

1. Activity Reporting.

Activity 578-2014

Investigating the impact of climate extremes on future water and food security.

Status	Complete	Milestone	2.3.1 2014
Start date	2012 Jan	End date	2014 Dec

Description: Extreme hydroclimatic events such as droughts and floods cause huge damage in South Asia and East Africa, in particular to agricultural production and rural livelihoods. Long-term climate projections suggest that more frequent and severe hydroclimatic extremes are likely to happen in the future. Enhancing farmers' coping capacity and improving agricultural and water policies will increase the resilience of rural community towards both today's and future hydroclimatic extremes. This project aims to provide policy-relevant recommendations through conducting the following research activities: (1) quantitatively assess drought severity and frequency in the study regions using statistical and biophysical models to identify vulnerable areas and inform drought mitigation; (2) build a risk-based optimization (stochastic programming) model to prioritize mitigation measures; (3) analyze farmers' perception of and responses to droughts in the past to identify adaptation gap; and (4) construct hydroclimatic extreme scenarios for the study regions, assess their macro impacts, and identify promising mitigation policies using a global agricultural economic model.

Status: Complete. This project is completed.

Gender Component: The household survey in Ethiopia will enable us to assess the impacts of climate shocks, including drought, on men and women and the roles played by men and women in coping with and in mitigating the risks of future extreme events. We will also explore men's and women's perceptions of climate change and climate risk, knowledge of climate-smart agriculture (CSA) practices, and adoption of CSA practices and adaptation strategies.

Objectives:

1. Develop a risk-based optimization model for mitigating extreme hydroclimatic event impacts on agriculture and apply it to a CCAFS site in India.
2. Assess macro impacts of severe drought events in the IGP
3. Characterize drought patterns in IGP and EA to inform drought management planning.
4. Analyze the crop yield impacts of climate extremes and climate change.
5. Analyze resilience of rural households in Ethiopia to climate shocks using household survey data.

Deliverables:

Description	Type	Year	Status	Justification
A paper on "Economic consequences of water and agricultural adaption strategies for a prolonged, severe drought in the Indo-Gangetic Plains" submitted to a journal	Peer-reviewed journal articles	2014	Complete	
A working paper on "Drought impacts on crop production in Kenya"	Non-peer reviewed articles	2014	On going	A draft of the working paper has been completed. In this paper, we used ground-based weather observation records made available by the National Climatic Data Center of NOAA, USA. We compared those data with gridded climate records from GPCC, and found some inconsistency in monthly and annual statistics. We need to further check those climate input data and refine modeling results used in this paper.
Complete the paper "Irrigation for drought mitigation and impacts on groundwater storage in northwest India" and submit it to a journal	Peer-reviewed journal articles	2014	On going	The main modeling activities behind the paper preparation has been completed. However, we found that the results are subject to quite large uncertainty due to conditions of input data. In order to provide a discussion about the uncertainty, additional Monte Carlo-based sensitivity analysis was conducted, which causes a delay in submission of the manuscript.
Complete the paper "Changes in climate and associated crop yield impacts in the Indo-Gangetic Plains of India during the past 50 years" and submit it to a journal	Peer-reviewed journal articles	2014	On going	The study has been completed, and a manuscript has been prepared. We used two PDSI data sets, and believed it is necessary to check their consistency before submitting the paper. It will be submitted in 2015.

Description	Type	Year	Status	Justification
A working paper on "Effectiveness of household strategies to increase resilience to climate shocks"	Peer-reviewed journal articles	2014	On going	Work was started on this paper in 2014 but it remains a work in progress. The paper was submitted for oral presentation at the CCAFS organized CSA event in Montpellier in March 2015 but was only accepted as a poster and will therefore not be presented. The paper will also be submitted for presentation at the International Scientific Conference "Our Common Future under Climate Change," to take place in Paris, 7-10 July 2015. We plan to have a version of the paper ready for submission to a journal in 2015.
A working paper on "Gender differences in perceptions of climate change and vulnerability to climate shocks"	Peer-reviewed journal articles	2014	On going	This paper was drafted in 2014 but has not yet been submitted to a journal. It is currently on hold pending agreement over data sharing and collaboration between partners. We hope that these issues will be resolved in early 2015 and we can submit the paper to a journal pending input, revisions, and approval of our co-author. Although the paper is on hold, we did publish a project note on the preliminary results as part of the series "Enhancing Women's Assets to Manage Risk under Climate Change: Potential for Group-Based Approaches"
Policy note summarizing the results of a study that examined how gendered risk preferences and access to information influence the adaptation decisions of rural agricultural households in Ethiopia. This brief forms part of a series of briefs produced for a BMZ-funded project on climate change, collective action, and women's assets.	Policy briefs - Briefing paper	2014	Complete	

Partners:

1- University of Illinois:

Ximing Cai <xmcai@illinois.edu>

2- University of Central Florida (UCF):

Dingbao Wang <dingbao.wang@ucf.edu>

Location(s):

Countries: Ethiopia, India, Pakistan,

Activity 580-2014

Climate change adaptation, mitigation and building economic resilience in West Africa and South Asia.

Status	Complete	Milestone	3.1.1 2014
Start date	2013 Jan	End date	2015 Dec

Description: In this study we look at two countries in the West Africa/ECOWAS region and India, and evaluate economic and agro-ecological vulnerabilities to climate variability and long-term climate change. We combine a micro-level analysis of farm-level adaptation response and impact analysis with a macro-level analysis of impact response and adaptation at an economy-wide level. We look at the implications of higher int'l prices for high imported food countries, as well as the decline in crop yields. The impact on the balance of payment and the related spillover effect within the economy are also considered, along with impacts on important agricultural sectors such as livestock.

Status: Complete. Even though the project was intended to end at the end of 2015 it has been halted due to re-allocation of funds. Some good initial assessment of climate vulnerability, and a broad understanding of policies has been done. The modeling work was not able to be completed, however, due to the termination of project funding. We hope to fund further opportunities to carry forward this work.

Gender Component: Not defined

Objectives:

1. Identify the most important sources of climate vulnerability and to design appropriate responses.
2. Assess the degree of vulnerability to climate shocks across different household types and the critical pathways of impact.
3. Understand the possible tradeoffs between adaptation to climate change and the mitigation of GHG emissions at the field level.

4. Evaluate the critical linkages between agriculture and the rest of the economy that are relevant to climate change vulnerability.
5. Assess the most critical infrastructure and sectoral investments that need to be made to enhance resilience.

Deliverables:

Description	Type	Year	Status	Justification
Conceptual paper linking adaptation & mitigation and analytical design.	Peer-reviewed journal articles	2014	On going	
Organization of key socio-economic and biophysical data.	Data	2014	Complete	
Working versions of micro- and macro-economic modeling tools.	Platforms - Data Portals for dissemination	2015	Incomplete	
Cross-country comparison of results and sharing lessons & insights.	Workshop	2015	Incomplete	
Training of partners on key modeling tools and analytical methods.	Capacity	2015	Incomplete	

Partners:

- 1- Secrétariat Permanent de la Coordination des Politiques Sectorielles Agricoles (SP/CPSA):
Abdoulaye Ouedraogo <abdoulaye_bo@yahoo.fr>
- 2- Agence Nationale de Developpement Agricole et de Securite Alimentaire (ANDASA):
Jacqueline M. Sultan <sultanjm@yahoo.com>

Location(s):

Countries: Burkina Faso, Guinea, India,

Activity 581-2014

Low Emission Development Strategies (LEDS) in agriculture

Status	Complete	Milestone	3.1.1 2014
Start date	2013 Oct	End date	2014 Sep

Description: It is now widely recognized that natural resource use in many developing countries, from crop production to deforestation, is responsible for the bulk of greenhouse gas emissions. We also know that in many countries, it is the agriculture and forestry sectors—not industry or transport—that provide low-cost mitigation opportunities. As countries experience economic growth and choose among the available development pathways, they are in a favourable position to adopt natural resource use technologies and production practices characterized by low GHG emissions. Rather than embedding high emissions practices in their development and intervene on emissions reduction at a later stage, they can utilize Low Emissions Development Strategies (LEDS).

Status: Complete. The project is completed but it continues in Colombia to the help the Ministry of the environment to develop the Intended Nationally Determined Contributions document for COP 2015.

Gender Component: Not defined

Objectives:

1. The principal goal of this effort is to provide an analysis of alternative development pathways in forestry and agriculture and their GHG emission characteristics so that a country can choose among a portfolio of development strategies that weigh emissions reductions against possible tradeoffs in terms of agricultural output and revenues..

Deliverables:

Description	Type	Year	Status	Justification
2 Country Reports: Colombia and Zambia.	Peer-reviewed journal articles	2014	On going	

Partners:

- 1- Centro Internacional de agricultura Tropical (CIAT):
Glenn Hyman <<g.hyman@cgiar.org>

Location(s):

Countries: Zambia,

Activity 840-2014

The Agricultural Synergies Project: Guidance for Integrating REDD+ and Agricultural Emissions Reductions

Status	On going	Milestone	3.1.1 2014
Start date	2013 Oct	End date	2015 Sep

Description: This project is well nested in a series of already existing efforts that deal with projecting future land use changes and emissions deriving from this change.

The principal goal of this effort is to provide a tool for the analysis of alternative development pathways in forestry and agriculture, their GHG emission characteristics, and the conditions under which yield gains and intensification can possibly lead to land sparing phenomena.

Possible areas of analysis include intensive production on flatlands, areas where subsistence farmers can make large gains from yield increases and other instances where intensification is highly likely to spare land locally as well situations where it will likely lead to forest conversion in the absence of careful governance and related measures.

Status: On going. The project continues its implementation throughout 2015.

Gender Component: Not defined

Objectives:

1. Estimate the implications of agricultural intensification in combination with evolving land use patterns for carbon emissions of various potential types of agricultural systems in Vietnam, Zambia, Indonesia and Colombia.

Deliverables:

Description	Type	Year	Status	Justification
Modeling framework and tool to project future agricultural land use patterns in Vietnam, Zambia, Indonesia and Colombia. The tool to be able to estimate the implications for these land use patterns and carbon emissions of various potential types of agricultural yield gains in these countries.	Platforms - Data Portals for dissemination	2015	Incomplete	

Partners:

1- Princeton University:

Tim Searchinger <tsearchinger@gmail.com>

Location(s):

Countries: Colombia, Indonesia, Vietnam,

Activity 583-2014

Capturing the potential for greenhouse gas offsets in Indian agriculture

Status	On going	Milestone	3.1.1 2014
Start date	2012 Dec	End date	2015 Mar

Description: The Indian Government recently announced an aggressive GHG emissions intensity target of reducing emissions by 20-25 percent by 2020 on 2005 levels. Policy-makers now face the challenge of developing and implementing policy options consistent with this target. A critical challenge will be to find ways of exploiting low cost mitigation opportunities in sectors like agriculture, while also minimising the cost of emission reduction targets on India's growing energy and industry sectors to not unduly curtail broader economy-wide growth prospects.

An important issue addressed in this project concerns the extent to which broader policy reform in India's agricultural sector might contribute to national emission reduction targets. Beyond these broader reforms, lie specific mitigation policies like 'agricultural offsets' which provide a mechanism by which sectors facing higher marginal abatement costs can tap low cost mitigation opportunities within agriculture. In some instances, realising mitigation opportunities within agriculture may also offer potential to further enhance existing Indian programs and policies aimed at increasing agricultural productivity and improving the sustainability of India's farming systems. The approach could have beneficial international implications by clearly showing the central role that agriculture can play in GHG abatement in emerging and developed economies alike.

Status: On going. A closing workshop during which project results will be presented is scheduled for April 2015.

Gender Component: Not defined

Objectives:

1. Assess the scope of mitigation in India's agricultural sector and quantify the economy-wide effects of reforming existing agricultural policies and implementing a specific offsets policy.
2. Assess alternative Policy designs and institutional arrangements that can efficiently deliver GHG abatement by the agricultural sector.

Deliverables:

Description	Type	Year	Status	Justification
Final Report.	Peer-reviewed journal articles	2014	On going	
: "Greenhouse gas emissions from India's agricultural sector" for the journal Energy and Emission Control Technologies	Peer-reviewed journal articles	2014	On going	

Partners:

1- Monash University:

Sisira Jayasuriya <sisira.jayasuriya@monash.edu>

2- National Council of Applied Economic Research (NCAER):

Rajesh Chadha <rchadha@ncaer.org>

3- Infrastructure Development and Finance Corporation (IDFC):

Jyoti Gujral <jyoti.gujral@idfc.com>

Location(s):**Countries:** India,

Activity 585-2014

Increasing Women's Resilience to Confront Climate Change

Status	Complete	Milestone	4.1.3 2014
Start date	2013 Jan	End date	2014 Dec

Description: There is some evidence to suggest that unequal access to and control over assets make women particularly vulnerable to the negative impacts of climate change both in terms of their sensitivity to climate shocks and their adaptive capacity. Men and women are also likely to have very different perceptions of climate change and climate risk, and very different approaches to adaptation. But there is very little data or analysis of gender differences in climate change impacts or ability to engage in climate-smart agriculture. Improved information on these issues is needed to design gender-sensitive and pro-poor climate change research approaches that will benefit women and men.

Status: Complete. This project enhanced understanding of gendered climate change perceptions, impacts, and adaptation and coping strategies in selected CCAFS baseline sites in Bangladesh, Uganda, Senegal, and Kenya through collection and analysis of gender-disaggregated household survey data. The research was done in collaboration with ILRI, building on their in-depth farm characterization tool, IMPACTlite. Several reports and papers have been developed using these data and the results have been shared with researchers, policymakers and development practitioners through several outreach events and conferences. We will finalize publications and communications materials highlighting the key findings from the project and continue our outreach efforts, specifically targeting key NGOs and government agencies, through the DfID-funded activity "Gendered climate change adaptation" in 2015.

Gender Component: This project focused on answering key gender-climate research questions:

- How do men and women perceive climate change and, particularly, the livelihood risks associated with climate change?
- What are the gender disparities in access to and control over assets and how and to what degree does the disparity in assets affect how men and women experience climate shocks and change?
- How and to what degree does asset disparity determine how men and women respond to climate shocks and change?
- Which coping strategies and adaptation options are favored by women and men, respectively, and why?

Objectives:

1. This project enhances understanding of gendered climate change perceptions, impacts, and adaptation and coping strategies within selected CCAFS baseline sites in Bangladesh, Uganda, Senegal, and Kenya [*Kenya is managed by ILRI] using a gendered household survey of selected CCAFS IMPACT lite baseline communities originally surveyed by ILRI. The additional survey

modules collect detailed gender-disaggregated data on climate change perceptions, assets, and adaptation. The research is done in conjunction with other work on gender issues within CCAFS, and contributes to strategies to increase resilience for women as well as men.

Deliverables:

Description	Type	Year	Status	Justification
<p>Syntheses and other joint partner communication products based on findings from CCAFS work with women and marginalized groups in Lower Nyando, Kenya; Khulna, Bangladesh; and Rakai Uganda, Senegal.</p> <p>1. Report (Quantitative analysis of research question) on gendered perceptions, impacts, and coping and adaptation strategies.</p>	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Partially complete	The report has been drafted but we are still exploring potential outlets for publication.
<p>2. Policy briefs summarizing results of key research questions.</p> <p>Both the policy brief and the above mentioned report will aim to identify mechanisms for gender targeting, including addressing whether the major constraints to adoption lie in information, control of assets and other resources, or attitudes.</p>	Policy briefs - Briefing paper	2014	Extended	<p>We did not complete the policy briefs in 2014 because we were still finalizing the comparative site report which will form the basis for the briefs. However, for each site, we have developed a list of recommendations, based on the site report which will be included in the briefs. We will prepare a brief (or short series of briefs) in 2015 for the DfID-funded project on gendered climate change adaptation. The DfID funds will also enable us to conduct a stakeholder capacity needs assessment in order to tailor our findings to the needs of key organizations implementing adaptation projects on the ground.</p>

Description	Type	Year	Status	Justification
<p>This CCAFS working paper no. 83 was published using the data collected through this project and presents descriptive results of the survey.</p> <p>Citation is: Twyman J, M. Green, Q. Bernier, P. Kristjanson, S. Russo, A. Tall, E. Ampaire, M. Nyasimi, J. Mango, S. McKune, C. Mwongera, and Y. Ndurba. 2014. Adaptation Actions in Africa: Evidence that Gender Matters. CCAFS Working Paper No. 83. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available at: https://cgspace.cgiar.org/bitstream/handle/10568/51391/WP83.pdf</p>	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
<p>Paper on "What Influences Awareness and Adoption of Climate-Smart Agricultural Practices? Evidence from Kenya" is forthcoming as a CCAFS working paper in 2015, pending final approval.</p>	Working Paper	2014	Partially complete	The paper is essentially finished and in the pipeline for publication as a CCAFS working paper, pending final approval.
<p>Presentation by Joash Mango and Edidah Ampaire on "Understanding Gender and Climate Change: Case Studies from Kenya and Uganda" at the World Agroforestry Centre, May 14, 2014. Available at: http://www.slideshare.net/cgiarcclimate/understanding-gender-and-climate-change-35037158</p>	Presentations	2014	Complete	
<p>Presentation by Chiara Kovarik on "Gendered Differences in Climate Change Adaptation" at the Gender and Agriculture Workshop: Focus on Bangladesh, Dhaka, Bangladesh, June 18, 2014.</p>	Presentations	2014	Complete	

Description	Type	Year	Status	Justification
Blog post based on a presentation by Joash Mango and Edidah Ampaire on "Gender differences in how farmers adapt to climate-smart agriculture" on the CCAFS news blog. Available at: http://ccafs.cgiar.org/blog/new-analysis-suggests-gender-differences-how-farmers-adapt-climate-smart-agriculture#.VNT3qHvs3K6	Social media outputs (including web sites, blogs, wikis, linkedin group, facebook, yammer, etc.)	2014	Complete	
Op-ed by Claudia Ringler in Outreach Magazine on "COP20: Climate change negotiators must consider the role of rural women." Available at: http://www.stakeholderforum.org/sf/outreach/index.php/219-cop20/cop20-day5-forests-food-ag/11798-cop20-day5-negotiators-consider-role-rural-women	Articles for media or news (radio, TV, newspapers, newsletters, etc.)	2014	Complete	
Narrated presentation on "Gender, collective action, and climate change" for a master's program course developed by CCAFS on climate change, agriculture and food security at the National University of Ireland (http://www.nuigalway.ie/ccafs/). Presentation available at: https://www.youtube.com/watch?v=FfOs4gOVRyg&feature=youtu.be	Capacity	2014	Complete	
COP20 side event on "Increasing the Resilience of Farming Communities to Climate Change through Shared Learning and Adaptation Decision-Making with a Focus on Gender."	Workshop	2014	Complete	

Description	Type	Year	Status	Justification
Discussion forum on "Gender and resilience across the landscape – from Latin America, Africa and Asia," which took place on December 6, 2014, at the Global Landscapes Forum, in Lima, Peru, during COP20. Video available at: http://www.landscapes.org/gender-resilience-across-landscape-latin-america-africa-asia/	Workshop	2014	Complete	

Partners:

- 1- International Livestock Research Institute (ILRI):
Silvia Silvestri <s.silvestri@cgiar.org>
- 2- International Institute of Tropical Agriculture (IITA):
Edidah Ampaire <e.ampaire@cgiar.org>
- 3- World Agroforestry Centre (ICRAF):
Joash Mango <j.mango@cgiar.org>
- 4- Data Analysis and Technical Assistance Limited (DATA):
Zihadul Hassan <dataqzz@bangla.net>
- 5- Institut Senegalais de Recherche Agricole (ISRA):
Yacine Ndourba <yacinendourba@yahoo.fr>

Location(s):

Countries: Bangladesh, Kenya, Senegal, Uganda,

Benchmark Site: Nyando (Katuk Odeyo), Makueni (Wote), Kagera Basin (Rakai), Kaffrine, Bagerhat (Morrelganj),

Activity 584-2014

Global agricultural model intercomparisons with AR5 data- AgMIP project

Status	On going	Milestone	4.3.1 2014 (1)
Start date	2011 Mar	End date	2014 Feb

Description: AgMIP is a distributed climate-scenario simulation exercise for historical model intercomparison and future climate change conditions with participation of multiple crop and agricultural economics modeling groups around the world. The goals of AgMIP are to improve substantially the characterization of risk of hunger and world food security due to climate change and to enhance adaptation capacity in both developing and developed countries. AgMIP will significantly enhance information (including uncertainty estimates) to guide policymakers regarding risk of hunger, world food security, and agricultural adaptation. A key aspect is to create capacity-building partnerships among agricultural crop and economic modelers around the world, enhancing the ability of each nation to evaluate current and future climate impacts and adaptations. As part of the above program, IFPRI is participating in the Economics team. Under this activity, it aims to establish a methodological and procedural foundation for the systematic comparison and improvement of global and regional land use, production and trade models used for analysis of climate change impact, as well as mitigation and adaptation in the agricultural sector. It will involve coordinating and facilitating intercomparison of both regional and global agricultural market models being used for climate change impact and adaptation research. Achieving these objectives will include participating in the AgMIP cross-cutting themes to build collaborations between climate scientists, crop modelers and economic modeling groups to improve methods and procedures that allow crop model simulations to be used as inputs into economic models. This work will involve collaboration with the OECD, FAO, and various European research institutes (e.g., IIASA, PIK, Wageningen).

Status: On going. This is an on-going project

Gender Component: Not defined

Objectives:

1. Provide leadership in the development of the overall project design and administration
2. Global agricultural model intercomparisons to increase confidence in model outputs
3. Development of Representative Agricultural Pathways (RAPs) to be used in conjunction with the IPCC AR5 socioeconomic and climate drivers.

Deliverables:

Description	Type	Year	Status	Justification
	Data	2014	On going	
	Data	2014	On going	

Partners:

- 1- Oregon State University (OSU):
John Antle <john.antle@oregonstate.edu>
- 2- Columbia University:
Carolyn Mutter <czm2001@columbia.edu>
- 3- Organization of Economic Cooperation and Development (OECD):
Ada Ignaciuk <ada.iganciuk@oecd.org>
- 4- Food and Agriculture Organization of the United Nations (FAO):
Aikaterini Kavallari <aikaterini.kavallari@fao.org>
- 5- Wageningen University and Research Centre (WUR):
Hans van Meijl <hans.vanmeijl@wur.nl>
- 6- U.S. Department of Agriculture (USDA):
Ron Sands <rsands@ers.usda.gov>
- 7- University of Florida (UF):
Jim Jones <jimj@ufl.edu>
- 8- Purdue University:
Dominique van der Mensbrugghe <vandermd@purdue.edu>

Location(s):

Global

Activity 587-2014

Model Improvements and methodological developments of the IMPACT database management and model systems.

Status	On going	Milestone	4.3.1 2014 (1)
Start date	2013 Jan	End date	2014 Dec

Description: In 2013, the IMPACT model was redesigned and updated to version 3. This work focused on:

- (1) A redesigned food model to improve efficiency and speed
- (2) A redesigned water model to improve integration with the food model
- (3) A modular framework to ease communication between models
- (4) An efficient and streamlined data management system

This new model framework is now ready to be used to study the implications of the new global scenarios incorporating climate change (RCPs) and socioeconomic (SSPs) drivers for the IPCC's 5th Assessment Report (AR5).

In addition to the transition to AR5 socioeconomic and climate drivers, work will continue on IMPACT model improvements. These model improvements include updating 2 IMPACT modules already in IMPACT 3: (1) Livestock and (2) Nutrition. Additionally, there is work planned on reintegrating the aquaculture module, which was once a part of a previous version of IMPACT, into the IMPACT 3 model framework.

Status: On going. Significant work has been done in 2014 towards the development and updating of several IMPACT modules, which will be summarized below:

(1) Livestock Module - Working collaboratively with ILRI the livestock module developed by Siwa Msangi has been adapted to fit within the IMPACT 3 database. The structure of the model has been significantly altered for the new module to ensure compatibility with IMPACT 3 and to take advantage of the newer version's more advanced features. Data has been collected by ILRI to meet the new data demands of these additional features. Model testing, calibration, and validation will need to occur in 2015, with the objective of an ILRI led report presenting initial results of the new module

(2) Nutrition: Nutrition parameters have been updated in IMPACT 3 to take into account the update to a 2005 base year. Collaboration with nutrition experts at PHN, University of Oxford, CIMSANS, and CSIRO have been ongoing in 2014 as we explore a variety of options in modeling nutrition and health outcomes in IMPACT scenario analysis.

(3) Aquaculture Module - Initial design of aquaculture module is complete. Actual coding and data

integration into a standalone aquaculture model that meets all of the coding standards of IMPACT 3 will occur in 2015, before sharing with World Fish who will lead the calibration and validation of the new module

IMPACT 3 documentation has been developed and improved as a part of general dissemination of the new version of the model. This is in the form of a series of presentations and lecture materials that will be condensed and summarized in 2 technical documents in 2015. Additionally, work has been ongoing to improve the technical documentation of the IMPACT code, with efforts at automating the documentation of the model code for ease of updating a users manual. Users manuals for the simulation interface have been completed and shared with IMPACT user community.

Gender Component: Not defined

Objectives:

1. Integrate the new livestock module into IMPACT 3. This will require updating production functions, feed demand, and fully describing the grassland and fodder commodities in IMPACT.
2. Integrate the aquaculture module into IMPACT 3. This will require incorporating new commodities, with their respective demand and supply into the IMPACT data system.
3. Work on IMPACT documentation describing the new features of the model and data management system
4. Work with the Population, Health and Nutrition division in updating and improving the IMPACT food security and nutrition modules.
5. Complete the transition from AR4 climate and socioeconomic scenarios to the AR5 drivers

Deliverables:

Description	Type	Year	Status	Justification
Updated Livestock Module, which can work with IMPACT 3 as well as on its own in stand-alone mode	Platforms - Data Portals for dissemination	2014	Partially complete	Model structure and data collection have been completed. What is required now is for model calibration, validation, and finally full integration into IMPACT 3. The calibration and validation will begin in stand alone mode and will be led by ILRI partners. Once the model is fully parameterized it will be reintegrated into IMPACT 3.
Aquaculture Module, which can work with IMPACT 3 as well as on its own in stand-alone mode	Platforms - Data Portals for dissemination	2014	On going	The deliverable is still ongoing because there wasn't enough time 2014 to design and implement an additional module.
A report on the database management system for IMPACT 3, which describes the Bayesian approach used to efficiently process and clean the base year database from a variety of sources	Peer-reviewed journal articles	2014	On going	Focus on releasing Global Futures technologies report and generating a new IMPACT baseline took top precedence in 2014, and this paper was pushed back to 2015.
Update the IMPACT technical description to better reflect the new model developments completed in 2013 and in 2014	Discussion paper	2014	Partially complete	The lectures produced haven't yet been condensed into a full update of the technical description, but this will happen in 2015
Update the documentation for the new IMPACT water models	Reference material (booklets and training manuals for extension agents, etc.)	2014	On going	

Description	Type	Year	Status	Justification
Update the 2010 Research Monograph (Nelson et al.) on Climate Change and Food Security to incorporate the new AR5 drivers. Proposed title of Research Monograph: "Climate Change, Agriculture and Water: Scenarios to 2050" report (scenarios, modeling results, policy options) using IPCC AR5 scenarios, new SSPs, estimates of GHG emissions, and updated scenarios for population and GDP growth.	Peer-reviewed journal articles	2014	On going	Working on developing a new IMPACT 3 baseline occupied much of 2014. A new research monograph focusing on climate change could not move forward until a good baseline from which to project climate change could be established
Complete documentation of new modules to be integrated in IMPACT in 2014	Reference material (booklets and training manuals for extension agents, etc.)	2014	On going	Modules in question were not completed in 2014, therefore the documentation for these modules were postponed until they are completed

Partners:

Partners not defined

Location(s):

Global

Activity 846-2014

Analysing Countries' Human, Organizational and Systems Capacity and Policy Process to Proactively Respond to Impending Climate Change Challenges

Status	Complete	Milestone	4.3.3 2014
Start date	2013 Sep	End date	2014 Dec

Description: The gist of this project is to better understand the impact pathways of the policy processes within four countries so that CCAFS' researchers and partners can focus on the most impactful pathway within each country to generate the strongest change. For example, determining who has the strongest influence currently will indicate whom researchers should work with to yield immediate policy changes. However, there may also be a large, potential group of policy actors (for example farmer-based organizations) who could benefit from a little bit of capacity strengthening and may be potential partners of data generation activities and in the long run, may be able to exert strong influence over the policy process. The primary assumption of this project is that its outputs will serve as inputs into the other CCAFS projects as a guide for where and how to target capacity building activities as well as who to partner with to undertake action research, including scenario analyses and modelling. More specifically, the outputs of this project will suggest whether it is the supply or demand side of local policy research that needs enhancing. For example, if policymakers need additional guidance in interpreting and applying research results or if national researchers require analytical support to conduct their research.

Status: Complete. This project activity has been extended into the first quarter of 2015 to allow for publication. The case studies conducted for this project will be synthesized as individual chapters in an IFPRI book, as well as some individually written as case studies for IFPRI discussion papers.

Gender Component: Gender will be incorporated within this assessment in two ways. First, in the mapping of the impact pathways and the identification of the potential players and actors, we will assess whether there are opportunities for men and women to raise issues and that there is capacity to identify gender-disaggregated strategies for climate resilience. Second, when identifying individual capacities, gender-disaggregated data will be obtained.

Objectives:

1. Determine the individual, organizational, and system-wide capacities of a country's policy process with respect to the ability to recognize the impending threats of climate change to their country and to respond proactively
2. Identify the critical capacity gaps in each country's research, policymaking, institutional development, and program implementation processes
3. Analyze the effect of the various capacity short-comings on the policy process and the resulting impact on the food and agriculture sectors

Deliverables:

Description	Type	Year	Status	Justification
General capacity needs assessment: Individual and Organizationala. Quantification of the existing human, physical, and financial resources of each identified organization and individual.b. Assessment of the structural and functional capacities of all organizations to participate in the policy process.c. Identification of the existence of any national council, parliamentary committee, or taskforce that is dedicated to addressing the challenges presented by climate change.	Peer-reviewed journal articles	2014	On going	This project activity has been extended into 2015 to allow for collaborator deliverables to be turned in and for the data to be analyzed.
The four case studies for the project in Bangladesh, Ghana, Tamil Nadu (India), and Vietnam will be formed as chapters in a future IFPRI book on the capacity for climate change policy making. Lessons learned from these case studies will be drawn out so that they may be applicable to future policy making in other developing countries.	Books	2014	On going	This project activity has been extended into 2015 to allow for collaborator deliverables to be turned in and for the data to be analyzed.
The capacity assessment case studies conducted in four countries (Bangladesh, Ghana, India, and Vietnam) will be published as IFPRI discussion papers in 2015.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	On going	This project activity has been extended into 2015 to allow for collaborator deliverables to be turned in and for the data to be analyzed.

Partners:

- 1- Ministry of Food and Agriculture (MoFA):
Dorothy Effa <daeffa@gmail.com>

2- Ministry of Agriculture (MoA):

Md Reza Ahmed Khan <rezaahmed@gmail.com>

3- Ministry of Agriculture (MoA):

Fatema Wadud <shilawadudgp@gmail.com>

4- Vanavarayar Institute of Agriculture (VIA):

Dr. P. Jaisridhar <drjai.extn@gmail.com>

5- Vietnet Information Technology and Communication Center (VIETNET-ICT):

Hoang Ngan Pham <nganphamhoang@gmail.com>

Location(s):

Countries: Bangladesh, Ghana, India, Vietnam,**Activity 993-2014**

Climate change, food security and policy reform in India

Status	On going	Milestone	4.3.2 2014
Start date	2013 Apr	End date	2016 Mar

Description: This project aims to understand the pathways of impact for climate change in India, and how policy reforms can best facilitate the necessary adaptation that is envisioned to meet future climate-driven shocks and other challenges. IFPRI is working with a number of partners to understand the market-level impacts on crop & livestock, and identify key actors in the value chain who can facilitate adaptation, if they are properly incentivized through improved policy-driven signals.

Status: On going. The project is ongoing and IFPRI's contribution to Work Package 1 will be completed in early 2015. The identification of key impacts and dimensions of vulnerability in WP1 will be key inputs into the subsequent activities in the project.

Gender Component: Not defined

Objectives:

1. To identify the regions and agricultural sectors of India that are vulnerable to climatic change, and to quantify the magnitude of potential impacts on the Indian agricultural economy and overall socio-economic welfare

2. To capture the macro-level impacts of climate change on India's agricultural economy, that will be used by other work packages of the project as a basis for their analysis.

Deliverables:

Description	Type	Year	Status	Justification
model-generated simulation results of climate-change driven impacts on key sectors of India's agricultural economy	Data	2014	On going	
Detailed write up of climate change impacts on agriculture, with policy implications for interventions at the micro- and macro-level	Peer-reviewed journal articles	2014	On going	
Workshop with project partners and stakeholders to discuss preliminary results and their implications	Workshop	2014	Complete	

Partners:

- 1- Consumer Unity and Trust Society (CUTS):

Bipul Chatterjee <bc@cuts.org>

- 2- Norwegian Institute for Consumer Research (SIFO):

Arne Dulsrud <arne.dulsrud@sifo.no>

- 3- Norwegian Institute for International Affairs (NUPI):

Karl Rich <kr@nupi.no>

Location(s):

Countries: India,

Activity 994-2014

Improving models and predictions of future climate and agriculture in West Africa.

Status	On going	Milestone	4.3.1 2014 (1)
Start date	2014 Sep	End date	2019 Aug

Description: This proposal is for the call of NSF 13-607 -Decadal and Regional Climate Prediction using Earth System Models (EaSM). This proposal contributes to addressing the first long-term goal of the EaSM program, i.e., “Achieve comprehensive, reliable global and regional predictions of decadal climate variability and change through advanced understanding of the coupled interactive physical, chemical, biological, and human processes that drive the climate system, including as they pertain to agriculture , forestry or land cover/use.”

We propose a collaborative project among University of Connecticut, MIT, Loyola Marymount University, and the International Food Policy Research Institute. While this continues our currently funded NSF project, the two new thrusts of the project are: (1) Consideration for not only the biogeophysical pathway of land cover changes’ impact on regional climate but also the pathway through their impact on dust generation and biomass burning; (2) Consideration for various irrigation strategies, guided by predictions of agricultural economy and irrigation potential. The proposed work is essential for achieving improved predictions of future climate and agriculture in West Africa, for informing human adaptation to climate change to ensure adequate food supplies and for informing international food policy making.

Status: On going. The project continues as planned.

Gender Component: Not defined

Objectives:

1. This proposal is aimed to improve models and future predictions of regional climate in West Africa, accounting for a comprehensive set of mechanisms underlying the feedback from both natural and managed ecosystems, and to characterize the uncertainties in regional climate predictions We also like to understand the roles of dust emission and biomass burning in regional climate variability and change and to improve predictions of future agriculture in West Africa through improved climate predictions and improved models for agricultural land use.

Deliverables:

Partners:

Partners not defined

Location(s):

Regions: West Africa (WA),

Activity 1011-2014

Climate change, agriculture and food security scenario analysis and proposed policies for Latin America region

Status	On going	Milestone	4.3.2 2014
Start date	2014 Jan	End date	2014 Dec

Description: Through the use of various modeling tools, analyze the impacts of climate change on the agricultural sector and report findings in country reports in 8 countries in Latin America: Guatemala, Honduras, Nicaragua, and El Salvador (the Central America four, CA4), Mexico, Brazil, Colombia, and Peru. The long-range goal is to take these reports and develop them into 1 or 2 research monographs that could be widely disseminated and form the basis for national and regional policy discussions on adaptation to climate change.

Status: On going. The project had a number of challenges in 2014. The AgMIP data, which we were tasked with using, was much more difficult to download and to compile than we thought. Furthermore, the IMPACT data that we were trying to use had several key errors for which we had to go back to the dataset originators to correct. Nevertheless, key progress was made. A new composite AgMIP crop suitability dataset was developed, and graphs and maps for the country reports were made. Furthermore, drafts of two of the countries were made. Finally, the MIRAGE model was calibrated and run, and final output placed in tables. We currently making new graphs from the latest version of IMPACT, and are drafting all country reports.

Gender Component: Not defined

Objectives:

1. To provide research outputs and analysis to inform policies supporting sustainable, resilient, and equitable agricultural and natural resource management developed, adopted and implemented by agricultural, natural resource management, conservation and development organizations, civil society and advocacy organizations and networks, national governments and international bodies.
2. Through modeling and analysis done with small farmers in mind, (1) evaluate technologies that could be adopted and (2) consider policies that could be adopted, resulting in increased capacity in low-income communities (and supporting organizations) to adapt to climate variability, shocks

and longer-term changes leading to more climate-resilient livelihoods.

3. As a result of analysis that will impact policy and assist in technology assessment for helping small farmers adapt to climate change, those small farmers, who represent a significant proportion of rural poor, will have increased and stable access to food commodities in the face of climate variability.

Deliverables:

Description	Type	Year	Status	Justification
Country reports reflecting analysis of the models showing the impact of climate change on agriculture, and possible impacts of attempts to adapt to climate change. Reports will also include secondary literature analysis of current climate planning in each country.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	On going	The project had a number of challenges in 2014. The AgMIP data, which we were tasked with using, was much more difficult to download and to compile than we thought. Furthermore, the IMPACT data that we were trying to use had several key errors for which we had to go back to the dataset originators to correct. Nevertheless, key progress was made. A new composite AgMIP crop suitability dataset was developed, and graphs and maps for the country reports were made. Furthermore, drafts of two of the countries were made. Finally, the MIRAGE model was calibrated and run, and final output placed in tables. We currently making new graphs from the latest version of IMPACT, and are drafting all country reports.
In an effort to capitalize on a key opportunity to share results and cultivate interest in using the analysis, prepare at least one presentation that might be used in a side event to COP-20 in Lima, Peru.	Presentations	2014	Cancelled	We were initially supposed to be included in a CCAFS-sponsored side event, but the CCAFS planners changed their minds, and we were not included. We then tried to host a technical session at the Global Landscapes Forum, but our proposal, facing a lot of competition for limited slots, was not accepted.

Partners:

Partners not defined

Location(s):

Countries: Brazil, Colombia, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru,

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

Output: 2.3.1

Summary:

Output: 3.1.1

Summary: A modeling framework capable of reconciling the limited spatial resolution of macro-level economic models with models that function at a higher spatial resolution, which allow to properly account for changes in carbon stocks and GHG, was developed and implemented and deployed. The approach is based on the use of public and widely accessible data and the flexibility and transparency of the approach proposed in this study can increase decision-makers' trust and uptake of the results. A paper delineating the econometric approach used in the land use model was published in *Environment and Resource Economics* (Li et al. 2014 "Impacts of Road Expansion on Deforestation and Biological Carbon Loss in the Democratic Republic of Congo"). A paper describing the methodological approach and that uses Colombia as an empirical application (Low Emission Development Strategies in Agriculture. An Agriculture, Forestry and Other Land Uses (AFOLU) Perspective) is currently under review for publication in *World Development*.

Output: 4.1.3

Summary: The results show that issues of gender and climate change are largely contextual. Across sites, a majority of respondents perceived climate change, but there were differences in climate change perceptions between men and women. Results also show limited capacity to cope with climate shocks, highlighting the importance of building men's and women's assets to reduce their vulnerability. Common responses to climate shocks involved limiting or changing food choices and selling assets (a strategy women were more likely to report). Ensuring greater access to assets and building the productive capital of both men and women would enable more men and women to make proactive changes to livelihood strategies and farming practices in order to increase resilience to future climate changes and shocks.

In terms of adaptation strategies, there was considerable variation across sites. In general, men were much more likely to report adapting to climate change than women. The data showed that some individuals (including, encouragingly, some women) are making greater and more labor- and resource-intensive changes (e.g. soil and water conservation, water harvesting, off farm income). Key constraints to adaptation included lack of time and labor, suggesting that there are some real tradeoffs in terms of workload. In addition, the results highlighted differences between men and women in access to climate information from various sources. Addressing these disparities—and identifying the ways to more effectively to reach men and women—is critical to increasing climate resilience.

These results were summarized in several reports and papers and were highlighted at two high-profile events at the end of 2014: an IFPRI co-sponsored side event at the COP20 in Lima, Peru and an IFPRI discussion forum at the Global Landscapes Forum coinciding with the COP20 event.

Output: 4.3.1

Summary: In 2014 IFPRI (along with other members of the AgMIP Global Economics team) designed and analyzed scenarios to explore the global and regional impacts of climate change on yields, area, production, consumption, trade and prices for major commodity groups under a range of plausible socioeconomic and emissions pathways. Results of this work are currently in review for publication. This work was supported by funds from the US Dept of Agriculture, with additional contributions from the authors' host institutions and other donors. In the case of IFPRI these additional contributions were jointly supported by CCAFS.

Output: 4.3.2

Summary: (580-2014) we have identified the key ag sectors that warrant the attention of policy makers for strengthening in both Burkina Faso and Guinea. We have held consultations at country-level based on these studies.

(1011-2014) This is a multi-year project that has begun with analysis of data and running models, but for which the communication will take place in the future as a monograph is produced.

Output: 4.3.3

Summary: This research included collaboration with developing country researchers in four different countries (Bangladesh, Ghana, Tamil Nadu in India, and Vietnam) and helped to build their capacity to conduct analysis of the climate change policy process system in their respective country context. Collaborators represented various institutions including agricultural ministries.

3. Communications.

Media Campaigns:

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

1) Statement of Secretary (Minister) Arsenio Balisacan on "Addressing the Impacts of Climate Change in the Philippine Agriculture Sector" during the Project Inception Workshop held in Richmond Hotel, Quezon City, Philippines on January 13-14, 2014 was posted in NEDA website (<http://www.neda.gov.ph/?p=2238>)

2) IFPRI's Side Event in COP 20 - "Increasing the Resilience of Farming Communities to Climate Change through Shared Learning and Adaptation Decision-Making with a Focus on Gender", December 3, 2014, Cuartel General del Ejército del Perú (CGEP) Av. Boulevard S/N, San Borja Lima 41 Surco, Lima, Peru (<http://womenandclimate.ifpri.info/2014/11/20/ifpri-side-event-at-cop-20-wednesday-03-dec-2014-1645-1815-sipan-room/>)

3) Press release - "IFPRI researchers contribute to the Lima Climate Change Conference in Peru" mentioned the IFPRI-SEA Philippine project - "At the same side event, IFPRI has invited the National Economic and Development Authority of the Philippines as well as the CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS), to address specific gender dimensions of climate-smart-agriculture, in the context of South East Asia, and particularly the Philippines". (<http://www.ifpri.org/sites/default/files/pressrel20141201.pdf>)

4) Event flyer - IFPRI's side event in COP 20 – "Increasing the Resilience of Farming Communities to Climate Change through Shared Learning and Adaptation Decision-Making with a Focus on Gender" was carried out on December 3, 2014 in Lima, Peru. The event was organized by International Food Policy Research Institute with University of Missouri and Asociación para la Naturaleza y Desarrollo Sostenible (ANDES). An Introduction was done by Claudia Ringler, Deputy Division Director, Environment and Production Technology, IFPRI and Alejandro Argumedo, Director, ANDES. Ms. Gina V. Aljecera, Officer in-Charge, Assistant Director, Agriculture, Natural Resources and Environment Staff participated as the government representative from the National Economic and Development Authority (NEDA). (<http://climatechange.ifpri.info/files/2014/11/COP20-Flyer.pdf>)

Blogs:

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

1) Blog on IFPRI's side event in COP 20 involving the CCAFS-SEA Philippine project can be downloaded from <http://womenandclimate.ifpri.info/2014/11/20/ifpri-side-event-at-cop-20-wednesday-03-dec-2014-1645-1815-sipan-room/>

2) Additional information on IFPRI's side event in COP 20 mentioning CCAFS-SEA Philippine project can be viewed from <http://www.ifpri.org/pressrelease/ifpri-researchers-contribute-lima-climate-change-conference-peru>

3) Several announcements were made under IFPRI's climate change microsite such as <http://climatechange.ifpri.info/ifpri-side-event-at-cop-20-wednesday-03-dec-2014-1645-1815-sipan-room/>

Websites:

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

A project brief for the CCAFS-SEA "Addressing the Impacts of Climate Change in the Philippine Agriculture Sector" was developed and currently under review by NEDA. This will be uploaded in the IFPRI climate change website as soon as finalized.

Social Media Campaigns:

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

1) Statement of Secretary (Minister) Arsenio Balisacan on "Addressing the Impacts of Climate Change in the Philippine Agriculture Sector" during the Project Inception Workshop held in Richmond Hotel, Quezon City, Philippines on January 13-14, 2014 was posted in NEDA website (<http://www.neda.gov.ph/?p=2238>)

2) IFPRI's Side Event in COP 20 - "Increasing the Resilience of Farming Communities to Climate Change through Shared Learning and Adaptation Decision-Making with a Focus on Gender", December 3, 2014, Cuartel General del Ejército del Perú (CGEP) Av. Boulevard S/N, San Borja Lima 41 Surco, Lima, Peru (<http://womenandclimate.ifpri.info/2014/11/20/ifpri-side-event-at-cop-20-wednesday-03-dec-2014-1645-1815-sipan-room/>)

3) Press release - "IFPRI researchers contribute to the Lima Climate Change Conference in Peru" mentioned the IFPRI-SEA Philippine project - "At the same side event, IFPRI has invited the National Economic and Development Authority of the Philippines as well as the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), to address specific gender dimensions of climate-smart-agriculture, in the context of South East Asia, and particularly the Philippines". (<http://www.ifpri.org/sites/default/files/pressrel20141201.pdf>)

4) Event flyer - IFPRI's side event in COP 20 – "Increasing the Resilience of Farming Communities to Climate Change through Shared Learning and Adaptation Decision-Making with a Focus on Gender" was carried out on December 3, 2014 in Lima, Peru. The event was organized by International Food Policy Research Institute with University of Missouri and Asociación para la Naturaleza y Desarrollo Sostenible (ANDES). An Introduction was done by Claudia Ringler, Deputy Division Director,

Environment and Production Technology, IFPRI and Alejandro Argumedo, Director, ANDES. Ms. Gina V. Aljecera, Officer in-Charge, Assistant Director, Agriculture, Natural Resources and Environment Staff participated as the government representative from the National Economic and Development Authority (NEDA). (<http://climatechange.ifpri.info/files/2014/11/COP20-Flyer.pdf>)

Newsletters:

Events:

(580-2014): we held several important consultations on the key issues facing the crop & livestock sectors regarding climate change. These workshops (17 Dec 2013 and 10 Jan 2014) were important in validating our findings.

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

1) A Project Inception Workshop on "Addressing the Impacts of Climate Change in the Philippine Agriculture Sector" was organized by IFPRI and NEDA in Richmond Hotel, Quezon City, Philippines on January 13-14, 2014 and participated by representatives from the government, the academe, international research organization and non-government organization. The Project Inception Workshop report was circulated to the participants and posted in CCAFS wiki.

2) A Project Write-shop on "Addressing the Impacts of Climate Change in the Philippine Agriculture Sector" was organized by IFPRI and NEDA in Tagaytay City, Philippines on November 15-17, 2014. The event was participated primarily by the research collaborators (chapter authors) and the materials were shared with participants.

Videos and other Multimedia:

FP4-SEA, Addressing the Impacts of Climate Change in the Philippine Agriculture Sector Project

Videos were recorded during the Project Write-shop and are currently under review. These will be uploaded in CCAFS and IFPRI websites through blogs and other communication materials as soon as finalized.

Other Communications and Outreach:

4. Case studies.

Case Study #1

Title: Outreach regarding gender and climate change research

Author:

Type: Social differentiation and gender; Successful communications; Policy engagement;

Project Description:

This project enhanced understanding of gender-disaggregated climate change perceptions, impacts, and adaptation and coping strategies in selected CCAFS baseline sites in Bangladesh, Uganda, Senegal, and Kenya through collection and analysis of gender-disaggregated household survey data. The research was done in collaboration with ILRI, building on their in-depth farm characterization tool, IMPACTLite. This project is focused on answering key gender-climate research questions including:

- 1) How might men and women be (differentially) affected by long-run climate change and short-term climate shocks?
- 2) What are the characteristics and causes of gender differentials in vulnerability/resilience to weather-related risk (e.g. assets, information, empowerment in decision-making, rights, etc.)? How might the capacity to adapt to climate change be different for men and women?
- 3) What are the adaptation options, strategies, and approaches (individual, household, or collective) that are available to and preferred by men and women? How are these different and why?
- 4) Do men and women have different perceptions of climate change and climate risk? How do perceptions of climate change, climate risk, and personal values shape adaptation decisions and approaches?
- 5) Does joint decision-making increase household resilience to climate change? Does joint decision-making lead to better outcomes at the household level for food security, income, or productivity? Are there tradeoffs in terms of intra-household power dynamics?

Findings have been disseminated to researchers, policymakers and practitioners through reports and publications, social media, workshops and international conferences

Introduction / objectives:

The objective of the project was to collect and analyze gender-disaggregated data in order to inform researchers, policy-makers and development practitioners about gender differences in vulnerability to climate change, perceptions of climate change, and preferences and needs for adaptation and resilience.

Project Results:

The results from this project show that issues of gender and climate change are largely contextual. Across sites, a majority of respondents perceived climate change, but there were differences in climate change perceptions between men and women. Results also show limited capacity to cope with climate shocks, highlighting the importance of building men's and women's assets to reduce their vulnerability. Common responses to climate shocks involved limiting or changing food choices and

selling assets (a strategy women were more likely to report). Ensuring greater access to assets and building the productive capital of both men and women would enable more men and women to make proactive changes to livelihood strategies and farming practices in order to increase resilience to future climate changes and shocks.

In terms of adaptation strategies, there was considerable variation across sites. In general, men were much more likely to report adapting to climate change than women. The data showed that some individuals (including, encouragingly, some women) are making greater and more labor- and resource-intensive changes (e.g. soil and water conservation, water harvesting, off farm income). Key constraints to adaptation included lack of time and labor, suggesting that there are some real tradeoffs in terms of workload. In addition, the results highlighted differences between men and women in access to climate information from various sources. Addressing these disparities—and identifying the ways to more effectively to reach men and women—is critical to increasing climate resilience.

These results were summarized in several reports and papers and were highlighted at two high-profile events at the end of 2014: an IFPRI co-sponsored side event at the COP20 in Lima, Peru and an IFPRI discussion forum at the Global Landscapes Forum coinciding with the COP20 event.

Partners:

Project partners: International Livestock Research Institute (ILRI), International Institute of Tropical Agriculture (IITA), Data Analysis and Technical Assistance (DATA), Institut Senegalais du Recherches Agricoles (ISRA)

COP20 co-host: Asociación para la Naturaleza y Desarrollo Sostenible (ANDES)

COP20 and GLF co-organizer: University of Missouri

Links / sources for further information:

Working paper: <https://cgspace.cgiar.org/bitstream/handle/10568/51391/WP83.pdf>

Video of IFPRI COP20 side event: <http://vimeo.com/113628088>

Summary of IFPRI COP20 side event: <http://www.iisd.ca/climate/cop20/enbots/3dec.html#event6>

Video of GLF: <http://www.landscapes.org/gender-resilience-across-landscape-latin-america-africa-asia/>

Op-ed in Outreach Magazine: <http://www.stakeholderforum.org/sf/outreach/index.php/219-cop20/cop20-day5-forests-food-ag/11798-cop20-day5-negotiators-consider-role-rural-women>

IFPRI blog post: <http://www.ifpri.org/blog/un-international-day-rural-women>

Presentation: <https://www.youtube.com/watch?v=FfOs4gOVRyg&feature=youtu.be>

Presentation: <http://www.slideshare.net/cgiarcclimate/understanding-gender-and-climate-change-35037158>

Presentation: <http://www.slideshare.net/IFPRIGender/ccafs-dhaka-gender-workshop-presentation>

Case Study #2

Title: Low Emission Development Strategies in Colombia

Author: Alex De Pinto

Type: Inter-center collaboration; Capacity enhancement; Policy engagement;

Project Description:

Resource use in many developing countries, from crop production to deforestation, is responsible for the bulk of greenhouse gasses (GHG) emissions. We also know that there are instances in which the agricultural and forestry sectors can provide low-cost climate change mitigation opportunities. From a technical point of view, reducing expected increases in GHG emissions in agriculture requires the adoption of transformative approaches in the use of resources. Emphasis has been placed on methods that increase the efficiency in the use of fertilizers, water, and fossil fuels, as well as waste reduction. From a policy-making perspective, the design of low emission development strategies is an example of multi-objective decision making in which policies target the reduction of GHG emissions while other goals such as increasing agricultural productivity and food security or attaining objectives such as export goals or economic growth, are preserved. It is important also to consider that all countries are part of a global economic system and therefore it is critical that policies are devised with full recognition of the role of the international economic environment which, with its effects on commodity prices, can significantly affect the long-term viability and the budgetary implications of mitigation policies. The challenge at hand is to reconcile the limited spatial resolution of macro-level economic models that operate at a subnational or national level with models that function at a higher spatial resolution, which allow to properly account for changes in carbon stocks and GHG. The approach is based on the use of public and widely accessible data and we believe that the flexibility and transparency of the approach proposed in this study can increase decision-makers' trust in the results.

Introduction / objectives:

The projects aims at developing a method to bring together different models, all widely accessible to the public, to help policymakers in their evaluation of trade-offs, opportunities, and repercussions of alternative mitigation policies in the agricultural sector. The expectation is that stakeholders, from government agencies, to producer and consumers' organizations to farmers, will benefit from policies devised with the support of solid evidence and the effects of which can be investigated and evaluated by all the parties affected. The framework is flexible enough to be applied to any country interested in exploring country-wide effects and economic viability of CC policies.

Project Results:

Results reveal the importance of considering the full scope of interactions and changes in the various land uses when planning for GHG reduction policies. The carbon stock stored in forests often overwhelms the possible increases in GHG emissions generated by food crop production. Overall shifts in land uses determined by changes area allocated to agricultural production can have great effects on existing carbon stock which might be more significant than the resulting changes in GHG emission from crop cultivation.

The effects of the policies we simulated cover the entire spectrum of potential outcomes. We find win-win policies (reducing land allocated to pasture increase revenues and carbon stock and reduces GHG emissions), policies with tradeoffs (limiting deforestation in the Amazon increases carbon stock, decreases emissions, but reduces revenues) and policies that seem to generate clearly inferior results (increasing the area allocate to oil palm cultivation reduces carbon stock, increases emissions and reduces revenues).

Given the complexity of low emissions development strategies, modeling approaches, frameworks, and tools should be adaptable, open, and transparent. Modeling frameworks should be adaptable so that policy makers can explore the consequences of using different data sets and incorporate new information as it becomes available. Modeling frameworks and tools should be open to the inclusion of input from different models so that the robustness of the results can be assessed. The advantage of the approach proposed is that each one of the models does have alternatives and researchers have the option to replace them or integrate them with other models. We believe that this level of transparency and openness is essential to generate trust in the results among end users.

Partners:

CIAT

Links / sources for further information:

<http://climatechange.ifpri.info/>

Case Study #3

Title: Addressing the Impacts of Climate Change in the Philippine Agriculture Sector

Author: Mark W. Rosegrant

Type: Capacity enhancement; Policy engagement; Food security;

Project Description:

Agriculture is an important sector of the Philippine economy. Climate change is expected to affect the sector and have implications on food security. In this context, farmers in the Philippines would benefit from climate-smart adaptation technologies, and generation and adoption of these technologies would be greatly enhanced through creation of an enabling institutional environment. Agricultural policies must address climate change impacts through appropriate adaptation options, also taking into consideration food security. The National Economic and Development Authority (NEDA) is responsible for advising the Philippine President on national development planning, including recommending the level of the annual government expenditure as stipulated in the 2011-2016 Philippine Development Plan and Public Investment Program. Under NEDA, the Agriculture, Natural Resources and Environment Staff (ANRES) department provides technical support in coordinating the formulation of national plans and policies for agriculture, natural resources and agrarian reform sectors. NEDA has expressed strong interest to develop new methods to evaluate current policies and formulate future policies. The project is planning to integrate an innovative set of data, models and scenarios, in the areas of climate change, agriculture and food security, in the planning process of NEDA.

Introduction / objectives:

This collaborative research partnership between IFPRI and NEDA-ANRES aims to establish a decision-support mechanism on agricultural, climate change and food security policies, that uses newly generated data, modelling output and innovative scenario assessment. It is designed to integrate an innovative set of data, models and scenarios in the areas of climate change, agriculture and food security in the NEDA's development process (e.g., planning, project evaluation, and investment programming). It is expected that NEDA technical staffs are capacitated to analyze the strengths and weaknesses of policies and explore resilience and the provisioning capacity of the agricultural sector given future climate scenarios.

Project Results:

IFPRI in collaborative partnership with NEDA carried out a "Project Inception Workshop" for Addressing the Impacts of Climate Change in the Philippine Agriculture Sector, Quezon City, Philippines, January 13-14, 2014. The objectives of the Workshop include a) provide brief introduction about the research; b) ensure clarity on roles and responsibilities of each participant/author, expected outputs and timelines; c) present and discuss types, status, and sources of data including access; d) present key highlights of each chapter in the proposed book; and e) conduct open exchange of information and solicit feedback to improve/strengthen each chapter as necessary. Thirty nine partners and representatives from relevant government agencies (Climate Change Commission, Office of the President, Republic of the Philippines; Department of Agriculture; and Department of Science and Technology-Philippine Atmospheric, Geophysical and Astronomic Services

Administration), non-government organizations (UN Food and Agriculture Organization; US Aid for International Development), academe, other CG Center (World Agroforestry), and organizers participated in the Workshop.

In the course of project implementation, a write-shop was held on November 15-17, 2014 to a) present results and analysis of different chapters; b) present preliminary modeling results and analysis; c) identify overlaps of chapters and ensure coherence; d) solicit comments and recommendations to further enhance book content; e) review and finalize remaining activities in terms of timelines; and f) discuss the way forward between IFPRI and NEDA. During the write-shop, NEDA Secretary Balisacan shared that climate change issue was highlighted in the 22nd Asia-Pacific Economic Cooperation Economic Leader's Meeting in Beijing, China where heads of member states expressed strong interest particularly on the science and investments measures to build-up institutions capable of scaling-up actions on climate change adaptation and mitigation and disaster preparedness; and that the results from this project will be essential for planning in the agricultural and climate change sectors during 2015.

Partners:

National Economic and Development Authority; De La Salle University; University of the Philippines (UP) Diliman; UP Los Banos; World Agroforestry-Philippines; Department of Agriculture and Department of Environment and Natural Resources (to be confirmed)

Case Study #4

Title: Investigating the impact of climate extremes on future water and food security

Author: Tingju Zhu

Type: Successful communications; Breakthrough science; Food security;

Project Description:

Extreme hydroclimatic events such as droughts and floods cause huge damages in South Asia and East Africa, in particular to agricultural production and rural livelihoods. Long-term climate projections suggest that more frequent and severe hydroclimatic extremes are likely to happen in the decades to come. Enhancing farmers' coping capacity and improving agricultural and water policies is necessary to increase the resilience of rural communities towards both today's and future hydroclimatic extremes.

Key research questions:

- What can we learn from historical drought events in the Indo-Gangetic Plains and East Africa?
- At the rural community level, what drought mitigation measures are most effective at reducing risks faced by rural households? At the provincial and national level, what policies are most promising?
- What are the macro impacts of climate extreme events on regional water and food security?
- What strategies are effective at reducing livelihood risks due to climate shocks for men and women in Ethiopia?

Basic information about the activity: This project aims to provide policy-relevant recommendations on how to enhance the resilience of rural communities to hydroclimatic extreme events, such as drought. The main objectives of the project are to:

- Characterize drought patterns to inform drought management planning.
- Develop a risk-based hydroeconomic optimization model and adapt it to the production condition and policy environment of northeast India to identify and prioritize drought mitigation measures, focusing on coping with delayed monsoon.
- Assess macroscale impacts of major droughts on water and food security, and identify promising mitigation policies using a global agricultural economic model. Multicentury paleoclimate reconstruction is used in drought scenarios.
- Analyze crop yield impacts of climate extremes and climate change in the Indo-Gangetic plains.
- Analyze resilience of rural households in Ethiopia to climate shocks using household survey data.

The household survey data will be used to assess the roles played by men and women to mitigate the risks of extreme events. We will also explore men's and women's perceptions of climate change and climate risk, knowledge of climate-smart agriculture (CSA) practices, and adoption of CSA practices and adap

Introduction / objectives:

As we started to work on the CCAFS project “Impacts of Climate Extremes on Water and Food Security in South Asia and East Africa” (hereafter “Climate Extremes”) three years ago, a clear goal we had was to understand the water and food security risks associated with hydroclimatic extreme events in the study areas and identify coping strategies.

The goal was motivated by three considerations. First, the climate in both South Asia and East Africa are marked by strong seasonality and inter-annual variability, and extreme hydroclimatic events such as droughts cause huge damages, in particular to agricultural production and rural livelihoods. Second, long-term climate projections suggest that more frequent and severe hydroclimatic extremes are likely to happen in the decades to come. Third, enhancing farmers’ coping capacity and improving agricultural and water policies is necessary to increase the resilience of rural communities towards both present and future hydroclimat

Project Results:

Over the past three years, we have achieved new understandings of climate risks and appropriate coping strategies for the study areas. For instance, we found that in Pakistan droughts are widespread and often occur simultaneously over large areas, posing a significant challenge to drought planning and mitigation. In addition, we identified that in Pakistan a 16-year drought recurrence period is supported by strong evidences, which is useful for planning and preparing for droughts. In terms of mitigating future climate change, also for Pakistan, we found improving water use efficiency and promoting crop productivity through investment in research and agricultural extension are the most effective measures, which are even more important than building more water storage reservoirs in securing future water and food supply. For the entire Indo-Gangetic Plains (IGP), through reconstructing a paleoclimatology of more than 700 years, we found that most severe droughts, which we call “mega-droughts,” in the IGP actually took place in the 20th Century. This result is a bit surprising however it could potentially provide guidance for planning for and investment in water supply, irrigation and hydropower infrastructure --- if the infrastructure system of interest in the IGP can effectively cope with droughts of the 20th Century, there is a good chance it can deal with climate conditions in the future. Using the mega-drought scenarios, we analyzed water and food security situations in the IGP with an integrated water and food system model, and found that agricultural commodity trade plays a critical role in mitigating drought impacts. This implies that maintaining a well-functioning trade system, in particular when a major breadbasket like the IGP suffers from severe drought or other crop-impacting nature disasters, is essential for food security in the region and beyond.

Some of these findings have been published on international journals, and a few more papers are currently being finalized for submission. Most of these findings, plus other results not mentioned here, have been presented at major international conferences, such as the American Geophysical Union (AGU) Annual Fall Meeting. In 2014 AGU meeting alone, four presentations were given to disseminate research findings coming out of this study.

In December 2013, we held a mid-term project workshop in Washington, DC. Senior officers and experts from India, Kenya and Ethiopia attended the workshop and provided valuable comments and

suggestions for the research activities conducted under this project. Upon the completion of the CCAFS Climate Extremes project, we will further disseminate research findings through blogs, conferences, meetings, and other pub

Partners:

University of Illinois at Urbana-Champaign

University of Central Florida

5. Outcomes.

Outcome #1:

Low Emission Development Strategies in Colombia

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

The research and outreach work done under the LEDS project has targeted stakeholders at various level of the policy making process. The direct outcome of these outreach efforts is the request by the Colombian Ministry of the Environment, which has a presidential mandate to devise mitigation policies, to contribute with our analysis to the definition of the GHG emission reduction commitments to be included in the Intended Nationally Determined Contributions (INDCs) to be ratified at COP 2015,

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

A paper delineating the econometric approach used in the land use model was published in Environment and Resource Economics (Li et al. 2014 "Impacts of Road Expansion on Deforestation and Biological Carbon Loss in the Democratic Republic of Congo"). A paper describing the methodological approach and that uses Colombia as an empirical application (Low Emission Development Strategies in Agriculture. An Agriculture, Forestry and Other Land Uses (AFOLU) Perspective) is currently under review for publication in World Development.

What partners helped in producing the outcome?

CIAT

Who used the output?

Ministry of the Environment

How was the output used?

The output is currently used to formulate the country Intended Nationally Determined Contributions (INDCs) to be ratified at COP 2015,

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?

The Ministry of the Environment formally asked USAID to provide additional funding to IFPRI so that work leading to the preparation of the INDCs could continue and to create in-country capacity for the use of the model developed.

7. Outcome indicators.

Outcome Indicator:

Findings and evaluation tools on mitigation and livelihoods benefits of alternative agricultural development pathways used by global agencies and decision-makers in two countries in each of the three regions

Achievements:

A modeling framework for the analysis of Low Emissions Development Strategies that considers all land uses was developed by IFPRI and is currently used by the Ministry of the Environment in Colombia to develop the Intended Nationally Determined Contributions to be ratified at COP 21.

Evidence:

The Ministry of the Environment formally asked USAID to provide additional funding to IFPRI so that work leading to the preparation of the INDCs could continue and to create in-country capacity for the use of the model developed. USAID has provided the requested additional funding.

Outcome Indicator:

Global database and set of tools for climate-smart agriculture established and used by key international and regional agencies

Achievements:

(1011-2014) Developed new composite database of pre-climate change and future climate change (2050) crop suitability indices from AgMIP crop model comparison. Have not found an institution to host the output, so it has not yet been used by any key agencies.

Evidence:

Evidence not defined

8. Leveraged funds.

Leveraged funds #1

Title:

(1011-2014) Supplemental Funding of LAC Climate Change Adaptation monograph by IADB

Partner Name: Inter-American Development Bank

Budget: \$100,000.00

Theme :4

Leveraged funds #2

Title:

Additional funding for LEDS in Colombia

Partner Name: USAID

Budget: \$200,000.00

Theme :3

9. Publications.