RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security

ICRAF

2013 technical report

1. Activity Reporting

Activity 234-2013 (Milestone 3.3.2 2013.)

Title: Development of a protocal for quantification of smallholder agricultural GHGs.

Status: **Partially complete.** To date, 8 of 11 chapter drafts have been submitted. We have also been in contact with Springer to submit open access book proposal. The challenge is that all the authors have many other commitments and this is not seen as the highest priority.

Gender component:

No gender component

Deliverables:

- Methodology established, website compilation of “best” methods, regional trials, data

We are updating the Web site (http://worldagroforestry.org/samples). This is expected to be complete mid-2014.

- Results shared through Web site and conferences

Results were shared at the International Nitrogen Iniative meeting in Kampala (Pelster et al.) and via live stream on the CCAFS site.

- Article on methods for GHG quantification .

Paper" Methods for the quantification of GHG emissions at the landscape level for developing countries in smallholder contexts''

Partners:

FAO; EADD; CARE

Locations:

Global

Activity 588-2013 (Milestone 4.3.3 2013.) Commissioned

Title: CGIAR Center support to include climate change research in the "Global Futures for Agriculture" project.

Status: **Partially complete.** The data collection and analysis activities are on track but the modeling work is behind due to a staffing gap in 2013.

Gender component:

Data are collected from men and women farmers enabling the testing of the effect of agroforestry on men and women. In terms of the forecasting of impacts, the DSSAT and IMPACT framework does not currently disaggregate by gender, but it is now possible to do so, if the required data can be generated.

Deliverables:

- Plot and household data sets collected for maize growing households in Malawi

Both the plot yields and the household data sets were collected successfully.

- Analysis of the effects of agroforestry on maize yields for 2012 and 2013, including differential effects for men and women farmers.
Data analysis started only in October and thus will be completed in early 2014.
- Models improved for forecasting impacts of agroforestry under climate change; Empirical analyses available.
After a staffing gap, a new staff was hired to work on this in November so we expect to be back on track.

Partners:

Locations:

Global

Activity 678-2013 (Milestone 1.1.2 2013 (1).)

Title: Assessment of vulnerabilities, adaptive capacities and past and current adaptive strategies of agroforestry systems in a wide range of contexts.

Status: **Partially complete.** Methodological guidelines for participatory analysis of vulnerability and adaptation to climate change published in English and French. Analysis of data collected in rural communities in Burkina Faso, Mali and Niger is in process.

Gender component:

WCA: Vulnerability was analyzed in four gender groups (adult men, adult women, young men and young women) and adaptation plans were developed for each groupSEA: Integration of women among workshop and training participants; (2) Identify roles of women in farm decisions and agricultural policy implementation/development.

Deliverables:

- Weber: Methodological paper for participatory analysis of vulnerability and adaptation to climate change in French.
Document uploaded on CCAFS Intranet
- Weber: Methodological paper for participatory analysis of vulnerability and adaptation to climate change in English.
Document uploaded on CCAFS Intranet
- Weber: Data set of vulnerability of livelihood assets of gender groups in four regions of Burkina Faso, Mali and Niger stored in ICRAF database.
Data will be stored in ICRAF database by December 2014
- Weber: First draft of journal article synthesizing results of participatory analysis of vulnerability and adaptation to climate change in Burkina Faso, Mali and Niger, and recommendations for climate change adaptation planning in the region.
Journal article will be submitted by December 2014
- Rodel: Review paper for journal publication on local adaptive strategies and coping responses of small holder farmers in Southeast Asian watersheds.
Wiley Climate Change Paper co-authors of Rodel D. Lasco, MLEspaldon and RJDelfino (accepted for comments)
- Workshops on local adaptive strategies and coping responses of small holder farmers.

Technical Report submitted last March 2013
- Workshops on the role of trees and agroforestry in enhancing the resilience of small holder farmers.
Technical Report submitted last March 2013
- Research paper documenting the local adaptive strategies and coping responses of small holder farmers.
Technical report drafted/PPT for CCFAS CRP6.4 drafts
- Journal paper on the role of trees and agroforestry in enhancing the resilience of small holder farmers.
Submitted article on roles of trees , for formatting and technical editing

Partners:

INERA; IER; INRAN; University of the Philippines Los Baños

Locations:

Activity 679-2013 (Milestone 1.1.2 2013 (1).)

Title: Select tree germplasm better adapted to drought.

Status: **Partially complete.** Data analysis of on-farm trials in process.

Gender component:

Men and women do not always have the same priority for tree species. Therefore, the project identified priority trees that satisfy the needs of men (e.g. for construction and soil-fertility improvement) and priority trees that satisfy the needs of women (e.g. for food, medicine and fuel). The men and women decide which species they wish to establish and multiply on their farms, homegardens, etc. and receive training in all aspects of tree domestication.

Deliverables:

- Provenance/progeny tests of five tree species established on farms in four regions in Burkina Faso, Mali and Niger.
We do not have a report for this specific activity. It is part of a large project
- 20 partners from NARs, forestry departments and development projects and 250 men and women farmers trained in participatory tree domestication in Burkina Faso, Mali and Niger.
We do not have a report for this specific activity. It is part of a large project
- Data on growth and survival collected and analyzed in provenance/progeny tests in 2013 and 2014; data stored in ICRAF database and agtrials.org.
Data will be stored in ICRAF database by December 2014.

Partners:

INERA; IER; INRAN; PDRD

Locations:

Activity 680-2013 (Milestone 1.1.1 2014)

Title: Apply the open-source mapping system to develop species (and variety) suitability maps for a minimum of 100 agroforestry tree species in East Africa; Test the recommendation domains of selected fruit tree varieties in Kenya by evaluating the early performance of materials from climate-analogue locations across the current climatic range of each variety.

Status: **Partially complete.** A transect survey of mango variety cultivar turnover was completed, spanning most agroecological zones in between Mt. Kenya forest and Kitui. Preliminary results were dissseminated during the 2013 'Tropentag' conference. Two new mango varieties that are better adapted to future drier conditions have been sourced from India. Due to changes in funding since the development of the proposal, we needed to postpone workshops with key stakeholders.

Gender component:

No gender component in this activity

Deliverables:

- Open-source modelling framework for species distribution modelling and overlay with climate analogues developed.

The modelling framework has been completed, and results were presented during the 2013 Tropentag conference. Results will be updated with future climate available from the 5th Assessment Report of the IPCC that will become available as statistically downscaled data early 2014, and a manuscript with these updated results will be submitted. Results and methodology will also be communicated during the 3rd World Agroforestry Congress.

- Maps of current and future cultivation zones for 3 mango varieties developed for Kenya.

Maps documenting remaining, lost and new habitat were completed in 2013. However, these maps will be updated in 2014 with data that is now available from the 5th Assessment Report from the IPCC.

- Workshop performed with key stakeholders from the EA region to formulate recommendations for mango cultivation in potential future climate.

The workshop has been postponed due to changes in funding of this activity, and awaiting the update of suitability maps with data from AR5.

- Suitability maps publically available for a minimum of 100 agroforestry species in East Africa.

Suitability maps for current climates will be produced in 2014, based on point location data that have been compiled in 2013.

- 5 mango varieties from climate-analogue locations in EA and WA (Sudan, Mali, Niger) introduced in Kenya and evaluated by on-station trials with national partners.

We introduced 2 mango varieties from hot and dry northern India. More varieties as given above will be introduced in 2014. The evaluation of the new varieties did not yet start as we received the material only recently.

- capacity of national partners on variety procurement and nursery trial design and analysis built.

As new varieties only recently were received, this output is delayed and will be delivered in 2014

Partners:

KARI; KU

Locations:

East Africa (EA)

Activity 681-2013 (Milestone 1.2.1 2015 (1).)

Title: Climate-smart tree sourcing in East Africa - collaboration between research and implementing agencies in East Africa.

Status: **Complete.** Our work is principally about establishing breeding orchards and establishing the basis for breeding strategies and regional coordination of seed distribution. In the immediate term we will ensure that we adhere to appropriate ethical guidelines with respect to employment of gender for the work. The partners (NTSCs) will be engaged in seed collection, seed cleaning and nursery production and in these activities the NTSCs have trained female employees and contractors – ranging from 30% in Kenya to 100% in Uganda – it is part of the NTSCs' policy to consider gender.In the longer run female and male smallholder farmers will benefit from enhanced productivity from climate proof planting material

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Deliverables:

- Seed collection and seedling production for Prunus africana, Warburgia ugandensis, Croton megalocarpus, Acacia senegal

Progress report on collections by national tree seed centres and Anne Mbora

- Establishment of trials for Prunus africana, Warburgia ugandensis, Croton megalocarpus, Acacia senegal.

Land preparation for the Croton megalocarpus trials is underway for the first rainy season of 2014. Due to budget restrictions in 2014, we decided only to establish trials for Croton megalocarpus because this species a. has been identified as one of the most promising biofuel species for East Africa; b. this is an orthodox species not requiring regional transfer of live seedlings whereby soil needs to be removed from root systems during border crossings

- point data collection.

Data has been provided by each of the national tree seed centres on seed sources that are used for sourcing seeds when clients request for seed of a particular speciesData is currently available in Excel, but will exported as delimited text-layer that will be imported in GIS (DIVA-GIS, QGIS, R-raster) and ensemble suitability modelling (BiodiversityR) software

- Workshop.

Worshop on Regional Planning and Training, held in naivasha in July 2013

Partners:

NTSC; NTSA; KEFRI; KU

Locations:

East Africa (EA)

Activity 682-2013 (Milestone 1.1.1 2013)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on Agroforestry and on-farm interventions.

Status: **Partially complete.** List of preferred agroforestry species identified, and nursery established. These species will used in participatory agroforestry interventions

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; TreeAid; SLARI; ANPROCA; WASCAL; CILSS; IER; CORAF; CONEDD; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou; IRAG; CIFOR; DNEF; Universitiy of Eastern Finland

Locations:

West Africa (WA)

Activity 683-2013 (Milestone 1.1.1 2013)

Title: Contribution of tree diversity to livelihoods for climate change adaptation and mitigation.

Status: **Partially complete.** Baseline information collected in 2012 was revised and analyzed to characterize sites and define sampling strategies for work in 2013. Collection of detailed information in two sites (1 in Nicaragua and 1 in Costa Rica) on farm household information and distribution of tree resources at the farm level started in 2013, collection of data was delayed by data cleaning and analysis of baseline (see above). We had two BSc students from France working on their internships and Thesis for data collection. Plans for 2014 include data depuration and analysis.Due to lack of climatic information in the sites we decided to invest on installing small weather stations in three sites in Nicaragua. In 2013 we searched for adequate organizations (e.g. they are interested in having climatic information, are located there for long ter, have an area where the station can be installed and personal who can manage the station). We trained personal of the organizations on management of the station and data storage. Data storage started in November. The stations are managed by local partners and have been installed in two sites in Nicaragua. In one site installation is pending due to difficulties to identify a suitable partner

Gender component:

Gender disaggregated data and analysis for WP1. Baseline information contained some gender indicators. Database is in dataverse. Also a more detailed study done in 2013 in 2 sites (5 communities) collected more information on division of labour, and food security. Data needs to be depurated and start analysis.

Deliverables:

- baseline of farms resources and tree distribution (farms, villages - 3 countries) - gender disagregated data.

Database in CSPro, is already in Dataverse. The data are collected in 2 countries not 3.

- contribution of diversification at the farm and landscape level to adaptive capacity (livelihoods).

We are working on final reporting of baseline and analisis of household data to relate climate pereception, adaptive capacity and use of tree components for 4 sites. Work will be continued in more ddetail in farm typologies in 2 sites, with data collected in 2013. Data analysis has to be started.

- Review on data needs and methods functional diversity applied to AFS.

We are in the process of reviewing second draft of the report for publication, and finalizing analysis and first draft for publication

- Database of functional traits in 4 sites, 2 countries in Central America.

This is actually for 2014. Fieldwork with two MSc students will start in March 2014. Format will probably be databases in excel.

- Analyze the contribution of trees and their diversity to adaptive capacity (ecological processes and tradeoffs with other assets).

Two MSc Thesis has to be finished in 2014, but peer-review publications will probably be ready in 2015.

- analsis of under-explored options at farm and landscape.

This will actually be in 2015

Partners:

CATIE; CIRAD-Burkina Faso

Locations:

Latin America (LAM)

Activity 684-2013 (Milestone 1.1.3 2013 (2).)

Title: Enhancing the effectiveness of Climate Smart Agriculture through improved fodder shrubs and innovative extension approaches

Status: **Complete.** Project implementation progressed successfully to generate a variety of outputs within the set timelines except where circumstance were beyond control. A paper on effectiveness of volunteer farmer approach was published; data collection, workshops, nursery establishment and extension staff training on climate smart agriculture were conducted in Kenya and Uganda. Some challenges were however experienced- It was not possible to conduct leaf sample biochemical analysis locally as the laboratories do not conduct the required type of analysis. A request has been forwarded to ILRI Lab in Addis to assist progress this work. Preparation of a fodder manual was not realistic due to unforeseen delays involving staff availability to undertake the same. A suitable experienced consultant will be engaged to finalize the tasks upon completion of

the priority setting and baseline data analysis.

Gender component:

Female and male farmers farmer trainers and nursery managers will be equally involved in all activities; youths will be encouraged to participate and capacity of female students will be enhanced.Data in all surveys will be disaggregated by gender and wealth level to assess impacts on gender and wealth levels. Key hypotheses we will test:(1) Women farmer trainers are as effective in dissemination as men trainers. (2) Women trainers reach more women than men trainers. (3) Fodder shrubs are more used by women and the poor than commercial concentrates

Deliverables:

- Baseline data on existing fodder species on farm and related local knowledge collected; data on the existing seed and seedling systems; Agroforestry database updated with information on forages.

Field survey conducted in Kenya and data analysis in progress. Secondary data on collatecd to update existing fodder species listed in the agroforestry database

- Participatory needs assessment reports for Kenya and Uganda.

Report produced in time

- Manual on efficient production and management of priority forages developed.

Preparation of the manual postponed pending analysis of baseline data on existing fodder species

- Data on chemical characteristics of selected priority species

Data on nutritional and anti nutritional factors assembled for 77 tree species to be published in dataverse; As there are no local laboratories doing the required sample analysis a request has been sent to ILRI labin Addis for assistance on sample analysis for key nutrint factors.

- Tree forages species prioritization workshops conducted.

Training and priority setting workshop conducted in Kaptumo, Githunguri and Kayatta; 17 group and 15 private nurseries supported with quality seeds and nursery materials to produce some of the identfied priority species

- Publication on baseline data (2013).

Time contraints to complete field survey and undertake data analysis delayed report preparation

Partners:

KARI; KEFRI; Vi Agroforestry; IPACOP; KU; jkuat

Locations:

Activity 685-2013 (Milestone 2.1.3 2013 (2).)

Title: Action research to improve farmer resilience to climate impacts, in particular through agroforestry and rehabilitation practices and improving market access.

Status: **Partially complete.** A bit of delay for the project in Malawi. In Uganda, writing completion of 5 deliverable in progress (Synthesis paper, mannual, articles and policy brief)

Gender component:

(Uganda) Collect, analyse gender Disaggregated data with a targentof (1) understanding disproportion vulnerability and adapative capacitioes among men and women (2) gender based gaps and opportunities towards building resilience and (3) articulating gender based policy options towards resilience

Deliverables:

Partners:

Locations:

Activity 686-2013 (Milestone 2.1.3 2013 (1).)

Title: Adapting to extreme events in Southeast Asia through sustainable land management systems.

Status: **Partially complete.** Multiple workshops were conducted in all the project sites, as well as household surveys, to assess impacts, vulnerability adaptation. The training with local parners (LGU, farmers, community leaders) have been conducted, response to adopt agroforestry practices were very positive including new schemes from ICRAF-Claveria and in including climate change concerns in land use planning and barangay development plans. The national training is being organized for June 2014. Journal articles are being completed for publication within the year. The Talking Toolkit was developed and published online in 2013.

Gender component:

The vulnerability and impact assessment studies including assessing the role of trees were documented through household interviews and focus group discussions following a gender-based approach with equal men and women being interviewed and participating in the FGD

Deliverables:

- assisting local government units in landuse planning (workshops with national and local government partners).
2013 progress report, and FGD report (Vietnam)
- Research paper on impacts, vulnerability and adaptation of small holders to extreme climatic events.
Draft papers on climate change vulnerability, and adaptation with trees are available.
- Workshops on training needs assessment with stakeholders.
2013 progress report
- Journal paper on capacity building.
Simelton E, Dam VB, Finlayson R, Lasco R. 2013. The Talking Toolkit. World Agroforestry Centre. http://worldagroforestry.org/regions/southeast_asia/vietnam/products/tools/talking-toolkit
- Training of national and local partners sustainable land use systems under extreme climatic conditions.
Local training complete, National training this June 2014
- Land use plans by local government units incorporating adapt to extreme climatic events.
2013 progress report

Partners:

University of the Philippines Los Baños; CAVAPPED

Locations:

Activity 687-2013 (Milestone 2.1.3 2013 (2).)

Title: Gender impacts of water hazards in Yunnan, China: a Vulnerability and Adaptive Capacity Assessment.

Status: **Partially complete.** The research field work has been done, and gender-disaggregated data has been collected, and research results have been presented at several international conferences. A journal article is under final revision for submission.

Gender component:

The primary purpose of the research is to identify gendered impacts of water stress, including ways in which specific groups of men or women are more vulnerable, and ways in which institutions and policies contribute to and potentially could further contribute to stronger adaptive capacity among vulnerable groups in the face of probable continuing water stress.

Deliverables:

Partners:

Kunming Institute of Botany; YASS; Prefecture Agriculture and Forestry Departments; ICIMOD; YAU

Locations:

Activity 688-2013 (Milestone 2.1.3 2013 (2).)

Title: Enabling rural transformation and grassroots institutional building for sustainable land management and increased incomes and food security in East Africa

Status: **Partially complete.** The project has undertaken capacity development activities across it's six sites in line with the site work plans developed along with other stakeholders. Documentation of these activities capturing significant outcomes and lessons learnt has been ongoing to feed into the SRI model developed by the project. Other products developed include; Technical manuals, Brochures, Posters, Manuscripts for scientific publication and RIDS software. Currently the project is focusing on enterprise and platform development activities in the six project sites

Gender component:

The research has included understanding the roles and impacts of women and men in various activities including leadership and benefit sharing, participation, inclusion and exxclusion rules in the development of grassroots institutions. We have a specific output that gives insight into the roles of women in access to group benefits and participation.

Deliverables:

- stakeholder workshops.

*Development of site work plans and prioritization of group development trainings under the Strengthening Rural Institutions project

- working papers.

*Targetting 2 working papers from the baseline data collected and the step by step aproach used in developing the SRI model for strenghtening farmer groups

- baseline data compiled

*Baseline data for farmer groups in the six project implementation sites available; currently being synthesised for a working paper
- Reports and methods tools and approaches developed
*The SRI model for strengthening farmer groups is completed; currently being validated*Tools and software also complete and currently being validated
- Discussion paper on role of rural institutions in climate change adaptation
*Data collection and cleaning completed, analysis is underway
- Proposal on a rural institutions and climate change project
*Proposal developed, submitted and approved
- Developed a diagnostic model tool and software for grass roots institutions .
*The Rural Institutions Diagnostics software (RIDS) is near completion;currently advanced statistical analysis sub-routines are being included and tested

Partners:

KADLACC

Locations:

East Africa (EA),Other

Activity 689-2013 (Milestone 3.1.1 2013.)

Title: Rethinking China's Forest Bioenergy Policies: Incentives for Carbon Sequestration and Energy Production in Low Productivity Collective Forests in Southwest China (1); Policy options towards comprehensive approach to reducing emissions from the effective and efficient fertilizer use in China (2)

Status: **Complete.** The activity is now finished and all deliverables provided. This was a successful activity

Gender component:

the gender issues has been addressed with this activity mainly focus on household decision on fertilizer use and management.

Deliverables:

- A journal article and policy briefs on China’s Forests as a Carbon Resource
Incentives for carbon sequestration and energy production in low productivity collective forests in Southwest China
- A journal article and policy briefs on Large or Small? Rethinking China’s Forest Bioenergy Policies
paper: "Large or small? Rethinking China’s forest bioenergy policies"
- 2 journal articles “What is Driving the Explosion of Nitrogen Fertilizer Use in China?” & Patterns of Household Fertilizer Use in Yunnan Province, China”
Paper "Fertilizer use patterns in Yunnan Province, China: Implications for agricultural and environmental policy" and paper "

Partners:

Locations:

Activity 690-2013 (Milestone 4.1.4 2015.)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on local governance and market institutions

Status: **Partially complete.** A scoping study was conducted and generated information on (1) prevailing governance and decision making systems as well as extension and dissemination approaches. A report is being consolidated from village level booklets

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; TreeAid; SLARI; CSSL; ANPROCA; IER; WASCAL; CORAF; CILSS; CONEDD; Universitiy of Eastern Finland; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou; IRAG; CIFOR; DNEF

Locations:

West Africa (WA)

Activity 691-2013 (Milestone 3.1.1 2013.)

Title: Promoting a pro-growth pathway for reducing net GHG emissions East Asia (China, Mongolia and North Korea)

Status: **Partially complete.** Focusing on building capacities of sub-national and national stakeholders to identify institutional, policy and finance mechanisms that support adoption of low-carbon agricultural options with economic benefits for smallholders. Workshops and Scoping study have been done.

Gender component:

Identification of technical options will include targeted discussion with both men and women, and analysis will include attention to gender impacts. Gender aspects of institutions will also be analyzed.

Deliverables:

Partners:

XTBG; Kunming Institute of Botany; SDC; Ministry of Agriculture, Food and Light Industry; Green Gold; YAU; ITPCAS; Ministry of Environment, Nature and Tourism

Locations:

Other

Activity 692-2013 (Milestone 3.2.1 2013 (1).)

Title: Bioenergy Provision within AF systems in Africa

Status: **Complete.** Good progress was made in 2013, in terms of having stakeholder workshops, implementing case studies, networking with stakeholders including policy makers, publishing a strategic paper with communication products. Mobilizing extra fundraising is still challenge.

Gender component:

The fuel shortage can be due to the fact that cultural and economic factors affect the allocation and management of resources at the farm level, where women were often excluded from tree-planting decision. Efficient woodfuel sectors recognizing the important role of women in production, consumption and marketing in decision making, lead to gender-empowered development pathways with positive socio-economic and health impacts. If effectively promoted, the woodfuel sector significantly contributing to achieving MDGs.

Deliverables:

- Baseline data compiled

In July 2013, ICRAF-DFID dryland workshop produced some communication products on woodfuels together with regional/global partners to influence policy outcomes.

- Baseline data compiled

Although not comprehensive baseline such as national, the biophysical and socio-economic baseline for a case study (Mutomo, South Kitui in Kenya) was collected and now being analyzed by a PhD student to evaluate the impacts of woodfuel harvest on forest/land degradation.

- Strategic paper on woodfuels and potential impacts of AF

A strategic review paper, "the role of agroforestry in sustainable woodfuel provision in SSA" was just published in COSUST journal in early January 2014http://www.sciencedirect.com/science/article/pii/S1877343513001966

- White paper on woodfuels

charcoal technical brief out of ICRAF-SEI workshop as well as fact sheets, together with review work will be compiled into woodfuel white paper to guide strategies in ESA

Partners:

Locations:

Global

Activity 693-2013 (Milestone 4.2.1 2013 (3).)

Title: Development of Land Health Informations Systems including surveillance methods and soil carbon measurement (Carbon benefit project)

Status: **Partially complete.** A web-based tool for measuring and reporting soil carbon stocks was developed and is being tested before its released for public use

Gender component:

Training female scientists : building female capacity in science

Deliverables:

- A protocol for mearsuring carbon protocol and a web-based soil carbon calculator

A web-based tool for measuring and reporting soil carbon stocks was developed and is being tested before its released for public use

- Soil carbon data for five sentinel sites in Western Kenya

The data was published in ICRAF Dataverse (Aynekulu, Ermias; Shepherd, Keith; Sila, Andrew, 2014, "Land Health: Carbon Benefit Project (CBP), KENYA", http://dx.doi.org/10.7910/DVN/24317 World Agroforestry Centre [Distributor] V1 [Version])

Partners:

MSU

Locations:

East Africa (EA)

Activity 694-2013 (Milestone 3.2.1 2013 (1).)

Title: Establish project costs and governance of biocarbon projects

Status: **Complete.** This activity produced a paper in 2013. It might extend in 2014 towards Western Africa in collaboration with BIODEV project

Gender component:

Deliverables:

Partners:

CARE; TIST; Vi Agroforestry; WVI; ECOTRUST

Locations:

East Africa (EA)

Activity 695-2013 (Milestone 3.2.1 2013 (2).)

Title: Building a carbon neutral CGIAR

Status: **Complete.** In 2013, ICRAF HQ got its first carbon neutral certification. The assessment has also been carried out in all regional offices. At the HQ, a carbon levy has been implemented to collect enough money to buy the next carbon credits. The regional offices should be included in the certification in 2014.

Gender component:

There is no gender component in this activity

Deliverables:

Partners:

Locations:

Global

Activity 696-2013 (Milestone 3.3.1 2013.)

Title: Enabling small holder vulnerable communities to secure sustainable livelihoods under changing climates in India

Status: **Partially complete.** A methodology was composed for assessing the community vulnerability in terms of main farming & livelihood systems, including the livestock systems. The methodlogy utilizes bio-physical, socio-economic and anthropological parameters as mapping and characterizing units to prepare detailed profiling of the selected climate resilient technologies, as well as in determining the suitability classes of the promising technologies in the target area. Community vulnerability also included income, risk aversion capacity and the vulnerability of the enterprise producing natural resources. Using this methodology, community vulnerability was assessed at three sites, one each in Allahabad district, Uttar Pradesh, Bhilwara, Churu, Fatehpur-Shekhawati, Jhunjhunu districts, Rajasthan and Sri Nagar district, Uttrakhand, India. A set of component and systems technologies (climate smart / resilient) / farming interventions was assembled for each case. The set was presented, explained and discussed with the communities at Kaurihar grid in Allahabad, U.P., Kekadia-Aamrati, Bhilwara, Rampura, Churu, Sikar and Jhunjhunu grids in Rajasthan and Tungnath grid in Sri Nagar-Garwal, Uttrakhand for their selection of those interventions that they could apply on their own within their natural knowledge and social capital. Each grid covers 10 x10 km area, except at Tungnath, which was smaller. Farmers in Kaurihar, Rampura and Tungnath villages at individual farm- household level selected interventions from two categories - Individual farm and Community based (Community organization) based joint effort interventions. The farm based interventions include populating fields with fodder trees, expanded farm area under fodder species, horticulture and agroforestry,and the community based intervention included enhancing silvi-pasture in common lands, trees on road sides, canal banks, water storage structures, etc. and trees near settlements. The community oraganization and joint effort interventons arealso for social fencing and stone fencing of common pasture lands, and sharing the harvest proportionately to efforts put in. The project ensured their application and evaluation of performance using pre agreed criteria. Some of the criteria included aspects, such as the stable productivity, diversification options, multiple uses of crops, income levels, contribution to food security, risk spread, ease in application, requirement of external support, etc. The "flagship" interventions are being applied and evaluated seasonally. The gamut of the methodology as described above (protocol and procedures) was put in a tool box, tested and refined for technology suitability and extrapolation purposes and for training the selected national staff on these aspects. Promising interventions, including the agroforestry systems, fodder shrubs and tree systems and their production & utilization practices are being catalogued. These are being profiled in detail in order to provide the technology utilization requirements (TURs). At the same time farmers (producers) resource base analysis done within the potential target area (the grids), will provide inputs to come up with the target area qualities (TAQs).The potential target area will be classified into homologous zones and the matching of the TURs with the TAQs will enable coming up with the technology suitability classes in a quantitative manner. The impact of the above interventions is that the farmers at the project sites have been able to produce more than enough fodder for the entire year at the same or even higher livestock population. Beginning in the third year some communities after keeping the required fodder for the entire year have been able to sale extra fodder. In Rjasthan site, the distressed sale of livestock due to lack and high cost of fodder has stopped, this was a regular feature before. Allahabad site has observed a significant increase in livestock population and milk production. With all the progress in place, the project in 2013 suffered

a setback at Tung Nath site. This entire site hillock slided and washed away in the massive landslides during June-July, 2013. This site is a gorge now.

Gender component:

Gender component was used as an important criteria in the selection of the climate smart agricultural interventions (technologies). Priorities were given to those items where in the main responsibility lied on the women sections of the house holds, such as in the fodder and fuel wood collection and tending of some livestock. The interventions that reduce women time and drudgery were given priority and the interventions demonstrated at large scale in different ecologies.

Deliverables:

- A catalogue of the climate change resilient strategies and interventions (with detail technology profile) by ecology, including the ex-ante technology screening and community capa

The catelogue has been completed for three ecological cases. Community capacity assessment has also been completed in the these cases. However, the ex-ante technology screening part is delayed. These cases were presented in the National Review of the project in June and December, 2013. This activity also has some GIS component, but no scope of mentioning it in this format.

- A manual on the production of high quality planting material and other techniques

Relevant materials from all the countries in the region, where possible have been collected and the manual is being drwan up.

- A training manual along with detailed curricula, teaching aides and materials for enhancing community capacity to implement climate change resilient technological options

This activity is somewhat delayed as it is tied up with the other two activities to some extent. We will finalize it within next few months and plan to conduct one of the courses in the last quarter of the year for validation and refinement purposes.

Partners:

Locations:

South Asia (SAs)

Activity 697-2013 (Milestone 4.1.2 2013.)

Title: Scaling-up climate-smart agriculture

Status: **Partially complete.** The workshop in India went very well and ICRAF is foreseeing a promising future for CSA in India

Gender component:

A big focus has been put taken on gender especially with the production of ICRAF policy brief 14 "Addressing Gender in Climate-Smart Smallholder Agriculture"

Deliverables:

- learning events e.g. at COP; policy brief

ICRAF Policy Brief 14: "Addressing Gender in Climate-Smart Smallholder Agriculture" + blog

Partners:

Locations:

South Asia (SAs)

Activity 698-2013 (Milestone 3.3.2 2013.)

Title: Tools, measurement and monitoring protocols for GHG flux measurements and C-sequestration in complex agro-ecological landscapes with and without trees; including biochar effects on emissions (2013), algorithms for remote sensing above-ground biomass and carbon (2013)

Status: **Partially complete.** Protocols for the measurement of emissions is complete as are algorithms for remote sensing.

Gender component:

This project integrates gender into it selection criteria for scientific capacity building.

Deliverables:

- estimate relationships between management systems and GHGs

We have 1 year of data.

- FAO report

New due date Feb 2014 set by FAO

- progress report on biomass yield and RUE

Draft publication on yield is complete. RUE is in progress.

- RS analysis and ground truthing

This is a computer program written in python.

Partners:

FAO; EADD; CARE

Locations:

East Africa (EA)

Activity 699-2013 (Milestone 3.3.1 2013.)

Title: Analysis of the potential for smallholder communities to provide sufficient biomass for efficient pyrolysis liquid fuel production; Assess biochar potential for C sequestration and improved management practices

Status: **Partially complete.** Outputs are on track, although the PI from the coordinating organization is on sabbatical for the latter half of 2013 and early 2014. That has only affected one of the outputs -- on the piloting of the pyrolysis kiln as his participation is critical.

Gender component:

Information on gender of household head and enterprise owner is collected so information will be analysed

according to gender. However, gender is not the main focus of the research.

Deliverables:

- Publication on the selection of the communities and assessment of agricultural practices, resource endowments and biomass stocks

The student has drafts of 2 of 3 papers for her thesis completed, but these still need revision before they are submitted to a journal.

- Development of demand-supply strategy for commercial pyrolysis plant to generate liquid biofuels and biochar

There is still more work to be done in 2014 on demand for pyrolysis outputs

- Piloting of pyrolysis kiln to generate heat and liquid energy and biochar in W. Kenya

Still under discussion with an NGO (Access Energy) and a major agribusiness company (Finlay's)

- Supply of biomass and energy use by agribusinesses in W Kenya and their potential demand for pyrolysis bioenergy

The data from tea, coffee and sugar factories was collected and analyzed as planned.

- Report from the agribusiness data collected above

As noted for the 2013 data output, a draft report is already written. It will be combined with other data from farms prior to submission to a peer-reviewed outlet.

- PhD Thesis on Smallholder Use of Biomass in Western Kenya and Implications for Supply of Biomass for Energy

This is on track to be finished by mid 2014.

Partners:

Cornell University

Locations:

East Africa (EA)

Activity 700-2013 (Milestone 3.3.2 2013.)

Title: A framework for quantifying error propagation and cost-error trade-offs in soil carbon stock measurements

Status: **Partially complete.** Source of uncertainities and cost-error trad-offs in quantifying soil carbon stocks were idenified, but the framework for error propagation is not complted

Gender component:

Training female scientists : building female capacity in science

Deliverables:

- Final publication and protocol updating

A web-based tool for measuring and reporting soil carbon stocks was developed and is being tested before its released for public use

Partners:

Locations:

East Africa (EA)

Activity 701-2013 (Milestone 4.2.1 2013 (5).)

Title: Uncovering the past climate, extreme events and impacts across regions to adapt and mitigate climate changes

Status: **Partially complete.** The dendrochronology lab has been fully established and technicians have been trained. It is now up for running samples

Gender component:

Deliverables:

- Training of technician for tree ring lab in Germany

Edith Anyango followed a training in Germany for several month early 2013

Partners:

Locations:

West Africa (WA),East Africa (EA)

Activity 703-2013 (Milestone 4.2.1 2013 (5).)

Title: Using remote sensing for drought assessment and monitoring in the highlands of Asia

Status: **Partially complete.** 1) Using the Global Land Surface Satellite (GLASS) LAI data to assess drought-induced response by vegetation in Asian highlands from 2001 to 2010, along with monthly precipitation data from weather stations within the study area, completed and submitted to Journal for review; 2) Modelling of rubber expansion risk in Southeast Asia (draft ready, submitted to Nature in Feb 2014); 3) Using MODIS data to assess the agricultural damage (particularly coffee, rubber,etc) during extreme cold event in Yunnan 2014 (collecting data and developing methods); 4) Using Partial Least Squares (PLS) regression for fruit phenology and crop production analysis

Gender component:

The results will be used as scientific evidences during the stakeholder dialogue and shared with both male and female farmers and government officers from local communities and government. More importantly, all the results will be also put as knowledge platform for public access, and will benefit to millions of smallholder farmers, decision-makers, enterpises companies, as well as public.

Deliverables:

Partners:

Kunming Institute of Botany; NCC

Locations:

Other

Activity 704-2013 (Milestone 3.3.1 2015 (1).)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on Sustainable wood energy

Status: **Partially complete.** Preliminary wood energy surveys were conducted and report produced

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; TreeAid; SLARI; ANPROCA; WASCAL; IER; CILSS; CORAF; CONEDD; Universitiy of Eastern Finland; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou

Locations:

West Africa (WA)

Activity 705-2013 (Milestone 3.3.2 2014.)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on Carbon measurement and monitoring systems

Status: **Partially complete.** Most of the work was done by the University of Helsinki, Department of Geosciences and Geography and focused on the field measurement campaign and acquisition of airborne lidar (light detection and ranging) data in the Taita Hills, in south-eastern Kenya. Field data on above ground biomass was also collected by University of Helsinki. Land health surveillance was carried out in the Taita sentinel site based on the Land degradation Surveillance Framework (LDSF) developed by ICRAF. Background information and data from the Programme sites in West Africa was collected. A manual for biomass measurement was developped.

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; SLARI; ANPROCA; WASCAL; IER; CILSS; Tree Aid; CORAF; CONEDD; Universitiy of Eastern Finland; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou; IRAG; CIFOR; DNEF

Locations:

West Africa (WA)

Activity 706-2013 (Milestone 4.2.1 2013 (3).)

Title: Multi-disciplinary species distribution modeling – climate change impact projection and adaptation planning with climatic, environmental and socioeconomic factors (2013-2015)

Status: **Complete.** The activity went on well in 2013. Results were really interesting

Gender component:

Deliverables:

Partners:

Locations:

East Africa (EA)

Activity 707-2013 (Milestone 4.2.1 2013 (1).) Commissioned

Title: Research technician ICRAF

Status: **Partially complete.** Most of the tasks agreed by both CCAFS and RMG were well done and aticulated but an initial lack of capacity in these areas likely led to delays in some of the deliverables. Moreso, a lack of agreement between the CCAFS and RMG regarding what was expected in terms of preliminary analysis was likely a greater factor in these delays

Gender component:

Deliverables:

- Synthesis backstopping, reports, article

Revised the statistics on the global summary report for CCAFS baseline data

- Changes and Reasons for Changes

The analysis of the changes and reasons for changes was well produced and a draft paper is under preparation by CCAFS team (Foerch Wiekbe and Christine Jost)

- Site Characterization, Farm typology analysis

Halted due to urgent RMG tasks and time constraints and will start in 2014.

Partners:

Locations:

Global

Activity 708-2013 (Milestone 4.2.1 2013 (5).)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on Replicable tools and frameworks

Status: **Complete.** An outcome mapping was conducted in both countries to identify key partners that will be involved in executing the project activities at site level

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; TreeAid; SLARI; ANPROCA; WASCAL; IER; CILSS; CORAF; CONEDD; Universitiy of Eastern Finland; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou; IRAG; CIFOR; DNEF

Locations:

West Africa (WA)

Activity 709-2013 (Milestone 4.1.1 2013.)

Title: Developing community-based climate smart agriculture through participatory action research in five benchmark sites in West Africa

Status: **Partially complete.** The project has run 10 workshops both regional and national as well 8 village level trainings on how to use seasonal forecast information to plan the cropping season activities. These village level workshops involved 462 men and 164 women. Field activities evolved around combining land and vegetation rehabilitation, new crop varieties, water management using participatory approaches in planning, implementing and evaluating these activities. Gender, trade-offs, change in behavior constitute the main areas that have been critical considered in the analysis of the information generated by the activities. Training activities were about how to measure change in behavior, integrated soil fertility management, soil and water conservation, statistical analysis, etc. These trainings involved in total 108 men and 109 women. Four students were also trained (3MSc. and 1 from a professional agronomic school). Broadcast of climate information was also organized 4 times.

Gender component:

Most of the focus will be on biophysical data, but in eliciting local knowledge and translating findings to 'recommendations' gender-specific perspectives on benefits and drawbacks of trees of various kinds will be taken into account.

Deliverables:

Partners:

Locations:

West Africa (WA)

Activity 711-2013 (Milestone 4.2.1 2013 (5).)

Title: Sustainable Rural Development through High Value Biocarbon Approaches: Building Multifunctional Landscapes and Institutions in West and East Africa, focus on National policies and capacity strengthening

Status: **Partially complete.** Two country profiles on policy environment for Burkina Faso and Sierra Leone were produced that will help identifying capacity building needs and supporting NAMAs and NAPAs.

Gender component:

No specific gender component

Deliverables:

Partners:

INERA; TreeAid; SLARI; CSSL; ANPROCA; WASCAL; IER; CILSS; CORAF; CONEDD; Universitiy of Eastern Finland; University of Helsinki; Njala University of Sierra Leone; Université de Ouagadougou; IRAG; CIFOR; DNEF

Locations:

West Africa (WA)

Activity 713-2013 (Milestone 4.2.1 2013 (1).)

Title: Integration of climate change in national agroforestry policy in India

Status: **Incomplete.** Agroforestry in the country is being promoted / facilitated by a number of agencies; it is specifically not in the domain of any one of them, which makes its mainstreaming difficult. Therefore, ICAR, ICRAF with other partners in the country under the leadership support of the National Advisory Council spearheaded a national consultation effort for Developing a National Policy on Agroforestry. This group has submitted its recommendations to the government and has also indicated the key elements including the climate change aspects to be included in the National Agroforestry Policy. The recommendations for the National Agroforestry Policy are available at http://nac.nic.in/pdf/recommendations_agroforestry.pdf.

Gender component:

We will give special attention and focus on pro-poor and pro-women items in the policy brief agenda. This may include items, such as the production and supply of the high quality planting material, insitu processing and value addition and efficient energy use options at the household level.

Deliverables:

- Status reports on the national and sub-national priorities, programs and policies with respect to climate change

This activity was expanded to also include Sri Lanka in the program. Two national level consultations in India and a national level conference in Sri Lanka were organized. The national and sub-national priorities, general policies and programs are available in both the countries.

- A paper / report on the potentials and possibilities of agroforestry for addressing the challenges of climate change

This part has been dealt with by five national level consultations with the central government, state

governments, industry & finanacial institutions, donors, NGOS. ICRAF, ICAR with other partners in the country under the leadership support of the National Advisory Council spearheaded a national consultation effort for Developing a National Policy on Agroforestry.

- Workshop agenda according to the objectives identified above, and a list of topics (questions) to be deliberated during the workshop

The workshop was oragnized in November month, 2013. This had plain text, power point formats. ICRAF, ICAR with FAo, selected Ministries of the Government of India, State Governments in India, NGO & civic societies and other partners particiapted and prepared the draft of the recommendations that was posted at the NAC website for public review and scrutiny.

- Workshop recommendations and follow ups, share with participants, request for their feedback and submit the report the national authorities

The group working on Developing the National Agroforestry Policy has submitted its recommendations to the government and has also indicated the key elements to be included in the National Agroforestry Policy. The recommendations are available at http://nac.nic.in/pdf/recommendations_agroforestry.pdf The feedback from the partners is awaited.

Partners:

Locations:

South Asia (SAs)

2. Succinct summary of activities and deliverables by Output level

Output: 1.1.1

Summary:

3 of ICRAF activities touched upon this output in 2013. In Kenya, maps of current and future cultivation zones for 3 mango varieties and maps documenting remaining, lost and new habitat was developed. A modelling framework was developed as well. In Latin America, data were collected on farms resources and tree distribution (the database is in CSPro).

Work in progress:

EA: Suitability maps publically available for a minimum of 100 agroforestry species in East Africa. + 5 mango varieties from climate-analogue locations in EA and WA (Sudan, Mali, Niger) introduced in Kenya and evaluated by on-station trials with national partners.

WCA: List of priority species for Burkina Faso and Sierra Leone to be used in agroforestry interventions + Germplasm for priority species collected and part sown in village nurseries, in at least 1 village per country.

LA: Report on the contribution of diversification at the farm and landscape level to adaptive capacity (livelihoods) + Review on data needs and methods functional diversity applied to AFS.

Output: 1.1.2

Summary:

3 ICRAF activities worked on this output in 2013.

In WCA, 2 methodological papers for participatory analysis of vulnerability and adaptation to climate change were produced (in French and in english). In Burkina Faso, Mali and Niger, provenance/progeny tests of five tree species established on farms were undertaken. Capacity building was done for 20 partners from NARs, forestry departments and development projects and 250 men and women farmers who were trained in participatory tree domestication.

In SEA, 2 workshops on "local adaptive strategies and coping responses of small holder farmers" and on "the role of trees and agroforestry in enhancing the resilience of small holder farmers" were done.

Work in progress: Data set of vulnerability of livelihood assets of gender groups in four regions of Burkina Faso, Mali and Niger stored in ICRAF database + Review paper for journal publication on local adaptive strategies and coping responses of small holder farmers in Southeast Asian watersheds + Research paper documenting the local adaptive strategies and coping responses of small holder farmers + Journal paper on the role of trees and agroforestry in enhancing the resilience of small holder farmers (already submitted)

Output: 1.1.3

Summary:

Only one activity dealt with output 1.1.3 in 2013. Baseline data on (i) existing fodder species on farm and related local knowledge; (ii) the existing seed and seedling systems; (iii) information on forages were collected. Other data on chemical characteristics of selected priority species were collected as well (Collaboration with ILRI). A tree forages species prioritization workshops was conducted in kenya. 17 group and 15 private nurseries are now supported with quality seeds and nursery materials to produce some of the identfied priority species. Eventually, a participatory needs assessment reports for Kenya and Uganda was produced.

Work in progress: Publication on baseline data (2013) + Policy brief on climate smart agricultural practiced for dairy farmers + Manual on efficient production and management of priority forages

Output: 1.2.1

Summary:

ICRAF only got 1 activity working on this topic. In 2013, seed collection and seedling production for 4 species (Prunus africana, Warburgia ugandensis, Croton megalocarpus, Acacia senegal) was done. A worshop on Regional Planning and Training was held in naivasha in July 2013. A manual on 'Enhancing tree productivity: Climate Change Adaptation and Regional Seed Supply project" is now available.

Work in progress: Establishment of trials for Prunus africana, Warburgia ugandensis, Croton megalocarpus, Acacia senegal.Land preparation for the Croton megalocarpus trials is underway for the first rainy season of 2014. Due to budget restrictions in 2014, decision has been taken to only establish trials for Croton megalocarpus because this species a. has been identified as one of the most promising biofuel species for East Africa; b. this is an orthodox species not requiring regional transfer of live seedlings whereby soil needs to be removed from root systems during border crossings

Output: 2.1.3

Summary:

At least 4 ICRAF activities worked on this output in 2013.

In EA, a special issue in the African Crop science Journal based on the Going to scale project was published as well as a book on Integrated agricultural research for development proof of concept. In Kenya, several stakeholders workshops allowed the development of site work plans and prioritization of group development trainings under the Strengthening Rural Institutions project. A baseline data collection for farmer groups in the six project implementation sites was finished available (currently being synthesised for a working paper). Capacity building of farmers, nursery managers and extension workers was done and training materials were developed and tested related to vegetative fruit tree propagation (Facilitators soft skills manual + Capacity Needs Assessment Guide for Facilitators). Still in Kenya, a proposal on a rural institutions and climate change project was developed, submitted and approved.

In SEA, 2 workshops were held on landuse planning (assistance to local government units) and on training needs

assessment with stakeholders. A journal paper on capacity building was produced. in China, a training for ICRAF and national partner staff in survey and analysis tools to bring work in line with CCAFS and IMPACT model requirements was done. Data on the VACA region were collected.

Work in progress:

Synthesis paper on adaptation strategies barriers and gaps in Uganda + Analytical tool (manual for assessing resilience) + Research paper on impacts, vulnerability and adaptation of small holders to extreme climatic events + Training of national and local partners sustainable land use systems under extreme climatic conditions (Local training complete, National training this June 2014) + Publication on VACA in the region + Validation of the SRI model for strengthening farmer groups + Discussion paper on role of rural institutions in climate change adaptation (Analysis of data underway) + The Rural Institutions Diagnostics software (RIDS) is near completion (currently advanced statistical analysis sub-routines are being included and tested)

Output: 3.1.1

Summary:

2 activities dealt with this output in China. Most of the deliverables were writings:

- A journal article "Incentives for carbon sequestration and energy production in low productivity collective forests in Southwest China"

- A journal paper: "Large or small? Rethinking China's forest bioenergy policies"

- A journal paper: "Fertilizer use patterns in Yunnan Province, China: Implications for agricultural and environmental policy" and paper "

- A working paper on "Biofuels in China: An Analysis of the Opportunities and Challenges of Jatropha Curcas in Southwest China"

- A book: An Agroforestry Guide for Field Practitioners

- Southwest China Climate Change Impacts and Adaptation Scoping Study

3 mini-films were produced:

- Making the Highland a Better Place (Copyright)

- Agoforestry and Climate Change Adaptation

- Water Goverance and Climate Change

Output: 3.2.1

Summary:

3 ICRAF activities did work on this output in 2013.

In July 2013, ICRAF-DFID dryland workshop produced some communication products on woodfuels together with regional/global partners to influence policy outcomes (Including a book:"Treesilience: An assessment of the

resilience provided by trees in the drylands of Eastern Africa". Another workshop was held together with SEI on cross-sectoral bioenergy workshop in Nairobi with many key stakeholders. A workshop on the charcoal crisis was also done.

Strategic paper on woodfuels and potential impacts of AF was produced.

Some communication products: Blog on firewood and charcoal + ICRAF Policy Brief 15 "Climate Finance for Agriculture and Livelihoods"

1 publication: paper describing project finance and institutions of several biocarbon projects in East Africa was published.

Eventually quite some work has been done concerning ICRAF's institutional carbon footprint (Carbon footprint assessment reports and recommendations, carbon neutral certification, carbon levy and data collection improvement).

Output: 3.3.1

Summary:

2 main activities were working on this output.

The data from tea, coffee and sugar factories was collected and analyzed as planned.

Report of secondary data on wood energy, complemented with stakeholder views: analysis of a) secondary data; b) stakeholder views; c)data on energy wood from scoping study made by the BIODEV project in WCA.

Work in progress:

Publication on the selection of the communities and assessment of agricultural practices, resource endowments and biomass stocks + Development of demand-supply strategy for commercial pyrolysis plant to generate liquid biofuels and biochar

Output: 3.3.2

Summary:

A lot of work has been done with the SAMPLES project: 4 papers and results were shared at the International Nitrogen Iniative meeting in Kampala (Pelster et al.) and via live stream on the CCAFS site.

The MICCA project got quite a number of interesting outputs: GHG flux measurements; C-sequestration assessment; LHSF biophysical baseline assessment + tree inventory + RS analysis and ground truthing + 2 papers.

In WCA, the BIODEV project and its Work Package on carbon measurements managed to get Airborne LiDAR image acquisitions and image processing for above-ground bio-carbon stocks prediction in Taita Hills, Kenya + Land health data collection from one sentinel site (240 plots) and soil data processing in Taita Hills + A manual for biomass measurement

Work in progress:

Communication product: update of the samples products and results on the ICRAF website

estimate relationships between management systems and GHGs + progress report on biomass yield and RUE + A web-based tool for measuring and reporting soil carbon stocks was developed and is being tested before its released for public use + Gathering of satellite and ancillary data from the study sites in West Africa- preparation for field work in Sierra Leone and Burkina Faso

Output: 4.1.1

Summary:

One ICRAF activity in WCA related to this output. In 2013, several workshops were held to refine and validate the workplan in each countries. Most of the deliverables are still in progress: Establishment of land restoration trials combining anti-erosion structures with assisted natural regeneration of local species involving 20 farmers + Field trials in Jatropha + Integrated soil fertility management trials established on farmers' fields + soil samples in Ghana and Mali + tree seedling planted in Ghana + Burkina and Ghana team trained by IUCN on the tools for PM&E of the project + Socio-econmic data, carbon stocks, GHGs in the 5 countries + Training for farmers and students

Output: 4.1.2

Summary:

One activity touched upon output 4.1.2: Scaling-up CSA.

A big workshop on scaling-up CSA was held in India with many key partners and was a success.

A policy brief "Addressing Gender in Climate-Smart Smallholder Agriculture" + blog on the same topic were written.

The paper "Beyond climate-smart agriculture: toward safe operating spaces for global food systems" was published

ICRAF contributed to the writing of the Agriculture chapter in UNEP emission gap report 2013

Output: 4.1.4

Summary:

Only the BIODEV project (Work Package on governance and market institutions was working on this outputs. They did a training of the project staff and national partners both in Burkina Faso and Sierra on tools to be used for the scoping, PRA and interviews.

Work in progress:

Capacity building of the project staff and national partners + Scoping study' will collect data within a

representative sample of the villages within the project site on: local institutions, extension services, agroforestry systems and practices, fuel wood production and consumption and marketing. it will help produce a list of key priority tree of diverse functional groups and services.

Output: 4.2.1

Summary:

This output is the one ICRAF is the most contributing to.

In Kenya, soil carbon data for five sentinel sites in Western Kenya was collected and put on ICRAF dataverse. The dendrochronology lab was equiped, launched and a technician was trained in Germany. The research technician Anthony Ndungu contributed to synthesis backstopping, reports, article and to the analysis of the changes and reasons for changes (produced and a draft paper is under preparation by CCAFS team (Foerch Wiekbe and Christine Jost)).

In EA, databases on historic (1983) and modern (2012) crop distribution across most of the Kenyan agricultural areas, ranging from the coast to the Ugandan border, plus parts of Uganda and DRC, integrated with data on tenure, accessibility and population attributes. was collected and analysed. Very interesting results and promising proposals.

In WCA, the BIODEV project consolidated the workplan of the project for a smooth implementation and monitoring for integrated sustainable development, including biocarbon and small-scale sustainable energy production. An outcomes mapping of partners of the project in the both Burkina Faso and Sierra Leone was also produced. A template for Country profile related to National policies and capacity strengthening was also finalized.

Eventually in China, remte sensing was used to collect downscale climate data, stratify bioclimatic regions, hydrological modeling, rubber distribution and expansion risks

Work in progress:

A protocol for mearsuring carbon protocol and a web-based soil carbon calculator + mountain specialty modeling + Journal articles for rubber plantation and samllholders + Global summary of data quality of impact lite baseline data. Writing up the two documents to be uploaded to CCAFS website soon + Dataverse for the BIODEV project on the ICRAF dataverse to allow the immediate sharing of data, methods and project documents + Country profile describing institutional and governance conditions that can support fair and efficient NAMA that reflects the landscape activities and local reality, described and provided to government institutions and national stakeholder platforms

Output: 4.3.3

Summary:

On project dealt with this output.

Plot and household data were collected for maize growing households in Malawi.

Work in progress:

Analysis of the effects of agroforestry on maize yields for 2012 and 2013, including differential effects for men and women farmers + Models improved for forecasting impacts of agroforestry under climate change; Empirical analyses available + Develop models and plateforms for better integrating agroforestry and NRM into CGIAR ex ante impact modeling systems + Develop models and plateforms for better integrating agroforestry and NRM into CGIAR ex ante impact modeling systems

3. Publications

Publication #1

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Iiyama M, Neufeldt H, Dobie P, Njenga M, Ndegwa G, Jamnadass R. 2013. The potential of agroforestry in the provision of sustainable woodfuel in sub-Saharan Africa. Current Opinion in Environmental

Sustainability 6: 138-147.

Publication #2

Type: Books

CCAFS Themes: Theme 3

Citation: De Leeuw J, Njenga M, Wagner B, Iiyama M, (Eds.) 2014. Treesilience: An assessment of the resilience provided by trees in the drylands of Eastern Africa. Nairobi, Kenya. ICRAF 166 pp.

Publication #3

Type: Policy briefs

CCAFS Themes: Theme 3

Citation: Wagner B, De Leeuw J, Njenga M, Iiyama M, Jamnadass R. 2013. Towards greater resilience in the drylands: trees are the key. ICRAF Policy Brief 18. Nairobi, Kenya. World Agroforestry Centre (ICRAF).

Publication #4

Type: Other

CCAFS Themes: Theme 3

Citation: Abdirizak H, Gudka M, Kibor B, Kinuthia M, Kimeu P, De Leeuw J, Maimbo M, Safriel U, Njenga M, Iiyama M. 2013. Farmer-managed natural regeneration: how to regenerate pasture and farmland on a low budget. ICRAF Technical Brief. Nairobi, Kenya. World Agroforestry Centre (ICRAF).

Publication #5

Type: Other

CCAFS Themes: Theme 3

Citation: World Agroforestry Centre (ICRAF). 2013. Charcoal: a driver of dryland forest degradation in Africa? ICRAF Factsheet. Nairobi, Kenya. World Agroforestry Centre (ICRAF).

Publication #6

Type: Other

CCAFS Themes: Theme 1, Theme 2, Theme 3, Theme 4.1, Theme 4.2, Theme 4.3

Citation: [CIFOR] CGIAR Research Program on Forests, Trees and Agroforestry. 2013. Annual Report 2012 - Forests, Trees and Agroforestry. Bogor: Indonesia.

Publication #7

Type: Other

CCAFS Themes: Theme 1, Theme 2, Theme 3, Theme 4.1, Theme 4.2, Theme 4.3

Citation: [ICRAF] World Agoforestry Centre. 2013. Annual Report 2012-2013: Transforming lives and landscapes with trees. Nairobi: Kenya.

Publication #8

Type: Book chapters

CCAFS Themes: Theme 4.1

Citation: Kristjanson, P Gordes, A Sessa, R Braimoh, A Vermeulen S. 2013. Local institutions. In: Sourcebook on Climate-Smart Agriculture, Forestry and Fisheries. Module 12. Rome: FAO.

Publication #9

Type: Book chapters

CCAFS Themes: Theme 1

Citation: Puskur, R Ballantyne, P Kristjanson, P. 2013. Redesigning a livestock research institute to support livestock development within an AIS approach. In: Agricultural Innovation Systems: an investment sourcebook. World Bank Agriculture and Rural Development Series.

Publication #10

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Smith, P Haberl, H Popp, A Erb, K Lauk, C Harper, R Tubiello, F de Siqueira P A Jafari, M Sohi, S Masera, O Böttcher, H Berndes, G Bustamante, M Ahammad, H Clark, H Dong, H Elsiddig, E A Mbow, C Ravindranath, N H Rice, C W Robledo-Abad, C Romanovskaya, A Sperling, F Herrero, M House, I Rose, S. 2013. How much land based greenhouse gas mitigation can be achieved without compromising food security and environmental goals? Global Change Biology 19 (8): 2285 - 2302

Publication #11

Type: Journal papers

CCAFS Themes: Theme 4.1

Citation: Chaudhury, M Vervoort, J Kristjanson, P Ericksen, P Ainslie, A. 2013. Participatory scenarios as a tool to link science and policy on food security under climate change in East Africa. Regional Environmental Change 13 (2): 389-398.

Publication #12

Type: Journal papers

CCAFS Themes: Theme 4.1

Citation: Neufeldt, H Jahn, M Campbell, B Beddington, J R DeClerck, F De Pinto, A Gulledge, J Hellin, J Herrero, M Jarvis, A LeZaks, D Meinke, H Rosenstock, T Scholes, M Scholes, R Vermeulen, S Wollenberg, E Zougmoré, R. 2013. Beyond climate-smart agriculture - towards safe operating spaces for global food systems. Agriculture & Food Security 2: 12p.

Publication #13

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Rosenstock, T S Rufino, M C Butterbach-Bahl, K Wollenberg, E. 2013. Toward a protocol for quantifying the greenhouse gas balance and identifying mitigation options in smallholder farming systems. Environmental Research Letters 8: 5p.

Publication #14

Type: Policy briefs

CCAFS Themes: Theme 4.1

Citation: Bernier, Q Franks, P Kristjanson, P Neufeldt, H Otzelberger, A Foster, K. 2013. Addressing gender in climate-smart smallholder agriculture. ICRAF Policy Brief 13. Nairobi: Kenya.

Publication #15

Type: Policy briefs

CCAFS Themes: Theme 3

Citation: Foster, K Neufeldt, H Franks, P Diro, R Munden, L Anand, M Wollenberg, E. 2013. Climate finance for agriculture and livelihoods. ICRAF Policy Brief 15. Nairobi: Kenya

Publication #16

Type: Working papers

CCAFS Themes: Theme 3

Citation: Raut, N Raya, B Sitaula, B K Bajracharya, R M Kristjanson, P. 2013. Gender roles and greenhouse gas emissions in intensified agricultural systems in the mid-hills of Nepal. CCAFS Working Paper 47. Copenhagen: Denmark.

Publication #17

Type: Books

CCAFS Themes: Theme 4.1

Citation: Adewale, AA Oluwole, FA Buruchara, R Nyamwaro S. 2013. Integrated agricultural research for development: from concept to practice. Forum for Agricultural Research in Africa (FARA).

Publication #18

Type: Other

CCAFS Themes: Theme 1

Citation: Simelton E, Dam VB, Finlayson R, Lasco R. 2013. The Talking Toolkit. How smallholding farmers and local governments can together adapt to climate change. World Agroforestry Centre (ICRAF), Ha Noi, Viet Nam.

Publication #19

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Miyuki, I Neufeldt, H Dobie, P Njenga, M Ndegwa, G Jamnadass, R. 2014. The potential of agroforestry in the provision of sustainable woodfuel in sub-Saharan Africa. Current Opinion in Environmental Sustainability 6: 138-147.

Publication #20

Type: Journal papers

CCAFS Themes: Theme 1

Citation: Luedeling, E Guo, L Dai, J Leslie, C Blanke, M. 2013. Differential response of trees to temperature variation during the chilling and forcing phases. Agricultural and Forest Meteorology. 181: 33-42.

Publication #21

Type: Journal papers

CCAFS Themes: Theme 4.2

Citation: Metzger, MJ Bunce, RGH Jongman, RHG Sayre, R Trabucco, A Zomer, R. 2013. A high-resolution bioclimate map of the world: a unifying framework for global biodiversity research and monitoring. Global Ecology and Biogeography 22: 630-638.

Publication #22

Type: Journal papers

CCAFS Themes: Theme 1

Citation: Guo, L Dai, J Ranjitkar, S Yu, H Xu, J Luedeling, E. 2013. Chilling and heat requirements for flowering in

temperate fruit trees. International Journal of Biometeorology.

Publication #23

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Tang, S Wang, C Wilkes, A Zhou, P Jiang, Y Han, G Zhao, M Huang, D Schönbach, P. 2013. Contribution of grazing to soil atmosphere CH4 exchange during the growing season in a continental steppe. Atmospheric Environment. 67: 170-176.

Publication #24

Type: Journal papers

CCAFS Themes: Theme 4.2

Citation: Ranjitkar, S. 2013. Effect of elevation and latitude on spring phenology of Rhododendron at Kanchenjunga conservation area, East Nepal. International Journal of Applied Sciences and Biotechnology.

Publication #25

Type: Journal papers

CCAFS Themes: Theme 4.2

Citation: Metzger, MJ Brus, DJ Bunce, RGH Carey, J Goncalves, J Honrado, JP Jongman, RHG Trabucco, A Zomer, R. 2013. Environmental stratifications as the basis for national, European and global ecological monitoring. Ecological Indicators. 33:26-35.

Publication #26

Type: Journal papers

CCAFS Themes: Theme 4.2

Citation: Guo, L Andreas, W Yu, HY Xu, JC. 2013. Analysis of factors influencing yield variability of major crops in China. Plant Diversity and Resources. 35(4): 513-521.

Publication #27

Type: Journal papers

CCAFS Themes: Theme 4.2

Citation: Guo, L Dai, J Ranjitkar, S Xu, J Luedeling, E. 2013. Response of chestnut phenology in China to climate variation and change. Agricultural and Forest Meteorology. 180: 164-172.

Publication #28

Type: Other

CCAFS Themes: Theme 4.2

Citation: Xu J, Mercado A, He J., Dawson I (eds.) (2013) An Agroforestry guide for field practitioners. The World Agroforestry Centre, East Asia, Kunming, China. 63 pp.

Publication #29

Type: Working papers

CCAFS Themes: Theme 3

Citation: Weyerhaeuser, H Tennigkeit, T Yufang, S Kahrl, F. 2007. Biofuels in China: an analysis of the opportunities and challenges of Jatropha Curcas in Southwest China. ICRAF Working Paper Number 53. Nairobi: Kenya.

Publication #30

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Kahrl, F Su, Y Tennigkeit, T Yang, Y Xu, J. 2012. Large or small? Rethinking China's forest bioenergy policies. Biomass and Bioenergy. In Press. 1-8.

Publication #31

Type: Journal papers

CCAFS Themes: Theme 4.3

Citation: Yunju, L Kahrl, F Jianjun, P Roland-Holst, D Yufang, S Wilkes, A Jianchu, X. 2012. Fertilizer use patterns in Yunnan Province, China: implications for agricultural and environmental policy. Agricultural Systems. 110: 78-89.

Publication #32

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Kahrl, F Su, Y Tennigkeit, T Wilkes, A Xu, J. 2013. Incentives for carbon sequestration and energy production in low productivity collective forests in Southwest China. Biomass and Bioenergy. 59: 92-99.

Publication #33

Type: Other

CCAFS Themes: Theme 1

Citation: Boureima, M Abasse, TA Sontelo Montes, C Weber, JC Katkore, B Mounkoro, B Dakouo, JM Samake, O Sigue, H Bationo, BA Diallo, BO. 2013. Participatory analysis of vulnerability and adaptation to climate change: a methodological guide for working with rural communities. ICRAF Occasional Paper 19.

Publication #34

Type: Other

CCAFS Themes: Theme 1, Theme 2, Theme 3, Theme 4.1, Theme 4.2, Theme 4.3

Citation: Ngulu, J Kindt, R Luedeling, E Kehlenbeck, K. 2013. Cultivation potential of different mango varieties in Kenya, considering likely impacts of climate change. ICRAF conference presentation. "Agricultural development within rural-urban continuum". Tropentag, September 17-19 2013, Stuttgart-Hohenheim.

Publication #35

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Arias-Navarro, C Diaz-Pines, E Kiese, R Rosenstock, T Rufino, MC Stern, D Neufeldt, H Verchot, LV Butterbach-Bahl, K. 2013. Gas pooling: a sampling technique to overcome spatial heterogeneity of soil carbon dioxide and nitrous oxide fluxes. Soil Biology and Biochemistry. 67: 20-23.

Publication #36

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Rosenstock, TS Tully, KL Arias-Navarro, C Neufeldt, H Butterbach-Bahl, K Verchot, LV. 2014. Agroforestry with N2-fixing trees: sustainable development's friend or foe? Current Opinion in Environmental Sustainability. 6: 15-21.

Publication #37

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Rosenstock, TS Diaz-Pines, E Zuazo, P Jordan, G Predotova, M Mutuo, P Abwanda, S Thiong'o, M Buerkert, A Rufino, M Kiese, R Neufeldt, H Butterbach-Bahl, K. 2013. Accuracy and precision of photoacoustic spectroscopy not guaranteed. Global Change Biology.

Publication #38

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Ogle, SM Olander, L Wollenberg, L Rosenstock, T Tubiello, F Paustian, K Buendia, L Nihart, A Smith, P. 2013. Reducing greenhouse gas emissions and adapting agricultural management for climate change in developing countries: providing the basis for action. Opinion Paper.

Publication #39

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Milne E, Neufeldt H, Smalligan M, Rosenstock T, Bernoux M, Bird N, Casarim F, Denef K, Easter M, Malin D, Ogle S, Ostwald M, Paustian K, Pearson T and Steglich E. 2012. Methods for the quantification of emissions at the landscape level for developing countries in smallholder contexts. CCAFS Report No. 9. Copenhagen: Denmark.

Publication #40

Type: Other

CCAFS Themes: Theme 3, Theme 4.3

Citation: UNEP. 2013. The Emissions Gap Report 2013. A [UNEP] United Nations Environment Programme Synthesis Report.

Publication #41

Type: Journal papers

CCAFS Themes: Theme 3

Citation: Foster, K Neufeldt, N. 2014. Biocarbon projects in agroforestry: lessons from the past for future development. Current Opinion in Environmental Sustainability. 6: 148-154.

4. Communications

Media campaigns:

N/A

Blogs:

Carbon footprint blog: http://www.worldagroforestry.org/newsroom/highlights/world-agroforestry-centre-hq-certified-carbonneutral

Charcoal: http://blog.worldagroforestry.org/index.php/2013/10/03/unpacking-the-evidence-on-firewood-and-charcoal-in-africa/

Gaspooling: http://ccafs.cgiar.org/blog/gas-pooling-best-way-measure-soil-emissionsmore-efficiently#.UuqjRY2Ew8Y

Carbon finance: http://www.worldagroforestry.org/vi/node/2740 AND http://www.worldagroforestry.org/newsroom/highlights/climate-finance-makes-sense-farmers

Gender and CSA: http://www.worldagroforestry.org/newsroom/highlights/gender-connection-climate-smart-agriculture

Websites:

ICRAF HQ carbon footprint website: http://worldagroforestry.org/carbon-footprint

SAMPLES: http://worldagroforestry.org/samples
Trees and resilience: http://www.worldagroforestry.org/knowfor

Social media campaigns:

Outreach efforts are made via blogs, Tweets, short video clips, and Facebook regarding new climate change related research from SD6, and the ICRAF carbon footprint efforts.

Newsletters:

N/A

Events:

N/A

Videos and other multimedia:

Charcoal video clip: http://www.youtube.com/watch?feature=player_detailpage&v=UjJHrpx4bUE

Other communications and outreach:

3 mini-films: Making the Highland a Better Place (Copyright) ; Agoforestry and Climate Change Adaptation ; Water Goverance and Climate Change
Improving the quantification of agricultural emissions in low-income countries: http://ccafs.cgiar.org/videostream

5. Case studies

Case Study #1

Title: Enabling Rural Transformation and Grassroots Institutional Building for Sustainable Land Management and Increased Incomes and Food Security
Author: Joseph Tanui
Type: Capacity enhancement

Project description:

The Strengthening Rural Institutions (SRI) project uses a participatory action research approach to simultaneously produce impacts in six selected sites and expand scientific knowledge on grassroots institutional strengthening and analysis. These sites are: Bungoma and Embu in Kenya; Lushoto and Pemba in Tanzania; Kapchorwa and Masindi in Uganda. The key impact goal is strengthening policy engagement by policy makers and citizens, and enabling grassroots institutions to reach economies of scale, access services including rural finance, extension and legal aid, and weaken obstacles of change for improved production and incomes, and poverty reduction in East Africa. The main purpose of the project is to develop a model for strengthening rural grassroots institutions for effective engagement in policy processes that enable poor rural households to

aggregate, mobilize, and access rural services.

Introduction / objectives:

-Enhance capacity of RI through empowerment/access to knowledge/skills-Improved livelihoods and asset accumulation through enterprise-Build/strengthen a regional institutional platform for knowledge sharing, scaling up, and participation in policy making and development processes in EA-Provide project frameworks, model/tools for use by project managers to strengthen RI

Project results:

Capacity development activities have been carried out in the six project sites based on identified gaps and needs from group work plans. A soft skill manual for facilitators has been developed to provide insights of building on soft skills, the manual highlights case studies of best practices in building soft skills and it is being applied at the sites by the facilitators as they offer trainings on hard/ technical skills. The manual has also increased the ownership of the site level facilitators over the project and provided the project team an opportunity to learn from the sites. Feedback on the SRI model from partners which included simplification and repackaging for use by a wider client including general practitioners. Target groups are implementing the work plans they developed and also monitoring their activities based on the trainings they have received

Partners:

Government ministries (Agriculture, Environment, Social services), IFAD, Upper Tana Natural Resource Management Project, Smallholder Dairy Commercialization Programme, Smallholder Horticulture Marketing Programme, District Livelihoods Support Program

Links/sources for further information:

http://worldagroforestry.org/regions/eastern-africa/our-projects/strengthening-rural-institutions

Case Study #2

Title: Developing community-based climate smart agriculture through participatory action research in CCAFS benchmark sites in West Africa

Author: Jules Bayala

Type: Social differentiation and gender,Inter-center collaboration,Capacity enhancement

Project description:

This project is a joint initiative of CCAFS-West Africa program and ICRAF-West and central Africa regional office. The initiative started with the development of project document by ICRAF and accepted by the CCAFS-West Africa which served as the basis of the signature of an agreement in December 2011 between ICRISAT (hosting CCAFS-West Africa) and ICRAF. The started with three countries (Burkina Faso, Ghana and Mali) and addendum to the agreement allowed the inclusion of two more countries (Niger and Senegal). The activities are geared towards boosting farmers' ability to adapt to climate change, manage risks and build resilience. At the same time, the hope is also to improve livelihoods and incomes and, where possible, reduce greenhouse gas emissions to ensure solutions are sustainable. The field activities are conducted by national scientists of INERA of Burkina Faso, SARI-CSIR of Ghana, IER of Mali, INRAN of Niger and ISRA of Senegal.

Introduction / objectives:

Test and validate, in partnership with rural communities and other stakeholders, a scalable CSA model

integrating a range of innovative agricultural risk management strategies (Development of cost-effective options for agricultural mitigation; Build African project managers' capacity; Enable rigorous tracking of institutional changes and impacts over time)

Project results:

The project has run 10 workshops both regional and national as well 8 village level trainings on how to use seasonal forecast information to plan the cropping season activities. These village level workshops involved 462 men and 164 women. Field activities evolved around combining land and vegetation rehabilitation, new crop varieties, water management using participatory approaches in planning, implementing and evaluating these activities. Gender, trade-offs, change in behavior constitute the main areas that have been critical considered in the analysis of the information generated by the activities. Training activities were about how to measure change in behavior, integrated soil fertility management, soil and water conservation, statistical analysis, etc. These trainings involved in total 108 men and 109 women. Four students were also trained (3MSc. and 1 from a professional agronomic school). Broadcast of climate information was also organized 4 times.

Partners:

Institut de l'Environnement et de Recherches Agricoles (INERA), Burkina; Savanna Agricultural Research Institute (SARI), Ghana; Institut d' Economie Rurale (IER), Mali; Institut National de la Recherche Agronomique (INRAN), Niger; ISRA (Senegal)

Links/sources for further information:

http://www.worldagroforestrycentre.org/

Case Study #3

Title: Linking herders to carbon markets

Author: Andreas Wilkes

Type: Innovative non-research partnerships

Project description:

The Three Rivers Grassland Carbon Sequestration Project, located in Qinghai province in northwest China, is a pilot project using carbon financing to facilitate grassland restoration and increase livestock productivity. Carbon finance will be used to cover implementation costs (e.g. grass planting), compensate foregone income, and

increase productivity and incomes (e.g. improved feeding, and marketing associations). This model aims to break the vicious cycle of overstocking, degradation and poverty, while generating a reduction of approximately 650,000 tCO2e, over a period of ten years. Since 2012, the Chinese government has been developing pilot emissions trading systems, with a view to establishing a national carbon market. Linking herders to carbon markets is a relevant opportunity in China. ICRAF and partners' work (a) designed a pilot project and (b) drafted carbon accounting and monitoring methodologies so that grassland management is eligible for carbon markets.

Introduction / objectives:

Improved grassland management can sequester carbon, but without approved methodologies, grassland management is not eligible for carbon markets. The specific objective was to draft and obtain approval for a cost-effective carbon accounting and monitoring methodology for grassland carbon sequestration.

Project results:

On the basis of the pilot project design, a methodology was drafted to meet the requirements of the Verified Carbon Standard. The Sustainable Grassland Management methodology has passed the rigorous VCS double-validation process and will soon be approved for international use. The Swiss Government has funded a study to see if Mongolian herders can also apply the methodology and access carbon markets.China is developing its own carbon markets. Regulations require that projects producing Chinese Certified Emission Reductions must use a methodology approved by the Chinese government. In January 2014, a revised version of the grassland methodology was approved. A Project Design Document was prepared, including financial analysis. This was used to discuss with private sector investors and local government. In its Five Year Plan, Qinghai Province government has written integration of carbon markets with its ecological programs. Lessons from Qinghai have also supported similar initiatives in Mongolia and Uruguay.

Partners:

Funding: UN FAO, the Ministry of Agriculture (China) and Qinghai Province government. Methodology: Chinese Academy of Agricultural Sciences; UNIQUE forestry and land use GmbH. Pilot project design: Institute of Tibetan Plateau Research, Northwest I

Links/sources for further information:

Link/Source for further information FAO 'Climate Change Mitigation Finance for Smallholder Agriculture' includes some description of the project:

http://www.fao.org/docrep/015/i2485e/i2485e00.pdf An overview is also provided in this presentation: http://www.livestockdialogue.org/fileadmin/templates/res_livestock/docs/workshop/2012_07_May_Brasilia/carbon_crediting.pdf The draft VCS methodology is at

http://www.fao.org/fileadmin/user_upload/newsroom/docs/FAO-SGM-Methodology.pdf

6. Outcomes

Outcomes #1

Title:

Developing community-based climate smart agriculture through participatory action research in CCAFS benchmark sites in West Africa

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

Relevant institutions and policy frameworks in West Africa consider the benefits of CSA for resilient food production of small holders farmers from knowledge generated through capacity building, stronger partnership, social learning including gender to sustainably produce food in resilient landscapes where trees become integral part of agro systems to buffer climate risks

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

- Seasonal forecast data made available to farmers at the onset of each rainy season
- New crop varieties introduced
- Various context specific combinations of farmer managed natural regeneration with soil and water conservation techniques developed
- A strong partnership of various actors (meteo service, research, extension, NGOs, FBO) developed
- Successes, achievement and lessons learnt from previous projects capitalized and used
- Linguistic corpus of climate change concepts in local languages being developed leading to progressive better communication and change in behaviour
- Capacity of the various partners on climate change and climate smart

What partners helped in producing the outcome?

Meteo services in all countries, Prolinova in Senegal, IUCN in Burkina Faso, Care in Niger, AMEDD in Mali

Who used the output?

National authorities in charge of agriculture, environment and research

How was the output used?

The concept of climate smart agriculture has gained recognition and is been frequently mentioned in public discourses but also integrated (at least some attempts) in national programs. Farmers themselves have indicated the gain of new ideas that have shaped their behavior in such a way climate change issues are considered when planning their cropping activities at in the least the project sites. This still needs to go beyond sites boundaries..

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? Please provide a reference or source.

The evidence for the group of farmers has been evaluated by the project team through storytelling and a report has been produced for the case of Burkina Faso. A larger scale evaluation for the five countries has been conducted by a consultant and a report being produced.

Outcomes #2

Title:

Linking herders to carbon markets

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

One accounting and monitoring methodology for grassland carbon sequestration has been approved by the Chinese government for use in the domestic carbon trading markets. Another accounting and monitoring methodology for grassland carbon sequestration is shortly to be approved by the Verified Carbon Standard – the largest international voluntary market standard – for global use.

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

Two draft accounting and monitoring methodologies that were submitted to the Chinese government and the VCS.

What partners helped in producing the outcome?

FAO supported the work, and led direct interactions with the validators of the VCS methodology. Experts at the Chinese Academy of Agricultural Sciences led interactions with the expert panel of the National Development and Reform Commission in China.

Who used the output?

The methodology approved in China is currently providing the basis for discussions between Qinghai province government and a private investor.

How was the output used?

The outcome is being used to support negotiations on investment in the pilot project in Qinghai province..

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? Please provide a reference or source.

Approval of the Chinese methodology has been listed in a notification issued by the National Development and Reform Commission
http://203.207.195.145:92/archiver/cdmcn/UpFile/Files/Default/20140122144410296875.pdfThe VCS methodology has passed two validations, and the final approved draft will soon be announced on the VCS website www.v-c-s.org

Outcomes #3

Title:

AfriCAN Climate

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

AfriCAN Climate is a project co-financed by the European Commission within the 7th Framework Programme. The project aims to support Africa in the process of adapting to and mitigating climate change, by bridging the gap between research and action. This is achieved through the development of a dynamic web platform, bringing together an active network of European and African researchers and communication experts. The outcome is an increased uptake of research results and their translation into practical projects that will have a direct impact on people's lives. The AfriCAN Climate portal (http://africanclimate.net/) targets a wide variety of stakeholders: researchers, field practitioners, project developers, development partners, NGOs, local/national governments and farmers organizations.The project has led to the dissemination and use of research results by non-research partners, including private sectors, development partners etc.

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

The project also supports awards in recognition of excellence: the AfriCAN Climate Awards. On this occasion, AfriCAN Climate will present the second Award, themed on Good Practice for Climate Change Adaptation and Mitigation. As an example, the second AfriCAN Climate technical tour and workshop took place in Kenya, in November 2013, as the knowledge sharing event on Integrated Approach to Climate Change Mitigation and Adaptation in Africa, organised by project partner World Agroforestry Centre (ICRAF) in cooperation with the project coordinator WIP - Renewable Energies and Imperial College, London. The event brought together about 70 key stakeholders, including from East, Western and Southern Africa as well as from Europe, in the research, policy, media and development sectors to share their knowledge and good practices on climate change mitigation and adaptation, as well as their experiences on opportunities and challenges of using/disseminating

knowledge.The event showcased and shared examples of integrated approaches of climate change adaptation and mitigation, as practiced in Africa, and to discuss how knowledge platforms help African residents to better adopt climate change mitigation and adaptation technologies. The participants charted a way forward on how best to use knowledge platforms and how to develop synergies among different platforms, with the aim of scaling up best practices and technologies.

What partners helped in producing the outcome?

WIP-Renewable (Germany), Imperial College London, Practical Action, DTU, ENDA, ICPAC, University of Witwatersrand, etc.

Who used the output?

Research and non-research partners, including private sectors, development partners etc.

How was the output used?

the users, including non-research users, accessed the research results translated for wider audience however it is not really possible to monitor how it was used.

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? Please provide a reference or source.

http://africanclimate.net/en/events/african-climate-knowledge-sharing-workshop-and-award-ceremony-second-edition http://africanclimate.net/en/publications/african-climate-knowledge-sharing-workshop-technical-tour-and-award-ceremony http://africanclimate.net/en/news/lean-energy-solutions-receives-african-climate-good-practice-award

Outcomes #4

Title:

Heifer International - EADD (East African Dairy Development) continues its partnership with ICRAF through the Phase II of the MICCA project

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

Heifer international funded the EADD program. This program led to an improvement of farmer livelihoods through fodder agroforestry species that improve feeding of dairy cows which leads to higher yields per cow and therefore reduces emissions per unit milk.The partnership with ICRAF is continuing so this means more dairy farmers will be involved in CSA practices

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

- GHG flux measurements; C-sequestration assessment; LHSF biophysical baseline assessment- Estimate relationships between management systems and GHGs- Data collection: Baseline data on existing fodder species on farm and related local knowledge collected; data on the existing seed and seedling systems; Agroforestry database updated with information on forages- Participatory needs assessment reports for Kenya and Uganda- Tree forages species prioritization workshops conducted

What partners helped in producing the outcome?

FAO ItalyEADDCARE Tanzania

Who used the output?

The main users of this outcome will be the end-users: the dairy farmers

How was the output used?

In its second phase EADD will expand to other countries in East Africa (not clear yet which) and has adopted the language of CSA as a means of characterizing the links between food security and improved productivity, adaptation to and mitigation of climate change.

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? Please provide a reference or source.

MICCA has been central to articulating this nexus and identifying the best options to reduce emissions while improving food security

Outcomes #5

Title:

India new National Agroforestry Policy

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

In India a significant progress has been made in building the scientific management of agroforestry systems, and this has provided farmers sustainable gains in production, diversification and economy. The country is increasingly recognizing agroforestry as an important avenue for buffering against climate change. However, the corresponding development and field level applications are not meeting the pace due to the non-existence of an appropriate agroforestry policy. Agroforestry in the country still is an orphan system. To address the above,

ICRAF- South Asia with the key national partners, especially the National Advisory Council (NAC) launched an Agroforestry Policy Initiative (API) through a workshop in June, 2011. Another workshop in 2012 and a series of them in 2013 brought out a framework and significant recommendations, which led to preparing an "Agroforestry Policy" for the country. The efforts specifically seeked to carry forward the articulation of climate change and its related aspects in the ongoing National Agroforestry Policy Initiative through a dialogue process and collective wisdom of a wider clientele. Thus, ICRAF has been working hand-in-hand with the National Government of India to produce a National Agroforestry Policy. The policy draft has recently been approved by the Government of India and launched by the President of the country himself during the World Congress in Agroforestry in February 2014. Some of the important items included in the policy are to develop a national level mechanism, such as the establishment of an Agroforestry Mission / Board that will carry forward the policy recommendations, and provide a platform for dovetailing and converging various agroforestry programs and investments by different agencies in the country. This also provides an opportunity for leveraging of resources towards climate smart agriculture practices. ICRAF is expected to continue playing the catalyst role in the establishment of the national mechanism for implementing the policy recommendations, including the preparations of the guideline for them, etc.

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

• Workshops, round table meetings, and iterative consultations with all stakeholders• Status reports on the national and sub-national priorities, programs and policies with respect to climate change• Report on the potentials and possibilities of agroforestry for addressing the challenges of climate change• Draft of the new Indian National Agroforestry Policy

What partners helped in producing the outcome?

There is large number of stakeholders that relate to this initiative. The main ones are: The National Advisory Council (NAC), Ministry of Agriculture and its various departments, including ICAR, Ministry of Rural Development, Ministry of Tribal Affairs, Ministry of New and Renewable Energy, State Governments, Industry, NGOs & civic societies, private and corporate houses, financial, educational, and research institutions, and international donors

Who used the output?

Essentially the same institutions as in the above column; primarily the National Advisory Council (NAC), Ministries and their line departments, State Governments, Planning Commission, Industry, financial, educational, and research institutions, NGOs & civic societies, and donors

How was the output used?

This is too early an expectation and to be specific on. The measure of outcome use is not only in terms of financial investment. The reshaping of agenda, redirecting resources, better and more focused program, etc. would be part of the use. The current level of investment on agroforestry related programs in the country is estimated to be over $ 5-6 billion..

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? Please provide a reference or source.

Proceedings of various national consultations; NAC recommendations; Draft of the Policy. A number of them have been on the net for quite some time http://www.business-standard.com/article/pti-stories/cabinet-approves-national-policy-on-agroforestry-114020601334_1.htmlNo specific study has been done to show the connection between research and outcome. It is too early and too much of an expectation at this stage. It could be taken up in the future.

7. Outcome indicators

Outcome indicator #1

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:

A lot of data collection related to this outcome: data on farms resources and tree distribution; existing fodder species on farm and related local knowledge; the existing seed and seedling systems; information on tree forages Maps of current and future cultivation zones for 3 mango varieties and maps documenting remaining, lost and new habitat was developed.A lot of capacity building was done as well on participatory tree domestication; local adaptive strategies and coping responses of small holder farmers; role of trees and agroforestry in enhancing the resilience of small holder farmers and tree forages species prioritization.

Evidence:

2 methodological papers for participatory analysis of vulnerability and adaptation to climate change in french and english.Participatory needs assessment reports for Kenya and Uganda

Outcome indicator #2

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:

In 2013, seed collection and seedling production for 4 species (Prunus africana, Warburgia ugandensis, Croton megalocarpus, Acacia senegal) was done. A worshop on Regional Planning and Training was held in naivasha in July 2013. A manual on 'Enhancing tree productivity: Climate Change Adaptation and Regional Seed Supply project" is now available.

Evidence:

Data collection + workshop + manual

Outcome indicator #3

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:

N/A

Evidence:

N/A

Outcome indicator #4

Outcome indicator:

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

Achievements:

It seems that our activities were not very well mapped on the CCAFS logframe

Evidence:

Outcome indicator #5

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:

N/A

Evidence:

N/A

Outcome indicator #6

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:

N/A

Evidence:

N/A

Outcome indicator #7

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 lot of scientific knowledge gathered in publications + 3 mini-films as communication products

Evidence:

- A journal article "Incentives for carbon sequestration and energy production in low productivity collective forests in Southwest China"- A journal paper: "Large or small? Rethinking China's forest bioenergy policies"- A journal paper: "Fertilizer use patterns in Yunnan Province, China: Implications for agricultural and environmental policy" and paper "- A working paper on "Biofuels in China: An Analysis of the Opportunities and Challenges of Jatropha Curcas in Southwest China"- A book: An Agroforestry Guide for Field Practitioners- Southwest China Climate Change Impacts and Adaptation Scoping StudyMini-films: - Making the Highland a Better Place (Copyright)- Agoforestry and Climate Change Adaptation - Water Goverance and Climate Change

Outcome indicator #8

Outcome indicator:

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

Achievements:

ICRAF-DFID dryland workshop produced some communication products on woodfuels together with regional/global partners to influence policy outcomes.2 other workshops were done: "cross-sectoral bioenergy"

with many key stakeholders + "The charcoal crisis"

Evidence:

book:"Treesilience: An assessment of the resilience provided by trees in the drylands of Eastern Africapaper describing project finance and institutions of several biocarbon projects in East Africa was publishedAll materials related to ICRAF's carbon footprint/carbon neutral certification

Outcome indicator #9

Outcome indicator:

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

Achievements:

Supply of biomass and energy use by agribusinesses in W Kenya and their potential demand for pyrolysis bioenergy (data collection). Other data collection: GHG flux measurements; C-sequestration assessment; LHSF biophysical baseline assessment + tree inventory + RS analysis and ground truthing + get Airborne LiDAR image acquisitions and image processing for above-ground bio-carbon stocks prediction in Taita Hills, Kenya + Land health data collection from one sentinel site (240 plots) and soil data processing in Taita Hills Report of secondary data on wood energy, complemented with stakeholder views: analysis of a) secondary data; b) stakeholder views; c)data on energy wood from scoping study made by the BIODEV project in WCA.Journal articles related to SAMPLES and MICCA projects

Evidence:

6 papers related to SAMPLES and MICCAA manual for biomass measurement

Outcome indicator #10

Outcome indicator:

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

Achievements:

In WCA, the project " Developing community-based climate smart agriculture through participatory action research in five benchmark sites in West Africa" is dealing with this outcome. Most of the outputs are still in progress. In India, the Scaling-up CSA organized a very big workshop with many stakeholders and produced a policy brief and paper

Evidence:

A policy brief "Addressing Gender in Climate-Smart Smallholder Agriculture" + blog on the same topic The paper "Beyond climate-smart agriculture: toward safe operating spaces for global food systems"

Outcome indicator #11

Outcome indicator:

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

Achievements:

A lot of data collection: soil carbon data; dendrochronology; crop distribution across EA integrated with data on tenure, accessibility and population attributes; downscale climate data; stratify bioclimatic regions; hydrological modeling; rubber distribution and expansion risks

Evidence:

Data

Outcome indicator #12

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:

Plot and household data were collected for maize growing households in Malawi.

Evidence:

Data

8. Leveraged funds

Leverage funds #1

Title:

Going to scale: Enhancing the adaptive management capacities of rural communities for sustainable land management in the highlands of eastern Africa

Partner name: IDRC

Budget: $237840

Theme: T1

Leverage funds #2

Title:

Building Biocarbon and Rural Development in West Africa (BIODEV)

Partner name: CIFOR, University of Helsinki and University of Eastern Finland

Budget: $13656000

Theme: T1

Leverage funds #3

Title:

Climate Smart Rural Development Project

Partner name: VALUES FOR DEVELOPMENT LIMITED

Budget: $29000

Theme: T1

Leverage funds #4

Title:

Sloping Land Management for Disaster Risk Reduction and Food Security in DPR Korea

Partner name: Ministry of Land and Environmental Protection in DPR Korea + Kunming Institute of Botany, China

Budget: $100000

Theme: T1