1. Activity Reporting.

Activity 769-2014

Assess likely effects of specific adaptation, risk management and mitigation options in 2 - 3 target regions using household characteristics data, scenarios of development pathways and simple models.

Status	Complete	Milestone	2.1.2 2015
Start date	2014 Jan	End date	2014 Dec

Description: Assess likely effects of specific adaptation, risk management and mitigation options in three target CCAFS regions using household characterization data (ImpactLITE), regional scenarios of developmental pathways and simple household models in order to
1. identify robust generic adaptation options applicable across sites and farm household groups
2. identify specific region and farm type specific adaptation options and their scope of application
3. quantify the relative importance of generic versus specific adaptation options
Assessments will be set up and evaluated in participatory model demonstrations with local stakeholders

Status: Complete. Food security analyses have been performed for the 9 sub Saharan African CCAFS benchmark sites for which detailed household characterization data (collected through 'impactlite') were available. An advanced drat of a scientific manuscript is available which will be finalised for submitting to the journal 'Agriculture and Food Security' in the coming weeks. Based on the food security analyses presented in the paper we also developed a so-called 'mini-survey' which only collects the indicators needed for the rapid food security analysis, and which also quantifies gender differentiated control on the benefits of on and off farm activities. This tool has now been tested in both West and Southern Africa and will be rolled out in 2015, generating key information linking food security, agricultural production and gender equity across a wide range of contrasting systems.

Gender Component: The analyses showed that at the moment limited information linking food security and gender equity at farm household level is available. Based on the food security analyses presented in the paper we therefore developed the 'mini-survey' which, besides the rapid food security indicator, quantifies gender differentiated control on the benefits of on and off farm activities. This tool has now been tested in both West and Southern Africa and will be rolled out in 2015, generating key information linking food security, agricultural production and gender equity across a wide range of contrasting systems.

Objectives:

1. 1. identify robust generic adaptation options applicable across sites and farm household groups
2. 2. identify specific region and farm type specific adaptation options and their scope of application
3. 3. quantify the relative importance of generic versus specific adaptation options

Deliverables:

Description	Type	Year	Status	Justification
1 journal article; household modeling framework made available and applied	Information outputs	2014	Partially complete	The manuscript still needs a few final touches before it can be submitted for review in a peer review journal
A short review on trade off analyses in agricultural systems. It is the result of one of the effort to get a good overview of state-of-the-art approaches in farm household level modelling	Peer-reviewed journal articles	2014	Complete	
Another short review on the current status of farm household modelling in the scientific literature	Peer-reviewed journal articles	2014	Complete	
Although not directly an output generated by the current CCAFS activity it is a excellent example of how adaptation and climate and socio-economic scenarios can be analysed at farm household level, and has therefore contributed to our current knowledge of this topic.	Peer-reviewed journal articles	2014	Complete	

Partners:

1- Wageningen Unversity and Research Centre (WUR):
Ken Giller <ken.giller@wur.nl>

Location(s):

Regions: East Africa (EA), West Africa (WA),

Activity 770-2014

Development and test application for ONE CCAFS region of a prototype multi-scale decision support tool for policies to increase adaptive capacity of smallholder farmers and incentives to enhance mitigation practices.

Status	Complete	Milestone	4.2.1 2014 (1)
Start date	2014 Jan	End date	2014 Dec

Description: Development and test-application for one CCAFS region of a prototype multi-scale decision support tool for policies to increase the adaptive capacity of smallholder farmers and incentives to enhance mitigation practices. This prototype integrates large scale top down approaches with micro scale bottom up approaches to allow researchers, policy and decision makers to jointly 'examine the processes required for promising adaptation options to be scaled up and out' through model simulations. This activity requires input from the on-going regional scenarios work, household modelling work, and regional policy engagement processes.

Status: Complete. A review paper (published in Food Policy) has been written in which contrasting multi-scale analyses frameworks are discussed that can be used to evaluate food security at different integration levels. One of these approaches, using a collation of existing household level characterization data and the worldbank LSMS IAS of Uganda has been used to perform food security analyses across Uganda, contrasting in-depth survey studies with the spatially extended approach of the LSMS data. Currently the analysis are finalised and a manuscript is being prepared.

Gender Component: Not defined

Objectives:

1. Development and application of a prototype of a multi-scale impact assessment tool

Deliverables:

Description	Type	Year	Status	Justification
report describing multi-scale model prototype and one application. The multi-scale model prototype itself	Peer-reviewed journal articles	2014	Complete	

Partners:

1- Wageningen Unversity and Research Centre (WUR):
Ken Giller <ken.giller@wur.nl>

2- International Maize and Wheat Improvement Center (CIMMYT):
Santiago Lopez Ridaura <s.l.ridaura@cgiar.org>

3- Commonwealth Scientific and Industrial Research Organisation (CSIRO):
Mario Herrero <m.herrero@csiro.org>

Location(s):

Regions: East Africa (EA),

Activity 488-2014

Quantification of GHG emissions to inform mitigation interventions in East Africa agricultural systems

Status	Complete	Milestone	3.3.2 2014
Start date	2012 Aug	End date	2014 Dec

Description: This project focusses on building capacity and collecting information for characterizing GHG emissions and identifying mitigation potentials of typical agricultural systems in EA. It builds on the CCAFS sampling frames and the Land Degradation Surveillance Framework (LDSF) developed by ICRAF at few selected sites. In addition, the study uses existing household data to select farm types and within those, cropping activities to identify promising mitigation options. In 2014, activities will focus on development of low cost protocol (SAMPLES) for quantification of key farming systems of East Africa; modeling workshop; and identification of mitigation options. Using data from the SAMPLES, the project will support the development and testing of an agricultural NAMA for Kenya.

Status: Complete. Soil GHG measurements from fields of smallholder systems were part of the SAMPLES project. These measurements were ended in September 2014 and summarized by Pelster et al. (submitted and under review with Global Change Biology). An economic assessment of mitigation options has been done by Dr. Giovanna De Giusti, Maseno University, Kenya. The report is available and a first draft paper for a peer reviewed journal has been prepared. The project also included the development of guidelines (protocols) for targeting, greenhouse measurements, soil analysis etc. This work is summarized for book being published by Springer. The drafts are available on the CCAFS-SAMPLES webpage. The work done in this project is forming the basis for the new FP3-CCAFS projects in East-Africa, South-East-Asia and Latin America, which are starting in 2015.

Gender Component: Not defined

Objectives:

1. To build capacity for researchers in the East Africa region to measure GHG emissions, modeling agricultural productivity and GHG emissions.
2. To develop protocols for integrating gas measurements and modeling for characterizing environmental impacts of different agricultural systems
3. To conduct case studies in selected CCAFS sites to measure GHG emissions and identify suitable mitigation options for the case study regions

Deliverables:

Description	Type	Year	Status	Justification
Development of protocols for landscape targeting	Book chapters	2014	Complete	
Capacity building for assessing GHG emission mitigation potentials in mixed crop-livestock systems	Capacity	2014	Complete	
Database of GHG emissions	Data	2014	Complete	
Analysis and identification of mitigation options, and one agricultural NAMA developed for Kenya	Peer-reviewed journal articles	2014	On going	Article is still currently under review. Once we get suggestions back from the reviewers and editors, we will be able to complete the deliverable.
Journal article on how to mitigate greenhouse gas emissions from livestock production	Non-peer reviewed articles	2014	Complete	
Economic analysis of smallholder farming systems in Nyando, Kenya	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
A manuscript presenting measured annual GHG fluxes from ten farmer-managed sites across Kenya and Tanzania	Peer-reviewed journal articles	2014	On going	was submitted at the end of 2014 to the Journal of Geophysical Research: Biosciences. The manuscript is currently under review.

Partners:

1- International Livestock Research Institute (ILRI):
Klaus Butterbach-Bahl <k.butterbach-bahl@cgiar.org>

2- World Agroforestry Centre (ICRAF):
Todd Rosenstock <t.rosenstock@cgiar.org>

3- Center for International Forestry Research (CIFOR):
Mariana Rufino <m.rufino@cgiar.org>

4- Maseno University:
Giovanna de Giusti <giovanna.degiusti@gmail.com>

5- Karlsruher Institut für Technologie (KIT):
Eugenio Diaz-Pines <eugenio.diaz-pines@kit.edu>

6- International Rice Research Institute (IRRI):
Björn Ole Sander <b.sander@irri.org>

Location(s):

Countries: Kenya, Tanzania, Uganda,
Benchmark Site: Nyando (Katuk Odeyo), Kagera Basin (Rakai), Usambara (Lushoto),

Activity 936-2014

Implementation of the CCAFS social learning strategy, assembling and disseminating guidelines for M&E of innovation, non-traditional approaches to supporting local decision making

Status	On going	Milestone	4.2.2 2014 (1)
Start date	2014 Jan	End date	2014 Dec

Description: CCAFS is catalysing new thinking and action around participatory 'social' research and learning approaches to enhance food security in the context of climate change. The CCSL initiative was launched by CCAFS in early 2012 to look at ways that more participatory learning approaches can improve the impact of research for development programs. This activity by ILRI supports the engagement of people in CCSL, rollout of the strategy, and further testing and documentation of ideas and practices.

Status: On going. One of the main achievements has been the funding, documentation and completion of the CCSL sandbox-funded project on watershed management with Makerere University, which has led to strong insights from the team and has helped collect the very first hand set of social learning evidence coming from CCSL work.
Another key achievement has been the comprehensive effort on collecting, organizing and archiving all case studies developed so far in relation with CCSL on the CG Space collection for CCSL outputs, paving the way for strong information management for the upcoming work on evidence-gathering.
And of course the completion of the first public version of the CCSL framework and toolkit has been developed in the course of 2014.

Gender Component: Gender is one of the key factors influencing the effectiveness of social learning and associated processes so will be part of all activities and analyses. Moreover, one of our intentions is to see how social learning can explicitly benefit women and other 'differentiated' groups. A working paper on social differentiation has been developed in 2013 as one of the key outputs for 2013 and its insights and lessons are integrated in the current CCSL framework and set of case studies.

Objectives:

1. Building strong evidence base for social learning methodologies and taking social learning to scale (CCSL activity area 2)
   CCSL will further develop the framework and toolkit initiated in 2013 as a way to both engage different actors to understand and apply social learning better, and as a way to collect evidence from first-hand experience to strengthen the conceptual foundations of CCSL and practical applications of the framework and toolkit. This objective covers the framework/toolkit as well as case studies and a number of other smaller activities.

2. Bringing together communities of practice and advocating social learning methodologies (CCSL activity area 3)
   Since the inception of CCSL work, a lot has been achieved by a small group of people. Now that a number of key materials are in place and that the framework and toolkit is up and running (though work in progress), the CCSL group wants to open up its work and connect with other networks and communities of practice which could benefit from CCSL work, in the field of climate change, learning and knowledge management, monitoring and evaluation etc. This objective attempts at connecting with those akin communities via events, visits, short briefs explaining the linkages and crucially facilitating interaction and engagement through the CCSL sandbox.

Deliverables:

Description	Type	Year	Status	Justification
Sandbox progress report As in past years, the CCSL sandbox is the central space for engagement around and coordination of CCSL conversations and issues. The sandbox will be actively facilitated, endowed with small resources to incubate innovative social learning initiatives and will be reported about.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	Still to continue in 2015.
CCSL case stories by ILRI These case stories will consider various initiatives in their infancy, in full implementation and completed, to assess to what extent social learning has been included, or could have been and with what results.	Articles for media or news (radio, TV, newspapers, newsletters ,etc.)	2014	On going	These case studies were drafted in March 2014 but never reviewed by the PI and thus never finalized.
Further development of the CCSL framework + toolkit, and case study repository The CCSL framework, toolkit and case study repository will be further developed to provide more focused guidance and resources and to gather documented experiences from social learning initiatives taking place in 2014 (and beyond)	Tools (i.e. search engines, games, etc)	2014	Complete	No information available.
Organization, facilitation and documentation of CCSL events As the CCSL group is opening up and connecting with other communities and networks, face-to-face events will offer critical opportunities to engage and connect with those related 'conversation and action spaces'. ILRI will support the organization, facilitation and documentation of at least two of these events as they happen through the year.	Workshop	2014	Complete	

Description	Type	Year	Status	Justification
Various broad fields are connected with social learning and are effectively playing as related families. This Learning Brief outlines research fields related to social learning.	Data	2014	Complete	

Partners:

1- Euforic Services:
Pete Cranston <pete.euforic@gmail.com>

2- Acclimatise Climate Change Adaptation Consultants (Acclimatise):
Liz Carlile <liz.carlile@iied.org>

3- Westhill Knowledge Ltd:
Carl Jackson <carl.jackson@wkg.uk.net>

Location(s):
Global

Activity 975-2014

Assessing gender differentiated adoption potential of climate smart agricultural practices in selected target CCAFS sites using HH characterization data and GHG emissions factors

Status	Cancelled	Milestone	4.1.3 2015
Start date	2014 Jan	End date	2015 Dec

Description: This activity will result on identification of climate smart agricultural practices in their current use, the quantification of their adaptation and mitigation potential. the study will be complemented by a trade-offs analysis between adaptation, mitigation and food security at household level

Status: Cancelled. Activity was not carried on

Gender Component: The project intends to assess "gender differentiated" adoption potential of climate smart agricultural practices

Objectives:

1. Screening climate smart agricultural practices in their current use
2. Quantifying the adaptation and mitigation potential of these climate smart practices
3. Analyzing synergies and trade-offs between adaptation and mitigation at farm household level

Deliverables:

Description	Type	Year	Status	Justification
Report describing what climate smart agricultural practices are in current use by smallholders in selected East African sites (Rakai, Wote)	Peer-reviewed journal articles	2014	Cancelled	
Report that quantifies the adaptation and mitigation potential of climate smart practices in current use and analyzes synergies and trade-offs between adaptation and mitigation at farm household level	Peer-reviewed journal articles	2015	Incomplete	

Partners:

Partners not defined

Location(s):

Countries: Kenya, Uganda,

Benchmark Site: Makueni (Wote), Kagera Basin (Rakai),

Activity 599-2014

Coordinate development of low costs protocol (SAMPLES) for quantification of key farming systems of East and West Africa and SE Asia

Status	Complete	Milestone	3.3.1 2015 (2)
Start date	2013 Jan	End date	2013 Dec

Description: Expanding knowledge on strategies for assessing GHG emissions at landscape scales including targeting, on-site and laboratory measurements of GHG, household surveys for assessing livelihood, synthesis of results and identification of region specific, feasible mitigation strategies. This will be done by on-site and centralized training activities involving regional researchers, scientists and technicians coming from Tanzania, Uganda, and Kenya.

Status: Complete. The project was completed end of 2014. However, several activities are still on-going but are financed from other sources. E.g. Ibrahim Wanyama started a PhD (enrolled at University of Freiburg, Germany) and should complete his studies in the next two years. He has a stipend from DAAD, receives additional support from ILRI and will continue to work on soil GHG emissions from different landuses at Rakai, but also Mau Forest region.
Also Fredrick Wandera, KARI, is one of the trainees who will continue with his work in Wote, Kenya. He is currently finishing his master and we are discussing to possibly enrol him as PhD student. Both students are still working on the datasets obtained so far, and both of the datasets will be published in 2015 in peer reviewed journals.
In 2013 we discussed the possibility to work in Lushoto, Tanzania, and have been in close contact with Paul Reuben (Department of Agricultural Engineering and Land Planning, TZ), who also joined trainings on GHG emission measurements. However, for logistic and other reasons this didn't work out. Nevertheless, we are exploring opportunities, e.g. in cooperation with the University of Dresden, Germany, to possibly implement and training and measuring program at Lushoto, though financed from other sources.
Patrick Brandt, a PhD student at Karlsruhe Institute of Technology, Germany, and ILRI supported our outreach work on targeting and identifying best options for climate smart agricultural at national scale for Kenya. This is a joined activity of CIFOR and ILRI, led by CIFOR. It is envisaged that this work finally supports the development of an agricultural NAMA. Also this work will continue beyond 2014.
We also have another Kenyan Student (Betty Gisore) from Kenyatta University who has learned how to measure GHG emissions from manure and is working on developing emission factors for manure in typical, East African grazing conditions.
We also trained other students from the University of Maseno (Theodora Achieng and Emmanuel Mambo) on how to measure GHG emissions from mixed agricultural landscapes. Theodora is currently working on an M.Sc. and is partnered with CIFOR, while Mambo, who is also an M.Sc. student, is working with ICRAF

Gender Component: Not defined

Objectives:

1. Landscape targeting for Rakai, Wote and Lushoto.
2. First assessment of GHG emission potentials for the different sites.
3. Training of researcher, technician and scientists.

Deliverables:

Description	Type	Year	Status	Justification
1 Training for researchers and technicians from NARES on GHG measurments.	Workshop	2014	Complete	
GHG assessment for Lushoto, Wote, Rakai.	Capacity	2014	Complete	The field work has been completed, all soil samples have been analyzed for C, N and isotpes of C and N (in close cooperation with the Karlsruhe Institute of Technology, Germany; F. Wanyama stayed in Germany for training and analyses for 3 months). In 2015 data will be published in a peer reviewed Journal.
Quantification of soil GHG Emission Potentials, Rakai, Uganda This work is part of the PhD work of Ibrahim Wanyama which will continue in 2015 and 2016. Ibrahim's salary is funded via DAAD and ILRI. He is enrolled for his PhD at University of Freiburg, Germany. The Report provides an overview about activities in 2014, which are currently underway to be summarized for a peer reviewed publication	Working Paper	2014	Complete	
Quantification of GHG emissions from manure and urine application to rangeland This work was part of the bachelor thesis of Sophie Nuber (University of Freiburg), who worked with a M.Sc. student, Betty Gisore (University of Nairobi) at ILRI. Sophie summarized her experimental work for a Bachelor Thesis which was submitted to the University of Freiburg, Germany and Betty is currently writing up her M.Sc. which is due to be completed during 2015	Capacity	2014	Complete	

Partners:

1- International Institute of Tropical Agriculture (IITA):
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2- Kenya Agricultural Research Institute (KARI):
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3- Center for International Forestry Research (CIFOR):
Mariana Rufino <m.rufino@cgiar.org>

4- World Agroforestry Centre (ICRAF):
Todd Rosenstock <t.rosenstock@cgiar.org>

Location(s):

Benchmark Site: Nyando (Katuk Odeyo), Makueni (Wote), Kagera Basin (Rakai), Usambara (Lushoto),

Regions: East Africa (EA),

Activity 978-2014

Institutional Dimensions of Climate Change Adaptation

Status	On going	Milestone	4.2.2 2014 (1)
Start date	2014 Jan	End date	2015 Dec

Description: Investigate the role of local institutions in constraining/ enabling adaptive capacity at three CCAFS benchmark sites. Engage local stakeholders in testing an approach to institutional/ governance assessment. Identify governance-related indicators to use in assessing impact of adaptation interventions

Status: On going. Data collection for all three case studies has been completed. Reports for two have been completed. The third report is now being written. Further synthesis and publications will follow.

Gender Component: Assessment of governance and institutional characteristics will include elements such as gender participation

Objectives:

1. To characterize local institutional and governance arrangements at locations within three CCAFS target sites
2. To analyze cases of institutional arrangements and mechanisms that enable, and cases that hinder, adaptation
3. To engage local stakeholders in testing an approach to institutional/ governance assessment
4. To identify governance-related indicators to use in assessing impact of adaptation interventions

Deliverables:

Description	Type	Year	Status	Justification
Case study report no. 1	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Case study report no. 2	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Baseline data on governance at three sites	Data	2015	Incomplete	
Strategic plan for institutional innovation no. 1	Workshop	2014	Cancelled	This "strategic plan for local institutional innovation" would have been part of an ongoing engagement with the local stakeholders. As funds from CCAFS for ongoing engagement with the stakeholders at this site were not to continue, this was not pursued.
Strategic plan for institutional innovation no. 2	Workshop	2014	Cancelled	This "strategic plan for local institutional innovation" would have been part of an ongoing engagement with the local stakeholders. As funds from CCAFS for ongoing engagement with the stakeholders at this site were not to continue, this was not pursued.

Description	Type	Year	Status	Justification
Strategic plan for institutional innovation no. 3	Other	2015	Incomplete	
Briefing paper on the institutional assessment for Baobolong watershed, Kaffrine, Senegal.	Policy briefs - Briefing paper	2014	Complete	

Partners:

Partners not defined

Location(s):

Countries: Ethiopia, Kenya, Senegal,

Benchmark Site: Makueni (Wote), Borana (Yabero), Kaffrine,

Activity 979-2014

Animal health and greenhouse gas emissions intensities

Status	On going	Milestone	3.1.2 2015
Start date	2013 Jan	End date	2014 Dec

Description: Build upon an analytical framework for quantifying GHG impacts of catttle disease control interventions. Combine models to assess production benefits of disease control interventions with lifecycle assessment moels to estimate GHG emissions intensities.

Status: On going. The bulk of the work under this activity has been completed and what remains is to finish writing up and publishing the results.

Gender Component: Not defined

Objectives:

1. 1. To increase capacity for LCA, including assessments of GHG emission intensities, for developing country livestock production systems.
2. 2. To estimate the reduction in GHG emissions intensity expected to arise from controlling trypanosomosis in cattle in the West Africa.
3. 3. To develop a framework for estimating the environmental impacts (GHG emissions intensity) of livestock sector interventions more generally.

Deliverables:

Description	Type	Year	Status	Justification
Parameterised herd models and maps of cattle densities, cattle production systems, trypanosomosis distribution, economic benefits and GHG emissions reductions from disease control.	Data	2014	Complete	
A framework and software tool for estimating the environmental impacts (GHG emissions intensity) of livestock sector interventions using LCA.	Platforms - Data Portals for disseminati on	2014	On going	Manuscript not yet accepted for publication.
Technical report describing the data, methodology and results.	Peer-reviewed journal articles	2014	Cancelled	The production of a technical report has been considered unnecessary as the work will be published in a journal article
Journal article drafted.	Peer-reviewed journal articles	2014	On going	Manuscript submitted but not yet accepted for publicaiton.

Partners:

1- Food and Agriculture Organization of the United Nations (FAO):
Pierre Gerber <pierre.gerber@fao.org>

2- Scotland's Rural College (SRUC):
Michael MacLeod <michael.macleod@sruc.ac.uk>

Location(s):

Regions: East Africa (EA), West Africa (WA),

Activity 980-2014

Review of livestock-related mitigation and adaptation strategies at regional level including assessments of their application domains and potential impacts on productivity and GHG emissions.

Status	On going	Milestone	1.1.1 2015 (1)
Start date	2011 Mar	End date	2015 Mar

Description: This project assesses the mutual benefits of adaptation and mitigation scenarios for a wide range of livestock production sytems, at a regional (landscape or farming system) scale. It also aims to identify the most promising options for combined mitigation and adaptation in livestock systems at regional level.

Status: On going. 3 Deliverables have been completed.
One day training on 'Livestock and Climate Change' and 2 weeks technical training on 'Methods of measurement of GHG emissions' have been organized in collaboration with the University of Pretoria and the Global Research Alliance (GRA).

Gender Component: We ensured to have gender balance when organizing the trainings, to give equal opportunities to female scientists to participate.

Objectives:

1. Reviewing livestock-related mitigation and adaptation strategies at regional level and assessing their application domains and potential impacts on productivity and GHG emissions.

Deliverables:

Description	Type	Year	Status	Justification
Regional workshop organized and held	Workshop	2014	Extended	Workshop was held in February 2015 to be combined with workshops taking place in other project regions
Training courses organized and held	Capacity	2014	Complete	
Livestock mitigation and adaptation options at regional level assessed.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Report on mitigation and adaptation strategies including maps of application domains for adaptation and mitigation options	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Recommendations for adaptation planning are given for the four regions of the project area. Uncertainties in climate projections are comprehensively considered and the implications for adaptation planning are discussed.	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	

Partners:

1- International Institute for Applied Systems Analysis (IIASA):
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3- Food and Agriculture Organization of the United Nations (FAO):
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4- Institut National de la Recherche Agronomique (INRA):
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5- Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA):
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6- Centre International de Recherche Agricole et du Developpppement (CIRAD):
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11- Szent István University (SZIU):
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12- The Irish Agriculture and Food Development Authority (TEAGASC):
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13- Universidad Politecnica de Madrid (UMP):
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14- Global Research Alliance on Agricultural Greenhouse Gases:
Victoria Hatton <victoria.hatton@nzagrc.org.nz>

Location(s):
Global

Activity 594-2014

Implement and Assess Index Based Livestock Insurance Program on Borena, Southern Ethiopia

Status	On going	Milestone	2.1.3 2014
Start date	2010 Oct	End date	2014 Sep

Description: The activity emcompasses actions and objectives with sit within the broader project titled "Index-Based Livestock Insurance: Adapation and Innovations for Ethiopia". The project builds on lessons learned and ongoing activity from the pilot venture initiated in Marsabit District and currently being scaled out across Northern Kenya. Having launched sales in southern Ethiopia in July of 2012, there are now close to 700 purchased contracts over three sales windows. As part of the impact assessment effort, we have a rigorous impact evaluation design based on quasi-experimental techniques as well as GPS tracking of collared herds. We are also working to explicitly incorporate IPCC predictions and climate change and associated biomass dynamics to explore dynamic pricing. The particular elements of this activity involve efforts to increase adoption and continued survey work as part of the impact assessments.

Status: On going. While the IBLI program will not receive funding from CCAFS in 2015, it will continue to be implemented in Borena, Ethiopia as it has a range of other funding sources to sustain it for the time being. The IBLI team is still striving to increase the rate of adoption based on informed demand and to further IBLI's research goals.

Gender Component: Not defined

Objectives:

1. Increase the rate of adoption based on informed demand.
2. Complete second round of annual household panel survey with complete codebook documentation.
3. Complete fifth and sixth rounds of herd migration detailed surveys with documentation.
4. Complete IBLI process manual (covering both Kenya and Ethiopia case).
5. Complete automation of IBLI contract updates

Deliverables:

Description	Type	Year	Status	Justification
Third round of household survey data completed	Data	2014	Complete	
fifth and sixth round of herd collaring data completed	Data	2014	Complete	
draft paper on determinants and patterns of IBLI demand in southern Ethiopia	Peer-reviewed journal articles	2014	Complete	
System to automate index calculations	Platforms - Data Portals for dissemination	2014	On going	The automation of IBLI contract updates is not complete as we revamped the entire contract design process for a simpler, more flexible and easily scalable contract. We are currently working on the automation of this new contract into 2015.
Paper on remote sensing contributions to index development	Data	2014	Complete	
IBLI Case Study	Non-peer reviewed articles	2014	Complete	
IBLI Impact Brief	Non-peer reviewed articles	2014	Complete	
Tropentag Poster Presentation	Workshop	2014	Complete	

Partners:

1- Cornell University:
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2- Index Insurance Innovation Initiative (I4):
Nathan Jensen <ndj6@cornell.edu>

3- Oromiya Insurance Company (OIC):
Getaneh Erena <getaneherena@gmail.com>

4- Mercy Corps:

Sintayehu Alemayehu Teshome <salemayehu@et.mercycorps.org>

5- Community initiative facilitation and assistance (CIFA):
Wako Dida <wakod@cifaethiopia.org>

Location(s):

Benchmark Site: Borana (Yabero),

Regions: East Africa (EA),

Activity 991-2014

Model application to assess the impacts of climate change in rangeland systems, including changes in biomass availability, plant functional groups, and carbon and nitrogen fluxes.

Status	On going	Milestone	4.2.1 2014 (1)
Start date	2014 Jan	End date	2014 Dec

Description: Temperate and tropical rangelands are the most extensive land type on earth. They are biologically diverse and support the livelihoods of millions of households. In most rangelands, there is not sufficient precipitation for agriculture, and so families use livestock to essentially turn sunlight into food. Historically, the inhabitants of these areas had to contend with droughts, fires, livestock raids, and other stressors and shocks. Animals evolved physical and behavioral adaptations such as high heat tolerance and migration, and people adopted behaviors such as transhumant movement and developed cultural norms that minimized exposure to stresses. Flexibility came to be a defining feature of pastoral communities, and their adaptive capacity was great.
The 21st century will bring unprecedented climate change to semi-arid and arid systems (at least within human history). These stressors will reduce further the adaptive capacity of coupled semi-arid and arid systems. One means of increasing the likelihood that households, enterprises, and land managers will be able to adapt to future changes is if future conditions can be anticipated. A quantitative method of anticipating future conditions is through using simulations, where inputs into simulations are modified as predicted in change scenarios. We propose to develop and apply a new grazingland ecosystem model to better understand future changes in rangelands across the globe. The tool we have developed (Grange) is responsive to changes in precipitation and temperature through time, it is spatially explicit, and of moderate complexity (therefore high utility). We propose to continue to develop and test the model against a growing variety of observations and to carry out multi-scale analyses of native rangelands and the changes they may undergo.

Status: On going. This project is nearly complete.

Gender Component: Not defined

Objectives:

1. Apply GRange using past climate to understand interannual variability in NPP in the world's grazinglands
2. conduct detailed regional studies (in EA and WA) on internanual variaibilty in feed supplies, including grazinglands
3. modify the model to better represent animal impacts on plant commhnities and plant responses to grazing offtake

4. fully integrate fire through parameterizing fire ignition and spread as a function of plant/weather conditions

Deliverables:

Description	Type	Year	Status	Justification
peer-reviewed publication on climate variability and livestock feed	Peer-reviewed journal articles	2014	On going	This paper is under review.
regional-scale study of climate variability and feed sources	Data	2014	On going	We have completed compilation of these data, but have not yet found an outlet for their release.
integration of livestock numbers and dynamic fire into Grange	Platforms - Data Portals for dissemination	2014	Complete	Is complete.

Partners:

1- Colorado State University (CSU):
Randy Boone <rboone@nrel.colostate.edu>

2- Sokoine University of Agriculture (SUA):
Siza Tumbo <siza.tumbo@gmail.com>

3- Commonwealth Scientific and Industrial Research Organisation (CSIRO):
Mario Herrero <mario.herrero@csiro.au>

Location(s):

Countries: Kenya,

Activity 997-2014

Herd and animal level interventions for GHG emission mitigation.

Status	On going	Milestone	3.1.2 2015
Start date	2014 Jan	End date	2016 Dec

Description: An association between increased livestock productivity and reduced GHG emission intensity has been demonstrated, and livestock productivity interventions suggested as a cost-efficient mitigation option, particularly in smallholder systems where productivity is low (Gerber et al., 2011, 2013). However the achievable levels of improvement in livestock productivity and associated reduction in GHG emission intensity has not been well quantified for smallholder systems, and further the interventions to achieve this productivity gain are typically stated generically as 'feed quality, genetics, animal health' which is not easily translated into a change in practice.

This activity will develop an analytical framework (expanded herd model linked to LCA), allowing for the mitigation potential from various livestock productivity interventions (animal health, feed, use of non-traditional genetics) to be quantified, and thus for specific livestock productivity interventions to be prioritized. Further this work will contribute to the development of a decision support tool, aiding stakeholders to identify nationally (or locally) appropriate mitigation actions.

This activity will be undertaken by a PhD student, and thus will also build capacity.

Status: On going. The PhD student, Gareth Salmon, was recruited in early 2014 following a competitive process, and commenced his studies with Scotland's Rural College (SRUC) in May 2014. The PhD student is making good progress, having within the first 6 months developed a PhD workplan, undertaken specific training and background reading on GHG mitigation and life-cycle analysis and related topics, and commenced estimating input parameters for modelling (using GLEAM) of a low-input dairy system in Senegal.

Gender Component: Not defined

Objectives:

1. Development of a flexible analytical framework to quantify the increase in livestock productivity, and associated decrease in GHG emission intensity, for various animal level interventions including animal health, feed, and the use of non-traditional genetics, in smallholder livestock production systems
2. Demonstration of the utility of the analytical tool to priorities livestock interventions (animal health, feed, genetics) for both increased livestock productivity and reduced GHG emission intensity, via one or more case studies where detailed data is available

3. Quantification of the mitigation potential from increased livestock productivity for a range of smallholder livestock production systems (assuming ‘packaged’ interventions rather than specific intervention focus)
4. Contribute to the development and promotion of a decision support tool for use by stakeholders to identify nationally (or locally) appropriate mitigation actions

Deliverables:

Description	Type	Year	Status	Justification
PhD student recruited and detailed PhD concept note (overall problem statement, introduction, methodical approach, workplan and timeline) for the PhD theses	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	Complete	
Key components of the analytical framework (herd model linked to life cycle assessment) identified and documented; development of the framework underway	Research report (i.e. workshop report, consultant's report, discussion paper, project report, student thesis, etc.)	2014	On going	Identification and documentation of key components of the analytical framework complete (see submitted deliverable: PhD research plan): further development / customization of the framework on-going.
Data collated for parameterising the study on prioritizing livestock productivity interventions (animal health, feed, genetics) for both increased productivity and decreased GHG emission intensity, in one or more smallholder livestock production system (such as Senegal dairy)	Data	2014	On going	Data analysis for parametrization of GLEAM model underway, using socio-economic & animal-level data generated from 18 months field monitoring under the Senegal Dairy Genetics project. (The Senegal Dairy Genetics project is funded by the Finnish Ministry of Foreign Affairs, via the FoodAfrica program, and the Livestock & Fish CRP)

Partners:

1- Scottish Agricultural College (SAC):

Michael MacLeod <michael.macleod@sruc.ac.uk>

Location(s):
Countries: Senegal,

Activity 1009-2014

Monitoring impact on adaptive capacity at multiple levels; completing regional scenarios analysis.

Status	On going	Milestone	4.1.3 2014
Start date	2014 Jan	End date	2014 Dec

Description: This activity will assist the development of outcome indicators for the Flagship 4 pilots. This activity will complete analysis of the regional scenarios.

Status: On going. A detailed report describing the systematic review of local vulnerability to climate change has been completed and uploaded.
A second concept note on integrating Climate Smart Agriculture with Nutritional outcomes is almost completed.

Gender Component: Vulnerability is inherently a socially differentiated phenomena, and gender issues will be assessed, if there is evidence in the short listed studies regarding gender.

Objectives:
1. Complete analysis of East and West Africa regional scenarios impact on food security.
2. Develop and test indicators of adaptive capacity.

Deliverables:

Description	Type	Year	Status	Justification
Paper on regional scenarios food security impacts.	Peer-reviewed journal articles	2014	On going	Deliverable not achieved due to no time for Polly Ericksen plus delay in finalising quantitative scenarios for West and East Africa.
Report on indicators of adaptive capacity.	Working Paper	2014	Complete	
	Discussion paper	2014	On going	We are finalising a draft of this paper to share before the Montpellier CSA conference, and as input into the requested ILRI seminar for the CCAFS ISP in May. We are keen to get this paper widely discussed and disseminated as it is very timely.

Partners:

Partners not defined

Location(s):

Global

Activity 1026-2014

Capacity building on methods for quantification of GHG to national stakeholders (researchers and technicians), collection of information for characterizing GHG emissions, and farming system characterization (e.g. crop performance, soils, livelihoods). Establish on-farm experiments to measure GHG emissions, productivity, profitability and social acceptability through farmers interviews in three CCAFS sites.

Status	Cancelled	Milestone	3.3.2 2014
Start date	Not defined	End date	Not defined

Description:

Status: Cancelled. N/A

Gender Component: Not defined

Objectives:

Objectives not defined

Deliverables:

Description	Type	Year	Status	Justification
Modeling workshop, identification of mitigation options and final technical project report.	Workshop	2014	On going	

Partners:

Partners not defined

Location(s):

Not defined

Activity 1027-2014

Initiate cross-Center analyses targeting CSV sites.

Status	Cancelled	Milestone	2.1.2 2014
Start date	Not defined	End date	Not defined

Description: Process initiated for application at at-least 3 Climate-Smart Village sites.

Status: Cancelled. This activity did not occur.

Gender Component: Not defined

Objectives:

Objectives not defined

Deliverables:

Description	Type	Year	Status	Justification
Process initiated for application at at-least 3 Climate-Smart Village sites.	Data	2014	Cancelled	This activity did not occur.

Partners:

Partners not defined

Location(s):

Not defined

Activity 1028-2014

Vulnerability assessments linked to CCAFS scenarios work and indicator development; model harmonization backstopping.

Status	Cancelled	Milestone	4.2.1 2014 (3)
Start date	Not defined	End date	Not defined

Description:

Status: Cancelled. This work did not happen in 2014. Polly's engagement with the scenarios has been limited to analysing the food security implications of the West and East Africa scenarios.

Gender Component: Not defined

Objectives:

Objectives not defined

Deliverables:

Description	Type	Year	Status	Justification
Paper on regional scenarios food security impacts.	Peer-reviewed journal articles	2014	On going	Polly had too much work; the final quantitative reports for East and West Africa were delayed.
Report on indicators of adaptive capacity.	Peer-reviewed journal articles	2014	On going	

Partners:

Partners not defined

Location(s):

Not defined

Activity 1032-2014

Identification and implementation support of mitigation priorities and opportunities in rice-dominated landscapes

Status	Cancelled	Milestone	2.1.2 2014
Start date	Not defined	End date	Not defined

Description:

Status: Cancelled. This activity did not occur. This is an error.

Gender Component: Not defined

Objectives:
Objectives not defined

Deliverables:

Partners:
Partners not defined

Location(s):
Not defined

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

Output: 1.1.1

Summary: Three deliverables were completed in 2014. 1 is Report on livestock mitigation and adaptation options in East Africa, including animal husbandry and health; improved feed quality; improved grassland management. A second report covers maps of application domains for adaptation and mitigation options. A third report makes recommendations for adaptation options in livestock production systems. A two week technical training was conducted for African Scientists in collaboration with Univ Pretoria and the Global Research Alliance.

Output: 2.1.2

Summary: Food security analyses completed for the 9 SSA CCAFS benchmark sites using the Impact Lite data. One journal publication is ready for submission. A mini-survey tool has been developed which collects only those indicators needed for rapid food security analysis, which also quantifies gender differentiated control on the benefits of off and on farm activities.

Output: 2.1.3

Summary: All deliverables for IBLI in 2014 were completed (third round of household survey data; fifth and sixth round of herd collaring data; draft paper on determinants and patterns of IBLI demand; system to automate index calculations; paper on remote sensing contributions to index development). First ever IBLI payout in Ethiopia on November 1 for 509 policy holders in Borana. Number of policy holders doubled in 2014.

Output: 3.1.2

Summary: Our analysis had produced country- and regional-level assessment of trends in feed supply volatility over time. This results clearly suggest how feed production intensification has affected volatility and can serve as a guide for development of national-level investments intended to reduce feed supply risk and foster climate adaptation.

Our analysis has demonstrated that trypanosomosis control in East Africa can result in reductions in GHGei of between 2 and 8% depending on cattle production systems.

Output: 3.3.1

Summary: Six PhD and masters students involved in this research. One MSc looking at impact of water harvesting structures on soil C and N stocks in Wote; One PhD looking at soil GHG emissions in Uganda (Rakai); two students studing GHG emissions from manure and urine application to rangelands.

Output: 3.3.2

Summary: Soil GHG measurements taken from farmers fields as part of SAMPLES and summarized

in Pelster et al (under review with GCB). Economic assessment of mitigation options completed. ILRI contribution to SAMPLES book (Chapter 5) completed. A manuscript submitted which summarizes annual GHG fluxes across 10 farmer managed sites in Kenya and Tanzania.

Output: 4.1.3

Summary: Report describing the systematic review of local vulnerability to climate change completed. Concept note on integrating CSA with nutritional outcomes almost completed.

Output: 4.2.1

Summary: Model almost complete in terms of integrating livestock numbers and dynamic fire into Grange. A regional scale study of feed supply sources has contributed to a database. One publication is being drafted.

Output: 4.2.2

Summary: 4.2.2 936 Two CCSL sandbox reports were submitted. Two CCSL case studies by ILRI were drafted but not finalized. The CCSL framework and toolkit was updated with key information about monitoring and evaluation in particular. A main event around M&E involving 40 professionals from research and development institutes was co-organized and facilitated by ILRI and ongoing team meetings were held with appropriate documentation.

4.2.2 978 Three cases studies were carried out in Wote (Kenya), Kaffrine (Senegal), and Borena (Ethiopia). Two reports (Wote and Kaffrine) have been submitted. A briefing paper was submitted for Kaffrine. The Wote research will be presented at the CSA Montpellier meeting in March.

3. Communications.

Media Campaigns:

None

Blogs:

Many CCAFS outcomes reported on the LSE blog (livestock systems.ilri.org)
Four CCSL blog posts were posted on: http://infoilri.wordpress.com/ over 2014

Websites:

The IBLI project has its own website: livestockinsurance.wordpress.com
The CCSL has its own wiki maintained via ILRI, known as the CCSL sandbox.

Social Media Campaigns:

None

Newsletters:

None

Events:

A CCSL evidence-gathering workshop was held in June 2014. All related documentation is available at: https://www.flickr.com/photos/cgiarclimate/sets/72157645219457054/

Videos and other Multimedia:

None

Other Communications and Outreach:

All CCSL outputs can be found at: https://cgspace.cgiar.org/handle/10568/3530/browse?value=SOCIAL+LEARNING&type=ccafsubject

4. Case studies.

Case Study #1

Title: Facilitating community strategizing through participatory research into local institutions and governance

Author: Lance W. Robinson

Type: Social differentiation and gender; Participatory action research ;

Project Description:

The role of local institutions in constraining or fostering adaptive capacity is well described in the scientific literature, but translating this into impact remains a challenge. Governance and institutional environments can be extremely complex, and both policymakers at national level and stakeholders at the local level lack appropriate tools around institutional assessment, diagnosis and decision-making. This research engaged local stakeholders in testing an approach to institutional/governance assessments.

Institutional assessments have been conducted using a methodology which assists local stakeholders to strategize and make decisions about institutional design and innovations. The methodology assists these stakeholders to appraise their institutional environment and identify opportunities for improvement. The methodology explicitly involves differentiating stakeholder and population groups to understand the impact of governance and institutional arrangements on different social groups.

Introduction / objectives:

• To assist local communities and stakeholders to conduct an appraisal of their institutional environment, especially those aspects of institutions and decision-making that are most relevant for the capacity to adapt to climate change.

• To use the institutional assessments to contribute to broader efforts by stakeholders toward transformative institutional innovations and increased adaptive capacity.

Project Results:

In all three case studies, focus group discussions and workshops were held with local stakeholders. In all three cases, the process of engaging in analysis of people's own local institutional environment contributed to changed perceptions about climate change, commitments on their part to address weaknesses in local institutional systems, or both.

The institutional assessment conducted in Makueni, Kenya helped Community Forest Association (CFA) members to appreciate the institutional roadblocks they are facing, including the apparent reluctance of the Kenya Forest Service (KFS) to follow through on implementing an agreement to devolve authority to the CFA. During the course of one of the workshops carried out during this research, members of the CFA made a decision to organize a meeting between themselves, the Makueni County Government, and KFS to address the issue.

During the course of a workshop with stakeholders in Dikale, Yabello Woreda, Ethiopia, community members heard presentation of the results of the institutional assessment, and discussed the governance situation with respect to pasture and water management. They decided that there is a need to reinvigorate pasture and water committees for each of the three localities participating, and to convene a meeting of all three localities to address the institutional weaknesses which prevented implementation of agreements on pasture and water management.

During initial meetings in the Ndiao Bambaly/Bao Balong area of Kaffrine Region, Senegal, the availability of seeds and the difficulties of access to fertilizers were seen as the most important challenges. However, participatory analysis through discussions and the development of problem tree diagrams led to the identification of climate change as a deeper cause. Thus, farmers in particular have realized the importance of the governance of adaptation to climate change instead of only seeking isolated compensatory solutions such as recurrent demand for fertilizer subsidy.

Partners:

Institut Sénégalais de Recherches Agricoles, Senegal; l'Association des Villages Riverains du Baobolong, Senegal; KAMUKIMA Community Forest Association, Kenya; Managing Risk for Improved Livelihoods, Ethiopia.

Links / sources for further information:

URLs for the case study reports are forthcoming.

Case Study #2

Title: Improving livelihoods and mitigating GHG emissions through enhanced manure management
Author: David Pelster
Type: Capacity enhancement; Policy engagement;

Project Description:

This component will undertake a series of activities to deliver expert knowledge to practitioners, policymakers, and other stakeholders, with a focus on livestock systems in Africa. This includes working closely with the Climate and Clean Air Coalition (CCAC), partner countries and institutions, and key agricultural organizations globally to mobilize farmers, investors, governments, and development institutions to accelerate the adoption of improved manure management practices through policy development, capacity building and knowledge transfer. This component will draw heavily on the CCAC's ability to partner with national governments and leading international development institutions, and will build global repositories of expertise and knowledge, and attract private sector actors.

Phase 1 will examine current policies and farmer practices relating to manure management and summarize these in an assessment report. Phase 1 will also identify current barriers to uptake of integrated manure management and develop proposals to address those barriers in one or two African countries.

Phase 2 will be the application of the aforementioned proposals in order to influence policy makers, and transfer knowledge to farmers on the benefits of integrated manure management, including the installment and maintenance of anaerobic digesters for the production of biogas, and locally relevant best management practices to achieve those benefits.

Introduction / objectives:

The objective of this activity is to integrate improved manure management practices into livestock systems to: (1) capture methane as an energy source, (2) reduce short-lived climate pollutants, notably methane and black carbon, and other harmful emissions to the environment, and (3) optimize nutrient utilization for crop production. These goals can be achieved by: increasing awareness for local farmers and policy makers of the potential of using manure; facilitating improved practices by making knowledge and expertise locally available through the facilitation of networks, and the linkages of practices and policies; and creating improved knowledge and support infrastructures.

Project Results:

Stakeholder consultations and a combination of general and specific questionnaires resulted in the production of an assessment report on current policies and practices relating to livestock manure management in Africa. Also, the assessment report identified several barriers to improving livestock manure management, including inconsistent government policies in Ethiopia and the lack of information available for farmers. Therefore, the CCAC provided an additional year of funding aiming to remove those barriers by 1) influencing of policy makers in Ethiopia to facilitate improved manure management policies; and 2) the training of 200 extension workers and bio-gas technicians on improved techniques on managing livestock manure.

Partners:

The Climate and Clean Air Coalition (CCAC); the Food and Agriculture Organization of the United Nations (FAO); the Global Methane Initiative (GMI); the Global Research Alliance on Agricultural Greenhouse Gases (GRA); Wageningen UR Livestock Research (WUR); the Livestock and Poultry Environmental Learning Center (LPELC); the Tropical Agricultural Research and Higher Education Center (CATIE); Stockholm Environmental Institute.

Case Study #3

Title: Using satellite data to insure camels, cows, sheep and goats: IBLI and the development of the world's first insurance for African Pastoralists

Author: Iddo Dror, Shreya Maheswari and Andrew Mude

Type: Innovative non-research partnerships;

Project Description:

IBLI is an ongoing project managed by Dr. Andrew Mude at ILRI. It is a mixture of innovative research and partnership/ capacity development to provide index-based livestock insurance to pastoralists in northern Kenya and southern Ethiopia. Although initial studies and many donors are excited by the potential of IBLI to have impact on pastoralists' assets, investments and consumption capacity; IBLI is struggling to mature into a large-scale, sustainable program with well-developed institutions in Kenya. This case study, written in the style of a Harvard Business case, was written to describe a dilemma IBLI is facing in terms of how to expand. Some donors are keen to see IBLI expand to new countries in East and West Africa. Given the low sales figures in Kenya, some IBLI team members thought this was a good chance to maintain donor interest. The project leader, Dr. A. Mude, worried, however, that expanding too quickly might do damage to the current IBLI pilots, damaging IBLI's reputation and demand for the product.

Introduction / objectives:

The objectives of IBLI are to provide an index-based insurance project to help pastoralists protect their livestock assets in the face of drought. IBLI aims to achieve a level of sales which will make the product sustainable; i.e. demand will be sufficient that commercial and NGO partners provide it without the research / capacity development support of ILRI. This case study illustrate the IBLI program's journey and create thought-provoking discussions about issues such as marketing the IBLI product, generating sales, managing partnerships between various IBLI stakeholders, educating customers, balancing the twin IBLI goals of commercial sustainability and social protection.

Project Results:

The first difficult task of IBLI was to construct a reliable index, using forage availability data and correlating it to livestock mortality. Second they piloted it in one county in Kenya, Marsabit, and calculated the appropriate threshold strike level. Testing the market proved very challenging, and was the focus of work in 2007 and 2009; surveys indicated that significant educational efforts were needed to make the clients familiar with such a new product. But ensuring that the extension campaigns reached a mass of people was difficult and costly, due to low financial literacy of clients, infrastructural deficits in Marsabit, lack of local agents willing to sell the policies. Other growing pains included problems with delivery systems and a local private partner. Partnership woes continued to plague the programme as the insurer and underwriter were unprepared to execute new sales on time, after the first successful payout made in October 2011, so IBLI terminated their contracts. IBLI was then faced with a dilemma in terms of how far to go down the "implementation" pathway, as this was a distraction from the research mission of ILRI. However, IBLI decided that they needed to work more closely with partners in order to ensure their eventual ownership of the IBLI product in the long run. So the team

decided that ILRI / IBLI would work more systematically to develop capacity for key implementation competencies and for organisations critical to sustainable delivery of IBLI over time. In 2012 and 2013 IBLI found new partners and continues to refine its product. One key lesson for donors has been to slow down the goal of making IBLI commercially viable too soon. Subsidising the policies remains necessary.

Partners:

The following partners were interviewed in the writing of the case study:
Abdikarim Daud, Portfolio Manager—Livestock, Kenya Markets Trust
• Achiba Gargule, Program Manager—Kenya, AustralianAID
• Apurba Shee, Economist, Index Based Livestock Insurance (IBLI) project, International Livestock Research Institute
(ILRI)
• Birhanu Tadesse, Research Officer, IBLI project, ILRI
• Brenda Wandera, Market and Capacity Development Specialist, IBLI project, ILRI
• Bryn Davies, Market and Capacity Development Manager, IBLI project, ILRI
• Christopher Barrett, Professor of Economics and International Professor of Agriculture, Cornell University; Co-
Founder and Co-Principal Investigator, IBLI project
• Daniel Clarke, Senior Disaster Risk Financing and Insurance Specialist, the World Bank
• Diba Galgallo, Market and Capacity Building Assistant, ILRI
• Erastus Ndege, Agronomist, APA Insurance Ltd.
• Habib Shatry, Chief Operating Offer, Takaful Insurance of Africa
• James Sina, Disaster Risk Financing and Agricultural Insurance Consultant, World Bank Group
• Jimmy Smith, Director General, ILRI
• Leigh Johnson, Lecturer in Economic Geography, University of Zurich
• Michael Mbaka, Senior Project Manager, Financial Sector Deepening (FSD) Kenya
• Munenobu Ikegami, Economist, IBLI project, ILRI
• Tony Brenton-Rule, Head of Business Development, ILRI
• Ubah Kahiye, Program Manager, Mercycorps Kenya
• Vincent Githinji, Deputy Director of Livestock Marketing, State Department of Livestock, Government of Kenya

Links / sources for further information:

https://cgspace.cgiar.org/bitstream/handle/10568/51647/PR_ibli_nov2014.pdf?sequence=1
https://livestockinsurance.wordpress.com

Case Study #4

Title: A systematic review of local vulnerability to climate change
Author: Polly Ericksen (borrowing completely from the report)
Type: Breakthrough science;

Project Description:

This project sought to review the evidence underlying studies of vulnerability to climate change. We were concerned to identify the most robust conceptual frameworks and methodological approaches to identify a set of vulnerability determinants upon which there was agreement in the literature, and a strong evidence base with clear causality. Identifying such a set of indicators should help projects such as CCAFS to monitor and evaluate the impact of interventions to increase adaptive capacity (and adaptation) to climate change. The first phase of the project was reported on in early 2014. We attempted to apply the strict methodology of systematic review, but ran in to difficulties, due to the highly heterogeneous and dynamic nature of studies/ research on vulnerability. In May 2014, we engaged experts in systematic review from Wageningen University who redid the review properly. It is those results we report on here. We are excited by the innovative approach we were able to take in applying a very rigorous evaluation method (systematic review) to a field of research as diverse as vulnerability assessments. The results were striking.

Introduction / objectives:

The ultimate objective was to distill a robust standard set of empirically validated indicators from the literature in order to be able to make aggregate statements at national or global levels about local vulnerability. The key research questions that guided the review were

1. what determinants of vulnerability are common across the studies
2. what are the causal mechanisms that link determinants and vulnerability outcomes?
3. which methodological approaches give most robust/ reliable results in understanding determinants and mechanisms of vulnerability?

Project Results:

In total 168 papers were screened after a search of 15 databases. Only 71 articles met the criteria for full text review; and after another round of screening for relevance and quality sufficient to include in the study, only 28 papers were included in the formal systematic review. After consultation with 31 experts, another 8 papers were added for a pool of 35 articles. The results are as follows. As vulnerability cannot be directly observed, most assessments rely on a set of "indicators" which vary considerably. The diversity of cause and effect relationships between determinants and outcomes warranted a systematic review in order to identify a suitable core set of candidate indicators to represent vulnerability at the appropriate scale. Three fully defined relevant frameworks of vulnerability were identified: IPCC (with variants); Patterns of smallholder vulnerability; and Vulnerability as Expected Poverty (with extensions). Notably the comparative analysis of the research studies found such heterogeneity in frameworks, concepts and operationalisations that it was impossible to identify empirically supported patterns of climate vulnerability through a review of literature. We therefore propose an approach that tracks vulnerability (and thus adaptive capacity)

through a set of indicators that mix some form of (objective) asset/ poverty measures at the household level with (subjective) governance and policy factors at community and national levels. Any system of vulnerability indicators should be scrutinised, tested and validated before institutionalising them in programmatic contexts.

Partners:

Peter Tamas and Aogan Delany from Wageningen University; Sabrina Chesterman (independent consultant)

Links / sources for further information:

The report is a CCAFS report (Working Paper 97 and available on the CCAFS website)

5. Outcomes.

Outcome #1:

Mazingira Lab enables ground breaking GHG emissions research in East Africa

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

The laboratory became operational at the end of 2014 with state-of-the art laboratories for greenhouse gas research, for emissions from terrestrial ecosystems and emissions from ruminants, for the latter e.g. respiration chambers have recently been installed. Students and scientists from developing countries can join experiments, learn about scaling, targeting and measuring techniques, understand how livestock systems are affecting the environment and which measures can be taken to reduce the environmental footprint of livestock production.

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

Outputs (see activity 1026-2014 and 599-2014)
1 Database of GHG emissions for 60 smallholder farms
2 Publications:
Dickhofer, U., K. Butterbach-bahl, D. Pelster. 2014. What is needed for reducing the greenhouse gas footprint? Rural 21. 48:31-33.
Butterbach-Bahl, K., Sander B.O., Pelster D., Diaz-Pines E. 2014. Soil and manure trace gas emissions. Standard Assessment of Mitigation Potential and Livelihoods in Smallholder Systems (SAMPLES).
Butterbach-Bahl, et al. (In review). Smallholder farms in western Kenya have limited greenhouse gas emissions (Submitted to Global Change Biology).
Rosenstock, et al 2014. Greenhouse gas fluxes in agricultural soils of East Africa. Submitted to J. Geophys. Res.: Biosciences.

What partners helped in producing the outcome?

CIFOR; Karlsruhe Institute of Technology (KIT); Maseno University;

Who used the output?

1. NARES from across Africa
2. Kenyan Ministries for Agriculture and Environment and the Kenya Climate Change Unit.
3. Students and nationally-recruited research technicians: In 2014 two African PhD student, 3 African MSc students, and three African Research Technicians were trained in GHG measurement and mitigation methodology.

How was the output used?

Output used in the training courses (GRA and CCAFS EA in Pretoria) and student theses (see activity 599).
In Kenya, the outputs will lead to the design of a dairy sector NAMA in partnership with Unique

Forestry and FAO.

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?

Activity reporting under 488 and 599.

Outcome #2:

Getting the livestock numbers right in GHG emissions models

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

The outcome has been a series of high level scientific publications with revised and more accurate estimates of livestock contribution to GHG emissions across the tropics, by type of system. This will allow the livestock sector to be included in global environmental change analysis, leading to a more nuanced conversation about GHG emissions from the livestock sector relative to other economic and food security benefits.

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

Herrero, M. P.K. Thornton, R. Kruska and R.S. Reid. 2008. Systems dynamics and the spatial distribution of methane emissions from African domestic ruminants to 2030. Agriculture, Ecosystems and Environment 126: 122-137.

Herrero, M., P.K. Thornton, P. Gerber and R.S. Reid. 2009. Livestock, livelihoods, and the environment: understanding the tradeoffs. Current Opinion in Environmental Sustainability 1: 111-120.

Havlik, P., et al. 2012. Crop productivity and the global livestock sector: implications for land use change and greenhouse gas emissions. American Journal of Agricultural Economics 95(2): 442-449. DOI 10.1093/ajae/aas085.

Herrero, M. and P. Thornton. 2013. Livestock and global change: emerging issues for sustainable food systems. PNAS 110(52): 20878-20881.

Herrero, M. et al. 2013. Global livestock systems: biomass use, production, feed efficiencies and greenhouse gas emissions. PNAS 110 (52): 20888-20893.

Havlik, P., et al. 2014. Climate change mitigation through livestock system transitions. PNAS 111 (10): 3709-3714.

What partners helped in producing the outcome?

Peter Havlik, Michael Obersteiner (IIASA)
Pete Smith, Univ Aberdeen
Pierre Gerber, FAO

Who used the output?

The scientific community who model livestock emissions. The IPCC 5th assessment report.
In future it could be used by the Global Livestock Agenda and the UNFCCC.

How was the output used?

To give better estimates of livestock emissions by type of system and location. This has changed the understanding across key global actors of livestock's contribution to GHG emissions, and set the basis for a more rational discussion about which systems and interventions to target.

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?
see the Outcome story Polly submitted to CCAFS last May.

7. Outcome indicators.

Outcome Indicator:

One to five flagship technical and/or institutional approaches identified and developed with farmers, key development and funding agencies (national and international), civil society organizations and private sector in three regions, which would directly enhance the adaptive capacity of the farming systems to the climate change conditions

Achievements:

The training conducted in Pretoria with the GRA and CCAFS reviewed several livestock system specific interventions for adaptation: feeding options, animal husbandry (health, breeds) and grassland management options with a number of African stakeholders.

The project deliverables for activity 980 also indicated model and literature survey results on most effective adaptation options: grazing management, breeding, mobility, supplemental feeding.

Evidence:

See the activity 980 ouputs.

Outcome Indicator:

Breeding strategies of regional and national crop breeding institutions in three target regions are coordinated, informed by CCAFS-led crop modeling approaches that are developed and evaluated for biotic and abiotic constraints for the period 2020 to 2050

Achievements:

none

Evidence:

none

Outcome Indicator:

Integrated adaptation strategies for agricultural and food systems inserted into policy and institutional frameworks at regional, national or sub--national level in 2 target regions. Policy makers and key stakeholders use CCAFS research outputs - guidelines, tools and methods-- to support the development of NAPAS, sector specific adaptation plans, or germplasm benefit sharing policies.

Achievements:

none

Evidence:

none

Outcome Indicator:

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

Achievements:
none
Evidence:
none

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:
none
Evidence:
none

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:
none
Evidence:
none

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:
not yet
Evidence:
none

Outcome Indicator:

Decision-makers in three regions better informed re options and policy choices for incentivizing and rewarding smallholders for GHG emission reductions

Achievements:
not yet
Evidence:
none

Outcome Indicator:

Project design and monitoring guidelines for smallholder agriculture in developing countries produced and contributing to global standards

Achievements:

SAMPLES protocol is contributing to global standards; also SAMPLES research was used / discussed at FAO scientific meeting in late 2014. SAMPLES protocol used in all CCAFS mitigation regions now.

Evidence:

See SAMPLES protocol on CCAFS website and report from FAO meeting organised by Theme 3.

Outcome Indicator:

Agriculture mainstreamed into the global climate change policies, and major international food security initiatives fully incorporate climate change concerns

Achievements:

none

Evidence:

none

Outcome Indicator:

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

Achievements:

none

Evidence:

none

Outcome Indicator:

New knowledge on how alternative policy and program options impact agriculture and food security under climate change incorporated into strategy development by at least 3 national agencies, and 3 key international and regional agencies

Achievements:

none

Evidence:

none

8. Leveraged funds.

There is no Leverage funds

9. Publications.

Publication #1:

A new LandscapeDNDC biogeochemical module to predict CH4 and N2O emissions from lowland rice and upland cropping systems

Citation:

Kraus D, Weller S, Klatt S, Haas E, Wassmann R, Kiese R, Butterbach-Bahl K, 2015, A new LandscapeDNDC biogeochemical module to predict CH4 and N2O emissions from lowland rice and upland cropping systems. Plant Soil 386, 125-149, DOI 10.1007/s11104-014-2255-x

Identifier	CCAFS Themes	Type	Access
DOI	Theme 3,	Peer-reviewed journal articles	

Publication #2:

Short and long-term impacts of nitrogen deposition on carbon sequestration by forest ecosystems

Citation:

The citation is not defined yet.

Identifier	CCAFS Themes	Type	Access
http://www.journals.elsevier.com/current-opinion-in-environmental-sustainability/	Theme 3,	Peer-reviewed journal articles	

Publication #3:

Methane and nitrous oxide emissions from rice and maize production in diversified rice cropping systems

Citation:

The citation is not defined yet.

Identifier	CCAFS Themes	Type	Access
http://link.springer.com/journal/10705	Theme 3,	Peer-reviewed journal articles	

Publication #4:

Assessment of nitrate leaching loss on a yield-scaled basis from maize and wheat cropping systems

Citation:

Zhou M, Butterbach-Bahl K, 2014, Assessment of nitrate leaching loss on a yield-scaled basis from maize and wheat cropping systems. Plant Soil 374, 997-991, DOI 10.1007/s11104-013-1876-9

Identifier	CCAFS Themes	Type	Access
DOI 10.1007/s11104-013-1876-9	Theme 3,	Peer-reviewed journal articles	

Publication #5:

N2O and CH4 emissions, and NO3- leaching on a crop-yield basis from a subtropical rain-fed wheat-maize rotation in response to different types of nitrogen fertilizer

Citation:

Zhou M, Zhu B, Brüggemann N, Bergmann J, Wang Y, Butterbach-Bahl K, 2014, N2O and CH4 emissions, and NO3- leaching on a crop-yield basis from a subtropical rain-fed wheat-maize rotation in response to different types of nitrogen fertilizer. Ecosystems, 17, 286-301, DOI: 10.1007/s10021-013-9723-7

Identifier	CCAFS Themes	Type	Access
DOI: 10.1007/s10021-013-9723-7	Theme 3,	Peer-reviewed journal articles	

Publication #6:

Regional nitrogen budget of the Lake Victoria Basin, East Africa: syntheses, uncertainties and perspectives

Citation:

Zhou M, Brandt P, Pelster D, Rufino MC, Robinson T, Butterbach-Bahl K, 2014, Regional nitrogen budget of the Lake Victoria Basin, East Africa: syntheses, uncertainties and perspectives. Environm. Res. Letter 9, 105009, doi:10.1088/1748-9326/9/10/105009

Identifier	CCAFS Themes	Type	Access
doi:10.1088/1748-9326/9/10/105009	Theme 3,	Peer-reviewed journal articles	

Publication #7:

Nitrous oxide emissions during the non-rice growing seasons of two subtropical rice-based rotation systems in southwest China

Citation:

Nitrous oxide emissions during the non-rice growing seasons of two subtropical rice-based rotation systems in southwest China

Identifier	CCAFS Themes	Type	Access
http://link.springer.com/journal/11104	Theme 3,	Peer-reviewed journal articles	