1. Activity Reporting.

Activity 463-2014

Cross-Center Index Insurance Workshop

Status	Complete	Milestone	2.1.1 2014
Start date	2014 Jan	End date	2014 Jan

Description: Index insurance workshop co-hosted with IFPRI bringing together scientists from across the CGIAR

Status: Complete. The workshop, “Mobilizing a CGIAR Agricultural Insurance Research Community,” was held in Washington, D.C., January 20-22 2014. The workshop aimed to mobilize a community of practice on weather-related insurance for agricultural development and adaptation, take stock of relevant expertise and approaches across the CGIAR, and inform the development of funding proposals under CCAFS Flagship 2. The 29 participants included 14 CGIAR Centers, and the RPLs for E and W Africa. It contributed to the design of at least three projects in the new Flagship 2 portfolio, and started the process that led to CCAFS Report No. 14.

Gender Component: Not defined

Objectives:

1. Build community of practice among CG scientists working on index insurance; highlight CGIAR achievements to date in index insurance and outline future research agenda

Deliverables:

Description	Type	Year	Status	Justification
Workshop held at IFPRI in early 2014	Workshop	2014	Complete	
Journal Article highlighting center achievements in index-insurance and setting future agenda	Peer-reviewed journal articles	2014	On going	
Community of Practice webpage - continued engagement from CG scientists	Articles for media or news (radio, TV, newspapers, newsletters,etc.)	2014	On going	
Workshop report: Mobilizing a CGIAR Agricultural Insurance Research Community	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	

Partners:

1- International Food Policy Research Institute (IFPRI):
Maximo Torero <m.torero@cgiar.org>

2- International Research Institute for Climate and Society (IRI):
Dan Osgood <deo@iri.columbia.edu>

Location(s):

Global

Activity 464-2014

Half-time postdoctoral research scientist focusing on index insurance applications and cross enter collaboration

Status	On going	Milestone	2.1.1 2014
Start date	2013 Mar	End date	2014 Dec

Description: Helen Greatrex, IRI/CCAFS post-doctoral associate; conducting research on index insurance applications and building cross-center collaboration. Working half-time with the Financial Instruments team at IRI and coordinating joint IRI-CCAFS index insurance activities.

Status: On going. Dr. Greatrex contributed to strengthening the visibility and substance of index-based insurance in Theme 2. Her contributions to CCAFS in 2014 included; (a) leading a synthesis of lessons and evidence from case studies that appear to be succeeding in providing effective index-based insurance for poor farmers in the developing world, published (Jan 2015) as CCAFS Report No. 14; (b) participated in an ongoing collaborative project with AgMIP on the use of models to evaluate a combination of weather index insurance and soil fertility management in Senegal; (c) publication of prior research on satellite rainfall estimation, which is relevant to weather index insurance; and (d) participation in the design of two projects in the new Flagship 2 portfolio. She will be employed full-time on these projects starting in 2015.

Gender Component: Not defined

Objectives:

1. Evaluate alternative indexes and implementation designs for index-based agricultural insurance
2. Building index insurance community of practice throughout CGIAR

Deliverables:

Description	Type	Year	Status	Justification
Journal articles	Peer-reviewed journal articles	2014	On going	
Expansion of Community of Practice web page through facilitation of inter-center discussion	Other	2014	On going	
Advances in the Stochastic Modeling of Satellite-Derived Rainfall Estimates Using a Sparse Calibration Dataset	Peer-reviewed journal articles	2014	Complete	

Partners:

1- International Research Institute for Climate and Society (IRI):
Dan Osgood <deo@iri.columbia.edu>

Location(s):

Global

Activity 788-2014

Household modeling of livelihood resilience to climate risks

Status	Complete	Milestone	2.1.3 2014
Start date	2012 Jan	End date	2014 Dec

Description: Through a workshop and online Community of Practice bringing together CGIAR researchers, develop tools and a inter-center research community that will evaluate a range of adaptation interventions at CCAFS Climate Smart Villages

Status: Complete. Prior work on household modeling to inform adaptation, supported jointly by Themes 2 and 4, culminated in a 3-day workshop on “Household level modeling in CCAFS and other CRPs: Moving from ideas to action,” Turrialba, Costa Rica, 2014. The aim of the workshop was to develop a community of practice across CGIAR Centers and CRPs, and stimulate CGIAR – CSIRO collaboration to further develop the wide range of tools and approaches available in the different institutes.

Gender Component: Not defined

Objectives:

1. Develop tools and a inter-center research community that will evaluate a range of adaptation interventions at CCAFS Climate Smart Villages using household modeling methodologies

Deliverables:

Description	Type	Year	Status	Justification
Household modeling tool	Platforms - Data Portals for dissemination	2014	On going	
Workshop report	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Online community of practice	Articles for media or news (radio, TV, newspapers, newsletters,etc.)	2014	On going	
Workshop: Household level modeling in CCAFS and other CRPs: Moving from ideas to action, Turrialba, Costa Rica, 2014	Workshop	2014	Complete	

Partners:

1- International Livestock Research Institute (ILRI):

Dr. M.T. van Wijk <m.vanwijk@cgiar.org>

Location(s):

Global

Activity 469-2014

Ethiopia Climate Resilient Planning Pilot

Status	On going	Milestone	2.2.1 2014
Start date	2012 Jan	End date	2014 Dec

Description: Ethiopia Climate Resilient Planning Pilot - Workshop for decision-makers, social learning platform, and dissemination of new "information packages" for decision-makers AND expansion of pilot to two new regions

Status: On going. The work is on-going, but focused mainly on synthesis of 2012 and 2013 research activities due to the end of CCAFS funding and a delay in funding from external sources. The project awaits a decision from NEPAD in March 2015 on continued funding of this work and scaling to 5 countries in Africa.

Gender Component: Not defined

Objectives:

1. Demonstrate solid results of the study; get attention of donors and ministries in the Ethiopian government to scale it up and potentially expand to other countries.

Deliverables:

Description	Type	Year	Status	Justification
Workshop report	Non-peer reviewed articles	2014	Complete	
On-line social learning platform	Articles for media or news (radio, TV, newspapers, newsletters,etc.)	2014	On going	
Report measuring decision-makers' use of new "information packages."	Peer-reviewed journal articles	2014	On going	
Reports on first phase expansion of Pilot in LA and SEA (externally funded)	Peer-reviewed journal articles	2014	On going	

Partners:

1- GeoSpace Analytical Services (GeoSAS):
Sitotaw Berhanu <sitotawb@geosas.net>

2- International Rice Research Institute (IRRI):
Michael Sheinkman <msheinkman@irri.org>

3- U.S. Agency International Development (USAID):
Gary Eilerts <geilerts@usaid.gov>

4- International Research Institute for Climate and Society (IRI):
Tufa Dinku <tdinku@iri.columbia.edu>

5- The World Bank:
TBD <tbd>

6- World Food Programme (WFP):
TBD <tbd>

Location(s):

Countries: Cambodia, Ethiopia, Guatemala,

Activity 471-2014

Integrated Food Security Modeling Workshop and cross center collaboration on modeling tools built through Michael Sheinkman position at IRRI

Status	Complete	Milestone	2.2.1 2014
Start date	2012 Jan	End date	2014 Dec

Description: Michael Sheinkman position as Collaborative Research Scientist at IRRI. Goals: Food security information and response community of practice; Relevant project design and resource mobilization initiatives; Integrated food security proof-of-concept demonstration reported, connected to Integrated Phase Classification (IPC) process. Integrated Food Security Modeling Workshop in East Africa and cross center collaboration on modeling tools.

Status: Complete. The workshop on Integrated Food Security Modeling in Eastern and Southern Africa was held in Nairobi, Kenya, 10-12 February 2014. The workshop was part of a collaborative effort between CGIAR centers, FAO, WFP, and other partners to investigate the feasibility of linking seasonal climate forecasts with estimates of agricultural production; impacts on food commodity prices; and household food security status. It aimed to identifying opportunities to test the integration of different types of models to improve the lead-time and relevance of food security early warning in the region, and explore potential to develop products that would carry the work forward. It lead to development of a successful Flagship 2 project on food security modeling and early warning in East Africa.

Gender Component: Not defined

Objectives:

1. Development of food system-level research and partnerships, including decision support tools for national and international food security and humanitarian response
2. Integration of new climate-related information or decision support tools into national food security decision-making processes.

Deliverables:

Description	Type	Year	Status	Justification
Workshop on Integrated Food Security Modeling	Workshop	2014	Complete	
Report from Philippine pilot project	Peer-reviewed journal articles	2014	On going	

Partners:

1- International Rice Research Institute (IRRI):
Michael Sheinkman <m.sheinkman@irri.org>

2- Regional Integrated Multi-Hazard Early Warning System (RIMES):
TBD <tbd>

3- International Maize and Wheat Improvement Center (CIMMYT):
TBD <tbd>

4- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT):
TBD <tbd>

5- International Food Policy Research Institute (IFPRI):
TBD <tbd>

6- World Food Programme (WFP):
TBD <tbd>

Location(s):

Global

Activity 473-2014

Expansion of CCAFS Regional Agricultural Forecasting Toolkit

Status	On going	Milestone	2.3.1 2014
Start date	2012 Jan	End date	2014 Dec

Description: Expansion of the CCAFS Regional Agriculture Forecasting Tool (CRAFT) by adding crop model interoperability and increasing usability across CGIAR and partner research groups

Status: On going. Improvements in the robustness and ease of use of CRAFT, and range of enhancements, are under ongoing development.

Gender Component: Not defined

Objectives:

1. Crop forecasting software development & improvement; increased usability across CGIAR centers and partners

Deliverables:

Description	Type	Year	Status	Justification
The UF team will work with the WSU team and developers of four models (InfoCrop, AquaCrop, SARA-H, ORYZA2000) to develop and deliver integrated data translation tools for the CRAFT model.	Platforms - Data Portals for dissemination	2014	On going	
In collaboration with CCAFS, Asia Risk Centre, and UF, WSU will submit a paper for publication on the operation and interface of CRAFT.	Peer-reviewed journal articles	2014	On going	
The UF team will recommend methodology for validation analysis and calculation of goodness-of-fit statistics for model hindcasts, and the WSU team will implement the analysis.	Platforms - Data Portals for dissemination	2014	On going	
The WSU team will implement additional AgMIP translators into CRAFT, and provide technical support for users of the CRAFT systems.	Platforms - Data Portals for dissemination	2014	On going	

Partners:

1- University of Florida (UF):
Dr. Jim Jones <jimj@ufl.edu>

2- Washington State University (WSU):
Dr. Gerritt Hoogenboom <gerritt.hoogenboom@wsu.edu>

3- Agricultural Model Intercomparison and Improvement Project (AgMIP):
TBD <tbd>

4- Food and Agriculture Organization of the United Nations (FAO):
TBD <tbd>

5- Asia Risk Centre (ARC):
Premal Mehta <premal.mehta@asiariskcentre.com>

Location(s):
Global

Activity 805-2014

Seasonal forecasting and analysis to support World Vision forecast delivery in Tanzania

Status	Complete	Milestone	2.3.2 2014
Start date	2014 Jan	End date	2014 Dec

Description: Building on the ENACTS Tanzania dataset to create downscaled analysis and tools for agriculture extension agents and World Vision staff to upscale seasonal forecast delivery to farmers in Northern Tanzania

Status: Complete. T2 supported IRI training visits to strengthen Tanzania Meteorological Agency to capacity merged satellite-station data sets, expand development of "maproom" products, and develop downscaled seasonal climate forecasts. Further work on new information products were budgeted in a planned externally-funded project with World Vision-Tanznia, but the effort to raise funds failed and an alternative funding source was not found.

Gender Component: Not defined

Objectives:

1. Develop web-based tools providing downscaled analysis and seasonal forecasts developed for World Vision staff and agricultural extension agents in support of upscaling climate services for farmers in Tanzania

Deliverables:

Description	Type	Year	Status	Justification
Web-based tools providing downscaled analysis and seasonal forecasts developed for World Vision staff and agricultural extension agents.	Platforms - Data Portals for dissemination	2014	Cancelled	The Tanzania Meteorological Agency (TMA) benefited from training, but did not produce the anticipated new products tailored to the needs of farmers. Further work on new information products were budgeted in a planned externally-funded project with World Vision-Tanznia, but the effort to raise funds failed and an alternative funding source was not found. Theme 2 is still seeking to work with TMA to develop downscaled seasonal forecasts and other products for agriculture within the ongoing GFCS Adaptation Program in Africa project.

Partners:

1- International Research Institute for Climate and Society (IRI):
Tufa Dinku <tdinku@iri.columbia.edu>

2- Tanzania Meteorological Agency (TMA):
TBD <tbd>

3- World Vision International (WVI):
Laura Fontaine <laura_fontaine@wvi.org>

4- Ministry of Agriculture, Food and Cooperatives:
TBD <tbd>

Location(s):

Countries: Tanzania,

Activity 465-2014

Postdoc for continuation and expansion of the Climate Services for Farmers Pilot in Wote

Status	Cancelled	Milestone	2.3.2 2014
Start date	2012 Jan	End date	2014 Dec

Description: Postdoc for continuation and expansion of the Climate Services for Farmers Pilot in Wote; evaluation of yield and management changes resulting from dissemination of climate information to farmers in Wote and lessons for scaling up climate services in the region

Status: Cancelled. Funds were used to support part of the time of two ICRISAT Scientists based in Addis Ababa.
The TL provided continued support, to allow ICRISAT to develop publications that report on climate services work in Kenya that started in 2011. These publications have not been provided.

Gender Component: Evaluation of climate communications at Wote was disaggregated by gender, in order to provide insights and evidence to improve communication strategies for women farmers.

Objectives:

1. Continuation and expansion of seasonal forecasts and advisories at the Makuene benchmark site; testing of strategies for communicating climate information to farmers
2. Evaluate yield and management changes resulting from dissemination of climate information to farmers in Wote and lessons for scaling up climate services in the region

Deliverables:

Description	Type	Year	Status	Justification
Report evaluating yield and management changes resulting from dissemination of climate information to farmers in Wote and lessons for scaling up climate services in the region	Peer-reviewed journal articles	2014	Cancelled	Following three years of funding, an agreed set of publications was not provided.

Partners:

1- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT):
KPC Rao <k.p.rao@cgiar.org>

Location(s):
Countries: Kenya,
Benchmark Site: Makueni (Wote),

Activity 467-2014

Gender and equity in climate services

Status	Cancelled	Milestone	2.3.2 2014
Start date	2012 Jan	End date	2014 Dec

Description: Research and framework developed to improve equity among beneficiaries of climate information services and other adaptations to climate risk. Through work in West Africa and South Asia, the team has developed a research framework to improve how climate information services are developed and delivered. In 2014, the framework will be implemented and evaluated across multiple sites, replicating a process that engages farmers and partner organization.

Status: Cancelled. The ongoing project supports graduate student field research within CCAFS climate services projects, and provides guidance and support on understanding and overcoming gender and social equity challenges in climate services. Contributions in 2014 include: contribution to 2 CCAFS Working Papers, the Gender and Climate Change section of the AGRA Climate Change and Smallholder Agriculture In Sub-Saharan Africa report; and draft training materials on gender for incorporation into a climate communications training sourcebook that Theme 2 (now Flagship 2) is still developing.

Gender Component: This research & framework explicitly addresses gender and equity considerations in how the benefits of climate information services are distributed, and in how gender challenges can be addressed in climate services for farmers.

Objectives:

1. Develop and pilot/demonstrate methodology for analyzing and fostering gender and social equity within participatory action research focused on management of climate-related risk.

Deliverables:

Description	Type	Year	Status	Justification
The research framework is implemented in additional CCAFS research sites (to be identified by the UF/CCAFS team in conjunction with Theme 2), and appropriate trainings/responses are coordinated by the UF/CCAFS team (e.g., Tanzania). UF/CCAFS team returns to any appropriate sites (e.g., South Asia, Tanzania, Senegal) to implement appropriate training/response based on preliminary data collected during the framework development phase.	Capacity	2014	On going	
UF/CCAFS team initiates research to establish effectiveness and impact of framework utilization, specifically seeking to measure the equitable benefit of climate information services among women in targeted communities, probably in the summer of 2014 at up to three sites.	Peer-reviewed journal articles	2014	On going	
Adaptation Actions in Africa: Evidence that Gender Matters	Working Paper	2014	Complete	
Who gets the Information? Gender, power and equity considerations in the design of climate services for farmers	Working Paper	2014	Complete	
Gender and Climate Change. Section in: Africa Agricultural Status Report: Climate Change and Smallholder Agriculture In Sub-Saharan Africa.	Book chapters	2014	Complete	

Partners:

1- University of Florida (UF):
Sandra Russo <srusso@ufic.ufl.edu>

2- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT):
TBD <tbd>

Location(s):

Countries: Kenya, Senegal,
Benchmark Site: Nyando (Katuk Odeyo), Makueni (Wote), Kaffrine,

Activity 1002-2014

Communication approaches and materials for provision of climate services to smallholder farmers and intermediaries

Status	On going	Milestone	2.3.2 2014
Start date	2014 Feb	End date	2014 May

Description: Development of high quality training and support materials, designed for the different needs of each of the following: i) expert trainers from within intermediary organisations who will be responsible for training large numbers of field staff ii) field staff who after receiving training will work directly with farmers iii) farmers themselves. The content, style and amount of material will be designed for each of these users.

Status: On going. PICSA Field Manual completed. Two other manuals -- lecture materials for trainers, and course materials for trainees -- are still under development. Further work in 2015 will merge Theme 2 training on seasonal climate forecast communication into the next version of PICSA.

Gender Component: Not defined

Objectives:

1. Development of high quality training and support materials to support provision of a range of information (including historical climate information, short and medium term forecasts, crop and livelihood options, and risks) to smallholder farmers

Deliverables:

Description	Type	Year	Status	Justification
1. Develop training manual for expert trainers. To include background explanatory material as well as material for use directly with participants in training sessions. Hard copy, cd and web. By 31 May 2014	Reference material (booklets and training manuals for extension agents, etc.)	2014	Complete	
2. Develop materials for field staff (trainees). Hard copy, cd and web. By 31 May 2014	Reference material (booklets and training manuals for extension agents, etc.)	2014	Complete	
3. Develop materials for farmers for at least two locations in local languages. Note that detailed information will be location specific eg regarding agricultural innovations. (Materials will also act as examples for further locations). Hard copy, cd and web. By 31 May 2014	Data	2014	On going	
4. Provide an overview of the approach including clear descriptions of each component for the CCAFS manual for intermediaries. By 15 February 2014 (or sooner if necessary)	Other	2014	On going	
	Data	2014	Incomplete	

Partners:

1- University of Reading:

Peter Dorward <p.t.dorward@reading.ac.uk>

Location(s):

Global

Activity 1006-2014

Analysis and tools to support upscaling of seasonal forecast delivery to farmers in Northern Tanzania

Status	Extended	Milestone	2.3.2 2014
Start date	Not defined	End date	Not defined

Description: Building on the ENACTS Tanzania dataset to create downscaled analysis and tools for agriculture extension agents and World Vision staff to upscale seasonal forecast delivery to farmers in Northern Tanzania

Status: Extended. Theme 2 supported training for Tanzania Meteorological Agency in the Climate Predictability Tool, to support development of downscaled seasonal forecasts; and further development of downscaled historical and monitored climate information "maproom" products. Training on communicating seasonal forecasts with farmers is ongoing under the GFCS Adaptation Program in Africa bilateral project. However, efforts to secure funding with World Vision, which would have supported the development of downscaled forecasts based on ENACTS, did not materialize. We are still seeking opportunity to support this work.

Gender Component: Not defined

Objectives:

1. Develop web-based tools providing downscaled analysis and seasonal forecasts for World Vision staff and agricultural extension agents.

Deliverables:

Description	Type	Year	Status	Justification
Web-based tools providing downscaled analysis and seasonal forecasts developed for World Vision staff and agricultural extension agents.	Platforms - Data Portals for dissemination	2014	Complete	
Theme 2 supported training visits of IRI staff to Tanzania Meteorological Agency to (a) improve station data quality control and merging with satellite data, (b) develop capacity to produce and disseminate climate information products through the Data Library software platform, and (c) use CPT software to downscale seasonal climate forecasts.	Capacity	2014	Complete	

Partners:

1- International Research Institute for Climate and Society (IRI):
Tufa Dinku <tufa@iri.columbia.edu>

Location(s):

Countries: Tanzania,

Activity 1008-2014

Climate Services Global Coordinator - Arame Tall

Status	On going	Milestone	2.3.1 2014
Start date	2014 Jan	End date	2014 Dec

Description: Development and coordination of CCAFS' global strategy on climate services, under the supervision of CCAFS Theme 2 leader

Status: On going. Dr. Tall was effective and productive in her role in championing and coordinating climate services for CCAFS. Accomplishments include: (a) effective first year of the Global Framework for Climate Services (GFCS) Adaptation Program in Africa; (b) scoping and design of Rwanda Climate Services for Agriculture & Food Security Project ($4-5M expected from USAID-Rwanda over 4 years); (c) input into design of a roughly $7M agrometeorological advisory services component of a $100M World Bank GFDRR's Project in Myanmar (with the SEA RPL); CCAFS SE Asia Regional Program Leader; (d) contributed to securing $1M from USAID Africa Bureau to support CCAFS Climate Services work regionally in Africa; (e) co-organized and co-chaired the October 2013 Africa Climate Conference in Arusha; (f) secured a FutureEarth competitive grant to develop a coordinated Climate Research for Development (CR4D) Agenda in Africa; and (g) contributed to discussion within WB on collaboration between the GFDRR and Agriculture Global Practice divisions to identify and develop a few big wins on climate services to advance climate-smart agriculture.

Gender Component: The strategy for strengthening leadership for CCAFS work on climate services includes strategic research toward addressing the climate information needs of farmers, particularly women, using pilot participatory activities at CCAFS research sites to strengthen knowledge and evidence on enhancing resilience of rural communities through climate services, and scaling out relevant climate information and advisory services for millions of farmers in CCAFS priority regions (West Africa, East Africa, South Asia, East Asia and Latin America). Published her earlier research at Kaffrine, Senegal, on understanding and overcoming gender equity challenges in climate services. Co-authored a publication on the role of gender in adaptation in Africa. Three additional publications included some treatment of gender equity in climate services. She has consistently advocated for targeting gender equity challenges within all CCAFS work on communicating climate information with farmers.

Objectives:

1. Within CCAFS Regional Programs, serve as a resource to Regional Program Leaders in the use of CCAFS Climate-Smart Villages as learning labs to advance knowledge and evidence; in leveraging Center and partner expertise in the design, implementation and evaluation of site-based research; and in planning efforts to strengthen and scale up climate services for agriculture and food security;

2. Foster, and selectively contribute to, strategic research to advance the agenda and address key challenges in building the resilience of farmers through climate services;
3. Foster and ensure coordination among externally-funded initiatives to upscale climate services for agriculture, leveraging Center and partner expertise;
4. Recruit and supervise project-based staff, as appropriate, to support implementation of components of CCAFS global agenda on climate services;
5. Build strategic partnership to advance and enable coordinated frameworks for climate services for agriculture and food security across Africa, Asia and Latin America;
6. Raise visibility for CCAFS activities and science outputs on climate services for agriculture and food security, within the CGIAR, and among external partners and donors;
7. Champion and foster increased collaboration across the CGIAR consortium in the area of climate services for agriculture and food security.

Deliverables:

Description	Type	Year	Status	Justification
Report on good practice in evaluating climate services for farmers	Working Paper	2014	Complete	
Communications training guide for intermediaries to serve as the missing link between researchers and farmers	Books	2014	On going	
Scaling up climate services for farmers: Mission Possible. Learning from good practice in Africa and South Asia	Peer-reviewed journal articles	2014	Complete	
Who gets the Information? Gender, power and equity considerations in the design of climate services for farmers	Working Paper	2014	Complete	
Assessment of India's Integrated Agro-meteorological Advisory Service program from a farmer perspective	Working Paper	2014	Complete	
Reaching the last mile: Best practices in leveraging ICTs to communicate climate information at scale to farmers	Working Paper	2014	Complete	

Partners:

1- International Food Policy Research Institute (IFPRI):
Arame Tall <a.tall@cgiar.org>

Location(s):

Global

2. Succinct summary of activities and deliverables by Output level.

Output: 2.1.1

Summary: TL-led activities under 2.1.1 focused on weather-related insurance for smallholder farmers. The workshop, "Mobilizing a CGIAR Agricultural Insurance Research Community" (Washington, DC, January), sought to mobilize a community of practice within the CGIAR, and inform the development of funding proposals under CCAFS Flagship 2. The TL supported and co-supervised a Post-Doctoral Associate, Dr. Helen Greatrex working on knowledge and evidence gaps in index-based insurance for smallholder agriculture. The TL and Post-Doctoral Associate participated in the development and implementation of a USAID-funded CCAFS-AgMIP partnership project that included model-based analysis of weather index insurance at a location in Senegal. Deliverables from this work are: a workshop report that provides an overview of insurance-related work across the CGIAR and priority opportunities moving forward; a submitted CCAFS Report (published Jan 2015) synthesizing lessons and evidence from 5 successful index-based insurance case studies targeting poor farmers in the developing world; and input (through the workshop and post-doctoral associate) into the development of three successful Flagship 2 projects that include weather-related agricultural insurance.

Output: 2.1.3

Summary: The TL supported and supervised a researcher, Michael Sheinkman (IRRI, Bangkok), to advance this area. The workshop, "Integrated Food Security Modeling in Eastern and Southern Africa" (Nairobi, February) aimed to strengthen collaboration between CGIAR and food security information organizations (FAO, WFP, FEWSNet and others), investigate the feasibility of integrating different types of information and models (climate, crop production, price, household food security status) to improve early warning in the region. It resulted in a successful Flagship 2 project proposal on food security modeling and early warning in East Africa. Continuing work with partners in Ethiopia, on improving the use of climate information for food security planning, coordinated by T2 Science Officer Kevin Coffey, completed analyses of survey data, and drafted three working papers on methodology and results.

Output: 2.2.1

Summary: Activities supported by the TL, that contributed to this Output, included: (a) continuing development of high-resolution merged historical meteorological data sets and web-based tools (ENACTS) in the Tanzania Meteorological Agency and regionally in West Africa through AGRHYMET (with IRI, WA RPL, others); (b) training in statistical downscaling and analysis of seasonal forecasts in Tanzania (with IRI); (c) ongoing development of the CCAFS Regional Agricultural Forecasting Toolbox (CRAFT) (through Washington State U., U. Florida, and Asia Risk Center); and (d) a final year of support for remote sensing data assimilation methodology to improved mode-based crop production monitoring and forecasting (through IRI and NASA-JPL). Deliverables from this work are: (a) operational climate information "maproom" products at Tanzania Meteorological Agency; (b) submitted journal articles on remote sensing for crop production forecasting and drought information; (c) a

journal article on satellite rainfall estimation; and (d) a workshop report on ENACTS in West Africa.

Output: 2.3.1

Summary: The TL supported and supervised a researcher, Arame Tall (IFPRI, Washington, DC) to advance and coordinate work in this area. Activities in 2014 were: (a) co-leadership of the launch and early implementation of the GFCS Adaptation Program in Africa; (b) scoping and design of a Rwanda Climate Services for Agriculture & Food Security Project, expected to start mid-2015; (c) input into design of a roughly $7M agrometeorological advisory services component of a World Bank GFDRR's Project in Myanmar (with the SEA RPL); (d) negotiating $1M from USAID Africa Bureau for CCAFS Climate Services work regionally in Africa; (e) co-development of the Climate Research for Development (CR4D) Agenda in Africa, to implement recommendations of the Africa Climate Conference (Arusha, 2013); and (g) outreach to a range of global partners. Deliverables from these activities include: a CCAFS Report synthesizing lessons from 18 case studies of climate services for farmers; and Working Papers on community-level climate services evaluation methodology, ICT-based climate services communication, results of an assessment of India's Integrated Agro-meteorological Advisory Service, and results and lessons from a multi-stakeholder process to identify priorities and provide seed funding for regional and cross-regional action on climate services in Africa and South Asia.

Output: 2.3.2

Summary: The TL supported and supervised a researcher, Arame Tall (IFPRI, Washington, DC) to advance and coordinate work in this area. Activities in 2014 were: (a) co-leadership of the launch and early implementation of the GFCS Adaptation Program in Africa; (b) scoping and design of a Rwanda Climate Services for Agriculture & Food Security Project, expected to start mid-2015; (c) input into design of a roughly $7M agrometeorological advisory services component of a World Bank GFDRR's Project in Myanmar (with the SEA RPL); (d) negotiating $1M from USAID Africa Bureau for CCAFS Climate Services work regionally in Africa; (e) co-development of the Climate Research for Development (CR4D) Agenda in Africa, to implement recommendations of the Africa Climate Conference (Arusha, 2013); and (g) outreach to a range of global partners. Deliverables from these activities include: a CCAFS Report synthesizing lessons from 18 case studies of climate services for farmers; and Working Papers on community-level climate services evaluation methodology, ICT-based climate services communication, results of an assessment of India's Integrated Agro-meteorological Advisory Service, and results and lessons from a multi-stakeholder process to identify priorities and provide seed funding for regional and cross-regional action on climate services in Africa and South Asia.

3. Communications.

Media Campaigns:

Scaling Up Climate Services report launch w/ press release, infographic, and media stories

Index Insurance report launch w/ press release, infographic, and media stories

Blogs:

- http://ccafs.cgiar.org/blog/getting-grips-how-farmers-perceive-climate-variability-and-its-impacts
- http://ccafs.cgiar.org/blog/showing-how-climate-services-can-work-smallholder-farmers
- http://ccafs.cgiar.org/blog/climate-services-farmers-learning-journey-through-mafoota-jamaica
- http://ccafs.cgiar.org/blog/new-paper-finds-nepal%E2%80%99s-food-security-be-high-risk-climate-changes
- http://ccafs.cgiar.org/blog/index-based-insurance-pathway-out-poverty
- http://ccafs.cgiar.org/blog/how-can-we-help-farmers-better-understand-climate-information
- http://ccafs.cgiar.org/blog/new-project-addresses-worries-about-drought-guatemala
- http://ccafs.cgiar.org/blog/does-climate-information-matter-innovative-tool-measure-value-climate-services-farmers
- http://ccafs.cgiar.org/blog/strategising-new-approach-crop-insurance-india
- http://ccafs.cgiar.org/blog/improved-index-insurance-benefits-more-50000-farmers-india
- http://ccafs.cgiar.org/blog/new-data-helps-map-out-food-crises-they-start
- http://ccafs.cgiar.org/blog/traditional-forecasting-meets-science-climate-risk-management
- http://ccafs.cgiar.org/blog/scaling-climate-services-tanzania
- http://ccafs.cgiar.org/blog/how-can-researchers-and-policymakers-support-farmers-combating-drought-and-desertification
- http://ccafs.cgiar.org/blog/new-irrigation-technique-can-ease-drought-effects-rice-farmers
- http://ccafs.cgiar.org/blog/el-ni%C3%B1o-predicted-create-winners-and-losers-global-agriculture
- http://ccafs.cgiar.org/blog/putting-climate-services-farmers%E2%80%99-hands
- http://ccafs.cgiar.org/blog/household-level-models-help-choose-adaptation-options
- http://ccafs.cgiar.org/blog/can-we-blame-el-ni%C3%B1o
- http://ccafs.cgiar.org/blog/investigating-el-ni%C3%B1o-southern-oscillation-and-society-relationships
- http://ccafs.cgiar.org/blog/gender-power-and-climate-information-nyando-kenya
- http://ccafs.cgiar.org/blog/involving-users-creation-climate-information-products
- http://ccafs.cgiar.org/blog/us-and-african-leaders-home-food-security-changing-climate
- http://ccafs.cgiar.org/blog/farmers-are-good-meteorologists
- http://ccafs.cgiar.org/blog/stakeholders-learn-new-features-yield-forecasting-toolkit
- http://ccafs.cgiar.org/research-highlight/how-can-we-turn-climate-information-action
- http://ccafs.cgiar.org/blog/climate-change-mobile-telephony-could-change-things
- http://ccafs.cgiar.org/blog/study-reviews-compelling-strategies-reduce-drought-related-risks-farmers
- http://ccafs.cgiar.org/blog/climate-change-and-social-networks-senegals-peanut-basin

- http://ccafs.cgiar.org/blog/diverse-and-inclusive-communication-leads-better-uptake-agro-met-services-study
- http://ccafs.cgiar.org/blog/kaolack-community-radio-broadcasters-help-spread-climate-information
- http://ccafs.cgiar.org/blog/it%E2%80%99s-time-scale-proven-climate-risk-management-solutions-african-farmers
- http://ccafs.cgiar.org/blog/changing-climate-information-power
- http://ccafs.cgiar.org/blog/cyclone-resistant-house-provides-food-income-and-shelter-bangladesh
- http://ccafs.cgiar.org/blog/one-size-does-not-fit-all-considering-gender-equity-and-power-climate-information-services
- http://ccafs.cgiar.org/blog/new-capacity-produce-and-communicate-climate-information-services-built-tanzania
- http://ccafs.cgiar.org/blog/how-best-support-farmers-useful-climate-information-services
- http://ccafs.cgiar.org/blog/coping-climate-change-bangladeshi-farmers-boost-food-production-simple-interventions

Websites:

AGRHYMET Map Room

Asia Climate Risk Maproom

Social Media Campaigns:

World Day to Combat Drought and Desertification - two blogs and "mini" social media campaign

Scaling Up Climate Services report launch

Index insurance report launch and webinar (January 2015)

Newsletters:

N/A

Events:

CCAFS-PIM workshop on Mobilizing a CGIAR Agricultural Research Community, Washington, DC, January 2014
WB Climate Change Group Policy Team Seminar on Climate Services in Agriculture -- From Smallholders to Scale, Washington, DC, January 2014
USAID Partnership Meeting, Washington, DC, January 2014
GFCS Adaptation Program in Africa Inception Mission, Dar es Salaam, February 2014
Workshop on Integrated Food Security Modeling in Eastern and Southern Africa, Nairobi, February 2014
Impact Pathways Workshop and Training: Segovia, Spain. March 2014
CCAFS Science Meeting: Madrid, Spain. March 2014

WFP FoodSecure Planning Meeting, Rome, Italy. April 2014
Workshop on Managing Climate Risks to Agriculture in Central America, Turrialba, Costa Rica, April-May 2014
Workshop on Household-Level Modeling in CCAFS, Humid Tropics and other CRPs, Turrialba, Costa Rica, May 2014
CCAFS - World Bank GFDRR Collaboration Meeting, Washington, DC, July 2014
U.S.-Africa Leaders' Summit side event: Resilience and Food Security in a Changing Climate, Washington, DC, August 2014
Partnership visit to Farm Radio International, Ottawa, August 2014
CCAFS Latin America Planning Workshop, 16-19 September
Meeting on the Implementation Coordination of the Global Framework for Climate Services, Geneva, September-October 2014
GFCS Adaptation Programme Steering Committee meeting, Geneva, October 2014
South Asia Project Planning and Outcome meeting: Bangkok October 2014
Southeast Asia Project Planning and Outcome meeting: Bangkok October 2014
International Symposium on Weather and Climate Extremes, Food Security and Biodiversity, Fairfax, Virginia, October 2014
USAID Partnership Meetings, Washington, DC, October 2014
World Bank Partnership Meetings, Washington, DC, October 2014
Rwanda project planning meeting, Washington, DC, October 2014
West Africa Project Planning and Outcome meeting: Nairobi November 2014
East Africa Project Planning and Outcome meeting Nairobi November 2014
FARMD annual meeting November 2014
FARMD webinar, Climate Services for Smallholder Farmers, December 2014
International Conference on Climate Services: Montevideo, Uruaguy Dec 2014

Videos and other Multimedia:

Scaling Up Climate Services for Farmers
https://www.youtube.com/watch?v=4ieM_zKB6U4

Interviews with index insurance workshop attendees January 2014

Other Communications and Outreach:

El Niño blog series and social media outreach (El Niño event did not appear so series was not completed)

4. Case studies.

Case Study #1

Title: Launching National Climate Services in Tanzania and Malawi through the Climate Services Adaptation Programme in Africa

Author: James Hansen

Type: Innovative non-research partnerships; Capacity enhancement;

Project Description:

The “Climate Services Adaptation Programme in Africa,” funded by the Norwegian Agency for Development Cooperation (NORAD) at US$ 10M, is the first multi-agency, multi-sector national initiative to be implemented under the UN Global Framework for Climate Services (GFCS). CCAFS is one of the key partners in this project, working as one of six project consortium members along with the WMO, the Centre for International Climate and Environmental Research in Oslo (CICERO), International Federation of the Red Cross, the World Heath Organization and the World Food Programme, and serving on the project steering committee to guide project activities and implementation in Tanzania and Malawi from 2014 to 2016. As a core partner and steering committee member, CCAFS is working closely with World Food Programme to ensure that climate services benefit smallholder farmers in the target countries of Tanzania and Malawi.

Introduction / objectives:

The goal of the program is to increase the resilience of people most vulnerable to the impacts of weather and climate-related risks through the development, implementation and evaluation of a joint program of Climate Services in program countries. It aims to develop integrated frameworks for climate services in Tanzania and Malawi, and develop capacity at regional, national and local levels to produce and use climate services to provide and to use effective climate services to build resilience in the agriculture and food security, nutrition and health, and disaster risk reduction sectors.

Project Results:

CCAFS played a significant role in launching the program, and in building capacity to deliver effective climate services for agriculture in Tanzania and Malawi during the first year of implementation. Adopting a process developed by CCAFS scientist Arame Tall, national consultation workshops established governance processes for implementing climate services in both countries. CCAFS-led activities in 2014 included forecast downscaling and communication, scoping studies on communicating climate information through radio and mobile phone platforms, and baseline surveys in targeted districts to support monitoring and evaluation. Two workshops, facilitated by U. Reading collaborators, trained 75 agricultural extension officers in Longido district, Tanzania, to effectively communicate climate services with farmers. A workshop, facilitated by partners from U. Reading and the Senegal meteorological agency (ANACIM), trained meteorologists and agrometeorologists from Tanzania Meteorological Agency to analyze historical data, and use historical data and the Climate Predictability Tool (CPT) to produce seasonal forecasts at a local scale. CCAFS commissioned two

scoping studies to guide the development of effective climate communication channels. A scoping study and survey by Farm Radio International will inform design of WFP's rural radio program in Tanzania and Malawi, while a study led by ICRISAT will inform design of communication channels based on mobile phones and ICT platforms. An ICRAF team collected baseline data in target districts in Tanzania and Malawi on farmers' access and use of climate services that will be used to measure the project's impact. CCAFS participates on the Program Steering Committee, which is responsible for overall oversight and strategic decision-making; and on Project Delivery Teams (PDT) in Malawi and Tanzania, which are responsible for planning and implementing joint activities, and monitoring progress.

Partners:

UN World Meteorological Organization (WMO) – overall program leader
UN World Food Programme (WFP) – co-leader with CCAFS for the agriculture and food security sector
UN World Health Organization (WHO)
Centre for International Climate and Environmental Research – Oslo (CICERO)
Chr. Michelsen Institute (CMI)
International Federation of Red Cross and Red Crescent Societies (IFRC) including Norwegian Red Cross and Red Cross/Red Crescent Climate Centre
Additional partners through CCAFS are: University of Reading, Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM, Senegal national meteorological agency), International Research Institute for Climate and Society (IRI), Farm Radio International, ICRAF and ICRISAT.

Links / sources for further information:

http://ccafs.cgiar.org/blog/scaling-climate-services-tanzania#.VOE_fCnrjxZ
http://ccafs.cgiar.org/national-consultation-improving-climate-services-tanzania#.VOE-FinrjxY
http://ccafs.cgiar.org/blog/new-capacity-produce-and-communicate-climate-information-services-built-tanzania#.VOE-XynrjxY
http://ccafs.cgiar.org/blog/farmer-responsive-climate-services-built-tanzania-and-malawi#.VOFcPinrjxY
http://www.wfp.org/climate-change/projects/climate-services-action-africa
http://www.gfcs-climate.org/Norway_2

Case Study #2

Title: Weather-Related Agricultural Insurance – From Community of Practice to Impact On The Ground

Author: Alexa Jay, James Hansen

Type: Successful communications; Inter-center collaboration; Policy engagement;

Project Description:

In early 2014, together with the CRP on Policies, Institutions and Markets (PIM), FP2 convened a meeting of the CGIAR Community of Practice on index-based agricultural insurance, at the International Food Policy Research Institute (IFPRI) in Washington, D.C. The workshop aimed to mobilize a community of practice on weather-related insurance for agricultural development and adaptation, take stock of relevant expertise and approaches across the CGIAR, and inform the development of funding proposals under CCAFS Flagship 2: Climate Information Services and Climate-Informed Safety Nets. Several follow-up activities during the year further strengthened work on index insurance within the CCAFS network, and positioned CCAFS to shape a major initiative to scale up insurance for farmers in Nigeria. Follow-up activities led or supported by Theme 2 include: (a) a synthesis of lessons and evidence from case studies that have successfully provided index insurance to poor farmers and herders in the developing world at significant scale; (b) laying the groundwork for several competitive and commissioned insurance-related projects within the new 2015-2018 Flagship 2 portfolio; and (c) initiating a collaboration with the Nigerian Federal Ministry of Agricultural and Rural Development (FMARD) to provide technical input its plans to scale up insurance to 15 million farmers.

Introduction / objectives:

The workshop on “Mobilizing a CGIAR Agricultural Insurance Research Community” played a catalytic role in raising visibility of weather-related insurance expertise within the CCAFS network, laid the groundwork for a strong insurance component in the Flagship 2 portfolio over the next four hears, and positioning CCAFS to shape impact on the ground particularly in Nigeria.

Project Results:

By providing a space for sharing knowledge and facilitating collaboration across CGIAR Centers, the workshop helped strengthen the design of several projects proposed for the upcoming CCAFS Flagship 2, including all five of the projects with an insurance component that were accepted in the Flagship 2 2015-2019 portfolio. One of the workshop keynote presentations prompted a review, by CCAFS and IRI researchers, of five index insurance case studies that have successfully scaled up insurance to poor smallholder farmers and pastoralists in Africa and Asia, many of which were previously considered uninsurable. The study (completed late 2014, published as CCAFS Report 14 January 2015) provided updated evidence of the demand and potential scalability of index insurance for poor smallholder farmers; and distilled commonalities in the approaches that the case studies have employed to overcome the challenges of providing effective insurance under difficult circumstances, at scale. Expanded collaboration with CGIAR scientists interested in insurance (particularly CIMMYT), the insights and evidence from the case studies, and prior CCAFS engagement with the Nigeria

Federal Ministry of Agriculture and Rural Development (FMARD) on climate resilience policy helped position CCAFS to provide useful support to Nigeria's plans to scale up insurance to 15 million of its smallholder farmers by 2017. Following announcement of these plans at the UN Climate Summit and associated events in New York, September 2014, discussions identified several promising opportunities for CCAFS to contribute to the strategy of FMARD to scale up farmer insurance. As an outcome of that discussion, FMARD invited CCAFS to convene a workshop in London, 27-28 January 2015, to share knowledge that may strengthen Nigeria's climate resilience strategy, and explore potential opportunities for CCAFS to contribute to its implementation.

Partners:

CRP on Policies, Institutions and Markets (PIM); IFPRI; CIMMYT; International Research Institute for Climate and Society (IRI); Nigeria Federal Ministry of Agriculture and Rural Development; CCAFS W Africa and S Asia Regional Programs, and Coordinating Unit.

Links / sources for further information:

http://ccafs.cgiar.org/blog/index-based-insurance-pathway-out-poverty
http://ccafs.cgiar.org/mobilizing-cgiar-agricultural-insurance-research-community#.VOInOynricM
http://ccafs.cgiar.org/es/node/37684#.VOIeLinricM
http://ccafs.cgiar.org/blog/call-action-building-index-insurance-community-bangladesh#.VOIneSnricM
http://ccafs.cgiar.org/index-based-insurance#.VOInJCnricM
http://ccafs.cgiar.org/es/blog/improved-index-insurance-benefits-more-50000-farmers-india#.VOInRSnricM

5. Outcomes.

Outcome #1:

CCAFS Science Strengthens Investment in Climate Services for Agriculture

What is the outcome of the research (i.e. use of research results by non-research partners)?

CCAFS shaped at least USD 18 million of investment in climate services through research and stakeholder engagement, including NORAD's investment in the first multi-sector national implementation project under the UN Global Framework for Climate Services (GFCS), in Tanzania and Malawi; World Bank (WB) investment in agrometeorological services as part of its work to strengthen hydro-meteorological services in Myanmar; and USAID investment in climate services regionally – through CCAFS in Africa, and through a CCAFS-designed small grants initiative.

What outputs produced in the three preceding years resulted in this outcome?

Carr ER (ed.), 2014. Assessing Mali's Direction Nationale De La Météorologie Agrometeorological Advisory Program: Preliminary Report on the Climate Science and Farmer Use of Advisories. Washington, DC: USAID.

Hansen et al, 2011. Review of seasonal climate forecasting for agriculture in sub-Saharan Africa. Experimental Agriculture 47:205-240.

Tall et al., 2013. Scaling Up Climate Services for Farmers in Africa and South Asia. CCAFS WP 40.

Ndiaye et al., 2013. Communicating seasonal forecasts to farmers in Kaffrine, Senegal for better agricultural management. Case Study for Hunger, Nutrition, Climate Justice 2013, A New Dialogue: Putting People at the Heart of Global Development. Dublin: Irish Aid.

May, et al., 2013. Workshop Report: Developing a Methodology to Communicate Climate Services for Farmers At Scale.

ACC-2013 Roadmap EOS article & supplement (http://www.wcrp-climate.org/JSC35/documents/EOS_ACC13.pdf

What partners helped in producing the outcome?

Univ. South Carolina, IRI, Agence Nationale de l'Aviation Civile et de la Météorologie (ANACIM, Senegal national meteorological agency)

Who used the output?

WMO, WFP and other core partners on the GFCS Climate Services Adaptation Programme in Africa Project Steering Committee; USAID; WB-GFDRR

How was the output used?

WMO, WFP and other GFCS core partners incorporated methodology and lessons from CCAFS research into project design.

USAID adopted a CCAFS framework to guide small grants for catalyzing (cross-)regional climate services initiatives, and aligned Africa regional funding with priorities that CCAFS research identified

for climate services that benefit rural communities.

What is the evidence for this outcome? Specifically, what kind of study was conducted to show the connection between the research and the outcome? Who conducted it?

GFCS:
http://www.wfp.org/climate-change/projects/climate-services-action-africa
Programme Brief (http://www.gfcs-climate.org/Norway_2)
WB:
Emails from Vladimir Tsirkunov, GFDRR Hydromet Program Coordinator
USAID:
Sivakumar, 2014. Regional priorities for strengthening climate services for farmers in Africa and South Asia. CCAFS WP 71
Emails from Tegan Blane, Senior Climate Change Advisor Africa Bureau; John Furlow, Global Climate Change Office.

7. Outcome indicators.

Outcome Indicator:

One to five flagship risk management interventions evaluated and demonstrated by farmers and agencies at benchmark locations in three regions

Achievements:

Flagship risk management interventions evaluated and demonstrated with farmers and agencies at CCAFS locations in E and W Africa, S Asia and Latin America include: use of climate-based agro-advisories, weather-related insurance, livelihood diversification strategies, stress-tolerant cultivars, and a suite of “Smart Farm” interventions for areas prone to coastal flooding.

When the CCAFS logframe was formulated, efforts to establish relevant participatory activities at CCAFS benchmark sites were initially rather piecemeal and Theme-specific. But RPLs successfully integrated activities across Themes and across collaborating Centers and partners over the past 2 years, around the “Climate-Smart Village” concept. Risk management interventions are integrated into CSV activities in South Asia (India, Bangladesh), East Africa (Ethiopia, Kenya, Tanzania, Uganda) and West Africa (Senegal, Mali, Burkina Faso, Ghana). In each of E Africa, W Africa and S Asia, the testing of options in the context of Climate-Smart Villages (CSVs) is well advanced, and similar work has been initiated in SEA and LAM. In all CSV sites, tools and methods are used to mainstream gender into the participatory research work (needs, constraints, opportunities, analysis of enabling and constraining gender-related factors to adaptation, etc.).

The use of agro-advisories based on weather and climate information to guide farm management decision-making has been a focus at CSV sites across W and E Africa, and a subset in S Asia. In West Africa, work was first piloted in Kaffrine (Senegal) in 2011. It has since scaled up across the country through partnerships with development NGOs, agricultural extension, farmer organizations and a rural radio network. In 2014, for the first time, the Ministry of Agriculture formalized the use downscaled seasonal forecasts to guide the implementation of the Agricultural Plan for the country. The RPL has worked with AGRHYMET and ANACIM (Senegal meteorological service) to extend the successful approach in Kaffrine to CSV sites in Burkina Faso, Ghana, Mali and Niger; where downscaled seasonal rainfall forecasts were communicated, discussed and evaluated with farmers and other agricultural stakeholders. Workshops across sites equipped >350 staff from relevant organizations to interpret and communicate locally relevant information with farming communities. In E Africa, climate-informed agro-advisories were first piloted in Wote (Kenya) in 2011, where an ICRISAT-led, gender-disaggregated evaluation incorporated into the design of the project showed that training to understand probabilistic forecasts, and forecast-based advisories – alone or in combination – significantly influenced crop selection, land allocation, and production input decisions.

Subsequent work on climate-informed agro-advisories focused on: (a) integrating indigenous and scientific forecasting, and development of an SMS-based delivery system in Lushoto (Tanzania); (b) perceptions and use of traditional forecasting among the Borana pastoralists (Ethiopia); (c) use of on-

farm rainfall monitoring in Hoima and Rakai (Uganda); and (d) a combination of on-farm monitoring, mobile phone-based advisories and training in Nyando (Kenya). This work has been extended beyond CSV locations in several ways, for example through the content of the popular Shamba Shape-up television program in Kenya. In S Asia, climate-informed agricultural advisories was part of the suite of interventions in Punjab and Haryana (India), where it supports farmers' decisions about acquisition, allocation and management of production inputs. CIMMYT demonstrated a mobile phone-based agro advisory service that reached about 1200 farmers in more than 60 villages at CCAFS CSV sites across the states of Haryana, Bihar and Punjab (India). Data are being analyzed to understand the listening behavior of farmers and decisions influenced by the advisories, disaggregated by gender.

Weather-related insurance has been a significant component of work at CSV sites in S Asia and E Africa. CCAFS work in India includes a major effort to develop improved insurance products for farmers in Punjab and Haryana. The RPL worked with the Agricultural insurance Company of India to develop improved rainfall indices for insuring wheat and potato crops, and design and test new contract designs with farmers, with a view to improving the current weather-based crop insurance scheme across India. Results provide insights into opportunities to reduce insurance basis risk with local weather data; risks encountered by individual farmers due to natural calamities and defined weather perils, and challenges (technological, operational, regulatory) need to be addressed prior to scaling up, and possibilities for bundling insurance with other community based risk reduction strategies demonstrated in the CSVs. Participatory analysis of climate-related risks and risk management options in Khulna (Bangladesh) highlighted index-based insurance for climate-related flooding and associated salinity changes. This prompted scoping activities in Khulna, a national workshop, and development of a community of practice that continues to work toward practical solutions to the insurance challenges in Khulna and elsewhere in Bangladesh. The major focus of work at the CSV site in Borana (Ethiopia) has been adapting and evaluating innovative Index-Based Livestock Insurance (IBLI) for pastoralists. ILRI initiated a rigorous impact evaluation based on quasi-experimental techniques and GPS tracking of collared herds, which provided evidence to support scaling up scale up of livestock insurance among pastoralists in northern Kenya and southern Ethiopia. Work in Latin America includes pilot work on weather index insurance in Honduras, and analyses to inform the design on index-based insurance in Nicaragua.

Livelihood diversification has been a growing part of the suite of risk management interventions demonstrated and tested at CSV sites in E Africa and Latin America. In E Africa, working with the RPL, Bioversity used household surveys and focus groups at CSV sites in Kenya (Nyando and Wote) and Tanzania (Hombolo), to characterize the levels of diversity of sorghum, cowpea and pigeonpea through household surveys and focus groups, and assessed the effectiveness of varietal diversification strategies for reducing the risk farmers face. Thirteen thousand farmers were supplied with at least four different varieties of sorghum selected through crowd sourcing. Survey-based research identified how access to planting material is influenced by gender and age, providing insights into gender-related constraints and how they can be overcome. In Latin America, Bioversity and the RPL worked with coffee and cereal farmer families and producer organizations on diversification

strategies in coffee landscapes, in 10 communities in two municipalities representing the humid and dry coffee zone in Nicaragua. They developed a participatory method that helps rural communities select diversification strategies for climate adaptation, supported with science-based information on factors that determine diversification strategies. The approach accounts for constraints and opportunities for different farm household members.

The use of stress-tolerant crop germplasm to manage climate-related risk included drought-tolerant crops (sorghum, maize, bean), in combination with improved agricultural water management and integrated soil fertility management, was part of the participatory work in Wote (Kenya).

In the Kulna CSV site in Bangladesh, the WorldFish "SmartFarm" project identified demonstrated and evaluated a suite of risk management interventions for areas prone to coastal flooding. This included vertical gardening, landscape modifications to better control water in rice-aquaculture systems, and design of housing that better handles extreme events.

In S Asia, participatory work at CSVs identified community seed banks as a potential way to buffer against climate extremes and the problems associated with replanting. However, a regional assessment of the viability of seed banks, covering 7 countries, identified significant risk of replanting, and hence potential benefit from seed banks, only in an area in central India, and a few locations in Bangladesh, Pakistan and Sri Lanka. Even there, cost-benefit analyses showed that making seed banks economically viable would be challenging.

The participatory work on climate risk management interventions at CCAFS sites represents a minor portion of progress toward Outcome 2.1. This work incorporates other Theme 2 research activities; and in several cases has contributed to scaling up, and to transferring successful approaches to other locations.

Evidence:

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Ahmed, T. (2013). Scoping report: current status of index-based insurance in Bangladesh. Project Report 2013-38. Penang, Malaysia: Worldfish.

Banerjee R, Kamanda J, Bantilan MCS, Singh NP. 2013. Exploring the relationship between local institutions in SAT India and adaptation to climate variability. Natural Hazards 65(3):1443-14464.

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Outcome Indicator:

Three food crisis response, post-crisis recovery, and food trade and delivery strategies tested and evaluated with partner crisis response organizations at benchmark locations in three regions

Achievements:

Policies and processes for responding to climate shocks at the food system level were tested in Ethiopia and India. At this point we do not have evidence whether new information or decision support tools are being used for national food security decision-making. Work that targeted this Outcome shifted from an initial focus on crisis response organizations, toward the use of improved information for a broader suite of government and institutional interventions that reduce the negative impacts of extreme climate events on food security and rural livelihoods. It includes research to improve climate-related food security monitoring and early warning systems.

In partnership with GEOSAS, MoA, NMA, and EAIR, Theme 2 conducted a consultative review of the decentralized decision-making processes within the Ethiopian government to identify critical decision-making points that impact budget allocation, agricultural planning, and risk management. Key entry-points and timing for the delivery of advanced information were identified and the government has invited the team as an observer for the regional/national planning and budgetary process.

CIMMYT contributed to this Milestone through a review of government policies meant to mitigate production and market risks in a context of food security and climate change in India. Using market risk indicators from CCAFS baseline data, the work analyzed recent national policies that aim to mitigate consumption, production and market risks induced by climate variations. Evidence from this work suggests that a farmer who receives quality, up-to-date information, and who has the ability to use that information, is able to lessen the effect of these risks.

CCAFS was invited to join in the planning of the WFP Food Security Climate Resilience (FoodSECuRE) Facility. In 2014, two rounds of planning meetings and a selection of target countries was completed. The program will set up parametric triggers based on resilience planning. CCAFS science is helping design the triggers in what will be a >100 million dollar facility in 9 pilot countries.

The TL, working with IRRI, conducted a workshop on Integrated Food Security Modeling in Eastern and Southern Africa, that aimed to strengthen collaboration between CGIAR and relevant food security information organizations, and explore the feasibility of integrating different types of information and models (climate, crop production, price, household food security status) to improve

early warning in the region. It resulted in a successful CCAFS Flagship 2 project proposal (to start in 2015) on food security modeling and early warning in East Africa. Continuing work with partners in Ethiopia on improving the use of climate information for food security planning, coordinated by the T2 Science Officer, completed analyses of survey data, and drafted three working papers on methodology and results.

Theme 2 seconded a senior WFP food security analyst to explore pathways to include climate information in government and humanitarian planning for food security interventions. CCAFS/CGIAR was invited by the IPC (food security Integrated Phase Classification) Asia project management team (FAO and WFP) to attend IPC analysis workshops to target specific avenues for the inclusion of climate information in the classification process. A CCAFS/CGIAR Theme 2 representative attended four of the five national IPC analysis workshops to observe the process and liaise with the participants. To complement this intervention, Theme 2 partnered with key national institutions involved in the IPC process to prepare annotated bibliographies and create online mapping tools in Nepal and Pakistan that can feed directly into the IPC process.

Theme 2 has contributed to improving food security early warning, through tools and capacity to improve prediction of impacts of climate-related shocks on food production. Following a 2012 workshop in Sri Lanka that concluded that no existing tool can be readily adapted to the crop and rangeland forecasting needs of research partners and operational institutions in CCAFS regions, Theme 2 (with the S Asia RPL) initiated development of the CCAFS Regional Agricultural Forecasting Toolbox (CRAFT). In 2014, improvements to CRAFT continued in partnership with Washington State U., U. Florida, and Asia Risk Center. In S Asia, CRAFT is being used for in-season yield forecasting by WFP in Nepal, NRMC in Sri Lanka and CEGIS in Bangladesh; with strong support from the SA RPL in the form of capacity building of the national partners, and preparation of the large datasets on soil, crop genotypes and weather that CRAFT requires. The CRAFT toolkit was able to forecast yields rice, wheat and maize, with acceptable accuracy, in Nepal and Bangladesh. Evaluation and use of CRAFT is a component of three of the new CCAFS Flagship 2 projects that are starting in 2015. CCAFS also contributed to crop forecasting capacity in Colombia and regionally in E Africa. In Colombia, CIAT developed agro-climatic forecasting tools that combine seasonal climate forecasts with crop models to provide relevant and reliable information to farmers to support decisions. A TL-commissioned project (NASA-JPL and IRI) on assimilating remote sensing data into crop simulation models to improve forecast accuracy led to the development of a new project in E Africa. This project, funded by NASA and led by NASA-JPL, with support and guidance from the TL, is developing tools and capacity for hydrological and crop production forecasting through the NASA-SERVIR East Africa hub based in Nairobi. A S Asia regional program study evaluated the impact of past and projected future rainfall on demand, supply and prices of major agricultural commodities in India. A partial equilibrium model was developed to simulate the effects of monthly changes in rainfall on area, yield, production, demand and prices. No significant temperature effects were found. Modeled rice production was severely affected by rainfall deficits, as was production of pearl millet, sorghum and cotton to a lesser degree.

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Outcome Indicator:

National meteorological services and regional climate centers trained and equipped to produce downscaled seasonal forecast products for rural communities in two countries in each of three regions

Achievements:

CCAFS has contributed to the capacity of national meteorological services and regional climate centers to produce climate information at a scale and in forms that are relevant for rural communities in W Africa, E Africa, Latin America and S Asia,

Among the earliest activities of Theme 2 was work with ANACIM (the national meteorological service of Senegal) to analyze predictability of rainfall variables that are relevant to agricultural impacts and decisions, and then to pilot the use of downscaled seasonal rainfall forecasts, along with historical observations, with smallholder farming communities. The W Africa RPL has partnered with AGRHYMET and ANACIM (the national meteorological service of Senegal) to train national meteorological services in Ghana, Burkina Faso, Mali and Niger to produce downscaled seasonal climate forecasts for communication with smallholder farming communities at CCAFS sites. The TL supported training workshops, led by IRI and by ANACIM (Senegal) in statistical downscaling methods for the Tanzania Meteorological Agency, and collaborative downscaling with the Kenya Meteorological Department for the Wote CCAFS site. The Latin America RPL sponsored similar training on downscaling methods for Colombia.

For S Asia, the TL worked with the RPL to develop an online “maproom” that provides tools and analyses to assess the seasonal predictability of rainfall at a moderately high (0.25 degree) resolution across South Asia. The maproom and associated report are designed to inform national and regional climate institutions to develop or improve their ability to provide relevant seasonal climate forecasts.
In partnership with IRI; and co-funded with USAID, ACPC, WMO and UNDP; CCAFS supported national meteorological services of Ethiopia, Tanzania, Rwanda and Madagascar; and AGRHYMET regionally for the CILSS countries (Burkina Faso, Cape Verde, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal and Chad); to develop high-resolution, spatially complete, gridded historical data sets for rainfall and temperature by merging their quality-controlled station data with satellite data. These national institutes now provide new suites of historic and monitored climate information products through web-based “maprooms” that are built on the high-resolution historic data, and a highly customizable software platform. This initiative, known as ENACTS (Enhancing National Climate Services), provides historic (> 30 years) and monitored climate information products at a farmer-relevant scale (either 10km or 4km) with complete national coverage; and lays the foundation for producing downscaled, probabilistic seasonal climate forecasts at the same scale and with complete national coverage.

Through a researcher employed by the TL, based at IFPRI, CCAFS has contributed to the development of a coordinated Climate Research for Development (CR4D) agenda in Africa – to implement recommendations from the October 2013 Africa Climate Conference in Arusha (which the same CCAFS researcher co-organized and co-chaired). This work sets the stage for climate research across Africa, and international funding priorities, to focus on developing new information that is relevant for agriculture and other sectors.

Evidence:

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BLOGS:

http://ccafs.cgiar.org/blog/farmers-are-good-meteorologists#.VSb-IqbricM

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8. Leveraged funds.

There is no Leverage funds

9. Publications.