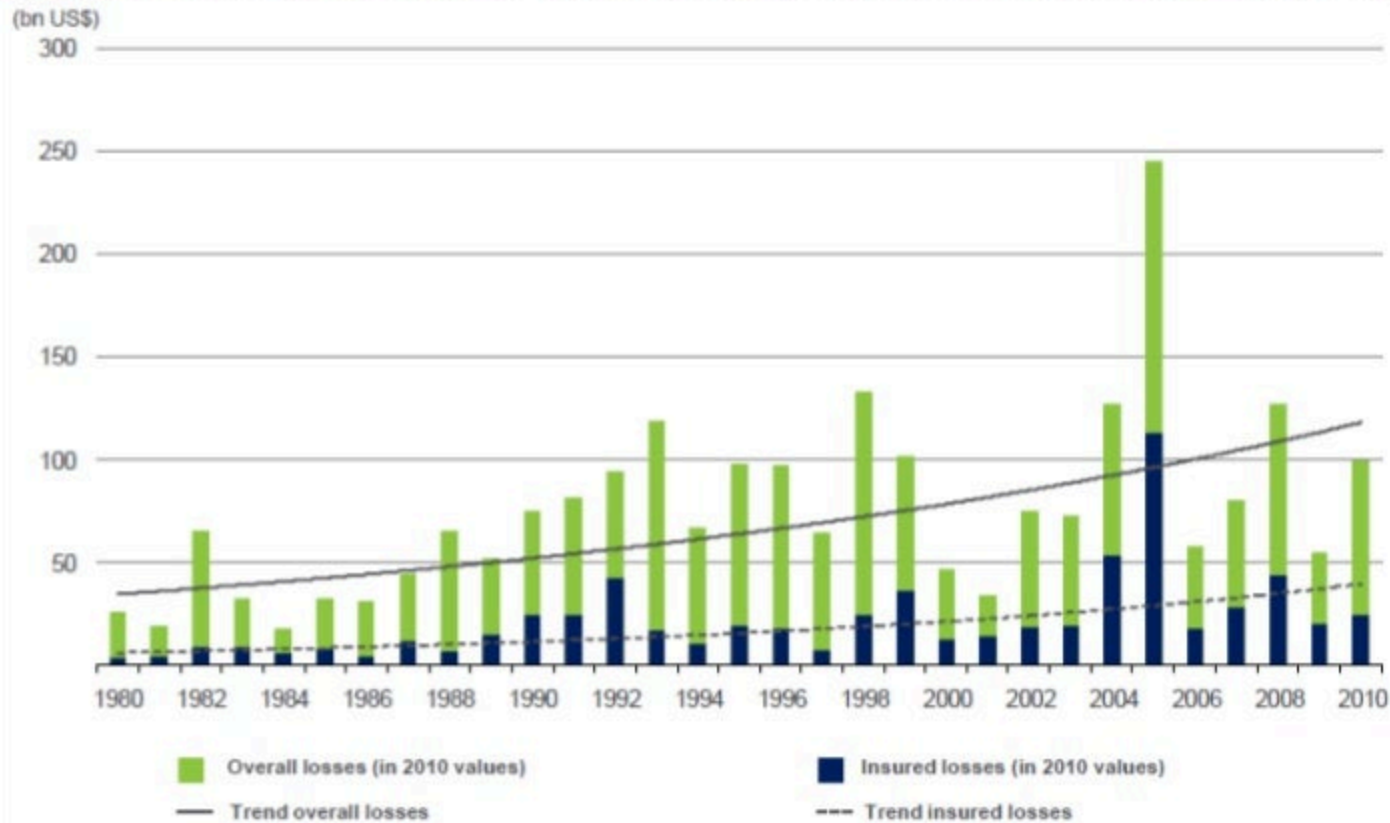
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NatCatSERVICE

Weather catastrophes worldwide 1980 – 2010

Overall and insured losses with trend



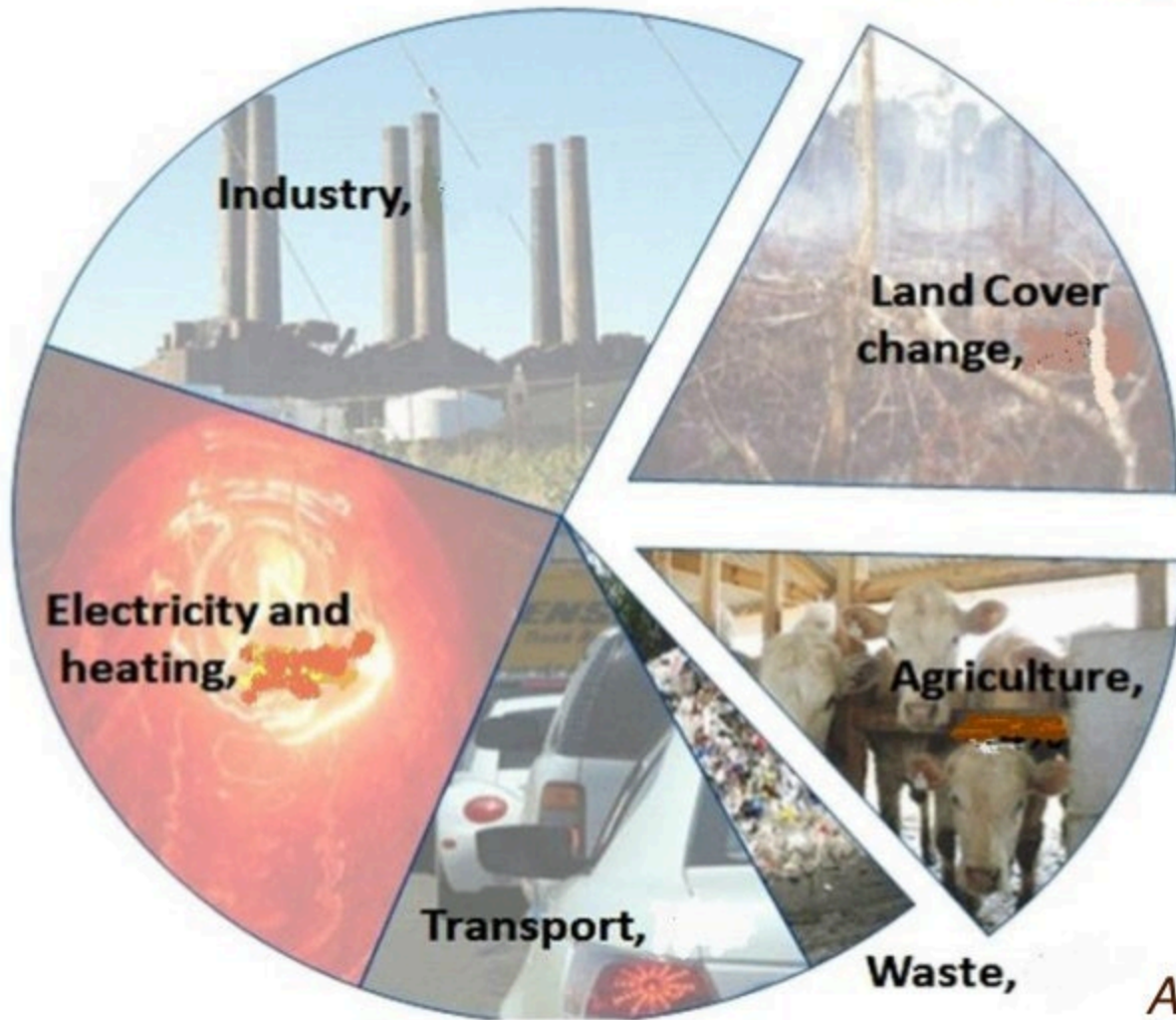
Source: Munich RE NatCatSERVICE



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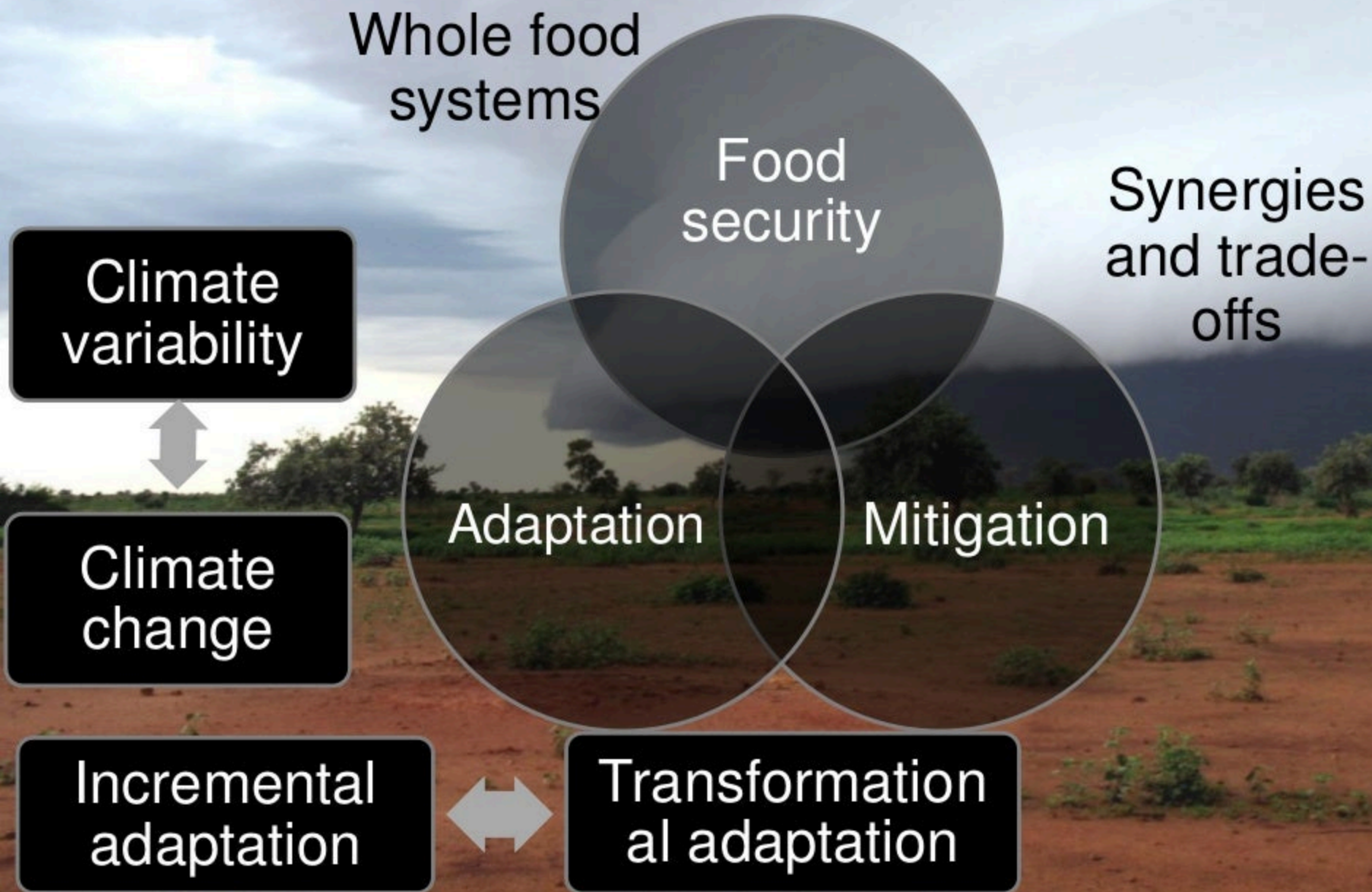
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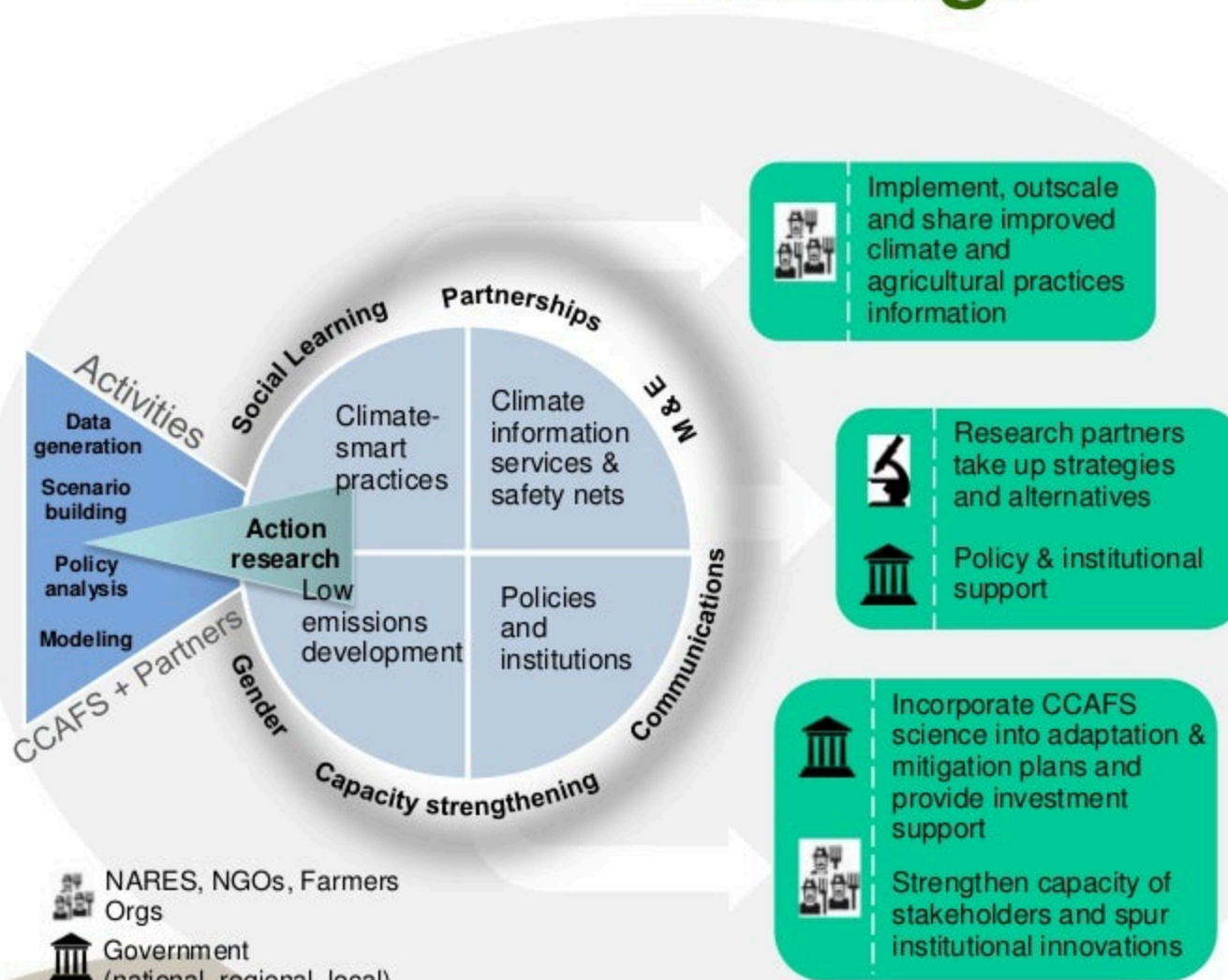
19-29%
global
GHGs from
food
systems

*Vermeulen et al. 2012
Annual Review of Environment and
Resources (2012)*

CCAFS plans to cover:



Generic CCAFS Theory of Change

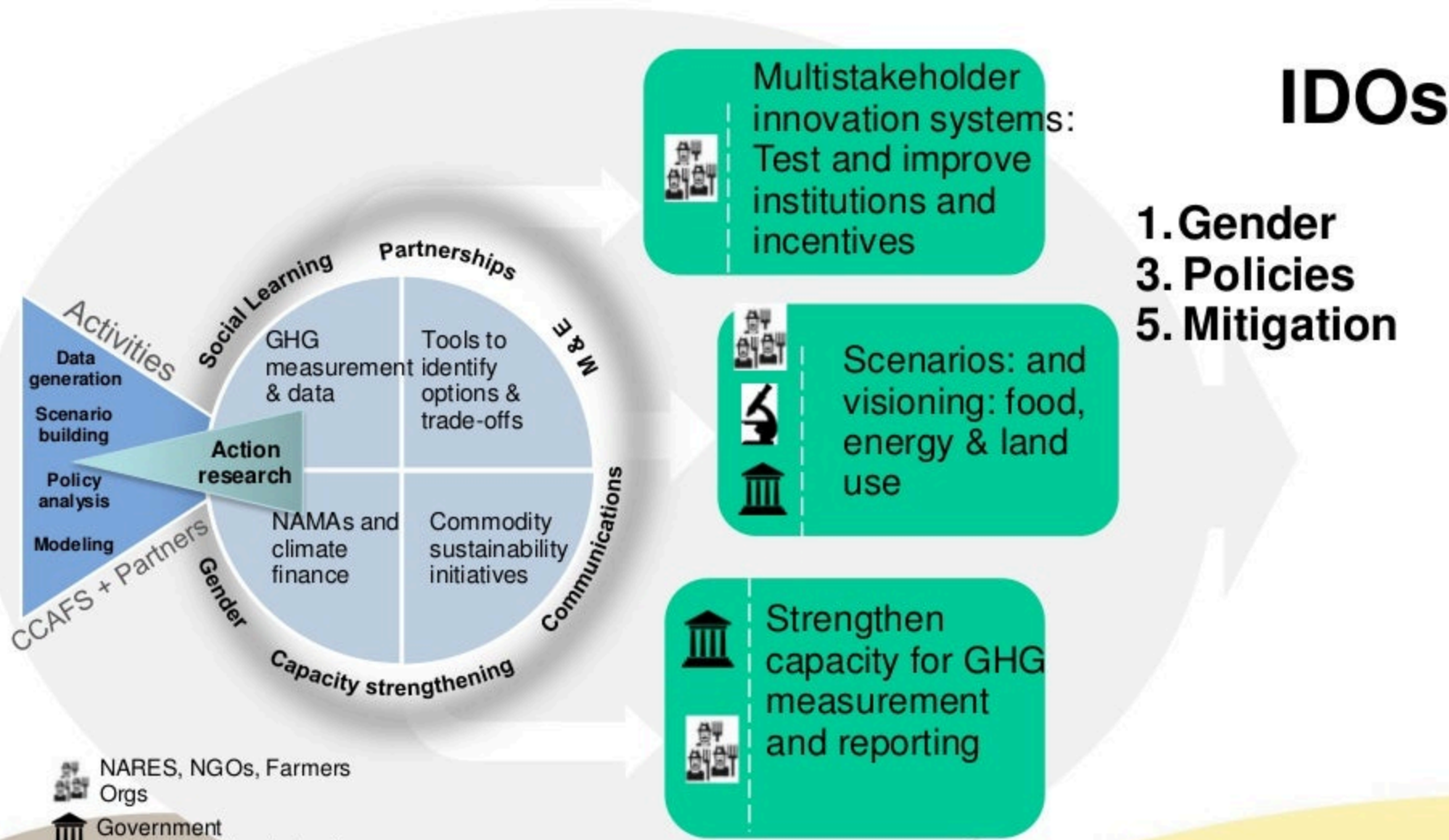


Intermediate Development Outcomes

1. Gender
2. Adaptive capacity
3. Policies
4. Food security
5. Mitigation

- NARES, NGOs, Farmers Orgs
- Government (national, regional, local)
- Climate & agricultural researchers, modellers, crop breeders

FP #3: Low emissions agricultural development



- NARES, NGOs, Farmers Orgs
- Government (national, regional, local)
- Climate & agricultural researchers, modellers, crop breeders

Vision: Improved incomes and food security through climate resilient, sustainable agricultural intensification that balances conservation and commercial utilization of land

Vision

Partners: NARO, ABCIC, NACCRI, NALPRI, Sokoine and Makerere Universities, CIAT, ICRAR, IWMI, ICRAF

Partners

Partner gaps: MAAIF, Insurance companies, private sector, Climate change secretariat, Local NGOs, Farmer organizations, NAADS, Credit/banks, International NGOs, Local Government

Constraints to next-users achieving the vision

- Institutional challenges
- Limited policy
- Inadequate structures that link CGIAR centres and NARS/attitude issues that depict CGAIR being dominant over NARS
- Inadequate capacities of the NARS
- End-user challenges
- Counterfeit and
- marginalization of women in land tenure, control of resources, household decision-making

Constraints

Outcomes that address next-user constraints

- CCAFC
- CGIAR centres
- Decision-makers establish an enabling environment for equitable access access and use of land that ensures tenure
- End-users take advantage of multiple diversification options supported by next-users, including off-farm income
- Next-users support agricultural intensification

Outcomes

Outcome mapping at site level

High value climate smart agriculture options

- Shaded coffee systems
- Integrated soil fertility management
- Water harvesting
- Crop diversification/shifts
- Wetland management/protection
- Land use laws



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FP 1: Climate-smart practices

- Improved technologies and practices for climate-smart agriculture
- Methods, approaches and capacity for local adaptation planning
- Innovative mechanisms for scaling up and out, including building local capacity to innovate



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FP 2: Climate Information Services and Climate-Informed Safety Nets

- Methods of improving near-term climate forecasts
- Methods of communicating climate information and advisories
- Climate-informed insurance products for women and men farmers
- Tools and options to manage the whole food system



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FP 4: Policies and institutions for resilient food systems

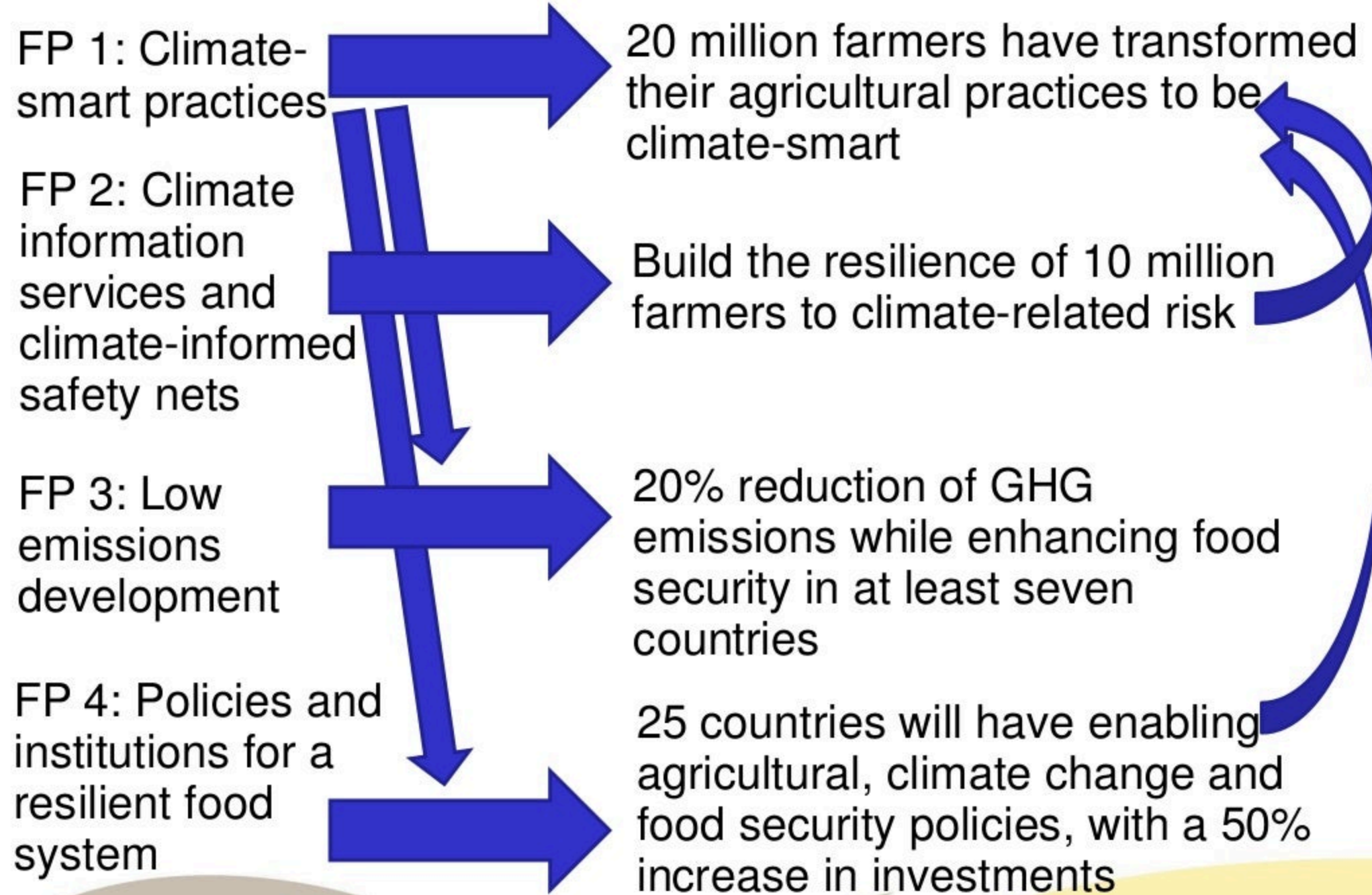
- Data, models and scenarios to understand impacts of climate change
- Decision support tools for targeting policy development and making investment choices
- Analysis of strengths and weaknesses of current and emerging national to global policy



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Program implementation

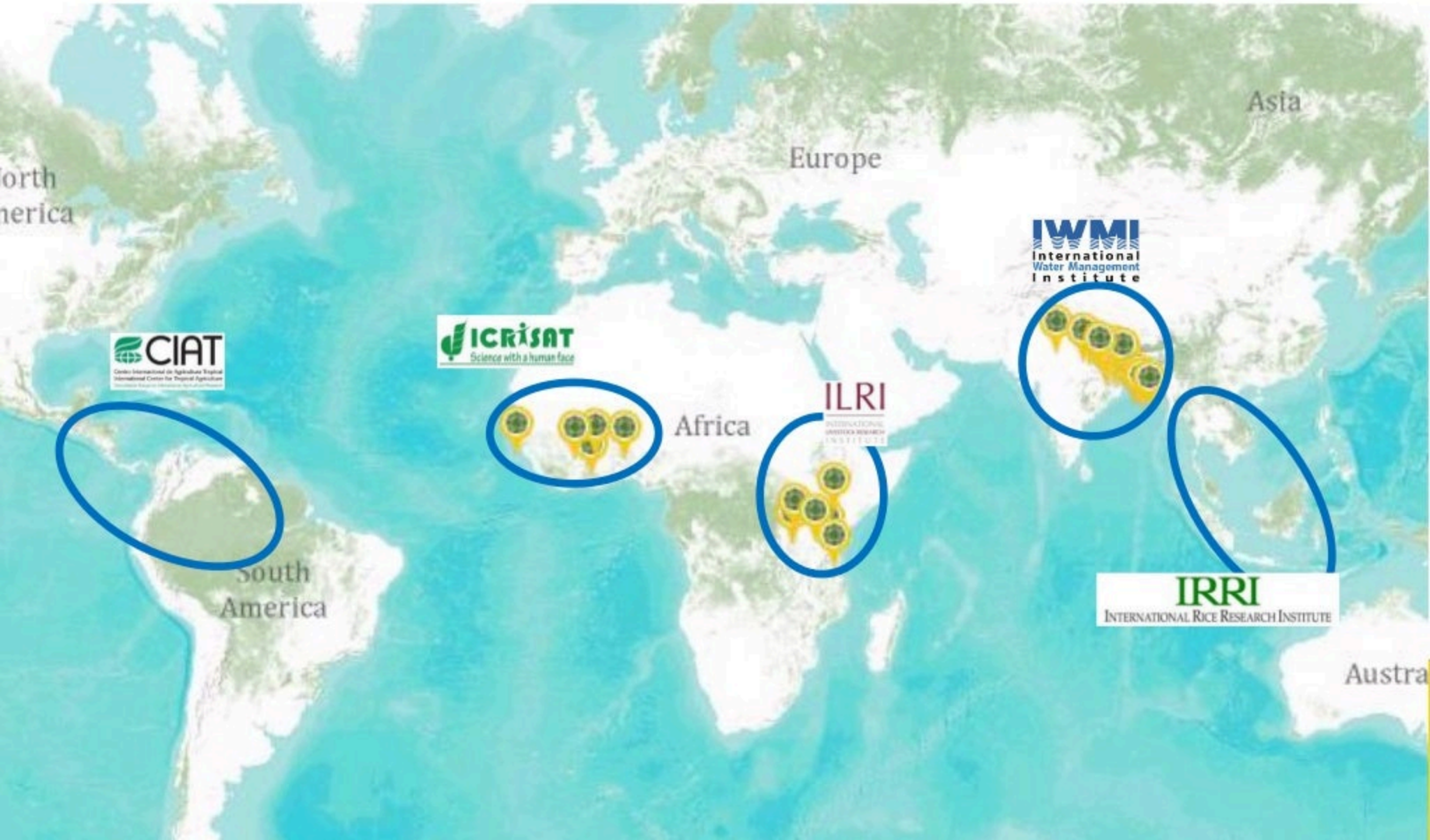


By 2023

Where CCAFS works



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futureearth
research for global sustainability

Strategic selection of partners based on impact pathways

Budget (\$ million)

Flagship	2015-2017 3-year budget	2018-2020 3-year budget	2021-2023 3-year budget	Total 9-year budget
• Climate-smart practices	60	63	45	168
• Climate information services and climate-informed safety nets	33	36	40	109
• Low-emissions agricultural development	30	40	60	130
• Policies and institutions for resilient food systems	39	27	27	93
Totals	162	166	172	500

30% to partners

Assume 30-40% bilateral



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Grounding the flagships in national realities: CIAT-CCAFS-Ministry of Agriculture Agreement on Integrative analysis of production systems in Colombia for adaptation to climate

Clima y Sector Agropecuario Colombiano

Adaptación para la Sostenibilidad Productiva



MinAgricultura
Ministerio de Agricultura
y Desarrollo Rural



**PROSPERIDAD
PARA TODOS**



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A climate adaptation partnership

Unite effort, resources and capacity between the Ministry and CIAT-CCAFS to strengthen the agricultural and livestock sector to adapt to climate change, and improve the resource use-efficiency in prioritised production systems

- US\$8m, 18 months, 11 national partners, 3 international partners
- “CCAFS Colombia”, 4 themes



www.aclimatesectoragrpecuariocolombiano.org



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Flagship 1: Climate-smart practices

- Multi-site evaluation of varieties within- and out- of season for maize, beans, rice, cassava and potato
- Quantifying benefits of different options: water and carbon footprints
- Site-specific management approaches to adaptation through farmer-farmer learning
- Modelling varietal response and scaling potential technological options nationally



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Flagship 2: Climate information services

- Development of Colombia's first agroclimatic forecasts
- Partnerships with Brazil and US on modelling approaches for seasonal forecasting
- Crop model application with local varieties and evaluated through trials
- Piloting with rice and maize grower organisations in 2 sites
- South-south learning: Colombia-Senegal knowledge exchange

Using Eta seasonal forecasts

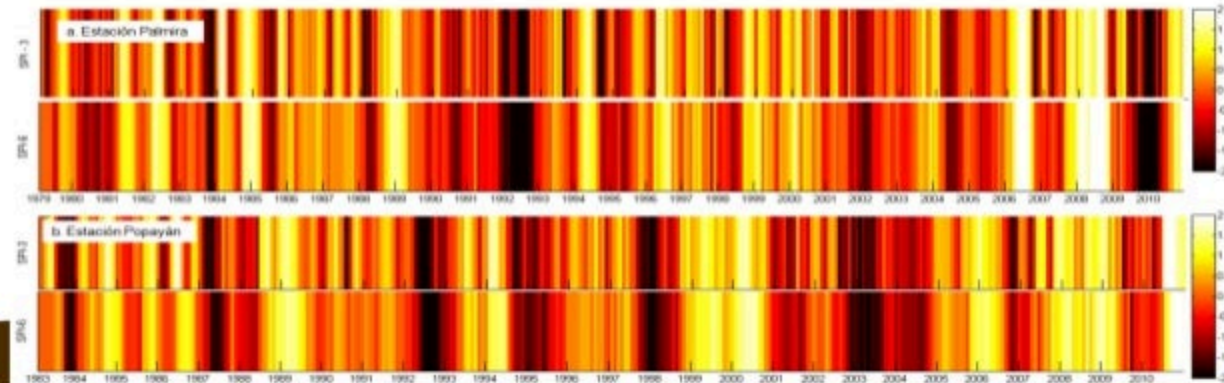
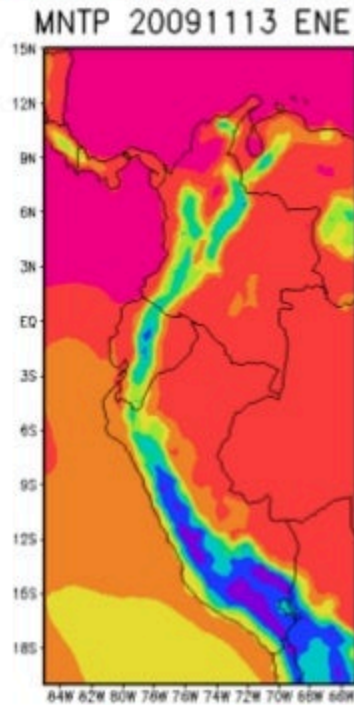
and crop models for agricultural risk management



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Flagship 3: Low carbon development

- Quantifying carbon footprints of different systems:
 - Potato with and without conservation agriculture
 - Silvopastoral systems versus pasture systems
 - “Campesino” agriculture
 - Fruit tree systems
- Development of 2 NAMAs for pasture reconversion and one other topic of importance to the Ministry of Agriculture
 - Business model for mitigation in the agricultural sector



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Flagship 4: Policies and institutions

- Significant training and capacity building of Ministries, agrometeorological institutions, farmer organisations and agricultural researchers
- Directly informing the agricultural sectorial plan for adaptation under development (with the National Planning Department)



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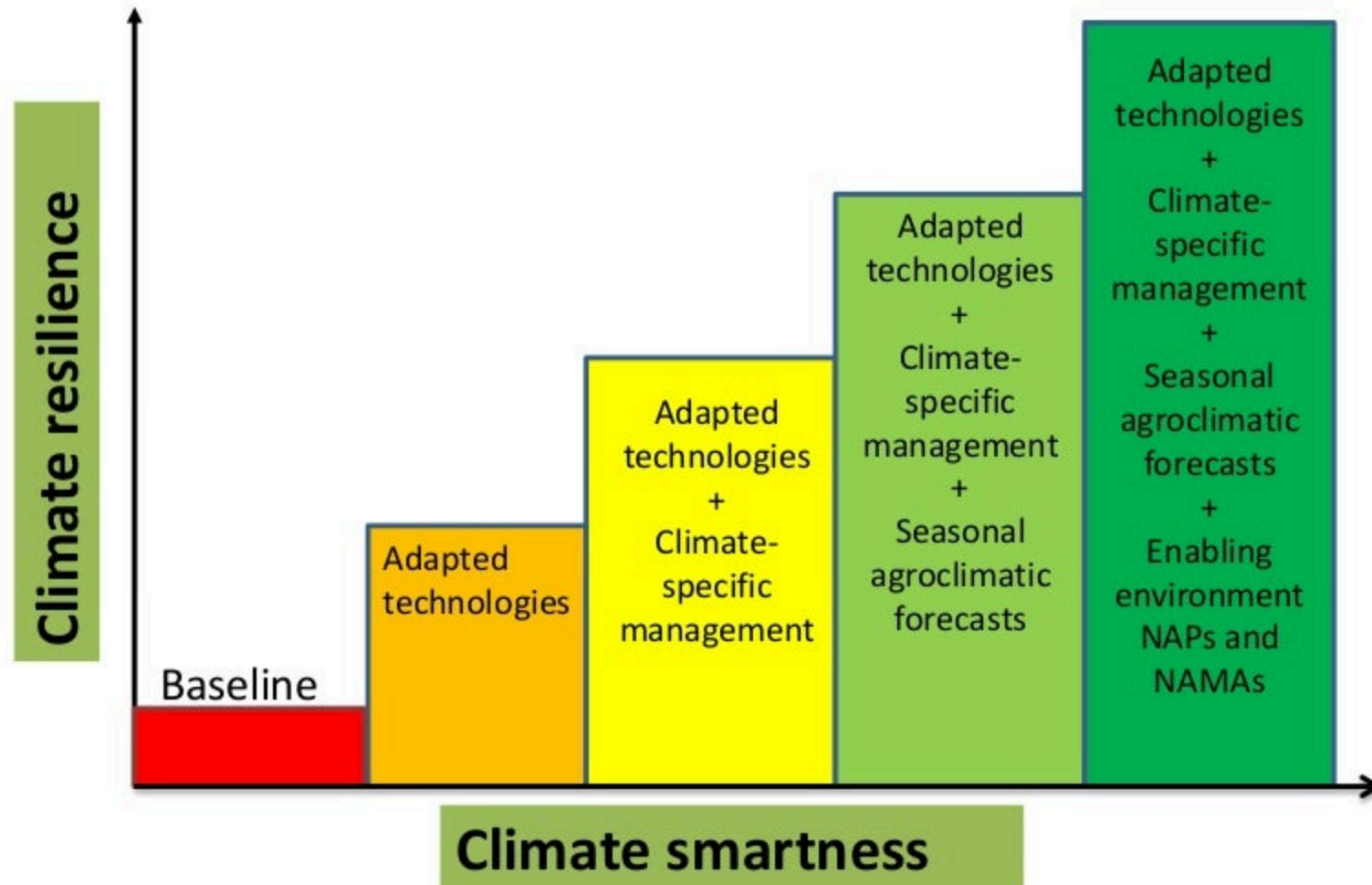


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After 6 months:

- 9 partners brought into the alliance
- 52 municipalities with on the ground activities
- 16 departments
- > 500 experimental plots in 20 locations
- > 70 materials being evaluated
- > 200 on farm participatory research sites
- > 40 events (workshops, meetings, events) with 660 participants from 32 institutions
- 97 researchers working on the project

Overall framework





CCAFS: The gender outcome challenge

Patti Kristjanson

Linking Knowledge with Action Research Theme Leader

CCAFS Big Outcomes
Flagships (What?)

Partnerships and strategies to achieve outcomes (*how & with whom?*)

Outcome Pathway

Gender Outcome (IDO)

Climate-smart practices

Inclusive local forward planning (e.g. using climate analogues)

Action research with NGO's taking gender transformative actions (e.g. CARE, PROLINNOVA)

Climate info services & Climate-informed safety nets

Equitable partic. research with met services and NARES

Co-strategy development with food aid community (e.g. WFP)

Low Emissions Agricultural Development

Learning re: inst's with local partners (PES and LED strategies)

Strategic partnerships (e.g. FAO) & comms efforts re: LED/mitigation by & for women

Policies and Institutions for resilient food systems

Learning alliances/platforms

Agricultural business 'hubs'

Policy champions & capacity in foresight analyses

Strengthening reg/nat'l farmers orgs voice in CCAFS policies

(Overarching)
Gender dissag. data & analyses, gender-cc tools & local partner capacity strengthening, innovative approaches - participatory video, TV, Radio Mobiles, integr. tools, open access K sharing, Foresight/scenarios analyses co-level. with PPP's

Increased access to and control over productive assets, inputs, information, food and markets; strengthened participation in decision-making processes

Empowerment of women and marginalised groups



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Country/Site Theory of Change

e.g. Eastern Kenya site: **Climate Services focus** – with: Met service, KARI, Extension, ICRISAT, ICRAF, ILRI, Media partner – Shamba Shape Up (Farm TV show watched by 11 million) – on improved seasonal forecasts + practical ag/NRM advice for climate resilience (women + men)

e.g. Western Kenya site: **Climate Smart Ag focus** – with: CARE, Vi, KARI, CIAT, CIMMYT, ICRAF, ILRI, Partic. Action Research with Min of Ag, extension, SSU: CSA practices & comms, inst'l arrangements (groups) targeting benefits of CSA to women, youths

e.g. a more 'Bottom-up' Theory of Change for CCAFS's 'Rakai' site in S. Central Uganda

Vision: Improved incomes and food security through climate resilient, sustainable agricultural intensification that balances conservation and commercial utilization of land

Partners: NARO, ABCIC, NACCRI, NALPRI, Sokoine and Makerere Universities, CIAT, IFPRI, IWMI, ICRAF, IITA, ILRI

Partner gaps: MAAIF, Insurance companies, Private sector, Climate change secretariat, Local NGOs, Farmer organizations, NAADS, Credit/banks, International NGOs, Local Government

Constraints to 'next-users' achieving the vision

Institutional challenges
Limited policy engagement
Inadequate structures that link CGIAR centres and NARS/attitude issues that depict CGIAR being dominant over NARS
Inadequate capacities of the NARS
End-user challenges
Counterfeit agricultural inputs (due to lack of regulation, corruption)
Land tenure issues
Low productivity
Marginalization of women in land tenure, control of resources, household decision-making

Strategies that address 'next-user' constraints

CCAFS Rakai expands its base of partners and **shifts focus to vulnerability and empowerment**
CGIAR catalyzes new engagement with NARS based upon **co-production of knowledge**
Next-users engage in **equitable policy processes** informed by research evidence
Decision-makers establish an enabling environment for **equitable access to and use of land that ensures tenure**
End-users take advantage of **multiple diversification options** supported by next-users, including off-farm income
Next-users support **agricultural intensification through pathways that reduce vulnerability and increase**

High value climate smart agriculture options (scaleable outputs)

Shaded coffee systems • Integrated soil fertility management • Water harvesting • Crop diversification/shifts • Wetland management/protection • Land use laws



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Big Data in Climate Change and Agriculture:

CCAFS commitment to open access agriculture



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Data management in CCAFS

- Making good quality data available as soon as possible: open access (CGIAR policy)
- Linking with other partners and other websites and tools as much as possible
- Making best use of existing databases: interoperability
- Fostering new and innovative approaches to data production, storage, archiving and use



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CCAFS Data Management Strategy

- Make available quality-assured “Data+” to potential users now and well into the future
- Encourage harmonization so that different data can be brought together to enrich understanding of processes, outcomes, impacts
- Set out a pathway for building a useful, complete and accessible repository of data for future research
- To guide CCAFS in designing and implementing data support mechanisms

Data generated by research plus documentation that enables them to be used in future (e.g. methods for data collection/generation, computer programs for data processing, data quality assessment, metadata)

Enabling a data sharing culture

- Promote the benefits of better managing and sharing data (increased visibility, reputation) and document where possible (data download stats)
- Reflect “publishing” of data and tools in performance assessment
- Promote international citation standards for data
- Develop improved metadata and data “self-documenting” technologies



Baseline Surveys:

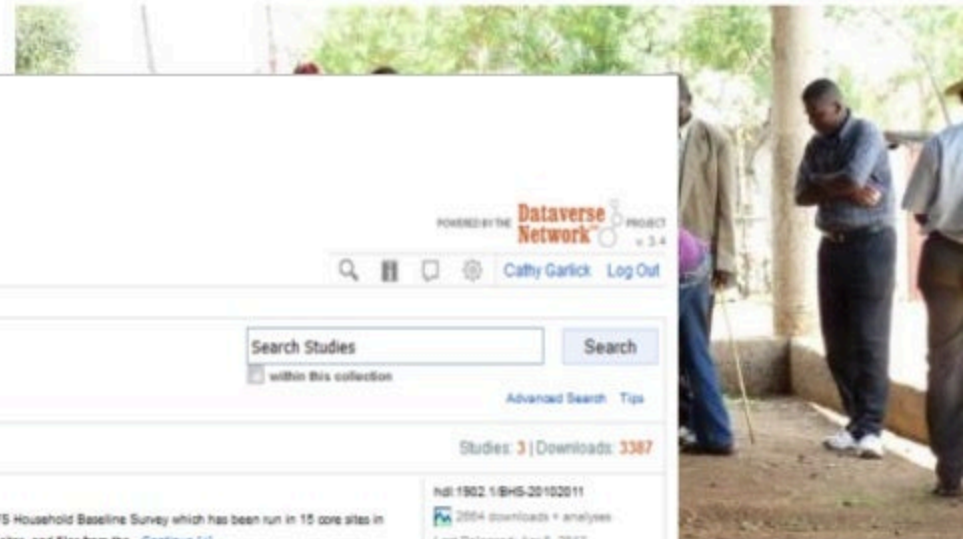
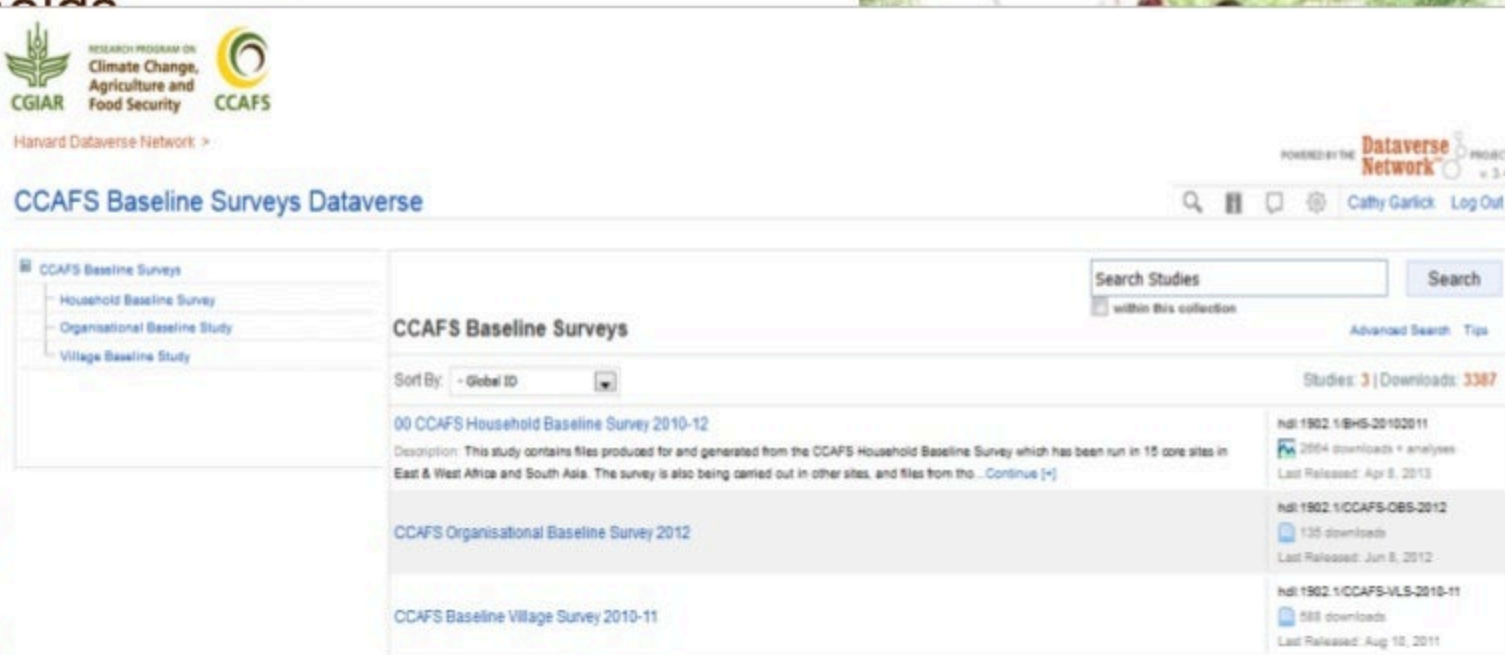
Documenting regional challenges and local knowledge

36 sites, 252 villages, with 5,040 households

Better regional selection

Clarified access infrastructure interpretation

Formal baseline for future program assessment

Harvard Dataverse Network >

CCAFS Baseline Surveys Dataverse

POWERED BY THE **Dataverse Network** PROJECT v 3.4
Cathy Garlick Log Out

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00 CCAFS Household Baseline Survey 2010-12 Description: This study contains files produced for and generated from the CCAFS Household Baseline Survey which has been run in 15 core sites in East & West Africa and South Asia. The survey is also being carried out in other sites, and files from the... Continue [+]	hdl:1902.1/18HS-20102011 2004 downloads + analyses Last Released: Apr 8, 2013
CCAFS Organisational Baseline Survey 2012	hdl:1902.1/CCAFS-OBS-2012 135 downloads Last Released: Jun 8, 2012
CCAFS Baseline Village Survey 2010-11	hdl:1902.1/CCAFS-VLS-2010-11 588 downloads Last Released: Aug 10, 2011

ne-surveys

Agtrials

<http://agtrials.org>



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Partners:

CIAT – beans, forages, cassava

TSBF – maize (AfSIS)

CIP – potatoes, sweet potatoes

Bioversity – bananas

ICRISAT – sorghum, millet, groundnuts

ICARDA – lentils, faba beans, barley, durum wheat, chickpeas

ILRI – animal trials

IRRI – rice

AfricaRice – rice

IITA – cassava

Generation Challenge Programme – CropOntology

IER (Mali) – sorghum, millet

ARC (South Africa) – beans

Monsanto – maize

AgMIP – crop model validation trials

MACCSUR (FACCE JPI) – crop model validation trials

Calibration
models

Exploratory
adaptation

- Genetic improvement
- On-farm practices

Assessment
options

Build “adaptive

CCAFS-Climate.org



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Houses global datasets of downscaled climate change projections for impact assessment studies. Data have been produced by several CG centres using different methods.

GCM DOWNSCALED GCM DATA PORTAL

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Spatial Downscaling

Spatial Disaggregation

Data

Useful Documents

Links

Citations

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Data Provided by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

The data distributed here are in ARC GRID, and ARC ASCII format, in decimal degrees and datum WGS84. CCAFS and its partners have processed this data to provide seamless continuous future climate surfaces. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from CCAFS or the data-developing institutions. Users should acknowledge CCAFS as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. For commercial access to the data, send requests to Andy Jarvis at the International Center for Tropical Agriculture (CIAT).

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AMKN Platform



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The Adaptation and Mitigation Knowledge Network: a platform for accessing and sharing agricultural adaptation and mitigation knowledge. Use for aggregating, visualising and interconnecting research outputs from CCAFS and partners.

The screenshot displays the AMKN Platform interface. At the top, it features the logos for the Adaptation and Mitigation Knowledge Network, CGIAR, and CCAFS, along with navigation links for Home, About, and Feedback, and a search bar. Below the header, there are dropdown menus for 'Filter Map Resources' and 'Display Data Layers'. The main content area shows a world map with numerous colored dots representing data points, primarily concentrated in Africa, Asia, and South America. An inset map shows the global context. On the left, a sidebar titled 'What's on the map (202)' lists various categories: Sites (15), Agrobiodiversity Cases (31), Blog Posts (69), Photo Sets (45), Videos (42), and Data Legend. The map interface includes zoom controls and a 'Zoom to CCAFS Region' button. The Esri logo is visible in the bottom right corner of the map area.

Data and Knowledge Portals



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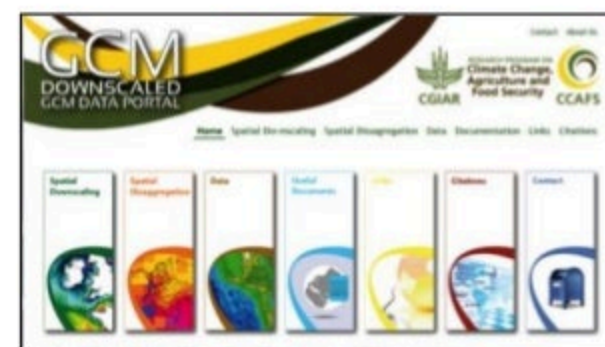
Climate information (CCAFS-Climate.org)

- 27,000 visitors
- Users downloaded **over 28 terabytes** of climate data
- Data cited **37 times** in peer-reviewed journal articles



Agricultural evaluation information (Agtrials.org)

- 6,300 total visits
- Over 3,000 files were uploaded
- Users downloaded 8.33 gigabytes of data



Socio-economic information (Dataverse – Baseline Surveys)

- Over 3000 total downloads of CCAFS Baseline Data

<http://ccaafs.cgiar.org/resources/tools-maps-models-and-data>



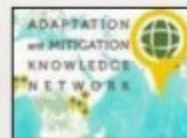
Tools, Maps, Models and Data

More data, models and tools are housed at the [CIAT-GCM page](#).



Climate Analogues help identify and map spatial and temporal analogue sites across the globe based on multiple climate projections. They can provide insights into the vulnerability of crops to climate change and support field evaluation, using today's climate, of agricultural adaptation options for 2030 and beyond.

[Get the Core-R package](#) | [Learn more about the approach](#)



Explore our work on a map!

The [Adaptation and Mitigation Knowledge Network](#) lets you explore data from our research on climate change, agriculture and food security, alongside related multimedia such as video interviews with farmers and photos and blogs from field work.

[CCAafs baseline survey data and materials](#)

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