

**Title:** Flagship 3 synthesis and supporting activities

## 1. Description

Start date	End date	Management liaison	Mgmt. liaison contact
Jan 2015	Dec 2016	F3	Wollenberg, Lini <Lini.wollenberg@uvm.edu>

Funding source types	Status	Lead Organization	Project leader
W1/W2, W3	Complete	CIAT - Centro Internacional de Agricultura Tropical - Colombia	Wollenberg, Lini <Lini.wollenberg@uvm.edu>

### Project is working on

Flaship(s)
F3 (Lini): Low emissions development

Region(s)
EA: East Africa
LAM: Latin America
SAs: South Asia
SEA: Southeast Asia

### Project summary

Flagship 3 synthesis and supporting activities included: - Managed and delivered the Flagship 3 impact pathway - Led publication of "Reducing emissions from agriculture to meet the 2 °C target" in Global Change Biology in May - Improved greenhouse gas emissions measurements and estimates of agriculture in tropical, developing country papers, including the freely downloadable Measurement Methods book, a journal article, and a tutorial video - Contributed to preparing country representatives to UNFCCC processes - Provided grants to 11 students, including 5 women, from developing countries, through the CLIFF Network (Aarhus University) - Development V2 of mitigation options tool (CCAFS-MOT) (University of Aberdeen) - Mitigation priorities analysis (IIASA) - Avoided deforestation and reduced emissions in livestock in Brazil (GII partners) - Analyzed gender and mitigation technology - Financing options for low-emissions agriculture - Mitigation strategies in rice production (IRRI, CCAC/UNEP)

## 2. Partners

### Partner #1 (Leader)

**Institution:** CIAT - Centro Internacional de Agricultura Tropical

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Project Leader	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Flagship 3 is based at the University of Vermont.	HQ
Partner	Chirinda, Ngonidzashe <n.chirinda@cgiar.org>	Activity 2014-156 *Partner*.	HQ
Partner	Ishitani, Manabu <m.ishitani@cgiar.org>	Activity 2014-425 *Partner*.	HQ

### Partner #2

**Institution:** UVM - University of Vermont

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Project Coordinator	White, Julianna <jwhite19@uvm.edu>	Julianna reports to Lini and coordinates P&R entries	HQ

### Partner #3

**Institution:** U-M - University of Michigan

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Agrawal, Arun <arunagra@umich.edu>	Activity 2014-158 *Partner*.	HQ

**Partner #4****Institution:** USP - University of Sao Paulo**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Pinho, Patricia <pinhopati@gmail.com>	Activity 2014-158 *Partner*.	HQ

**Partner #5****Institution:** University of Oxford - University of Oxford**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	McDermott, Constance <constance.mcdermott@ouce.ox.ac.uk>	Activity 2014-158 *Partner*.	HQ

**Partner #6****Institution:** Rainforest Alliance-United States**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Milder, Jeff <jmilder@ra.org>	Activity 2014-158 *Partner*.	HQ

## Partner #7

**Institution:** IMAFLORA - Instituto de Manejo e Certificação Florestal e Agrícola

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Guedes Pinto, Luis Fernando <luisfernando@imaflora.org>	Activity 2014-158 *Partner*.	HQ

## Partner #8

**Institution:** Global Research Alliance on Agricultural Greenhouse Gases-New Zealand

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Franzluebbers, Alan <Alan.Franzluebbers@ars.usda.gov>	Activity 2014-191 *Partner*.	HQ

## Partner #9

**Institution:** The World Bank-United States

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Baedecker, Tobi <tbaedeker@worldbank.org>	Activity 2014-191 *Partner*.	HQ

## Partner #10

**Institution:** FAO - Food and Agriculture Organization of the United Nations

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Kartunen, Kaisa <Kaisa.Karttunen@fao.org>	Activity 2014-191 *Partner*.	HQ

## Partner #11

**Institution:** UNEP - United Nations Environment Programme

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Etcheverry, Catalina <Catalina.Etcheverry.affiliate@unep.org>	Activity 2014-191 *Partner*.	HQ

## Partner #12

**Institution:** USAID - U.S. Agency for International Development

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Gurwick, Noel <ngurwick@usaid.gov>	Activity 2014-191 *Partner*.	HQ

**Partner #13****Institution:** CCAC - Climate and Clean Air Coalition**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Etcheverry, Catalina <Catalina.Etcheverry.affiliate@unep.org>	Activity 2014-191 *Partner*.	HQ

**Partner #14****Institution:** IIASA - International Institute for Applied Systems Analysis**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Obersteiner, Michael <oberstei@iiasa.ac.at>	Activity 2014-155 *Leader*.	HQ

**Partner #15****Institution:** AU - Aarhus University**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Kandel, Tanka <Tanka.Kandel@agrsci.dk>	Activity 2014-156 *Leader*.	HQ

## Partner #16

**Institution:** IRRI - International Rice Research Institute

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Sander, Bjoern Ole <b.sander@irri.org>	Activity 2014-425 *Leader*. Mitigation strategies in rice production, CCAC agriculture initiative, paddy rice component. IRRI and CIAT will facilitate technical and policy guidance for countries to implement mitigation options at large scales in paddy rice systems in Vietnam (IRRI), Bangladesh (IRRI), and Colombia (CIAT) , with the intent of scaling up impacts to regions. The program will focus on alternate wetting and drying (AWD) and associated management practices. IRRI will be the global coordinator for the project and have country responsibilities in Vietnam and Bangladesh. IRRI utilizes CCAFS funding to support national partners in Vietnam and Bangladesh.	HQ

## Partner #17

**Institution:** UNIQUE - Unique Forestry and Land Use GmbH

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Tennigkeit, Timm <timm.tennigkeit@unique-landuse.de>	Activity 2014-447 *Leader*.	HQ

## Partner #18

**Institution:** EcoAgriculture-United States

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Shames, Seth <sshames@ecoagriculture.org>	Activity 2014-448 *Leader*.	HQ

## Partner #19

**Institution:** University of Aberdeen-United Kingdom

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Hillier, Jonathon <j.hillier@abdn.ac.uk>	Contribute to development of mitigation options tool, agroforestry and methods calculations	HQ

## Partner #20

**Institution:** WUR - Wageningen University and Research Centre

**Contact(s):**

Type	Contact	Responsibilities and contributions	Branch
Partner	Roman Cuesta, Rosa Maria <rosa.roman@wur.nl>	SAMPLES project	HQ

**Lessons regarding your partnerships and possible implications for the coming planning cycle:**

Year	Lesson(s)
2016	Co-sponsoring events, including convening, hosting, and funding actions, is creating momentum among global organization partners and country agriculture and climate change specialists. (continued from above) IIASA completed a complex research initiative, shared initial findings, and submitted journal publications and will present at international conferences. CCAFS LED has increased the level of collaboration with FAO, GRA, WB, and USAID; co-sponsoring research initiatives with country partners and engagement at the global level, including a SBSTA presentation & negotiators workshop and a COP22 side event on MRV in livestock.

**Partnerships overall over the last reporting period:**

Partnerships have been successful at multiple levels: At the PPA level, CIAT and UVM have collaborated successfully to implement the project, and IRRI received additional funding for its LED work in rice from the Climate and Clean Air Coalition/UNEP. Global Innovations Initiative project partners Universities of Michigan, Sao Paulo and Oxford, the Rainforest Alliance and IMAFLORA completed research program and continue to share research multiple research outputs with partners. U. Aberdeen published v2 of CCAFS-MOT and won funding from NERC and USDA to test drive the tool. (continued below)

### 3. Locations

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This project is global

## 4. Outcomes

### 4.1 Project Outcomes

#### Project Outcome statement:

CCAFS low-emissions agricultural development syntheses and supporting activities support: Improved methods and data for quantification of low emissions agriculture options for smallholder farmers. Identification and prioritization of low-emissions climate-smart agriculture options. Incentives and innovations for scale-up of low-emissions agriculture and avoided deforestation from agricultural commodities.

**Annual progress towards outcome (end of 2016\*):** In at least 2 countries, a low-emissions plan will contribute to 5% reduction in GHG emissions or reach 10,000 farmers (including 10% women). 400,000 hectares of land are being managed with research-informed, low-emissions agriculture initiatives, including prevented deforestation, since 2014.

**Annual progress towards project outcome in the current reporting cycle (2016\*):** With four years of technical and financial support from CCAFS, Kenya's State Department of Livestock has completed the development of a Green Climate Fund (GCF) concept note for a dairy NAMA. The NAMA, titled "Low-emission and climate resilient dairy development in Kenya," will catalyze investments of USD 222.6 million in Kenya's dairy sector, directly impact over 150,000 households and reduce emissions by 8.80 MtCO<sub>2</sub>e over the 10-year implementation period. The NAMA will achieve the following gender-transformative impacts: - In 80% of project households, women (or men and women jointly) will control dairy enterprise income - 20,000 women will benefit from biogas - 600,000 women will have access to extension information on productivity-enhancing, low-emissions dairy management practices. In 2015, Vietnam and Bangladesh each submitted workplans for scaling up alternate wetting and drying in rice, targeting 11 million farmers in Vietnam and 1 million farmers in Bangladesh. Thus, 1 plan was achieved in 2016, for a cumulative total of 3 plans. Globally, FP3 also informed World Bank's Climate Action Plan, through which WB will develop CSA investment plans in 40 countries by 2020.

**How communication and engagement activities have contributed to achieving your Project outcomes:\*** The Kenya dairy NAMA was developed in close collaboration with the Ministries of Agriculture, Environment, and Finance in Kenya. Numerous stakeholder consultations assured widespread support of the NAMA by national and county governments, dairy and biogas companies, financial institutions, civil society organizations, and development partners (see attached GCF concept note). Additionally, FP3 provided backstopping to this integrative project by facilitating ILRI's engagement with UNIQUE Forestry and working with GSI (Sophia) to support a post-doc to study gender implications of dairy development in East Africa.

#### Evidence documents of progress towards outcomes:\*

<https://marlo.cgiar.org/data/ccafs/projects//111/projectOutcome/NAMA%20Kenya%20Dairy%20NAMA%20GCF%20concept%20%20Note,January%202017.pdf>

**Annual progress towards outcome (end of 2015):** In at least one country, a low-emissions plan will contribute to 5% reduction in GHG emissions or reach 10,000 farmers (including 10% women). More countries are on their way to joining them. 300,000 hectares of land are being managed with research-informed, low-emissions agriculture initiatives, including prevented deforestation. Scaling up is happening.

**Annual progress towards outcome (end of 2017):** Phase 2

**Annual progress towards outcome (end of 2018):**

**lessons regarding your Theory of Change and implications for the coming planning cycle; e.g. how have your assumptions changed, or do you have stronger evidence for them:\*** Our achievements thus far have provided strong evidence that participatory research is critical to achieving outcomes. Direct involvement of government ministries and agricultural enterprises was key to the completion of Kenya's dairy NAMA GCF concept note.

## 4.2 CCAFS Outcomes

**F3 (Lini) Outcome 2019:** Global standards organizations and national decision-makers are planning and implementing low-emissions development initiatives that contribute to food security, using reliable, comparable quantification data and decision support tools.

**Indicator #1:** # of low emissions plans developed that have significant mitigation potential for 2025, i.e. will contribute to at least 5% GHG reduction or reach at least 10,000 farmers, including at least 10% women.

2019
<p><b>Target value:</b> 8</p> <p><b>Cumulative target to date:</b> 10</p> <p><b>Target narrative:</b> Though CCAC: Bangladesh, Colombia, and Vietnam</p> <p><b>The expected annual gender and social inclusion contribution to this CCAFS outcome:</b> &lt;Not Defined&gt;</p>
2015
<p><b>Target value:</b> 0</p> <p><b>Cumulative target to date:</b> 0</p> <p><b>Target narrative:</b> Activity 2014-155: National researchers will be able to use the developed tool to develop priority low emissions pathways. Activity 2014-156: 10 researchers trained, working in CCAFS target countries. CLIFF researchers funded from this initiative will increase the capacity of developing countries to quantify greenhouse emissions. Activity 2014-159: 6 project plans / case studies will be analyzed to improve targeting - and impact on - women. Analysis will show how low-emissions plans affect women, it will not lead to more plans, but to improvement in the plans in targeting of women. Activity 2014-160: Policy makers in 8 countries have information needed to estimate costs and improve funding for smallholder agricultural investments that will yield mitigation co-benefits (to be confirmed)</p> <p><b>The expected annual gender and social inclusion contribution to this CCAFS outcome:</b> &lt;Not Defined&gt;</p>

## 2016

**Target value:** 2

**Cumulative target to date:** 2

**Target achieved:** 1.0

**Target narrative:** The CCAC project on AWD in Bangladesh, Colombia, and Vietnam will submit a phase 2 proposal for paddy rice. Decision-support tools, such as the CCAFS-MOT, will inform decision-makers in at least one country.

**Narrative for your achieved targets, including evidence:** In 2015, Vietnam and Bangladesh each submitted workplans for scaling up alternate wetting and drying in rice, targeting 11 million farmers in Vietnam and 1 million farmers in Bangladesh. In 2016, Kenya completed the development of a Green Climate Fund (GCF) concept note for a dairy NAMA, which will directly impact about 800,000 people and reduce emissions by 8.80 MtCO<sub>2</sub>e over the 10-year project. Thus, 1 plan was achieved in 2016, for a cumulative total of 3 plans. Globally, FP3 also informed World Bank's Climate Action Plan, through which WB will develop CSA investment plans in 40 countries by 2020.

**Narrative for your achieved annual gender and social inclusion contribution to this CCAFS**

**outcome:** Kenya's dairy NAMA will benefit an 400,000 women and youth. The following components of the NAMA are specifically intended to improve opportunities for women: - Provision of gender-inclusive extension services by dairy processors, resulting in increased adoption by men and women dairy farmers of productivity-enhancing milk production practices. - Making women visible in milk supply records to increase their access to finance. - Installation of 20,000 biogas units will save 8.8 million hours of women's time each year, enabling women to increase leisure time or engage in economic activities. (see GCF concept note attached to outcome case study 93)

**The expected annual gender and social inclusion contribution to this CCAFS outcome:** Scaling up and decision-support tools include considerations for gender and social inclusion.

## 2017

**Target value:** 0

**Cumulative target to date:** 2

**Target narrative:** <Not Defined>

**The expected annual gender and social inclusion contribution to this CCAFS outcome:** <Not Defined>

### Major Output groups:

- F3 (Lini): Methods and data for quantifying low-emissions agriculture options appropriate to smallholder farmers
- F3 (Lini): Decision support for identifying and prioritizing low-emissions CSA options, including synergies and tradeoffs with development objectives

**F3 (Lini) Outcome 2019:** Ministry officials, NGOs, private sector, and farmers' associations are scaling up low-emissions agriculture and preventing deforestation through innovative institutions, incentives, and regulations.

**Indicator #1:** # millions of hectares targeted by research-informed initiatives for scaling up low-emissions agriculture and preventing deforestation

2019
<p><b>Target value:</b> 4</p> <p><b>Cumulative target to date:</b> 500004</p> <p><b>Target narrative:</b> Colombia: 75,000 Vietnam: 740,000 Bangladesh: 740,000</p> <p><b>The expected annual gender and social inclusion contribution to this CCAFS outcome:</b> &lt;Not Defined&gt;</p>
2015
<p><b>Target value:</b> 0</p> <p><b>Cumulative target to date:</b> 0</p> <p><b>Target narrative:</b> Activity 2014-158: Partner IMAFLORA impacts more than 5 million hectares, but the target of this research will be much more narrow.</p> <p><b>The expected annual gender and social inclusion contribution to this CCAFS outcome:</b> &lt;Not Defined&gt;</p>
2016
<p><b>Target value:</b> 500000</p> <p><b>Cumulative target to date:</b> 500000</p> <p><b>Target achieved:</b> 150000.0</p> <p><b>Target narrative:</b> 0.5 million ha for AWD</p> <p><b>Narrative for your achieved targets, including evidence:</b> Kenya's dairy NAMA targets approximately 150,000 households. Assuming a farm size of approximately 1 ha, the dairy NAMA targets approximately 150,000 hectares.</p> <p><b>Narrative for your achieved annual gender and social inclusion contribution to this CCAFS outcome:</b> Kenya's dairy NAMA will benefit about 152,700 households, with an estimated population of about 800,000 people, including 400,000 women and youth.</p> <p><b>The expected annual gender and social inclusion contribution to this CCAFS outcome:</b> Scaling up of AWD includes a gender component, informed by a gender workplan written in 2015.</p>

2017

**Target value:** 0

**Cumulative target to date:** 500000

**Target narrative:** <Not Defined>

**The expected annual gender and social inclusion contribution to this CCAFS outcome:** <Not Defined>

## Major Output groups:

- F3 (Lini): Incentives and innovations for scale-up of low-emissions practices and avoided deforestation by agricultural commodities

## 4.3 Other Contributions

### Contribution to other CCAFS Impact Pathways:

C-development of CSA metrics; World Bank collaboration with CU, F1, F2 and F4.

### Collaborating with other CRPs

#### Forests, Trees and Agroforestry

**Description of collaboration:** Exchange of U Michigan project partner Imaflora with CIFOR Green Municipalities and CIAT Livestock Plus projects.

## 4.4 Case Studies

### Case Study #93

**Title:** Kenya prepares GCF concept note for low-emission and climate resilient dairy development

**Year:** 2016

**Project(s):** P12

**Outcome Statement:** With four years of technical and financial support from CCAFS, Kenya's State Department of Livestock has completed the development of a Green Climate Fund (GCF) concept note for a dairy NAMA. The NAMA, titled "Low-emission and climate resilient dairy development in Kenya," will catalyze investments of USD222.6 million in Kenya's dairy sector, directly impact over 150,000 households and reduce emissions by 8.80 MtCO<sub>2</sub>e over the 10-year implementation period.

**Research Outputs:** 1. Smallholder dairy methodology: Draft methodology for quantification of GHG emission reductions from improved management in smallholder dairy production systems using a standardized baseline (<http://hdl.handle.net/10568/77602>) 2. Systematic review of the factors influencing the adoption of technologies, management practices and marketing channels in smallholder dairy production 3. 6 feasibility studies for the components of the NAMA, included as annexes in the GCF concept note. Studies a, b, and c will also be published as CCAFS info-briefs. a. Processor-led provision of gender-inclusive extension services to their suppliers b. Financial assistance for on-farm investments by farmers and cooperatives c. Increased commercial production and marketing of fodder d. Energy efficiency and renewable energy in cooling and processing facilities e. Adoption of biogas technologies by male and female dairy farmers f. Strengthened institutional and stakeholder capacities for scaling up low-emission dairy development 4. GCF Concept note (available on request but not yet for public dissemination)

**Research Partners:** ICRAF: Project leader (2015-onwards), project P13 ILRI: Conducted research on best climate-smart dairy practices, maintained partnerships with Kenyan ministries UNIQUE Forestry and Land Use: Research leader FAO: Partner in capacity building/training for the Ministry of Agriculture, Livestock and Fisheries on NAMAs

**Activities:** This outcome was the result of nearly 4 years of research and engagement by CCAFS, ICRAF, ILRI and UNIQUE Forestry and Land Use with ministries, donors, dairy companies, and producers' organizations. Numerous stakeholder consultations informed project design, including: • A multi-stakeholder platform meeting (September 2015), attended by 47 farmers, dairy, biogas and financial companies, and national and county government officials, served to raise awareness and obtain feedback on the scope and objectives of the project. • Consultations (November 2015) were held with 45 farmers, farmer organization and county government representatives from 8 counties (Muranga, Nyeri, Nyandarua, Kirinyaga, Meru, Embu, Tharaka Nithi, Machakos) to integrate the project with ongoing initiatives at county level. • A second multi-stakeholder platform meeting (August 2016), attended by 71 representatives of dairy and biogas companies, financial institutions, civil society organizations, development partners and government institutions, at which the draft project concept was shared and discussed.

**Non-Research Partneres:** 1.Kenya's National Treasury: GCF National Designated Authority, responsible for submission of the concept note to GCF 2. Dairy processors (e.g. Brookside, New Kenya Cooperative Creameries): Involved in technical design of the concept note and dissemination of best practices to suppliers 3. IFAD: GCF Accredited Entity for the project

**Output Users:** The State Department of Livestock, part of the Ministry of Agriculture, Livestock and Fisheries (MoALF): Executing Entity for the NAMA; co-developed the concept note and submitted to the National Treasury 2. Kenya Dairy Board: Dissemination of project practices and lessons throughout the sector and across counties to support wider replication

**Evidence Outcome:** (1) The concept note for the dairy NAMA, as submitted by Kenya's State Department of Livestock to the National Treasury and (2) a letter accompanying the concept note submission from the Principal Secretary of the State Department of Livestock, citing support from CCAFS. NOT YET FOR PUBLIC DISSEMINATION

**Output Used:** Outputs were used directly by the State Department of Livestock and Kenya Dairy Board to formulate the GCF concept note and disseminate practices. IFAD and Government of Kenya have committed USD 14.58 million and USD 2.23 million, respectively, in project co-financing.

**References Case:** Kenya's Dairy Nationally Appropriate Mitigation Action (NAMA) Concept Note: A Proposal for a Green Climate Fund Project. January 2017 NOT YET FOR PUBLIC DISSEMINATION

**Primary 2019 outcome indicator(s):**

- # of low emissions plans developed that have significant mitigation potential for 2025, i.e. will contribute to at least 5% GHG reduction or reach at least 10,000 farmers, including at least 10% women.

**Link between outcome story and and the FP Outcome(s):** Enhancement of equitable access to assets and participation in decision making for women in household dairy enterprises will be a key focus of the gender-inclusive extension approaches promoted by the NAMA. Benefits are expected for 152,700 households, with an estimated population of about 800,000 people, including 400,000 women and youth.

**Annex uploaded:**

<https://marlo.cgiar.org/data/ccafs/projects//111/caseStudy/NAMA%20Kenya%20Dairy%20NAMA%20GCF%20concept%20%20Note,January%202017.pdf>

## Case Study #97

**Title:** Analysis of Paris Agreement pledges informs development planning and UNFCCC negotiations

**Year:** 2016

**Project(s):** P91

**Outcome Statement:** In November 2015, CCAFS published the first analysis of countries' Intended Nationally Determined Contributions to the Paris Climate Agreement. This research shaped subsequent planning among development organizations by demonstrating a country-driven demand for mitigation of agricultural emissions. Donors (World Bank and USAID) and impact investors (Root Capital) incorporated the analysis into their debates and strategies for low-emissions development assistance. Country negotiators used it to demonstrate the linkages between adaptation and mitigation in the agriculture sector.

**Research Outputs:** 1. Maps of agriculture in INDCs (D2663) 2. Data set (excel) on agriculture in INDCs (D2663) 3. Web page in CCAFS "tools" collection on agriculture in the INDCs 4. Info note: Agriculture's prominence in the INDCs (D1623) 5. Info note: How countries plan to address agricultural adaptation and mitigation (D1624) 6. Info note: Agriculture's contribution to national emissions (D1622) 7. Press release: Majority of national climate plans address agriculture, but most lack funds for footing annual USD 5 billion bill 8. Presentation at SBSTA side event (D1410, D2684) 9. Presentation at CCAFS Agriculture Negotiators Workshop (D2871) 10. Presentation at USAID Global Learning and Evidence Exchange workshop, Zambia March 15, 2016

**Research Partners:** This research was conducted primarily by CCAFS, with contributions from Flagship 1 (Priorities and Policies), Gender and Social Inclusion, the Coordinating Unit, and Copenhagen University. Ongoing partnerships with organizations such as World Bank, USAID, Root Capital, and country negotiators (especially Costa Rica, Vietnam, and Colombia) contributed to strong demand for the research products. FAO hosted a CCAFS workshop for COP22 agriculture negotiators.

**Activities:** FP3 collaborated with the CU on a press release and media campaign, capitalizing on discussion of INDCs at COP21. Lini Wollenberg and Meryl Richards gave media interviews and presented the results of the analysis at (1) an FP3-led SBSTA 44 side event, (2) a CCAFS global meeting for agriculture negotiators before COP22, (3) a USAID Global Learning and Evidence Exchange workshop. Upon request from individuals at World Bank, FP3 provided the database and carried out specific analyses (e.g. specific countries that included livestock mitigation). World Bank circulated key messages among staff of their Global Solutions Group on Climate Smart Agriculture and Global Practice for Agriculture. CCAFS also contributed analysis and text to the World Bank discussion paper, "Making climate finance work in agriculture." By request, FP3 presented the NDC analysis to USAID staff in two workshops and to UNFCCC country negotiators in a pre COP22 preparation workshop.

**Non-Research Partneres:** World Bank USAID Root Capital

**Output Users:** World Bank USAID Root Capital COP22 agriculture negotiators

**Evidence Outcome:** The outputs are referenced in a World Bank Discussion paper: <http://documents.worldbank.org/curated/en/986961467721999165/Making-climate-finance-work-in-agriculture> Also, see full documentation in attached annex

**Output Used:** 1. Prepare briefing notes for 2016 WB Spring Meetings 2. Inform WB's Climate Change Action Plan 3. Design agriculture project components (WB) 4. Guide USAID planning of LED 5. Determine implications of INDCs for smallholder agricultural finance (Root Capital) 6. Demonstrate the linkages between adaptation and mitigation (COP22 ag negotiators)

**References Case:** Press release:

<https://ccafs.cgiar.org/news/media-centre/press-releases/report-majority-national-climate-plans-address-agriculture-most#.WKHOKhIrJ0c> World Bank study:

<http://documents.worldbank.org/curated/en/986961467721999165/Making-climate-finance-work-in-agriculture> Entry on CCAFS "tools" page:

<https://ccafs.cgiar.org/agricultures-prominence-indcs-data-and-maps#.WKHN0xIrJ0d> Maps and data: <http://hdl.handle.net/10568/73255>

**Primary 2019 outcome indicator(s):**

- # of low emissions plans developed that have significant mitigation potential for 2025, i.e. will contribute to at least 5% GHG reduction or reach at least 10,000 farmers, including at least 10% women.

**Link between outcome story and the FP Outcome(s):** The analysis provided evidence that developing countries consider agriculture a priority for climate adaptation and mitigation; donors are using the analysis to guide their funding priorities.

**Annex uploaded:**

<https://marlo.cgiar.org/data/ccafs/projects//111/caseStudy/P111%20outcome%20case%20study%20statements%20from%20research%20users.pdf>

## Case Study #110

**Title:** APEC uses CCAFS technical expertise and inspiration to develop a new Pacific wide CSA initiative

**Year:** 2016

**Project(s):** P111

**Outcome Statement:** CCAFS engagement and technical support provided to the US Dept. of State led to: the framing of a Pacific wide CSA initiative covering both adaptation and mitigation and addressing land-based and aquatic-based food supplies, in the context of the Asia-Pacific Economic Cooperation. This multi-country effort puts CSA higher on national agendas, and provides further opportunity for CSA-related national efforts to come to fruition.

**Research Outputs:** Engagement from FP1 leader, SEA RPL and FP3 leader lead primarily to this. Expert guidance was provided throughout the year, and 2 workshops were attended which involved all APEC Economies. Presentations made synergised CCAFS learning around CSA, and contributed to decisions to focus on climate services and climate smart aquatic systems.

**Research Partners:** General CCAFS partners

**Activities:** Presentations made in Piura, Peru and Ho Chi Minh, Vietnam during 2016. Plus email based review of emerging CSA Initiative proposal. All in context of P101.

**Non-Research Partneres:** APEC Economies, US Department of State, USDA

**Output Users:** Department of State, Ministry of Agriculture Vietnam, plus all other APEC Economies.

**Evidence Outcome:** APEC Press release:

[http://www.apec.org/Press/News-Releases/2016/0511\\_PPFS\\_Climate.aspx](http://www.apec.org/Press/News-Releases/2016/0511_PPFS_Climate.aspx) APEC CSA Initiative Framework uploaded as Annex, CSA initiative proposal available upon request

**Output Used:** Synthesised learning of CSA supported the decision

**References Case:** Workshop reports:

[https://www.google.com.co/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=0ahUKEwiz3vTkyZ7SAhXHPYKHX7EBR8QFgg1MAQ&url=https%3A%2F%2Faimp2.apec.org%2Fsites%2Fpdpb%2Fsupporting%2520docs%2F2711%2FCompletion%2520Report%2FATC%252002%25202015\\_Report\\_APEC%2520CC%2520RDE%2520Workshop%2C%252021Sep2015.docx&usg=AFQjCNGN\\_7Q8rf8Y\\_Yaa9xOO5osTOxX4yw&sig2=hG9Cq3-rUNYh\\_XW\\_KtngzQ](https://www.google.com.co/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=0ahUKEwiz3vTkyZ7SAhXHPYKHX7EBR8QFgg1MAQ&url=https%3A%2F%2Faimp2.apec.org%2Fsites%2Fpdpb%2Fsupporting%2520docs%2F2711%2FCompletion%2520Report%2FATC%252002%25202015_Report_APEC%2520CC%2520RDE%2520Workshop%2C%252021Sep2015.docx&usg=AFQjCNGN_7Q8rf8Y_Yaa9xOO5osTOxX4yw&sig2=hG9Cq3-rUNYh_XW_KtngzQ)

**Primary 2019 outcome indicator(s):**

- # of national and subnational development initiatives and public institutions that prioritize and inform project implementation of equitable best bet CSA options using CCAFS science and decision support tools
- # of regional/global organisations and processes that inform their equitable institutional investments in climate smart food systems using CCAFS outputs
- # of low emissions plans developed that have significant mitigation potential for 2025, i.e. will contribute to at least 5% GHG reduction or reach at least 10,000 farmers, including at least 10% women.

**Link between outcome story and and the FP Outcome(s):** <Not Defined>

**Annex uploaded:**

[https://marlo.cgiar.org/data/ccafs/projects//101/caseStudy/Framework%20for%20APEC%20Food%20Security%20Climate%20Change%20Program\\_FINAL\\_\(25.09.16\).pdf](https://marlo.cgiar.org/data/ccafs/projects//101/caseStudy/Framework%20for%20APEC%20Food%20Security%20Climate%20Change%20Program_FINAL_(25.09.16).pdf)

## 5. Project outputs

### 5.1 Overview by MOGs

#### Major Output groups - 2019

**F3 (Lini):** Methods and data for quantifying low-emissions agriculture options appropriate to smallholder farmers

**Brief bullet points of your expected annual 2019 contribution towards the selected MOG:** <Not Defined>

**Brief 2019 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**F3 (Lini):** Incentives and innovations for scale-up of low-emissions practices and avoided deforestation by agricultural commodities

**Brief bullet points of your expected annual 2019 contribution towards the selected MOG:** <Not Defined>

**Brief 2019 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**F3 (Lini):** Decision support for identifying and prioritizing low-emissions CSA options, including synergies and tradeoffs with development objectives

**Brief bullet points of your expected annual 2019 contribution towards the selected MOG:** <Not Defined>

**Brief 2019 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

### Major Output groups - 2016

**F3 (Lini):** Methods and data for quantifying low-emissions agriculture options appropriate to smallholder farmers

**Brief bullet points of your expected annual 2016 contribution towards the selected MOG:**

Publication and sharing of SAMPLES book on low-cost methods. Contribution of emission factors to IPCC emission factor database.

**Brief summary of your actual 2016 contribution towards the selected MOG:** SAMPLES book published New SAMPLES website (including emission factor database) and two new videos Journal article (Biogeosciences): Hotspots of emissions from the land use sector Journal article (Scientific Reports): limits of GHG calculators to accurately predict emissions fluxes in tropical agriculture Brochure: Benefits of advanced livestock GHG inventories

**Brief 2016 plan of the gender and social inclusion dimension of the expected annual output:**

Emissions measurements focus on representation of smallholder farmers' activities. No gender component. Capacity building activities focus on training female and male scientific leaders.

**Summary of the gender and social inclusion dimension of the 2016 outputs:** Capacity building activities focus on training female and male scientific leaders; 5 new female students received CLIFF grants in 2016 Emissions measurements focus on representation of smallholder farmers' activities

**F3 (Lini):** Incentives and innovations for scale-up of low-emissions practices and avoided deforestation by agricultural commodities

**Brief bullet points of your expected annual 2016 contribution towards the selected MOG:** CSA practice briefs series. National focal points for paddy rice mitigation in Bangladesh, Colombia, and Vietnam will work with rice farmers and government bodies to scale up AWD. Research into certification and other avoided deforestation measures with cattle farmers in Brazil will inform certification mechanisms and decision-makers.

**Brief summary of your actual 2016 contribution towards the selected MOG:** Journal article, brief, and 2 working papers on sustainable cattle schemes in Brazil Two journal articles on carbon market projects in East Africa 2 Working papers on costs and benefits of mitigation technologies Working paper on MRV requirements 3 working papers on gender in cattle and rice systems

**Brief 2016 plan of the gender and social inclusion dimension of the expected annual output:** A gender workplan for AWD in Vietnam will be implemented in 2016.

**Summary of the gender and social inclusion dimension of the 2016 outputs:** 3 working papers examined opportunities for women in cattle systems in Central America and Kenya, and rice systems in Vietnam Both journal articles on carbon market projects in East Africa examined gender dynamics of these projects

**F3 (Lini):** Decision support for identifying and prioritizing low-emissions CSA options, including synergies and tradeoffs with development objectives

**Brief bullet points of your expected annual 2016 contribution towards the selected MOG:**

Aspirational mitigation goal for agriculture will catalyze investment in agricultural mitigation. Analysis of INDC commitments for agriculture, comparison of commitments with country-level mitigation potentials. CCAFS-MOT is releasing its V2 at the end of 2015 and will be available to potential users, including the World Bank,

**Brief summary of your actual 2016 contribution towards the selected MOG:** Journal article: Reducing emissions from agriculture to meet the 2 °C target (Global Change Biology) SBSTA side event: INDC mitigation targets Dataset: Agriculture in INDCs Updated version of CCAFS-MOT tool 8 case study briefs on GHG impacts of USAID food security projects Report and brief: Food consumption and mitigation

**Brief 2016 plan of the gender and social inclusion dimension of the expected annual output:** Analysis of mitigation co-benefits and tradeoffs with development objectives includes impact on women and vulnerable groups.

**Summary of the gender and social inclusion dimension of the 2016 outputs:** INDC analysis included dimensions of gender and social inclusion (with GSI) Hosted a preparation meeting for agriculture negotiators in advance of COP22, with participation of 9 female negotiators

## Major Output groups - 2015

**F3 (Lini):** Methods and data for quantifying low-emissions agriculture options appropriate to smallholder farmers

**Brief bullet points of your expected annual 2015 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2015 contribution towards the selected MOG:** Low-cost measurement methods for quantification of GHGs available online (SAMPLES) Create and disseminate database for Tier-2 emission factors measured by CCAFS and partners (SAMPLES) Provided training and stipends for 8 PhD scientists from developing countries to study GHG emissions from agriculture (CLIFF Network)

**Brief 2015 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2015 outputs:** 6 of the 8 CLIFF students in 2015 were women.

**F3 (Lini):** Incentives and innovations for scale-up of low-emissions practices and avoided deforestation by agricultural commodities

**Brief bullet points of your expected annual 2015 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2015 contribution towards the selected MOG:** Reviews of economics of AWD in paddy rice, balanced N fertilizer use, and monitoring, reporting and verification Directory for climate finance compiled and disseminated via LEDS Global Partnership Finance meeting, World Bank, CCAC Technical support and advising to CCAC, IFAD, USAID, WB. Collaboration with GCF, NAMA Facility, private sector

**Brief 2015 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2015 outputs:** Additional outputs: Reviews of opportunities to improve women's participation in and benefits from LED in paddy rice in Vietnam, dairy in Kenya and livestock in Costa Rica Synthesis of equity implications of carbon markets for smallholder farmers in EAfrica

**F3 (Lini):** Decision support for identifying and prioritizing low-emissions CSA options, including synergies and tradeoffs with development objectives

**Brief bullet points of your expected annual 2015 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2015 contribution towards the selected MOG:** Development of aspirational mitigation target for agriculture Calculations of potential of sustainable intensification and other methodologies in helping agriculture meet the 2-degree target Analysis of mitigation in INDCs for COP21 showing 103 countries pledging mitigation in agriculture Development and dissemination of v2 of CCAFS-Mitigation Options Tool

**Brief 2015 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2015 outputs:** Analysis of inclusion of gender in mitigation and adaptation plans included in INDCs

#### Major Output groups - 2014

**F3 (Lini):** Methods and data for quantifying low-emissions agriculture options appropriate to smallholder farmers

**Brief bullet points of your expected annual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief 2014 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2014 outputs:** <Not Defined>

**F3 (Lini):** Incentives and innovations for scale-up of low-emissions practices and avoided deforestation by agricultural commodities

**Brief bullet points of your expected annual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief 2014 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2014 outputs:** <Not Defined>

**F3 (Lini):** Decision support for identifying and prioritizing low-emissions CSA options, including synergies and tradeoffs with development objectives

**Brief bullet points of your expected annual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief summary of your actual 2014 contribution towards the selected MOG:** <Not Defined>

**Brief 2014 plan of the gender and social inclusion dimension of the expected annual output:** <Not Defined>

**Summary of the gender and social inclusion dimension of the 2014 outputs:** <Not Defined>

## 5.2 Deliverables

### D2658 - Chanje Lavi Plante: Hillside soil conservation to increase yields and sequester carbon in Haiti

#### Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

#### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77624>

**Open access:** Yes

**License adopted:** No

#### Deliverable Metadata

**Disseminated title:** Chanje Lavi Plante? in Haiti: Hillside soil conservation as a measure to increase yields and sequester carbon in Haiti

**Description / Abstract:** Analysis of the potential mitigation impacts of the agricultural development project Chanje Lavi Plantè in Haiti indicated that large amounts of carbon sequestration could be achieved through reforestation and perennial crop expansion. The project's strategy for watershed and landscape restoration links investments in profitable orchard systems with hillside stabilization. Reforestation of watersheds (–478,828 tCO<sub>2</sub>e/yr) and perennial crop expansion (– 230,854 tCO<sub>2</sub>e/yr), drive 98% of the project's sizable climate change mitigation co-benefits that are foreseen under successful project implementation. ? Chanje Lavi Plantè's reduction in postharvest loss contribute to the reduced GHG emission intensity of cropping systems (GHG emissions per unit of production). Interventions are estimated to reduce postharvest loss substantially in these value chains: plantain (– 53%), maize (–47%), rice (–44%), beans (–50%) and mango (–35%). ? The investments made by the project in irrigation infrastructure, terracing, and forest plantations aim to increase financial revenues of beneficiaries and reinforce the lasting provision of ecosystem services.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** HAITI

**Keywords:** AGRICULTURE,SOIL,CLIMATE,YIELD,CARBON SEQUESTRATION,FOOD SECURITY,CLIMATE CHANGE

**Citation:** Grewer U, Nash J, Bockel L, Galford G, 2016. Chanje Lavi Plante? in Haiti: Hillside soil conservation as a measure to increase yields and sequester carbon in Haiti. CCAFS Info Note.

Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77624>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
- Grewer, - Uwe
- Galford, - Gillian
- Bockel, - Louis

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1507 - Financing low emissions agriculture: Building the business case for AWD in irrigated rice

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<http://www.slideshare.net/cgiarclimate/financing-low-emissions-agriculture-building-the-business-case-for-alternate-wetting-and-drying-in-irrigated-rice>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Financing low emissions agriculture: Building the business case for alternate wetting and drying in irrigated rice

**Description / Abstract:** Presentation by consultant Rishi Basak to the Global Alliance of Climate-Smart Agriculture Annual Forum on June 16, 2016

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** BANGLADESH, VIETNAM

**Keywords:** CLIMATE CHANGE, MITIGATION, IRRIGATED RICE, PADDY SOIL, METHANE EMISSIONS

**Citation:** Basak, R. 2016. Building the Business Case for Low-Emission Agriculture - Alternate Wetting and Drying as a Case Example. Presentation at Global Alliance for Climate-Smart Agriculture Annual Forum. June 16, 2016.

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Basak - Rishi

### Deliverable Quality check

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2659 - Rwanda Dairy Competitiveness Program II: Efficiency gains in dairy production systems decrease GHG emission intensity**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77632>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Resilience and Economic Growth in Arid Lands - Accelerated Growth in Kenya: Mitigation co-benefits of herd size and feed quality management

**Description / Abstract:** The agricultural development project Resilience and Economic Growth in Arid Lands – Accelerated Growth (REGAL-AG) has promoted improved livestock management that resulted in a decrease in net emissions of 10%. Since emissions from livestock account for the majority of Kenya's agricultural emissions (95%), reduction of emissions in the livestock sector has high potential impact. REGAL-AG's interventions have sought to improve links between livestock producers and buyers, to boost producer access to critical inputs, and to increase availability of timely market information, which resulted in a decrease in slaughter age for all livestock types. REGAL- AG anticipated that these dynamics, coupled with the program outreach activities, could result in a 10% decrease in herd size, which drives the greater share of emission reductions. Increases in productivity (50–67%) and decreases in absolute emissions (-10%) that resulted from REGAL-AG's interventions decreased the emission intensity 33-40% (emissions per unit production) for all livestock types.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** KENYA

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,AGRICULTURE,LIVESTOCK

**Citation:** Nash J, Grever U, Bockel L, Galford G, Pirolli G, White J. 2016. Resilience and Economic Growth in Arid Lands – Accelerated Growth in Kenya: Mitigation co-benefits of herd size and feed quality management. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77632>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
- Grewer, - Uwe
- Bockel, - Louis
- Galford, - Gillian

**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2660 - Fertilizers and low emission development in sub-Saharan Africa

### Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77726>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Fertilizers and low emission development in sub-Saharan Africa

**Description / Abstract:** Greenhouse gas emissions from fertilizer usage in sub-Saharan Africa are currently low due to low application rates of nitrogen fertilizers. As African countries begin to implement their Nationally Determined Contributions to the Paris Agreement, there is an opportunity to improve crop productivity to meet future food needs while continuing to use N fertilizers—both organic and inorganic—efficiently. Efficient use of N fertilizers requires combining balanced and appropriate nutrient inputs with good agronomic practices, such as the use of improved, high-yielding varieties that are adapted to local conditions and needs, application and recycling of available organic matter, water harvesting and irrigation under drought stress conditions, and lime application on soils with acidity-related problems. Policies for soil fertility management in the context of climate goals may consider the need to: - Improve the availability, access and affordability of organic and inorganic nutrient inputs, along with other key inputs such as high-yielding varieties; - build capacity in adaptive nutrient management and agronomic best practices that support crop productivity; - ensure equitable access to inputs, particularly for women and vulnerable groups.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,FERTILIZER,AGRICULTURE

**Citation:** Richards M, van Ittersum M, Mamo T, Stirling C, Vanlauwe B, Zougmore R. 2016. Fertilizers and low emission development in sub-Saharan Africa. CCAFS Policy Brief no. 11. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77726>

**DOI:** <Not Defined>

**Creator / Authors:**

- Richards, - Meryl
- van Ittersum, - Martin
- Mamo, - Tekalign
- Stirling, - Clare
- Vanlauwe, - Bernard
- Zougmore, - Robert

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2662 - Livestock development and climate change: The benefits of advanced greenhouse gas inventories

### Main Information

**Type:** Outreach products

**Subtype:** Brochure

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/76520>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Livestock development and climate change: The benefits of advanced greenhouse gas inventories

**Description / Abstract:** Livestock development and climate change outcomes can support each other. More productive and efficient farm systems generally produce food at much lower greenhouse gas (GHG) emissions per unit of product. However, many countries use simple (Tier 1) methods for estimating livestock emissions in their GHG inventories. Tier 1 methods are unable to capture the reductions in emissions intensity that result from improvements to livestock farming. This booklet shows how advanced (Tier 2) inventory methods can support climate change and productivity goals and help broaden countries' policy options.

**Publication / Creation date:** 2016-08-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY, CLIMATE CHANGE MITIGATION, GREENHOUSE GAS EMISSIONS, LIVESTOCK

**Citation:** GRA, CCAFS. 2016. Livestock development and climate change: The benefits of advanced greenhouse gas inventories. Global Research Alliance on Agricultural Greenhouse Gases.

**Handle:** <http://hdl.handle.net/10568/76520>

**DOI:** <Not Defined>

**Creator / Authors:**

- Global Research Alliance on Agricultural Greenhouse Gases, -
- CGIAR Research Program on Climate Change, - Agriculture and Food Security

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
Global Research Alliance on Agricultural Greenhouse Gases-New Zealand	Franzluebbers, Alan <Alan.Franzluebbers@ars.usda.gov>	Responsible

## D2663 - How countries plan to address agricultural adaptation and mitigation: Analysis of Intended Nationally Determined Contributions

### Main Information

**Type:** Data, models and tools

**Subtype:** Database/Dataset/Data documentation

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/73255>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** How countries plan to address agricultural adaptation and mitigation: An analysis of Intended Nationally Determined Contributions. CCAFS dataset

**Description / Abstract:** Data presented here are the result of an analysis of the adaptation and mitigation contributions of the 162 INDCs (representing 189 Parties) submitted to the UNFCCC as of 28 April 2016 Related Info Notes: <http://hdl.handle.net/10568/69115> and <http://hdl.handle.net/10568/68990>

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE,ADAPTATION,MITIGATION,UNFCCC,AGRICULTURE,FOOD SECURITY

**Citation:** Richards M, Bruun TB, Campbell B, Gregersen LE, Huyer S, Kuntze V, Madsen STN, Oldvig MB, Vasileiou I. 2016. How countries plan to address agricultural adaptation and mitigation: An analysis of Intended Nationally Determined Contributions. CCAFS dataset version 1.2. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/73255>

**DOI:** <Not Defined>

**Creator / Authors:**

- Richards, - Meryl
- Bruun, - T.B.
- Campbell, - Bruce Morgan
- Gregersen LE, -
- Huyer, - Sophia

- Kuntze V, -
- Madsen STN, -
- Oldvig MB, -
- Vasileiou, - Ioannis

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Process of data quality assurance:** • Yes, but not documented

**Data dictionary:**

- Link: <http://hdl.handle.net/10568/73255>

**Are the tools used for data collection available:** • No

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2664 - Limits of agricultural greenhouse gas calculators to predict soil N<sub>2</sub>O and CH<sub>4</sub> fluxes

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/74313>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Limits of agricultural greenhouse gas calculators to predict soil N<sub>2</sub>O and CH<sub>4</sub> fluxes in tropical agriculture

**Description / Abstract:** Demand for tools to rapidly assess greenhouse gas impacts from policy and technological change in the agricultural sector has catalyzed the development of 'GHG calculators'—simple accounting approaches that use a mix of emission factors and empirical models to calculate GHG emissions with minimal input data. GHG calculators, however, rely on models calibrated from measurements conducted overwhelmingly under temperate, developed country conditions. Here we show that GHG calculators may poorly estimate emissions in tropical developing countries by comparing calculator predictions against measurements from Africa, Asia, and Latin America. Estimates based on GHG calculators were greater than measurements in 70% of the cases, exceeding twice the measured flux nearly half the time. For 41% of the comparisons, calculators incorrectly predicted whether emissions would increase or decrease with a change in management. These results raise concerns about applying GHG calculators to tropical farming systems and emphasize the need to broaden the scope of the underlying data.

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** GREENHOUSE GAS,SOIL,CLIMATE CHANGE,AGRICULTURE,FOOD SECURITY,MITIGATION

**Citation:** Richards MB, Metzel R, Chirinda N, Ly P, Nyamadzawo G, Vu QD, de Neergaard A, Oelofse M, Wollenberg E, Keller E, Malin D, Olesen JE, Hillier J, Rosenstock TS. 2016. Limits of agricultural greenhouse gas calculators to predict soil N<sub>2</sub>O and CH<sub>4</sub> fluxes in tropical agriculture. Scientific Reports 6

**Handle:** <http://hdl.handle.net/10568/74313>

**DOI:** <https://dx.doi.org/10.1038/srep26279>

## Creator / Authors:

- Richards, - Meryl
- Metzel R, -
- Chirinda, - Ngonidzashe
- Ly P, -
- Nyamadzawo G, -
- Vu, - QD
- Neergaard, - A. de
- Oelofse, - M
- Wollenberg, - Eva K
- Keller E, -
- Malin D, -
- Olesen, - Jørgen E.
- Hillier J, -
- Rosenstock, - Todd S.

## Publication Metadata

**Volume:** 6

**Issue:**

**Pages:** 26279

**Journal/Publisher name:** Scientific Reports

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author from a developing country National Agricultural Research System (NARS)

- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2665 - Joining the dots: Social networks and community resilience in post-conflict, post-disaster Indonesia**

**Main Information**

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/72814>

**Open access:** No

**Open access restriction:** Limited Exclusivity Agreements

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Joining the dots: Social networks and community resilience in post-conflict, post-disaster Indonesia

**Description / Abstract:** This paper applies social network analysis (SNA) as a methodology to investigate community resilience after the December 2004 tsunami and the March 2005 earthquake which struck both Nias and Aceh, Indonesia. Through the analysis, this research focuses on the urban and rural gradients and shows how victims' personal characteristic such as religion, ethnicity and gender create different community's circles of social support. Moreover, this article points out who are the key opinion leaders in the networks and identifies channels of resources/information considered to be crucial to face disaster.

**Publication / Creation date:** 2016-04-01

**Language:** en

**Country:** INDONESIA

**Keywords:** RESILIENCE,DISASTER,INDONESIA,CLIMATE CHANGE,AGRICULTURE,FOOD SECURITY

**Citation:** Guarnacci U. 2016. Joining the dots: Social networks and community resilience in post-conflict, post-disaster Indonesia. International Journal of Disaster Risk Reduction 16:180-191.

**Handle:** <http://hdl.handle.net/10568/72814>

**DOI:** <https://dx.doi.org/10.1016/j.ijdr.2016.03.001>

**Creator / Authors:**

- Guarnacci U, -

**Publication Metadata**

**Volume:** 16

**Issue:**

**Pages:** 180-191

**Journal/Publisher name:** International Journal of Disaster Risk Reduction

**Indicators for journal articles:** • This journal article is an ISI publication

• This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** F A I R

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2666 - Bridging organizations in agricultural carbon markets and poverty alleviation

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

#### Cross-cutting dimension:

- Gender

#### Gender level(s):

- Monitoring/impact assessment of gender outcomes of research/innovations/interventions/policies
- Analysis of sex-disaggregated data
- Diagnostics/analysis to understand gender issues

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/76327>

**Open access:** No

**Open access restriction:** Limited Exclusivity Agreements

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Bridging organizations in agricultural carbon markets and poverty alleviation: An analysis of pro-poor carbon market projects in East Africa

**Description / Abstract:** International agricultural carbon market projects face significant challenges in delivering greenhouse gas mitigation objectives whilst also seeking to provide additional benefits for poverty alleviation. The carbon credit producer (the smallholder farmer) and carbon credit buyer in the carbon market transaction typically operate at different spatial and temporal scales. Buyers operate at a global scale, responding to opportunities for financial speculation and both private and public climate action plans. Farmers operate within households, farms, and immediate agricultural landscapes, pursuing livelihood and food security needs. These different scales often result in mismatches of timing, payment, and knowledge in market transactions and can be partially rectified by project developers who serve to broker the relationship between the farmers and the buyers. We examined eight East African agricultural carbon market projects to determine how project developers function as bridging organizations and minimize the mismatches between these actors. Results show that projects better bridged the timing and payment gap between buyers and producers when project developers provided non-monetary benefits or direct monetary assistance to farmers. However, knowledge gaps remained a significant barrier for farmers wishing to participate in the market. We discuss how project developers brokered relationships in ways that reflected their interests and highlight the limitations, trade-offs, and challenges that must be overcome if win-win outcomes of

poverty alleviation and climate change mitigation are to be realized.

**Publication / Creation date:** 2016-08-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** Agriculture,Carbon markets,CLIMATE CHANGE,AGRICULTURE,FOOD SECURITY

**Citation:** Lee J, Ingalls M, Erickson JD, Wollenberg E. 2016. Bridging organizations in agricultural carbon markets and poverty alleviation: An analysis of pro-poor carbon market projects in East Africa. Global Environmental Change 39:98-107.

**Handle:** <http://hdl.handle.net/10568/76327>

**DOI:** <https://dx.doi.org/10.1016/j.gloenvcha.2016.04.015>

**Creator / Authors:**

- Lee J, -
- Ingalls M, -
- Erickson JD, -
- Wollenberg, - Eva K

## Publication Metadata

**Volume:** 39

**Issue:**

**Pages:** 98-107

**Journal/Publisher name:** Global Environmental Change

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2667 - Building local institutional capacity to implement agricultural carbon projects

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

#### Cross-cutting dimension:

- Gender

#### Gender level(s):

- Monitoring/impact assessment of gender outcomes of research/innovations/interventions/policies
- Development of innovations/ interventions/ policies with explicit gender targeting
- Diagnostics/analysis to understand gender issues

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/76295>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Building local institutional capacity to implement agricultural carbon projects: participatory action research with Vi Agroforestry in Kenya and ECOTRUST in Uganda

**Description / Abstract:** Background: Smallholders have begun to take advantage of a growing pool of investment in climate change mitigation. Meanwhile, early movers in this area are working to develop innovative models that will allow projects to be financially sustainable and scalable while benefiting local actors. This study focuses on two of these projects in East Africa, managed by Vi Agroforestry in Kenya and ECOTRUST in Uganda. They engaged in a participatory action research process to identify ways that local actors could take on expanded roles within the projects. Results: Results are presented as case studies which include project context, roles of local project actors, actions selected, and the outcomes of the actions on the key actors targeted. The actions focused on building the capacities of community-based intermediaries, facilitating partnerships with local government and local non-governmental organizations, and supporting a more active role played by women. Key findings from this process were that community-based intermediaries can play a leading role in land management trainings; local government involvement is critical to project success; local non-governmental organizations and businesses can play central roles in training and providing market incentives to farmers to implement sustainable practices; and women's roles in projects can grow if project benefits are aligned with their needs and trainings are made more accessible. Conclusions: These cases demonstrate that there is substantial scope for the responsibilities within agricultural carbon projects, and by extension climate-smart agriculture initiatives more broadly, to be

institutionalized at the local level. However, regardless of the institutional setup, due to carbon market factors beyond the control of these projects, the nancial case for smallholder projects that rely solely on nancing from carbon credits remains chal- lenging to these projects and others like them. As programmatic and policy-led approaches grow from these project models, it may be easier to nd ways to integrate carbon nancing with support for climate change adaptation, rural development, and ecosystem services provision. With these new models, the ability to institutionalize management and implementation capacity at the local level will remain critically important.

**Publication / Creation date:** 2016-07-01

**Language:** en

**Country:** UGANDA

**Keywords:** CLIMATE CHANGE MITIGATION,SUSTAINABLE LAND MANAGEMENT,CLIMATE FINANCE,AGRICULTURE,CLIMATE CHANGE,FOOD SECURITY

**Citation:** Shames S, Heiner K, Kapukha M, Kigali L, Masina M, Nantongo Kalunda P, Ssempala A, Recha J, Wekesa A. 2016. Building local institutional capacity to implement agricultural carbon projects: Participatory action research with Vi Agroforestry in Kenya and ECOTRUST in Uganda. Agriculture and Food Security 5:13.

**Handle:** <http://hdl.handle.net/10568/76295>

**DOI:** <https://dx.doi.org/10.1186/s40066-016-0060-x>

**Creator / Authors:**

- Shames, - Seth
- Heiner, - Krista
- Kapukha, - Martha
- Kiguli L, -
- Masiga M, -
- Nantongo Kalunda P, -
- Ssempala, - Annet
- Recha, - John
- Wekesa, - Amos

## Publication Metadata

**Volume:** 5

**Issue:** 13

**Pages:**

**Journal/Publisher name:** Agriculture & Food Security

**Indicators for journal articles:** • This journal article is an ISI publication

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
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EcoAgriculture-United States	Shames, Seth <sshames@ecoagriculture.org>	Responsible
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## D2668 - Hotspots of gross emissions from the land use sector: patterns, uncertainties, and leading emission sources

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/76325>

**Open access:** Yes

**License adopted:** CC\_BY

### Deliverable Metadata

**Disseminated title:** Hotspots of gross emissions from the land use sector: patterns, uncertainties, and leading emission sources for the period 2000–2005 in the tropics

**Description / Abstract:** According to the latest report of the Intergovernmental Panel on Climate Change (IPCC), emissions must be cut by 41–72 % below 2010 levels by 2050 for a likely chance of containing the global mean temperature increase to 2 °C. The AFOLU sector (Agriculture, Forestry and Other Land Use) contributes roughly a quarter (10–12 Pg CO<sub>2</sub> e yr<sup>-1</sup>) of the net anthropogenic GHG emissions mainly from deforestation, fire, wood harvesting, and agricultural emissions including croplands, paddy rice, and livestock. In spite of the importance of this sector, it is unclear where the regions with hotspots of AFOLU emissions are and how uncertain these emissions are. Here we present a novel, spatially comparable dataset containing annual mean estimates of gross AFOLU emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O), associated uncertainties, and leading emission sources, in a spatially disaggregated manner (0.5°) for the tropics for the period 2000–2005. Our data highlight the following: (i) the existence of AFOLU emissions hotspots on all continents, with particular importance of evergreen rainforest deforestation in Central and South America, fire in dry forests in Africa, and both peatland emissions and agriculture in Asia; (ii) a predominant contribution of forests and CO<sub>2</sub> to the total AFOLU emissions (69 %) and to their uncertainties (98 %); (iii) higher gross fluxes from forests, which coincide with higher uncertainties, making agricultural hotspots appealing for effective mitigation action; and (iv) a lower contribution of non-CO<sub>2</sub> agricultural emissions to the total gross emissions (ca. 25 %), with livestock (15.5 %) and rice (7 %) leading the emissions. Gross AFOLU tropical emissions of 8.0 (5.5–12.2) were in the range of other databases (8.4 and 8.0 Pg CO<sub>2</sub> e yr<sup>-1</sup> in FAOSTAT and the Emissions Database for Global Atmospheric Research (EDGAR) respectively), but we offer a spatially detailed benchmark for monitoring progress in reducing emissions from the land sector in the tropics. The location of the AFOLU hotspots of emissions and data on their as-

sociated uncertainties will assist national policy makers, investors, and other decision-makers who seek to understand the mitigation potential of the AFOLU sector.

**Publication / Creation date:** 2016-08-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** greenhouse gas emissions, land use

**Citation:** Roman-Cuesta RM, Rufino MC, Herold M, Butterbach-Bahl K, Rosenstock TS, Herrero M, Ogle S, Li C, Poulter B, Verchot L, Martius C, Stuver J, de Bruin S. 2016. Hotspots of gross emissions from the land use sector: patterns, uncertainties, and leading emission sources for the period 2000–2005 in the tropics. *Biogeosciences*, 13:4253–4269.

**Handle:** <http://hdl.handle.net/10568/76325>

**DOI:** <https://dx.doi.org/10.5194/bg-13-4253-2016>

**Creator / Authors:**

- Roman-Cuesta, - RM
- Rufino, - Mariana C.
- Herold M, -
- Butterbach-Bahl, - Klaus
- Rosenstock, - Todd S.
- Herrero M, -
- Ogle, - SM
- Li C, -
- Poulter B, -
- Verchot, - Louis
- Martius, - Christopher
- Stuver J, -
- de Bruin S, -

#### Publication Metadata

**Volume:** 13

**Issue:**

**Pages:** 4253-4269

**Journal/Publisher name:** Biogeosciences

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

#### Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura	Wollenberg, Lini	Responsible

Tropical

<Lini.wollenberg@uvm.edu>

## D1261 - Reducing emissions from agriculture to meet the 2°C target

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<https://cgspace.cgiar.org/handle/10568/73438>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Reducing emissions from agriculture to meet the 2°C target

**Description / Abstract:** More than 100 countries pledged to reduce agricultural greenhouse gas (GHG) emissions (Richards et al., 2015a) in the 2015 Paris Agreement of the United Nations Framework Convention on Climate Change. Yet technical information about how much mitigation is needed in the sector versus how much is feasible remains poor. We identify a preliminary global target for reducing emissions from agriculture of ~1 GtCO<sub>2</sub>e/yr by 2030 to limit warming in 2100 to 2°C above pre-industrial levels. Yet plausible agricultural development pathways with mitigation co-benefits deliver only 21 to 40% of needed mitigation. The target indicates that more transformative technical and policy options will be needed, such as methane inhibitors and finance for new practices. A more comprehensive target for the 2°C limit should be developed to include soil carbon and agriculture-related mitigation options. Excluding agricultural emissions from mitigation targets and plans will increase the cost of mitigation in other sectors or reduce the feasibility of meeting the 2°C limit.

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY

**Citation:** Wollenberg E, Richards M, Smith P, Havlík P, Obersteiner M, Tubiello FN, Herold M, Gerber P, Carter S, Reisinger A, van Vuuren D, Dickie A, Neufeldt H, Sander BO, Wassman R, Sommer R, Amonette JE, Falcucci A, Herrero M, Opio C, Roman-Cuesta R, Stehfest E, Westhoek H, Ortiz-Monasterio I, Sapkota T, Rufino MC, Thornton PK, Verchot L, West PC, Soussana JF, Baedeker T, Sadler M, Vermeulen S, Campbell BM. 2016. Reducing emissions from agriculture to meet the 2°C target. *Global Change Biology*. 22(12): 3859-3864.

**Handle:** <http://hdl.handle.net/10568/73438>

**DOI:** <https://dx.doi.org/10.1111/gcb.13340>

**Creator / Authors:**

- Wollenberg - Eva
- Richards - Meryl
- Smith - Pete
- Havlík - Petr
- Obersteiner - Michael
- Tubiello - Francesco N
- Herold - Martin
- Gerber - Pierre
- Carter - Sarah
- Reisinger - Andrew
- van Vuuren - Detlef P
- Dickie - Amy
- Neufeldt - Henry
- Sander - Björn O
- Wassmann - Reiner
- Sommer - Rolf
- Amonette - James E
- Falucci - Alessandra
- Herrero - Mario
- Opio - Carolyn
- Roman-Cuesta - Rosa Maria
- Stehfest - Elke
- Westhoek - Henk
- Ortiz-Monasterio - Ivan
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- Rufino - Mariana C<0000-0003-4293-3290>
- Thornton - Philip K.
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- West - Paul C
- Soussana - Jean-François
- Baedeker - Tobias
- Sadler - Marc
- Vermeulen - Sonja<0000-0001-6242-9513>
- Bruce M. Campbell - Bruce M<0000-0002-0123-4859>

**Publication Metadata**

**Volume:** 22

**Issue:** 12

**Pages:**

**Journal/Publisher name:** Global Change Biology

**Indicators for journal articles:** • This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:** • CCAFS - F3 (LINI)

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1262 - Aspirational global targets for climate change mitigation - Media outreach

### Main Information

**Type:** Outreach products

**Subtype:** Article for media/Magazine/Other (not peer-reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/73438>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Paris Climate Agreement Cannot Be Met Without Emissions Reduction Target for Agriculture

**Description / Abstract:** CCAFS press release

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** Global

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2670 - How does agriculture change our climate?

### Main Information

**Type:** Outreach products

**Subtype:** Website

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/75768>

**Open access:** Yes

**License adopted:** CC\_BY\_ND

### Deliverable Metadata

**Disseminated title:** How Does Agriculture Change Our Climate?

**Description / Abstract:** Greenhouse gas emissions from agriculture reached an all-time high in 2014, and for the first time since 1960 may now outpace fossil fuel growth. The agriculture sector plays a key role in reducing global emissions to avoid dangerous levels of climate change. The short report highlights trends and the primary sources of agricultural emissions, as well as a few solutions already in practice. In this report, we consider emissions from just part of the global food system: deforestation and agricultural management. The share of emissions from transportation of products in the global food supply chain, packaging, and food waste, for example, are important but not included here. When these activities are also considered, the global food system accounts for roughly 30 percent of global emissions. Despite agriculture's central role in changing the global climate, there are promising opportunities for mitigating emissions and reducing the demand for high-emissions food in the first place. Developing a global food system that both achieves food security and reduces agriculture's environmental impact is one of the foremost challenges of our time.

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY

**Citation:** Colombo B, West P, Smith P, Tubiello FN, Gerber J, Engstrom P, Urevig A, Wollenberg E. 2016. How Does Agriculture Change Our Climate? Environment Reports: Food Matters.

**Handle:** <http://hdl.handle.net/10568/75768>

**DOI:** <Not Defined>

**Creator / Authors:**

- Colombo B, -
- West P, -

- Smith P, -
- Tubiello FN, -
- Gerber J, -
- Engstrom P, -
- Urevig A, -
- Wollenberg, - Eva K

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1263 - Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture

### Main Information

**Type:** Articles and Books

**Subtype:** Book (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<https://cgspace.cgiar.org/handle/10568/77144>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture

**Description / Abstract:** Agriculture in tropical developing countries produces about 79 % of annual anthropogenic greenhouse gas (GHG) emissions and contributes to additional emissions through land-use change (Smith et al. 2014). At the same time, nearly 70 % of the technical mitigation potential in the agricultural sector occurs in these countries (Smith et al. 2008). Enabling farmers in tropical developing countries to manage agriculture to reduce GHG emissions intensity (emissions per unit product) is consequently an important option for mitigating future atmospheric GHG concentrations. Our current ability to quantify GHG emissions and mitigation from agriculture in tropical developing countries is remarkably limited (Rosenstock et al. 2013). Empirical measurement is expensive and therefore limited to small areas. Emissions can be estimated for large areas with a combination of field measurement, modeling and remote sensing, but even simple data about the extent of activities is often not available and models require calibration and validation (Olander et al 2014). These guidelines focus on how to produce field measurements as a method for consistent, robust empirical data and to produce better models.

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** Global

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,AGRICULTURE,AIR POLLUTION,SOIL SCIENCES

**Citation:** Rosenstock TS, Rufino MC, Butterbach-Bahl K, Wollenberg E, Richards M, (Eds.). 2016. Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture. Springer.

**Handle:** <http://hdl.handle.net/10568/77144>

**DOI:** <https://dx.doi.org/10.1007/978-3-319-29794-1>

**Creator / Authors:**

- Rosenstock - Todd S
- Rufino - Mariana C
- Butterbach-Bahl - Klaus
- Wollenberg - Eva
- Richards - Meryl

## Publication Metadata

**Volume:** N/A

**Issue:**

**Pages:**

**Journal/Publisher name:** Springer

**Indicators for journal articles:** • This article have a co-author based in an Earth System

Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:** • CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2671 - Effects of nitrogen fertilizer and manure application on storage of carbon and nitrogen

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/68581>

**Open access:** No

**Open access restriction:** Intellectual Property Rights (confidential information)

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Effects of nitrogen fertilizer and manure application on storage of carbon and nitrogen under continuous maize cropping in Arenosols and Luvisols of Zimbabwe

**Description / Abstract:** Soil organic matter (SOM) is important for long-term crop productivity through maintenance of soil quality and is also now receiving attention due to its potential for climate change mitigation. The objectives of the present study were to investigate the effects of 9 years of fertilization on soil organic carbon (SOC) and total organic nitrogen (TON) and their fractions for the 0–50 cm profile in clayey (Luvisols) and sandy (Arenosols) soils in Murewa District, Zimbabwe. Three treatments were assessed: unfertilized (Control), nitrogen fertilizer (Nfert) and nitrogen fertilizer plus cattle manure (Nfert+manure). Density fractionation was used to assess the distribution of SOC and TON in three SOM fractions and their sensitivity to fertilization in fields 0–50 m away from homesteads (Homefields) and > 100 m away from homesteads (outfields). The relationship between light and heavy fraction organic carbon (C) were analysed to determine equilibrium levels that give an indication of carbon storage potential. In clayey soils total organic C under Nfert+manure was 4% higher than Nfert and 16% higher than the control. In sandy soils, SOC stocks were lowest in the control and highest in Nfert treatments at all depths. Nine years of fertilization significantly influenced SOC concentrations and storage up to 20 cm depth, below which stocks and concentrations of C and N were statistically insignificant. Distribution of C and N in density fractions showed greater stabilization under Nfert+manure in clayey soils, whereas it was greater under Nfert in sandy soils. Estimation of equilibrium levels suggested that homefields had potential to store more C, whereas outfields and control treatments had limited capacity due to attainment of lower equilibrium levels. Application of manure can be a low-cost alternative for enhancing soil quality and promoting soil C sequestration under conventionally tilled continuous maize cropping systems in Zimbabwe.

**Publication / Creation date:** 2015-10-01

**Language:** en

**Country:** ZIMBABWE

**Keywords:** NITROGEN FERTILIZERS,MAIZE,CARBON,SOIL ORGANIC MATTER

**Citation:** Mujuru L, Rusinamhodzi L, Nyamangara J, Hoosbeek MR. 2016. Effects of nitrogen fertilizer and manure application on storage of carbon and nitrogen under continuous maize cropping in Arenosols and Luvisols of Zimbabwe. The Journal of Agricultural Science 154(2):242-257.

**Handle:** <http://hdl.handle.net/10568/68581>

**DOI:** <https://dx.doi.org/10.1017/S0021859615000520>

**Creator / Authors:**

- Mujuru, - Lizzie
- Rusinamhodzi L, -
- Hoosbeek MR, -
- Nyamangara, - Justice

## Publication Metadata

**Volume:** 154

**Issue:** 2

**Pages:** 242-257

**Journal/Publisher name:** The Journal of Agricultural Science

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author from a developing country National Agricultural Research System (NARS)
- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1264 - Review of data for estimating mitigation benefits through agroforestry

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Cancelled

**Year of expected completion:** 2016

**Justification of new expected date of completion:** Data currently insufficient. Agroforestry data to be taken up in Phase 2.

**Cross-cutting dimension:**

<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** <Not Defined>

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** <Not Defined>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** <Not Defined>

**Language:** <Not Defined>

**Country:** <Not Defined>

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Publication Metadata

**Volume:**

**Issue:**

**Pages:**

**Journal/Publisher name:**

**Indicators for journal articles:** <Not Defined>

**Publication acknowledge:** No

**Flagships contribution:**

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

## Deliverable Data sharing

### Deliverable files:

<Not Defined>

### Partners contributing to this deliverable:

Institution	Partner	Type
University of Aberdeen-United Kingdom	Hillier, Jonathon <j.hillier@abdn.ac.uk>	Responsible

**D2672 - Benefits and costs of climate change mitigation technologies in paddy rice: Focus on Bangladesh, Vietnam**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/75662>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

**Deliverable Metadata**

**Disseminated title:** Benefits and costs of climate change mitigation technologies in paddy rice: Focus on Bangladesh and Vietnam

**Description / Abstract:** This report examines the costs and benefits of alternate wetting and drying (AWD) in paddy rice production in Bangladesh and Vietnam as a technology that can lead to reduced greenhouse gas (GHG) emissions. AWD is a systematic management practice that involves periodic drying and reflooding of rice fields. Similar water management practices in rice growing have been used in Asian countries for decades, although not optimized for GHG reduction (Richards and Sander 2014). This report reviews the literature and examines the potential costs and benefits of implementing AWD at national scales in Bangladesh and Vietnam, two countries with current interest in promoting large-scale adoption of AWD. The report summarizes the wealth of information on the agronomic benefits of AWD, yet finds very little evidence of AWD's economic impacts, especially in conjunction with impacts on GHG emissions. The analysis provides a synthesis of the costs and benefits of AWD (e.g., production costs, revenues, yields, other benefits) on a per-hectare basis and a preliminary estimate of the technology's national-level impacts and implementation costs. It must be noted that only one study could be found on the production costs of AWD in Vietnam; thus more representative cost data would be required. Program implementation costs were estimated based on information found in the budgets from a relevant Nationally Appropriate Mitigation Action program in the Philippines and other agriculture sector technical assistance projects. Existing evidence and expert opinion indicate that AWD is very promising in terms of its potential to increase farmers' yields and profits and GHG reduction potential in Bangladesh and Vietnam. Adoption of AWD may allow for additional profit for farmers of between \$100 and \$400/ha as well as a reduction of 0.8 to 4 tCO<sub>2</sub>e/ha. The increased profit is due to decreased irrigation costs and increased yields from the use of AWD.

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** BANGLADESH, VIETNAM

**Keywords:** CLIMATE CHANGE, MITIGATION, IRRIGATED RICE, PADDY SOIL, METHANE EMISSIONS

**Citation:** Basak R. 2016. Benefits and costs of climate change mitigation technologies in paddy rice: Focus on Bangladesh and Vietnam. CCAFS Working Paper no. 160. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/75662>

**DOI:** <Not Defined>

**Creator / Authors:**

- Basak R, -

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D1265 - Reducing deforestation and enhancing sustainability in commodity supply chains: ... cattle certification in Brazil**

**Main Information**

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/70059>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

**Deliverable Metadata**

**Disseminated title:** Reducing deforestation and enhancing sustainability in commodity supply chains: interactions between governance interventions and cattle certification in Brazil

**Description / Abstract:** A large number of governance interventions are being developed in order to reduce deforestation and enhance the sustainability of commodity supply chains across the tropics. The extent to which individual agricultural commodity supply chain interventions can achieve scale, and environmental or social objectives, depends in part on the ways in which those interventions interact with other interventions. We use a casestudy of the new Sustainable Agriculture Network (SAN) cattle certification program in Brazil to explore the different ways in which governance interventions interact. We examine the broad landscape of policies and programs that affect sustainability in the cattle supply chain in Brazil, and assess whether such interventions support or constrain the scaling up of the SAN cattle program. We conducted semi-structured interviews with key stakeholders from government, private sector, and civil society organizations. We found that multiple interventions are acting in a complementary manner to enhance sustainability and therefore enable the scaling up of the SAN program, by aiding compliance with environmental laws, adoption of good production practices, and improved monitoring. At the same time, limited development, implementation, and complementarity of some interventions could be antagonistic to the SAN program's expansion because they maintain a context in which many actors operate far below the sustainability criteria required by the program. Our holistic approach enables us to identify specific gaps in the complex landscape of governance interventions in Brazil. Greater strategic complementarity and coordination between interventions may catalyze a more coherent and effective pathway to reduced deforestation and enhanced sustainability

**Publication / Creation date:** 2016-01-01

**Language:** en

**Country:** BRAZIL

**Keywords:** DEFORESTATION, CATTLE, GOVERNANCE, TROPICS, AGRICULTURE, FOOD SECURITY, CLIMATE CHANGE

**Citation:** Alves-Pinto HN, Newton P, Guedes Pinto LF. 2015. Reducing deforestation and enhancing sustainability in commodity supply chains: interactions between governance interventions and cattle certification in Brazil. Tropical Conservation Science 8: 1053-1079.

**Handle:** <http://hdl.handle.net/10568/70059>

**DOI:** <Not Defined>

**Creator / Authors:**

- Alves-Pinto - Helena Nery
- Newton - Peter
- Guedes Pinto - Luis Fernando

## Publication Metadata

**Volume:** 8

**Issue:**

**Pages:** 1053-1079

**Journal/Publisher name:** Tropical Conservation Science

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author from a developing country National Agricultural Research System (NARS)
- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:** • CCAFS - F3 (LINI)

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
U-M - University of Michigan	Agrawal, Arun <arunagra@umich.edu>	Responsible

**D2673 - Benefits and costs of nitrogen fertilizer management for climate change mitigation: Focus on India, Mexico**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/75660>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

**Deliverable Metadata**

**Disseminated title:** Benefits and costs of nitrogen fertilizer management for climate change mitigation: Focus on India and Mexico.

**Description / Abstract:** This report analyzes the costs and benefits of managing nitrogen fertilizer in ways that also reduce greenhouse gas emissions in cereal production (rice, wheat, and maize) in India and Mexico. The purpose of this work is to inform finance needed for low emissions agricultural development. For each agricultural mitigation practice identified, the corresponding potential emissions reduction and on-farm costs and benefits (e.g., operational costs, savings, or other benefits) are provided, based on available literature.

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** INDIA,MEXICO

**Keywords:** MITIGATION,NITROGEN,FERTILIZER,CLIMATE CHANGE,AGRICULTURE,FOOD SECURITY

**Citation:** Basak R. 2016. Benefits and costs of nitrogen fertilizer management for climate change mitigation: Focus on India and Mexico. CCAFS Working Paper no. 161. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/75660>

**DOI:** <Not Defined>

**Creator / Authors:**

- Basak R, -

**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D1266 - Report - A sustentabilidade é um bom negócio para a agricultura**

**Main Information**

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<https://cgspace.cgiar.org/handle/10568/72957>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

**Deliverable Metadata**

**Disseminated title:** Sustainability is good business for agriculture

**Description / Abstract:** This issue of Sustentabilidade em Debate brings together three studies that complement each other with the aim of answering the same question: can the adoption of good management practices for production, conservation of natural resources and working conditions be justified economically? In other words, is the adoption or pursuit of sustainability a good deal for farmers? This question stems from a mismatch between common sense and the experience of Sebrae-MG's Educampo Program, Rabobank and Imaflora with a large number of farmers. As a rule, industry leaders argue that sustainability can be achieved as long as someone foots the bill. This statement embeds the assumption that sustainability is a cost or a competitive disadvantage. The experience of leading organizations in these studies shows otherwise. Farmers affected by programs that contribute to the implementation of sustainability initiatives have reported that investments in agricultural production based on best practices bring economic returns and make their businesses more profitable, competitive and resilient. To test whether this perception is actually true, SEBRAE, Rabobank and Imaflora joined researchers from ESALQ-USP and from the University of Oxford. Based on robust methods, the three studies analyzed large databases that contain information from dozens of farmers covered by programs designed to stimulate sustainability in several regions of Brazil either through the provision of credit, technical assistance or certification. This publication presents, in advance and in a simplified and summary form, studies in final stages of postgraduate research that will later be published in detailed academic format. The main conclusions and recommendations of the studies are the following ones: 1. Farmers who adopt sustainability and management programs have improved economic performance outcomes. They are, therefore, more competitive. 2. This is because these farmers achieve higher productivity, become more efficient and produce at a lower cost. The economic advantages enjoyed on the farms are independent from market benefits or special prices. 3. A farmer with high socioenvironmental performance tends to have greater financial health

and, therefore, would tend to be a customer with less risk and greater ability to pay for the financial sector. 4. A management system is critical for implementing sustainability practices and for improving productivity and the efficiency of production. 5. Management systems and sustainability practices can be adopted by small, medium and large farmers. Collective actions favor and increase the scale of adoption for small and medium ones. We have not found any dependence between socioenvironmental performance and the wealth or size of farmers. 6. Credit can influence the adoption and support the implementation of good practices, management systems and sustainability practices in agriculture. A credit policy based on incentives and mechanisms for supporting changes driven by financial agents can induce a process of continuous improvements in the performance of farmers in terms of sustainability. The adoption of such a mechanism tends to be beneficial for farmers and banks. 7. Market instruments such as certification contribute to the implementation of management systems and sustainability practices. They can be implemented collectively, thus reducing costs for farmers. 8. There is a gap in terms of public policies designed to support the adoption of better management systems by farmers. Weak technical assistance and rural extension programs constitute a major barrier to sustainability. 9. The experiences of Rabobank and of the Educampo program (SEBRAE) show the potential of credit and technical assistance to promote and support the implementation of sustainability practices on farms. However, the main public policies for agricultural production do not encourage or support the implementation of management systems and sustainability practices as a core component. Little by little, sustainability parameters are being incorporated into some policies, but still in a marginal way. The metrics of production and productivity that usually measure the sector's success make all the challenges and complexities involved in promoting sustainable production invisible. 10. Weak public technical assistance and rural extension (ATER) programs go hand in hand with the increasing role of the private sector as a source of innovation and technology transfer, which is not necessarily intended to improve management systems, sustainability practices and the efficiency of farmers.

**Publication / Creation date:** 2016-04-01

**Language:** en, pt

**Country:** BRAZIL

**Keywords:** AGRICULTURE,SUSTAINABILITY,SUSTAINABLE AGRICULTURE,FARMERS,CLIMATE CHANGE,FOOD SECURITY

**Citation:** Institute for Forest and Agricultural Management and Certification. 2016. Sustainability is good business for agriculture. Sustentabilidade em Debate 3:1-46.

**Handle:** <http://hdl.handle.net/10568/72957>

**DOI:** <Not Defined>

**Creator / Authors:**

- Bini - Dienice
- Guedes Pinto - Luís Fernando
- de Miranda - Silvia H.G.
- Vian - Carlos
- Nunes - Rogério

#### Publication Metadata

**Volume:** 3

**Issue:**

**Pages:** 1-46

**Journal/Publisher name:** SUSTENTABILIDADE EM DEBATE

**Indicators for journal articles:** • This article have a co-author from a developing country National Agricultural Research System (NARS)

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
U-M - University of Michigan	Agrawal, Arun <arunagra@umich.edu>	Responsible

## D2674 - Monitoring, reporting, and verification requirements and implementation costs for climate change mitigation activities

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/75661>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** Monitoring, reporting, and verification requirements and implementation costs for climate change mitigation activities: Focus on Bangladesh, India, Mexico, and Vietnam

**Description / Abstract:** This report describes and estimates implementation costs for key monitoring, reporting, and verification (MRV) requirements for low emissions development programs requiring MRV systems. MRV system development and setup costs vary significantly—from a low of \$210,000 to a high of \$2.44 million—mostly due to the area covered by the Nationally Appropriate Mitigation Action program and the number of participating farmers. Therefore the cost of printing and distributing cultivation logbooks is greater (a key component of data collection). Cultivation logbooks account for over two-thirds of all first-year costs and can reach \$2.2 million in the case of India, where reaching one-third of farmers means over 18.5 million logbooks would be required. Finding an alternative to a printed paper booklet to record key cultivation data in a standardized fashion throughout the project's life cycle could help to drive down this cost. Ongoing MRV implementation costs may reasonably amount to less than \$55,000/year across the four countries and systems studied. Annual monitoring costs could be kept low by collecting data on field size and sustainable development indicators (e.g., tonnes of cereal produced, water usage, revenues) from a random sample of 384 participating farmers. Also, efforts to use existing data-gathering and management systems as much as possible through strategic partnerships with domestic institutions and implementing partners would help to drive down costs while also increasing the quality of MRV systems.

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** BANGLADESH,INDIA,MEXICO,VIETNAM

**Keywords:** MITIGATION, GREENHOUSE GAS, SOIL, CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY

**Citation:** Basak R. 2016. Monitoring, reporting, and verification requirements and implementation costs for climate change mitigation activities: Focus on Bangladesh, India, Mexico, and Vietnam. CCAFS Working Paper no. 162. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/75661>

**DOI:** <Not Defined>

**Creator / Authors:**

- Basak R, -

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D1267 - How Brazil's sustainable cattle schemes could beef up to conserve forests and sustainable rural livelihoods**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

<Not Defined>

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/78171>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

**Deliverable Metadata**

**Disseminated title:** How Brazil's sustainable cattle schemes could beef up to conserve forests and sustainable rural livelihoods

**Description / Abstract:** Cattle ranching is the largest driver of Brazilian deforestation, a relevant emitter of greenhouse gases, and an important source of local livelihoods. In response, many initiatives attempt to render Brazil's beef production more environmentally and socially sustainable. Drawing on key informant interviews, this paper assesses the effectiveness of Brazil's sustainable cattle schemes, with a particular focus on avoided deforestation in the Amazon biome; climate change mitigation; and improving the livelihoods of smallholder ranchers. We found that the sustainable cattle schemes have yet to reach scale and have yet to effectively halt forest loss, reduce greenhouse gas emissions, or sustain rural livelihoods. Thus far, cattle moratoria have achieved the greatest scale in addressing deforestation, but only by targeting the largest and thus most resourced ranches. In order to achieve both socially and environmentally sustainable cattle production, Brazil's sustainable cattle schemes must scale up, and all governance groups interviewed recommended bottom-up, technical assistance to ranchers to achieve this. Mixed governance schemes, involving both state and non-state actors, were also widely advocated. Impacts were difficult to compare due to a lack of uniform monitoring and thus comparability across the schemes; tools for common measurement are recommended to better compare schemes' effectiveness. The greatest perceived barriers were market-based: namely the lack of a sustainable beef brand and the associated lack of consumer demand. Respondents also noted the need for improved agronomic and technical assistance for ranchers. Social considerations in the schemes were found to be vague, and in some schemes, neglected.

**Publication / Creation date:** 2016-12-01

**Language:** en

**Country:** BRAZIL

**Keywords:** CLIMATE CHANGE,FOOD

SECURITY,AGRICULTURE,LIVESTOCK,CONSERVATION,SUSTAINABILITY,RURAL DEVELOPMENT

**Citation:** Maguire-Rajpaul VA, Alves-Pinto HN, McDermott CL, Galuchi T. 2016. How Brazil's sustainable cattle schemes could beef up to conserve forests, reduce emissions, and sustain rural livelihoods. CCAFS Working Paper no. 148. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/78171>

**DOI:** <Not Defined>

**Creator / Authors:**

- Alice Ferris - Victoria
- Galuchi - Tharic
- Alves Pinto - Helena Nery<0000-0001-9639-1234>
- McDermott - Constance<0000-0002-5238-0936>

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
University of Oxford - University of Oxford	McDermott, Constance <constance.mcdermott@ouce.ox.ac.uk>	Responsible

## D2675 - Gender dynamics in dairy production in Kenya: A literature review

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Gender

**Gender level(s):**

- Diagnostics/analysis to understand gender issues

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77727>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** Gender dynamics in dairy production in Kenya: A literature review

**Description / Abstract:** This literature review serves as a background document to better understand gender roles and dynamics in the dairy sector in Kenya and thus aims to inform research activities on the gender dimensions of mitigation options, such as sustainable dairy intensification. Technology change has strong gender and labor implications, as it typically involves renegotiation, reassignment, or deepening of roles and responsibilities within households. It can also alter traditional patterns of access to resources such as milk, land, and income. Clarifying gender issues is critical to inform programs and policies for effective design and delivery of mitigation technologies among smallholder households, and to ensure that the benefits of mitigation technologies reach women and men fairly, and thus contribute to both poverty reduction and sustainability.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** KENYA

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,AGRICULTURE,GENDER

**Citation:** Gallina A. 2016. Gender dynamics in dairy production in Kenya: A literature review. CCAFS Working Paper no. 182. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77727>

**DOI:** <Not Defined>

**Creator / Authors:**

- Gallina, - Ambra

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1268 - Alternate wetting and drying in irrigated rice

### Main Information

**Type:** Outreach products

**Subtype:** Infographic

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<http://www.slideshare.net/cgiarclimate/infographic-alternate-wetting-and-drying-in-irrigated-rice>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Alternate wetting and drying in irrigated rice

**Description / Abstract:** Infographic

**Publication / Creation date:** 2016-08-01

**Language:** en

**Country:** Global

**Keywords:** rice, water, awd

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Deliverable Quality check

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
IRRI - International Rice Research Institute	Sander, Bjoern Ole <b.sander@irri.org>	Responsible



## D2676 - A methodology for greenhouse gas emission and carbon sequestration assessments in agriculture

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<http://hdl.handle.net/10568/77767>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** A methodology for greenhouse gas emission and carbon sequestration assessments in agriculture: Supplemental materials for info series analyzing low emissions agricultural practices in USAID development projects

**Description / Abstract:** As many countries are increasing commitments to address climate change, national governments are exploring how they could best reduce the impact of their greenhouse gas (GHG) emissions. Agriculture is a major contributor to GHG emissions, especially in developing countries, where this sector accounts for an average of 35% of all GHG emissions. Yet many agricultural interventions can also help to reduce GHG impacts. This paper presents the methodology to estimate impacts of agricultural interventions on GHG emissions and carbon sequestration. This methodology is used in an analysis of several development projects supported by the United States Agency for International Development (USAID) and presented as a series of case studies. The methodology allows users to estimate (1) GHG impacts at project scale, (2) GHG emissions by agricultural practice, and (3) GHG emissions per unit of output (i.e., GHG emission intensity). The presented approach is a rapid assessment technique that is well suited to provide an indication of the magnitude of GHG impacts and to compare GHG impact strength of different field activities or cropping systems. It is well adapted to a context of data scarcity, as is common in agricultural investment planning where aggregate data on agricultural land use and management practices are available but where field measurements of GHG and carbon stock changes are missing. This approach is instrumental to inform agricultural investment, project, and policy planners about challenges and opportunities associated with achieving and accounting for GHG emission reductions in agricultural development projects.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY, EMISSIONS

**Citation:** Grever U, Bockel L, Galford G, Gurwick N, Nash J, Pirolli G, Wollenberg E. 2016. A methodology for greenhouse gas emission and carbon sequestration assessments in agriculture: Supplemental materials for info note series analysing low emissions agricultural practices in USAID development projects. CCAFS Working Paper no. 187. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT); Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77767>

**DOI:** <Not Defined>

**Creator / Authors:**

- Grever, - Uwe
- Bockel, - Louis
- Galford, - Gillian
- Gurwick, - Noel
- Nash, - Julie
- Wollenberg, - Eva

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
FAO - Food and Agriculture Organization of the United Nations	Kartunen, Kaisa <Kaisa.Karttunen@fao.org>	Responsible

## D1269 - Quantifying Greenhouse Gas Emissions from Managed and Natural Soils

### Main Information

**Type:** Training materials

**Subtype:** Lecture/Training Course Material

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<https://www.youtube.com/watch?v=LKKgpMK3XPg>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Quantifying Greenhouse Gas Emissions from Managed and Natural Soils

**Description / Abstract:** Presentation from chapter in Measurement Methods book by Klaus Butterbach-Bahl, Björn Ole Sander, David Pelster, and Eugenio Díaz-Pinés.

**Publication / Creation date:** 2016-12-01

**Language:** en

**Country:** Global

**Keywords:** soils, greenhouse gas emissions, SAMPLES

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Butterbach-Bahl - Klaus
- Pelster - David
- Sander - Björn Ole
- Díaz-Pinés - Eugenio

### Deliverable Quality check

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
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CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible
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## D2678 - Gender dynamics in rice-farming households in Vietnam: A literature review

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Gender

**Gender level(s):**

- Diagnostics/analysis to understand gender issues

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77766>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** Gender dynamics in rice-farming households in Vietnam: A literature review

**Description / Abstract:** This literature review is part of the CCAFS program on low emission agriculture flagship of the CGIAR Research Program on Climate Change, Agriculture and Food Security. It serves as a background document to better understand gender roles and dynamics in the rice sector in Vietnam, and provides input into research activities on the gender dimensions of mitigation options such as alternate wetting and drying. An understanding of gender issues helps to both improve effective design and delivery of mitigation technologies and ensure that the benefits of mitigation technologies reach women and men equitably. This will enable mitigation technologies to contribute to livelihood resilience, gender equity, and other development objectives as well as to lowering greenhouse gas emissions.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** VIETNAM

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY, RICE

**Citation:** Gallina A, Farnworth CR. 2016. Gender dynamics in rice-farming households in Vietnam: A literature review. CCAFS Working Paper no. 183. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77766>

**DOI:** <Not Defined>

**Creator / Authors:**

- Gallina, - Ambra
- Rozel Farnworth, - Cathy

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2679 - Climate change mitigation through intensified pasture management: Estimating greenhouse gas emissions on cattle farms

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<http://hdl.handle.net/10568/77771>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** Climate change mitigation through intensified pasture management: Estimating greenhouse gas emissions on cattle farms in the Brazilian Amazon

**Description / Abstract:** Cattle ranching in Brazil is a key driver of deforestation and greenhouse gas (GHG) emissions. The Brazilian government plans to reduce national GHG emissions by at least 36%, partly by reducing emissions in the livestock sector through strategies such as intensification, pasture improvement, and rotational grazing. We surveyed 40 cattle ranchers located in the Brazilian Amazon biome to investigate how GHG emissions differed between farms participating in livestock sustainability programs with intensified production and farms not participating in these programs. We found that participating farms produced 8.3 kg of CO<sub>2</sub>e/kg of beef than did non-participating farms, which represents 19% fewer emissions. Farms that had participated in a sustainability program for at least two years showed larger differences in emissions: 19.0 kg of CO<sub>2</sub>e/kg of beef less for program farms compared with their counterparts, or 35.8% fewer emissions. Key drivers of the total CO<sub>2</sub>e/kg of beef in all farms were enteric fermentation and manure management. This paper provides farm-level data supporting intensification as a possible strategy to reduce emissions per kilogram of beef produced, and suggests implications for policy and future research.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** BRAZIL

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,AGRICULTURE,LIVESTOCK

**Citation:** Bogaerts M, Cirhigiri L, Robinson I, Rodkin M, Hajjar R, Costa Junior, C, Newton P. 2016. Climate change mitigation through intensified pasture management: Estimating greenhouse gas emissions on cattle farms in the Brazilian Amazon. CCAFS Working Paper no. 188. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77771>

**DOI:** <Not Defined>

**Creator / Authors:**

- Bogaerts, - Meghan
- Cirhigiri, - Lora
- Robinson, - Ian
- Rodkin, - Mikaela
- Hajjar, - Reem
- Costa Junior, - Ciniro
- Newton, - Peter

**Deliverable Quality check**

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
U-M - University of Michigan	Agrawal, Arun <arunagra@umich.edu>	Responsible

## D1272 - SAMPLES database and website

### Main Information

**Type:** Outreach products

**Subtype:** Website

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<http://samples.ccafs.cgiar.org>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** SAMPLES website

**Description / Abstract:** Website to address the dearth of reliable information about greenhouse gas emissions from agriculture in tropical countries. SAMPLES scientists work with developing countries to improve data on agricultural greenhouse gas emissions and mitigation potentials.

**Publication / Creation date:** 2016-03-01

**Language:** en

**Country:** Global

**Keywords:** greenhouse gas emissions, emission factors, SAMPLES

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Richards - Meryl
- Rosenstock - Todd
- Rufino - Mariana
- Butterbach-Bahl - Klaus
- Wollenberg - Lini

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible



## D1273 - GACSA practice brief: Improved ruminant genetics: Implementation guidance for policymakers and investors

### Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77041>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Improved ruminant genetics: Implementation guidance for policymakers and investors

**Description / Abstract:** Genetics makes use of natural variation among animals. Selecting preferred animals as parents can yield permanent and cumulative improvements in the population. More efficient animals can greatly reduce greenhouse gas emissions and feed costs. Breeding, including cross-breeding between indigenous and imported species, can also improve resilience to diseases and heat stress and increase reproductive performance.

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** AGRICULTURE,CLIMATE CHANGE,FOOD SECURITY,CLIMATE-SMART AGRICULTURE

**Citation:** de Haas Y, Davis S, Reisinger A, Richards MB, Difford G, Lassen J. 2016. Improved ruminant genetics: Implementation guidance for policymakers and investors. Climate-Smart Agriculture Practice Brief. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77041>

**DOI:** <Not Defined>

**Creator / Authors:**

- de Haas - Yvette
- Davis - Steve
- Richards - Meryl B
- Difford - Gareth
- Lassen - Jan

- Reisinger - Andy

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2809 - How does agriculture change our climate?

### Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<http://www.environmentreports.com/how-does-agriculture-change/>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** How does agriculture change our climate?

**Description / Abstract:** Despite agriculture's central role in changing the global climate, there are promising opportunities for mitigating emissions and reducing the demand for high-emissions food. Developing a global food system that both achieves food security and reduces agriculture's environmental impact is one of the foremost challenges of our time. This report identifies major sources of emissions in the global food system and opportunities for reducing them, including a global target for mitigation.

**Publication / Creation date:** 2016-06-01

**Language:** English

**Country:** USA

**Keywords:** Global food system, mitigation, emissions, consumption, mitigation target

**Citation:** Colombo, B, P. West, P. Smith, F. Tubiello, J. Gerber, P. Engstrom, A. Urevig, E. Wollenberg. 2016. How does agriculture change our climate? Environment reports, Institute on the Environment, University of Minnesota, <http://www.environmentreports.com/how-does-agriculture-change/>

**Handle:** <http://www.environmentreports.com/how-does-agriculture-change/>

**DOI:** <Not Defined>

**Creator / Authors:**

- Colombo - B
- West - P
- Smith - P
- Tubiello - , Francesco
- Gerber - P
- Engstrom - P

- Urevig - A
- Wollenberg - E

## Deliverable Quality check

**FAIR Compliant:** F A I R

### Partners contributing to this deliverable:

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

**D2810 - Co-benefits to mitigation. In: Adaptation Measures in Agricultural Systems: Messages to SBSTA 44 agriculture workshops.**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

<Not Defined>

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<https://cgspace.cgiar.org/rest/bitstreams/66936/retrieve>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Co-benefits to mitigation

**Description / Abstract:** Summary of the opportunities for achieving adaptation co-benefits from mitigation measures.

**Publication / Creation date:** 2016-07-01

**Language:** English

**Country:** Denmark

**Keywords:** climate change mitigation, adaptation, SBSTA

**Citation:** Wollenberg, E. 2016. Co-benefits to mitigation. In: Dinesh D (ed). 2016. Adaptation Measures in Agricultural Systems: Messages to SBSTA 44 agriculture workshops. CCAFS Working Paper no. 145. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: [www.ccafs.cgiar.org](http://www.ccafs.cgiar.org)

**Handle:** <https://cgspace.cgiar.org/rest/bitstreams/66936/retrieve>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

**Deliverable Quality check**

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna	Responsible

<jwhite19@uvm.edu>

## D2682 - The Economic Advantage

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77628>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** The Economic Advantage: Assessing the value of climate-change actions in agriculture

**Description / Abstract:** This report is aimed at readers who seek to build economic evidence in support of the inclusion of actions on agriculture in climate change plans and programmes, particularly at the national level under the umbrella of nationally determined contributions (NDCs) to the December 2015 Paris Agreement, which aims to restrict a rise in global temperatures and manage risks.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** FOOD SECURITY, AGRICULTURE, CLIMATE CHANGE

**Citation:** Vermeulen S, Richards M, De Pinto A, Ferrarese D, Läderach P, Lan L, Luckert M, Mazzoli E, Plant L, Rinaldi R, Stephenson J, Watkiss P. 2016. The economic advantage: assessing the value of climate change actions in agriculture. Rome, Italy: International Fund for Agricultural Development (IFAD).

**Handle:** <http://hdl.handle.net/10568/77628>

**DOI:** <Not Defined>

**Creator / Authors:**

- Vermeulen, - Sonja
- Richards, - Meryl
- De Pinto, - Alex
- Ferrarese, - Dino
- Läderach, - Peter

- Lan, - Le
- Luckert, - Marty
- Mazzoli, - Enrico
- Plant, - Laura
- Rinaldi, - Roberto
- Stephenson, - Jim

## Deliverable Quality check

**FAIR Compliant:** F A I R

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2683 - The scientific basis of climate-smart agriculture: A systematic review protocol**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<http://hdl.handle.net/10568/70967>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

**Deliverable Metadata**

**Disseminated title:** The scientific basis of climate-smart agriculture: A systematic review protocol

**Description / Abstract:** Background: 'Climate-smart agriculture' (CSA)—agriculture and food systems that sustainably increase food production, improve resilience (or adaptive capacity) of farming systems, and mitigate climate change when possible—has quickly been integrated into the global development agenda. However, the empirical evidence base for CSA has not been assembled, complicating the transition from CSA concept to concrete actions, and contributing to ideological disagreement among development practitioners. Thus, there is an urgent need to evaluate current knowledge on the effectiveness of CSA to achieve its intended benefits and inform discourse on food, agriculture, and climate change. This systematic review intends to establish the scientific evidence base of CSA practices to inform the next steps in development of agricultural programming and policy. We will evaluate the impact of 73 promising farm-level management practices across five categories (agronomy, agroforestry, livestock, postharvest management, and energy systems) to assess their contributions to the three CSA pillars: (1) agronomic and economic productivity, (2) resilience and adaptive capacity, and (3) climate change mitigation in the developing world. The resulting data will be compiled into a searchable Web-based database and analytical engine that can be used to assess the relative effectiveness and strength of evidence for CSA, as well as identify best-fit practices for specific farming and development contexts. This represents the largest meta-analysis of agricultural practices to date. Methods/Design: This protocol sets out the approach for investigating the question: How do farm-level CSA management practices and technologies affect food production and/or farmers' incomes, resilience/adaptive capacity, and climate change mitigation in farming systems of developing countries? The objective of this ongoing systematic review is to provide a first appraisal of the evidence for CSA practices in order to inform subsequent programming. The review is based on data found in English-language peer-reviewed journals with

searches using terms relevant to CSA practices and CSA outcomes. Searches were conducted via Web of Science (WoS) and Scopus. Articles located were screened first by abstract and then full text according to predefined eligibility criteria for inclusion in the review. Data capturing the context of the study (e.g., geographic location, environmental context), management practices, and impacts (e.g., indicators of CSA outcomes) will be compiled from those studies that meet the predetermined criteria. Statistical relationships between practices and impacts will be evaluated via meta-analytical approaches including response ratios and effect sizes. Mechanisms to identify bias and maintain consistency continue to be applied throughout the review process. These analyses will be complemented with an analysis of determinants of/barriers to adoption of promising CSA practices covered in the meta-analysis. Results of the review will be incorporated into a publicly available Web-based database. Data will be publicly available under Creative Commons License in 2016.

**Publication / Creation date:** 2016-02-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY, CLIMATE-SMART AGRICULTURE, ADAPTATION, MITIGATION

**Citation:** Rosenstock TS, Lamanna C, Chesterman S, Bell P, Arslan A, Richards M, Rioux J, Akinleye AO, Champalle C, Cheng Z, Corner-Dolloff C, Dohn J, English W, Eyrich AS, Girvetz EH, Kerr A, Lizarazo M, Madalinska A, McFatridge S, Morris KS, Namoi N, Poultouchidou N, Ravina da Silva M, Rayess S, Ström H, Tully KL, Zhou W. 2016. The scientific basis of climate-smart agriculture: A systematic review protocol. CCAFS Working Paper no. 138. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/70967>

**DOI:** <Not Defined>

**Creator / Authors:**

- Rosenstock, - Todd S.
- Lamanna C, -
- Chesterman, - Sabrina
- Bell P, -
- Arslan A, -
- Richards, - Meryl
- Rioux, - J.
- Akinleye AO, -
- Champalle, - Clara
- Cheng Z, -
- Corner-Dolloff, - Caitlin
- Dohn J, -
- English W, -
- Eyrich AS, -
- Girvetz, - Evan H.
- Kerr A, -
- Lizarazo, - Miguel
- Madalinska A, -
- McFatridge S, -
- Morris KS, -
- Namoi N, -

- Poultouchidou N, -
- Ravina da Silva M, -
- Rayess S, -
- Ström H, -
- Tully KL, -
- Zhou W, -

## Deliverable Quality check

**FAIR Compliant:** F A I R

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2684 - Reducing emissions from agriculture to meet ambitious limits on global temperature increase

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

[http://unfccc.int/files/science/workstreams/research/application/pdf/part2\\_cgiar\\_richards\\_poster\\_medium.pdf](http://unfccc.int/files/science/workstreams/research/application/pdf/part2_cgiar_richards_poster_medium.pdf)

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Reducing emissions from agriculture to meet ambitious limits on global temperature increase

**Description / Abstract:** Poster presented at SBSTA Research Dialogue 8

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY

**Citation:** Wollenberg E, Richards M, Smith P, Havlík P, Obersteiner M, Tubiello FN, Herold M, Gerber P, Carter S, Reisinger A, van Vuuren D, Dickie A, Neufeldt H, Sander BO, Wassman R, Sommer R, Amonette JE, Falcucci A, Herrero M, Opio C, Roman-Cuesta R, Stehfest E, Westhoek H, Ortiz-Monasterio I, Sapkota T, Rufino MC, Thornton PK, Verchot L, West PC, Soussana JF, Baedeker T, Sadler M, Vermeulen S, Campbell BM, Frank S. 2016. Reducing emissions from agriculture to meet the Paris Agreement goals. Poster presented at the Eighth SBSTA Research Dialogue. Bonn, Germany.

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wollenberg, - Eva K
- Richards, - Meryl
- Smith P, -
- Havlik, - Petr
- Obersteiner M, -

- Tubiello FN, -
- Herold M, -
- Gerber, - P.J.
- Carter S, -
- Reisinger, - A
- van Vuuren D, -
- Dickie A, -
- Neufeldt, - Henry
- Sander, - Bjoern Ole
- Wassman, - R.
- Sommer, - R
- Amonette JE, -
- Falcucci A, -
- Herrero M, -
- Opio C, -
- Roman-Cuesta, - RM
- Stehfest E, -
- Westhoek, - H.J.
- Ortiz-Monasterio, - I
- Sapkota, - Tek Bahadur
- Rufino, - Mariana C.
- Thornton, - Philip K.
- Verchot, - Louis
- West PC, -
- Soussana, - J.F.
- Baedeker, - T.
- Sadler M, -
- Vermeulen, - Sonja
- Campbell, - Bruce Morgan
- Frank - Stefan

## Deliverable Quality check

**FAIR Compliant:** F A I R

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2685 - Designing Agricultural Development Investments to Yield Mitigation Co-Benefits in Livestock and Rice Systems

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<http://www.slideshare.net/cgiarclimate/designing-agricultural-development-investments-to-yield-mitigation-cobenefits-in-livestock-and-rice-systems>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Designing Agricultural Development Investments to Yield Mitigation Co-Benefits in Livestock and Rice Systems

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-12-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** mitigation, USAID

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash - Julie
- Wollenberg - Lini
- Galford - Gillian
- Richards - Meryl

### Deliverable Quality check

**FAIR Compliant:** F A I R

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2943 - Greenhouse gas mitigation potentials in the livestock sector

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/72856>

**Open access:** No

**Open access restriction:** Intellectual Property Rights (confidential information)

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Greenhouse gas mitigation potentials in the livestock sector

**Description / Abstract:** This paper identifies mitigation potentials in the livestock sector looking at different supply and demand side options. GLOBIOM results are used to quantify the mitigation potential from structural adjustments in the livestock sector.

**Publication / Creation date:** 2017-06-01

**Language:** English

**Country:** <Not Defined>

**Keywords:** livestock, mitigation, emissions, integrated assessment modeling

**Citation:** Herrero, M., B. Henderson, P. Havlik, P. K. Thornton, R. T. Conant, P. Smith, S. Wiersenius, A. N. Hristov, P. Gerber, M. Gill, K. Butterbach-Bahl, H. Valin, T. Garnett and E. Stehfest (2016) Greenhouse gas mitigation potentials in the livestock sector. Nature Climate Change, 6 (5). pp. 452-461.

**Handle:** <http://www.nature.com/nclimate/journal/v6/n5/full/nclimate2925.html>

**DOI:** <https://dx.doi.org/10.1038/nclimate2925>

**Creator / Authors:**

- Herrero M, -
- Henderson, - Ben
- Havlik, - Petr
- Thornton, - Philip K.
- Conant RT, -
- Smith P, -
- Wiersenius, - S.
- Hristov AN, -
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- Gill M, -
- Butterbach-Bahl, - Klaus
- Valin, - Hugo
- Garnett, - T.
- Stehfest E, -

## Publication Metadata

**Volume:**

**Issue:**

**Pages:**

**Journal/Publisher name:** Global Environmental Change

**Indicators for journal articles:** <Not Defined>

**Publication acknowledge:** No

**Flagsips contribution:**

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

## Partners contributing to this deliverable:

Institution	Partner	Type
IIASA - International Institute for Applied Systems Analysis	Obersteiner, Michael <oberstei@iiasa.ac.at>	Responsible

**D2688 - COP22 side event: Improving MRV for agricultural emission reductions in the livestock sector**

**Main Information**

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<http://www.slideshare.net/cgiarclimate/cop-22-livestock-mrv-side-event-presentation-nov-7-2016>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

**Deliverable Metadata**

**Disseminated title:** COP22 side event: Improving MRV for agricultural emission reductions in the livestock sector

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** livestock, MRV, COP22

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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- Jenkins - Agripina
- Eshetu - Zewdu
- Tiesnamurti - Bess
- Alexandre - Berndt

**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1409 - Aspirational mitigation country targets

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Cancelled

**Year of expected completion:** 2016

**Justification of new expected date of completion:** Will consider publishing in 2017 if there is country demand.

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** <Not Defined>

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** <Not Defined>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** <Not Defined>

**Language:** <Not Defined>

**Country:** <Not Defined>

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Publication Metadata

**Volume:**

**Issue:**

**Pages:**

**Journal/Publisher name:**

**Indicators for journal articles:** <Not Defined>

**Publication acknowledge:** No

**Flagships contribution:**

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

## Deliverable Data sharing

### Deliverable files:

<Not Defined>

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2689 - Metrics for monitoring climate-smart agriculture

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<http://www.slideshare.net/cgiarclimate/metrics-for-monitoring-climatesmart-agriculture>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Metrics for monitoring climate-smart agriculture

**Description / Abstract:** Presentation by Lini Wollenberg at 4 Pour Mille meeting in Montpellier, France 23 June 2016

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** metrics, CSA, 4pmille

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wollenberg - Lini

### Deliverable Quality check

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible



## D1410 - Negotiators and scientists discuss country emissions targets for agriculture at SBSTA 44

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/negotiators-and-scientists-discuss-country-emissions-targets-agriculture-sbsta-44#.V-vZtJMrK9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Negotiators and scientists discuss country emissions targets for agriculture at SBSTA 44

**Description / Abstract:** A new round of climate discussions is underway in Bonn. In the United Nations Framework Convention on Climate Change (UNFCCC) Subsidiary Bodies for Scientific and Technological Advice (SBSTA) 44 meeting, much of the buzz is around Nationally Determined Contributions (NDCs)—the pledges countries have made to reduce emissions under the Paris Agreement. While mitigation from agriculture is not formally part of the discussions at SBSTA, many countries included agricultural mitigation in their NDCs. At a side event on 18 May, scientists from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), the International Institute for Applied Systems Analysis (IIASA), and the National Wildlife Federation joined delegates from Ethiopia, Viet Nam and Colombia to discuss targets for mitigation from agriculture: how countries can determine what is feasible, fair, and necessary to limit climate change.

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** Global

**Keywords:** INDCs, mitigation

**Citation:** <Not Defined>

**Handle:**

<https://ccafs.cgiar.org/blog/negotiators-and-scientists-discuss-country-emissions-targets-agriculture-sbsta-44>

**DOI:** <Not Defined>

**Creator / Authors:**

- Richards - Meryl<0000-0002-5065-7401>

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2690 - Food, poverty and climate change

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<http://www.slideshare.net/cgiarclimate/food-pov-erty-and-climate-change-presentation-to-cdlinks-may-2016>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Food, poverty and climate change

**Description / Abstract:** Presentation by Lini Wollenberg at the 2nd project meeting of CD Links: Linking Climate and Development Policies – Leveraging International Networks and Knowledge Sharing

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** it

**Keywords:** food, poverty, climate change, development

**Citation:** Wollenberg L. Food, poverty and climate change. Presentation at the Presentation by Lini Wollenberg at the 2nd project meeting of CD Links: Linking Climate and Development Policies – Leveraging International Networks and Knowledge Sharing, May 2016. Venice, Italy.

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wollenberg - Lini

### Deliverable Quality check

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D1411 - CSA Practice brief in agroforestry

### Main Information

**Type:** Reports and other publications

**Subtype:** Research workshop report

**Status:** Cancelled

**Year of expected completion:** 2016

**Justification of new expected date of completion:** Will do in 2017 as part of F3 project

**Cross-cutting dimension:**

<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** <Not Defined>

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** <Not Defined>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** <Not Defined>

**Language:** <Not Defined>

**Country:** <Not Defined>

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Deliverable Data sharing

**Deliverable files:**

<Not Defined>

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible



## D1413 - CSA practice brief: biodigesters

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Cancelled

**Year of expected completion:** 2016

**Justification of new expected date of completion:** The research partner who was going to author this brief decided not to do so. (There was no contract in place, this would have been without payment.)

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** <Not Defined>

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** <Not Defined>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** <Not Defined>

**Language:** <Not Defined>

**Country:** <Not Defined>

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Deliverable Data sharing

**Deliverable files:**

<Not Defined>

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura	Wollenberg, Lini	

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## D1415 - Journal article on CCAFS-MOT methodology

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** 2016

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** CCAFS-MOT - a tool for farmers, extension services and policy-advisors to identify mitigation options for agriculture

**Description / Abstract:** CCAFS-MOT is a tool to support farmers, policy advisors and agricultural extension services on the choice of management practices that reduce greenhouse gas emissions (GHG) without risking food security. It is an Excel-based tool which brings together several empirical models to estimate GHG emissions in rice, cropland and livestock systems, and provides information about the most effective mitigation options. Greenhouse gas emissions are estimated in terms of carbon dioxide equivalent per hectare (kg CO<sub>2</sub>eq ha<sup>-1</sup>) and carbon dioxide equivalent per unit of product (kg CO<sub>2</sub>eq kg<sup>-1</sup>). Baseline management practices are chosen by the user and a set of mitigation options are ranked according to their mitigation potential. The tool allows different levels of input to be specified from an introductory to detailed level, depending on objectives and issues like to accommodate users with different backgrounds and details concerning input data. As such it allows for product and region specific assessments of GHGs and mitigation potentials to be made without the need for expert knowledge or for lengthy model set-up and calibration.

**Publication / Creation date:** <Not Defined>

**Language:** en

**Country:** <Not Defined>

**Keywords:** accounting, mitigation options, agriculture

**Citation:** Feliciano D, Nayak DR, Vetter SH, Hillier J. CCAFS-MOT - a tool for farmers, extension services and policy-advisors to identify mitigation options for agriculture. Submitted to Agricultural Systems October 2016. Reference number: AGSY\_2016\_434

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Feliciano - Diana
- Nayak - Dali Rani

- Vetter - Sylvia Helga
- Hillier - Jon

## Publication Metadata

**Volume:**

**Issue:**

**Pages:**

**Journal/Publisher name:** Agricultural Systems

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

## Deliverable Quality check

**FAIR Compliant:** F A I R

## Deliverable Data sharing

**Deliverable files:**

<Not Defined>

**Partners contributing to this deliverable:**

Institution	Partner	Type
University of Aberdeen-United Kingdom	Hillier, Jonathon <j.hillier@abdn.ac.uk>	Responsible

## D2965 - Long-term assessment of soil and water conservation measures on soil organic matter in SE Kenya

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/72968>

**Open access:** No

**Open access restriction:** Limited Exclusivity Agreements

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Long-term assessment of soil and water conservation measures (Fanya-juu terraces) on soil organic matter in South Eastern Kenya

**Description / Abstract:** A comprehensive assessment of soil organic matter (SOM) dynamics in semi-arid agrosystems implementing soil and water conservation (SWC) measures is still lacking despite their extent, ecological and economic significance. Therefore, we assessed the long-term impact of a commonly used SWC technique (Fanya-juu terracing) on SOM-related properties in South Eastern Kenya. A soil sampling campaign was conducted in a replicated stratified random manner on three land uses that had been continuously managed for over 30 years. Samples were analyzed for organic carbon and nitrogen contents,  $\delta^{13}C$ ,  $\delta^{15}N$ , pH and texture. Compared to sites implementing conventional agriculture, the establishment of SWC structures in this erosion-prone landscape resulted in the recovery of SOM levels comparable to those observed in neighboring semi-natural ecosystems. Sites under conventional agriculture practices contained 20 Mg C ha<sup>-1</sup> (0.85 m), while sites with SWC measures and those hosting semi-natural vegetation stored above a third more. There were significant differences in soil C/N ratios as well as in  $\delta^{13}C$  and  $\delta^{15}N$  values between SWC cultivation practices classified according to the presence or absence of trees. The presence of woody vegetation in sites with SWC structures had a strong impact on the spatial variability of SOM-related properties. There was also a significant negative relationship between  $\delta^{15}N$  values and C/N ratios across the different land uses. Our findings indicate the existence of contrasting SOM dynamics caused by vegetation-related effects, and provide suggestions for enhancing SOM storage in agricultural sites implementing SWC measures.

**Publication / Creation date:** 2016-04-01

**Language:** en

**Country:** KENYA

**Keywords:** SOIL,WATER,TERRACES,RESEARCH

**Citation:** Saiz, G., Wandera, F.M., Pelster, D.E., Ngetich, W., Okalebo, J.R., Rufino, M.C. and Butterbach-Bahl, K. 2016. Long-term assessment of soil and water conservation measures (Fanya-juu terraces) on soil organic matter in South Eastern Kenya. Geoderma 247: 1-9

**Handle:** <http://hdl.handle.net/10568/72968>

**DOI:** <https://dx.doi.org/10.1016/j.geoderma.2016.03.022>

**Creator / Authors:**

- Saiz, - G.
- Wandera, - F.M.
- Pelster, - David
- Ngetich, - W.
- Okalebo, - J.R.
- Rufino, - Mariana C.
- Butterbach-Bahl, - Klaus

#### Publication Metadata

**Volume:** 274

**Issue:**

**Pages:** 1-9

**Journal/Publisher name:** Geoderma

**Indicators for journal articles:** • This journal article is an ISI publication

• This article have a co-author from a developing country National Agricultural Research System (NARS)

• This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

#### Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
AU - Aarhus University	Kandel, Tanka <Tanka.Kandel@agrsci.dk>	Responsible

## D1302 - Summary of potential for economic measures to drive low emissions consumption

### Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77142>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** The technical mitigation potential of demand-side measures in the agri-food sector: a preliminary assessment of available measures

**Description / Abstract:** A number of studies have suggested that addressing greenhouse gas (GHG) emissions from agricultural production, or 'supply-side emissions', will be insufficient to reduce agri-food sector GHG emissions to limit the increase of global temperatures to well below 2o C. Recent studies have also suggested that 'demand-side measures' related to food consumption, food value chains, and food loss and waste, will be necessary to reduce emissions and may have a larger technical mitigation potential than supply-side measures. This report assesses the availability of demand-side policies and measures, and looks at evidence of these measures' impacts on behavior that directly results in emissions from the agri-food sector. Often discussed demand-side measures include 'soft' measures (e.g. health promotion initiatives, product labeling) and 'hard' measures (e.g. consumption taxes or subsidies). We review here the effectiveness of these measures for dietary change and reductions in food loss and waste, with a focus on developing countries, where agrifood emissions are projected to grow most rapidly and where the gaps in knowledge are largest.

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** AGRICULTURE,FOOD SECURITY,CLIMATE CHANGE

**Citation:** Kiff L, Wilkes A, Tennigkeit T. 2016. The technical mitigation potential of demand-side measures in the agri-food sector: a preliminary assessment of available measures. CCAFS Report No. 15. Copenhagen,Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77142>

**DOI:** <Not Defined>

**Creator / Authors:**

- Kiff - Laura
- Wilkes - Andreas
- Tennigkeit - Timm

**Deliverable Quality check**

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
UNIQUE - Unique Forestry and Land Use GmbH	Tennigkeit, Timm <timm.tennigkeit@unique-landuse.de>	Responsible

## D1303 - Participatory Action Research on agricultural carbon projects in East Africa

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<https://cgspace.cgiar.org/handle/10568/76295>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

### Deliverable Metadata

**Disseminated title:** Building local institutional capacity to implement agricultural carbon projects: participatory action research with Vi Agroforestry in Kenya and ECOTRUST in Uganda

**Description / Abstract:** Background: Smallholders have begun to take advantage of a growing pool of investment in climate change mitigation. Meanwhile, early movers in this area are working to develop innovative models that will allow projects to be nancially sustainable and scalable while bene ting local actors. This study focuses on two of these projects in East Africa, managed by Vi Agroforestry in Kenya and ECOTRUST in Uganda. They engaged in a participatory action research process to identify ways that local actors could take on expanded roles within the projects. Results: Results are presented as case studies which include project context, roles of local project actors, actions selected, and the outcomes of the actions on the key actors targeted. The actions focused on building the capacities of community-based intermediaries, facilitating partnerships with local government and local non-governmental organizations, and supporting a more active role played by women. Key ndings from this process were that com- munity-based intermediaries can play a leading role in land management trainings; local government involvement is critical to project success; local non-governmental organizations and businesses can play central roles in training and providing market incentives to farmers to implement sustainable practices; and women's roles in projects can grow if project bene ts are aligned with their needs and trainings are made more accessible. Conclusions: These cases demonstrate that there is substantial scope for the responsibilities within agricultural carbon projects, and by extension climate-smart agriculture initiatives more broadly, to be institutionalized at the local level. However, regardless of the institutional setup, due to carbon market factors beyond the control of these projects, the nancial case for smallholder projects that rely solely on nancing from carbon credits remains chal- lenging to these projects and others like them. As programmatic and policy-led approaches grow from these project models, it may be easier to nd ways to integrate carbon nancing with support for climate change adaptation, rural development, and ecosystem services provision. With these new models, the ability to institutionalize management and

implementation capacity at the local level will remain critically important.

**Publication / Creation date:** 2016-07-01

**Language:** en

**Country:** UGANDA

**Keywords:** CLIMATE CHANGE MITIGATION,SUSTAINABLE LAND MANAGEMENT,CLIMATE FINANCE,AGRICULTURE,CLIMATE CHANGE,FOOD SECURITY

**Citation:** Shames S, Heiner K, Kapukha M, Kigali L, Masina M, Nantongo Kalunda P, Ssempala A, Recha J, Wekesa A. 2016. Building local institutional capacity to implement agricultural carbon projects: Participatory action research with Vi Agroforestry in Kenya and ECOTRUST in Uganda. Agriculture and Food Security 5:13.

**Handle:** <http://hdl.handle.net/10568/76295>

**DOI:** <https://dx.doi.org/10.1186/s40066-016-0060-x>

**Creator / Authors:**

- Shames - Seth <0000-0002-7395-0838>
- Heiner - Krista
- Kapukha - Martha
- Kiguli - Lillian
- Masiga - Moses
- Nantongo Kalunda - Pauline
- Ssempala - Annet
- Recha - John
- Wekesa - Amos

### Publication Metadata

**Volume:** 5

**Issue:** 13

**Pages:**

**Journal/Publisher name:** Agriculture and Food Security

**Indicators for journal articles:** • This journal article is an ISI publication

- This article have a co-author from a developing country National Agricultural Research System (NARS)
- This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:** • CCAFS - F3 (LINI)

### Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
EcoAgriculture-United States	Shames, Seth <sshames@ecoagriculture.org>	Responsible



## D3095 - Efficacy of Integrated Straw Formulations on Lowland Rice Field Organic Carbon and GHG Using CCAFS-MOT

### Main Information

**Type:** Articles and Books

**Subtype:** Journal Article (peer reviewed)

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/80053>

**Open access:** Yes

**License adopted:** CC\_BY

### Deliverable Metadata

**Disseminated title:** Efficacy of Integrated Straw Formulations on Lowland Rice Field Organic Carbon and Greenhouse Gas Emissions Using CCAFS-MOT Model in Niger State, Nigeria

**Description / Abstract:** Aims: This study aims to determine the short term effects during off-season of pre-wetted straw and urea incorporation on lowland rice field soil carbon sequestration and greenhouse gas emissions using climate change adaptation food security mitigation option tool (CCAFS-MOT) model. Study Design: The experiment was performed using a Randomized Complete Block Design. Place and Duration of Study: Nigeria, Niger State, Bida local Government from April to July 2015. Methodology: Integrated formulations of rice straw and urea at different rates respectively: 2, 3 and 4 t/ha and 25, 50 and 75 kg/ha were used with one check plot (C) (without straw and urea). The experiment was a Randomized Complete Block Design, and ten (10) integrated formulations (treatments) were used with four (04) replications. Each replication, was made of ten (10) plots giving a total number of forty (40) plots. The effect of treatments on the following variables; Soil Organic Carbon Density Gain per Year (SOCDG/year, kg/ha) and GHGs emissions (kg/ha) were determined in order to identify the best treatments. Data collected were analyzed using GenStat 16.2 and CCAFS-MOT 1.0 for SOC balance. Matlab 11.0 and Excel 2013 were also used for data processing and graphs. Significance and Duncan's Multiple Range Test were performed at 95%. Results: Results indicated significance difference of treatments on each parameter evaluated. SOCDG increase is function of the quantity of straw and urea incorporated (Fpr. 0.001). Moreover, the study revealed three best treatments (T2, T4 and T5). Their responses (TR, %) to Soil Organic Carbon Density Gain per Year (SOCDG/year, kg/ha) have increased up to 43%. Potential carbon sequestration estimated by the CCAFS-MOT was about 44.4% for the improved practices identified with 0% methane emission and scanty nitrous oxide emission up to 31.3%. These results give strong evidence concerning the use of pre-wetted technique as panacea to both mitigate climate change and enhance croplands

productivity and resilience to these changes in Niger State, Nigeria. Conclusion: Pre-wetted straw and urea application can help to deplete greenhouse gas emission and enhance carbon on agricultural lands. However, additional trials are needed before validation of the method under different agro ecological conditions in west African zones.

**Publication / Creation date:** 2017-03-01

**Language:** en

**Country:** NIGERIA

**Keywords:** CLIMATE CHANGE, AGRICULTURE, FOOD SECURITY, SOIL, GREENHOUSE GASES

**Citation:** Koglo YS, Abdulkadir A, Feliciano D, Okhimamhe AA. 2017. Efficacy of Integrated Straw Formulations on Lowland Rice Field Organic Carbon and Greenhouse Gas Emissions Using CCAFS-MOT Model in Niger State, Nigeria. American Journal of Experimental Agriculture 13(5):1-11.

**Handle:** <http://hdl.handle.net/10568/80053>

**DOI:** <https://dx.doi.org/10.9734/AJEA/2016/27088>

**Creator / Authors:**

- Koglo, - Yawovi Sena
- Abdulkadir, - Abubakar
- Feliciano, - Diana
- Okhimamhe, - Appollonia A.

#### Publication Metadata

**Volume:** 13

**Issue:** 5

**Pages:** 1-11

**Journal/Publisher name:** American Journal of Experimental Agriculture

**Indicators for journal articles:** • This article have a co-author from a developing country National Agricultural Research System (NARS)

• This article have a co-author based in an Earth System Science-related academic department

**Publication acknowledge:** Yes

**Flagships contribution:**

#### Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
University of Aberdeen-United Kingdom	Hillier, Jonathon <j.hillier@abdn.ac.uk>	Responsible

## D292 - CCAFS Mitigation Options Tool, Delta version

### Main Information

**Type:** Data, models and tools

**Subtype:** Data portal/Tool/Model code/Computer software

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/67027>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** CCAFS Mitigation Options Tool, Delta version

**Description / Abstract:** The Climate Change, Agriculture and Food Security Mitigation Options Tool (CCAFS-MOT) is an Excel tool to support policy advisors and agricultural extension services on the choice of management practices that reduce greenhouse gas emissions (GHG) without risking crop yields. It integrates several empirical models to estimate GHG emissions from rice, grassland, cropland, and livestock systems, and to provide information about the most effective mitigation options. The CCAFS-MOT estimates GHG emissions and carbon sequestration in terms of carbon dioxide equivalent per kilogram per hectare (kgCO<sub>2</sub>e/ha) and carbon dioxide equivalent per unit of product (kgCO<sub>2</sub>e/kg product). Users select the baseline management practices for the specific system and obtain an array of mitigation options ranked according to the mitigation potentials. The aim of the tool is to accommodate a range of users, from experts to non-experts, depending on objectives and issues such as time constraints and information available.

**Publication / Creation date:** 2015-06-01

**Language:** en

**Country:** Global

**Keywords:** low emissions agriculture, mitigation

**Citation:** Feliciano, D. 2016. The CGIAR Research Program on Climate Change, Agriculture and Food Security Mitigation Option Tool (CCAFS-MOT) guidelines for users. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark.

**Handle:** <http://hdl.handle.net/10568/67027>

**DOI:** <http://hdl.handle.net/10568/67027>

**Creator / Authors:**

- Nayak - Dali

- Vetter - Sylvia
- Hillier - John
- Feliciano - Diana<0000-0002-5466-4879>

**Partners contributing to this deliverable:**

Institution	Partner	Type
University of Aberdeen-United Kingdom	Hillier, Jonathon <j.hillier@abdn.ac.uk>	Responsible

D304 - Policy Brief - Transitioning to more sustainable, low-emissions agriculture in Brazil

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<https://cgspace.cgiar.org/handle/10568/75631>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_SA

**Deliverable Metadata**

**Disseminated title:** Transitioning to more sustainable, low-emissions agriculture in Brazil

**Description / Abstract:** CATTLE Cattle producers joined sustainability initiatives primarily to increase production, reduce production costs, learn new practices and access innovations, and because of their interest in sustainability. Farmers who shifted to sustainable intensification practices increased their productivity. Some also accessed new markets and a minority earned higher prices. Producers sought farming advice mostly from nearby farmers and technicians promoting sustainability initiatives. The cost of changing farm practices, insufficient technical assistance or capacity, and difficulty in complying with legal standards were the major barriers preventing other cattle producers from participating in sustainability initiatives. The greenhouse gas (GHG) emissions per kg of beef of cattle farmers in sustainable intensification programs were 18% lower compared to neighboring farms not in the programs. Early life-cycle cattle ranching (e.g. calving, early rearing), commonly associated with deforestation, has been more engaged with NGO initiatives providing support and agronomic outreach rather than formal standards and reporting. Coffee Coffee farmers joined a certification program because of requests from buyers, potential for receiving price premiums on their coffee, and to access new markets with certified products. Coffee farmers producing certified coffee increased their economic efficiency, mainly due to higher productivity, compared to before they certified. Coffee producers' connections to technicians and access to information mostly revolved around their participation in cooperatives POLICY RECOMMENDATIONS Build on market development lessons from the coffee sector to enhance sustainability, quality, traceability, and branding in the cattle sector. Expand sustainability initiatives' capacity to deliver market access, technical assistance, and finance services to more cattle farmers. Continue support to producers in sustainability initiatives over multiple years, as they are likely to increase the sustainability of their practices with time. Expand agronomic outreach and sustainability initiatives to calving and early rearing operations to reduce associated deforestation and GHG emissions.

**Publication / Creation date:** 2016-06-01

**Language:** en,pt

**Country:** BRAZIL

**Keywords:** LIVESTOCK,COFFEE,AMAZON,CLIMATE CHANGE,MITIGATION,AGRICULTURE,FOOD SECURITY

**Citation:** Pinto LFG, Hajjar R, Newton P, Agrawal A, Adshead D, Bini D, Mogaerts M, Cirhigiri L, Maguire-Rajpaul VA, González-Chaves A, McDermott C, Milder J, Pinho P, Robinson I, Rodkin M, Wollenberg E. 2016. Transitioning to more sustainable, low-emissions agriculture in Brazil. CCAFS Info Note. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/75631>

**DOI:** <Not Defined>

**Creator / Authors:**

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- Newton - Peter
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- González-Chaves - Adrian
- McDermott - Constance
- Milder - Jeff
- Pinho - Patricia
- Robinson - Ian
- Rodkin - Mikaela
- Wollenberg - Eva

## Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
IMAFLOA - Instituto de Manejo e Certificação Florestal e Agrícola	Guedes Pinto, Luis Fernando <luisfernando@imaflora.org>	Responsible

## D2613 - Zero deforestation and sustainable production: a tenable couple?

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/zero-deforestation-and-sustainable-production-tenable-couple#.WKPJ0BrJ0d>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:**

<https://ccafs.cgiar.org/blog/zero-deforestation-and-sustainable-production-tenable-couple#.WKPJ0BrJ0d>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-04-01

**Language:** en

**Country:** Brazil

**Keywords:** deforestation, cattle, Amazon

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- White - Julianna

**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

## D2614 - Terracing practice increases food security and mitigates climate change in East Africa

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/terracing-practice-increases-food-security-and-mitigates-climate-change-east-africa#.WKPKiRlJ0d>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Terracing practice increases food security and mitigates climate change in East Africa

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** Kenya

**Keywords:** terracing, fanya-juu, soil carbon

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

## D2615 - World's most popular greenhouse gas calculators for agriculture are not accurate in tropical developing countries

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<https://ccaafs.cgiar.org/blog/world%E2%80%99s-most-popular-greenhouse-gas-calculators-agriculture-are-60-accurate-tropical-developing#.V-vZspMrK9Y>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** World's most popular greenhouse gas calculators for agriculture are not accurate in tropical developing countries

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** Global

**Keywords:** greenhouse gas calculators, greenhouse gas emissions

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

## D2871 - Agriculture in the INDCs

### Main Information

**Type:** Outreach products

**Subtype:** Presentation/Poster

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** Not Disseminated

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Agriculture in the INDCs

**Description / Abstract:** Presentation given by Lini Wollenberg at CCAFS Agriculture and Climate Change Negotiators Workshop held at FAO in Rome, October 14-16 2016

**Publication / Creation date:** 2016-10-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** INDCs, mitigation, negotiators

**Citation:** Wollenberg L and Richards M. Agriculture in the INDCs. Presentation at Agriculture and Climate Change Negotiators Workshop held at FAO in Rome, October 14-16 2016.

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wollenberg - Lini
- Richards - Meryl

### Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Deliverable Data sharing

**Deliverable files:**

<https://marlo.cgiar.org/data/ccafs/projects//111/deliverableDataSharing/Day%201%20Wollenberg%20ONDC%20Ag%20Nego%20Oct%205%202016%20.pdf>

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2616 - How much will climate change mitigation in agriculture cost?

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<https://ccafs.cgiar.org/blog/how-much-will-mitigation-agriculture-cost#.V-vZsZMrK9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** How much will climate change mitigation in agriculture cost?

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** Global

**Keywords:** mitigation, economics

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2617 - Innovation and support for cattle producers needed to reduce emissions from cattle in Brazilian Amazon

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<https://ccaafs.cgiar.org/cattle-ranching-brazilian-amazon-need-reduce-emissions-global-significance#.V-vZsJMrK9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Innovation and support for cattle producers needed to reduce significant emissions from cattle in Brazilian Amazon

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-06-01

**Language:** en

**Country:** Brazil

**Keywords:** ranching, amazon, cattle, emissions

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

## D2618 - Project developers key for linking smallholder farmers to global agricultural carbon markets

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Gender

**Gender level(s):**

- Monitoring/impact assessment of gender outcomes of research/innovations/interventions/policies
- Analysis of sex-disaggregated data

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

<https://ccaafs.cgiar.org/blog/project-developers-key-linking-smallholder-farmers-global-agricultural-carbon-markets#.V-vZIZMrK9Y>

**Dissemination Channel:** Other

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Project developers key for linking smallholder farmers to global agricultural carbon markets

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-08-01

**Language:** en

**Country:** Kenya

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible



## D2619 - Animal breeding benefits farmers, offers food secure opportunity for mitigating climate change

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/animal-breeding-benefits-farmers-offers-food-secure-opportunity-mitigating-climate-change#.WfAd8neZO9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Animal breeding benefits farmers, offers food secure opportunity for mitigating climate change

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** Global

**Keywords:** livestock, breeding, mitigation

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

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**Partners contributing to this deliverable:**

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

**D2620 - Better data on tropical greenhouse gas emissions hotspots from land use sector now available**

**Main Information**

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/spatially-explicit-land-sector-data-shows-greenhouse-gas-emissions-hotspots-inform-mitigation#.WfAd9XeZO9Y>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Better data on tropical greenhouse gas emissions hotspots from land use sector now available

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** Global

**Keywords:** emissions, hotspots

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

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**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2621 - From the ground up: Africa aims for sustainable, resilient soil management to combat climate change

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/ground-africa-aims-sustainable-and-resilient-soil-management-combat-climate-change#.WFAd-HeZO9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** From the ground up: Africa aims for sustainable, resilient soil management to combat climate change

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** Africa

**Keywords:** soil, fertility, Africa, adaptation, COP22

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Partners contributing to this deliverable:

Institution	Partner	Type
UVM - University of Vermont	White, Julianna <jwhite19@uvm.edu>	Responsible

## D2622 - Improving reporting for agricultural emission reductions in the livestock sector

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<https://ccafs.cgiar.org/blog/improving-reporting-agricultural%C2%A0emission-reductions-livestock-sector#.WFAd-HeZO9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Improving reporting for agricultural emission reductions in the livestock sector

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-12-01

**Language:** en

**Country:** Global

**Keywords:** livestock, emissions, MRV

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wollenberg - Lini

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## D2623 - Mitigation co-benefits of increased water and nutrient efficiency in irrigated rice in Bangladesh

### Main Information

**Type:** Outreach products

**Subtype:** Blog

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination URL:**

**Dissemination Channel:** Other

<https://ccafs.cgiar.org/blog/mitigation-co-benefits-increased-water-and-nutrient-efficiency-irrigated-rice-bangladesh#.WFAd-neZO9Y>

**Open access:** Yes

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** Mitigation co-benefits of increased water and nutrient efficiency in irrigated rice in Bangladesh

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** 2016-12-01

**Language:** en

**Country:** Bangladesh

**Keywords:** rice, water, nutrients, mitigation, low emission development

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash - Julie

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D1098 - (BILATERAL) Spatially referenced central information base and website**

**Main Information**

**Type:** Outreach products

**Subtype:** Website

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** Other

**Dissemination URL:**

<https://sites.google.com/a/irri.org/ccac/>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** GHG mitigation in rice information kiosk

**Description / Abstract:** This website serves as an information kiosk for greenhouse gas emissions and mitigation options in rice production systems. It covers rice management practices, data on biophysical and socioeconomic suitability of farming technologies and practices, and policy actions in Bangladesh, Colombia, and Vietnam.

**Publication / Creation date:** <Not Defined>

**Language:** en

**Country:** Global

**Keywords:** rice, mitigation

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

**Partners contributing to this deliverable:**

Institution	Partner	Type
IRRI - International Rice Research Institute	Sander, Bjoern Ole <b.sander@irri.org>	Responsible
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Other

## D1099 - (BILATERAL) National biophysical and socioeconomic assessments

### Main Information

**Type:** Data, models and tools

**Subtype:** Database/Dataset/Data documentation

**Status:** Cancelled

**Year of expected completion:** 2016

**Justification of new expected date of completion:** This deliverable will be reported by Project P21, deliverable D1186.

**Cross-cutting dimension:**

- N/A

### Deliverable dissemination

**Is this deliverable already disseminated:** No

**Open access:** No

**Open access restriction:** <Not Defined>

**License adopted:** No

### Deliverable Metadata

**Disseminated title:** <Not Defined>

**Description / Abstract:** <Not Defined>

**Publication / Creation date:** <Not Defined>

**Language:** <Not Defined>

**Country:** <Not Defined>

**Keywords:** <Not Defined>

**Citation:** <Not Defined>

**Handle:** <Not Defined>

**DOI:** <Not Defined>

**Creator / Authors:** <Not Defined>

### Deliverable Quality check

**FAIR Compliant:** **F A I R**

**Process of data quality assurance:** <Not Defined>

**Data dictionary:** <Not Defined>

**Are the tools used for data collection available:** <Not Defined>

### Deliverable Data sharing

**Deliverable files:**

<Not Defined>

**Partners contributing to this deliverable:**

Institution	Partner	Type
IRRI - International Rice Research Institute	Sander, Bjoern Ole <b.sander@irri.org>	Responsible

**D2647 - Manure helps feed the world: Integrated Manure Management demonstrates manure is a valuable resource**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- Capacity Development

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/74486>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Manure helps feed the world: Integrated Manure Management demonstrates manure is a valuable resource

**Description / Abstract:** Overview of Integrated Manure Management Integrated Manure Management is the optimal handling of livestock manure from collection, through storage and treatment up to application (crops and aquaculture). Through this process it is possible to prevent nutrient losses to a large extent under the site-specific circumstances. Healthy soils produce more food and are more resilient to climate change. Manure contains nutrients and organic matter essential for good soil fertility and soil health. Manure is a valuable resource of crop fertilizer, soil amendment and renewable energy. Manure is not a waste; not properly using manure is a waste.

**Publication / Creation date:** 2016-05-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE,AGRICULTURE,FOOD SECURITY

**Citation:** Teenstra E, Andeweg K, Vellinga T. 2016. Manure helps feed the world: Integrated Manure Management demonstrates manure is a valuable resource. Climate-Smart Agriculture Practice Brief. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/74486>

**DOI:** <Not Defined>

**Creator / Authors:**

- Teenstra E, -
- Andeweg, - K.
- Vellinga, - T

## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2648 - Shifting food consumption to mitigate climate change critical to fulfilling the Paris Agreement; but how?**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**  
<Not Defined>

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<http://hdl.handle.net/10568/77145>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Shifting food consumption to mitigate climate change is critical to fulfilling the Paris Agreement, but how?

**Description / Abstract:** Reducing emissions by changing consumption of foods with large greenhouse gas emissions could have a major impact on climate change. Yet past efforts to change diets through public policy have had mixed results, suggesting that recent estimates of technical mitigation potential likely exceed feasible reductions in emissions. ? Shifting consumption away from livestock products is a major opportunity for reducing emissions driven by consumption demand. In some contexts, this could also provide health, food security and other environmental benefits. ? Packages of policy mechanisms and interventions involving health, nutrition, efficiency and sustainability in supply chains will be more effective in achieving dietary change than any one measure. ? Focusing on reducing food loss and waste in high potential areas and involving key value chain actors can increase returns on efforts to mitigate climate change and improve food security. ? Private sector investment in reducing food loss and waste requires an enabling environment, support for development of commercially viable investments, and increased awareness among financial institutions of investment opportunities.

**Publication / Creation date:** 2016-09-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** CLIMATE CHANGE,FOOD SECURITY,AGRICULTURE

**Citation:** Kiff L, White J, Wilkes A, Wollenberg E. 2016. Shifting food consumption to mitigate climate change is critical to fulfilling the Paris Agreement, but how? CCAFS Info Note. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

**Handle:** <http://hdl.handle.net/10568/77145>

**DOI:** <Not Defined>

**Creator / Authors:**

- Wilkes, - Andreas
- Kiff, - Laura
- Wollenberg, - Eva K
- White, - Julianna

**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
UNIQUE - Unique Forestry and Land Use GmbH	Tennigkeit, Timm <timm.tennigkeit@unique-landuse.de>	Responsible

## D2649 - Gender dynamics in the cattle sector in Central America: A literature review

### Main Information

**Type:** Reports and other publications

**Subtype:** Discussion paper/Working paper/White paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**  
<Not Defined>

### Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**  
<http://hdl.handle.net/10568/77616>

**Open access:** Yes

**License adopted:** CC\_BY\_NC\_ND

### Deliverable Metadata

**Disseminated title:** Gender dynamics in the cattle sector in Central America: A literature review

**Description / Abstract:** Cattle production is an important economic activity throughout Central America. Dairy production, in particular, is an important activity for many smallholder farmers in Costa Rica and across the Central America region. Women's role in cattle production tends to be poorly valued and recognized, however. This literature review summarizes the scant research published about gender in the cattle sector in Central America, including the findings that (1) women lack access to and control over productive resources in the cattle sector and (2) extension services and training do not focus on women, likely because women's contributions are undervalued. The paper then describes a successful project in Nicaragua and recommends areas for research.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** <Not Defined>

**Keywords:** AGRICULTURE,CLIMATE,GENDER,LIVESTOCK,FOOD SECURITY,CLIMATE CHANGE

**Citation:** Gallina A. 2016. Gender dynamics in the cattle sector in Central America: A literature review. CCAFS Working Paper no. 181. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. Available online at: [www.ccafs.cgiar.org](http://www.ccafs.cgiar.org)

**Handle:** <http://hdl.handle.net/10568/77616>

**DOI:** <Not Defined>

**Creator / Authors:**

• Gallina, - Ambra

### Deliverable Quality check

**FAIR Compliant:** **F A I R**

## Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2650 - Accelerating Agriculture Productivity Improvement in Bangladesh: Mitigation co-benefits of nutrients and water use efficiency**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77620>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Accelerating Agriculture Productivity Improvement in Bangladesh: Mitigation co-benefits of nutrients and water use efficiency

**Description / Abstract:** Analysis of potential mitigation in the development project Accelerating Agriculture Productivity Improvement (AAPI) in Bangladesh showed a 2% reduction in greenhouse gas (GHG) emissions, driven by urea deep placement (UDP) and alternate wetting and drying (AWD) in flooded rice systems. Given high emissions associated with conventional irrigated rice production, this represents a substantial reduction in emissions. ? AAPI promotes UDP, a fertilization practice known to increase nitrogen uptake efficiency. Based on the project plan and progress of implementation, UDP adoption was anticipated on 1.1 million ha of aman rice and 700,000 ha of boro rice. UDP is an example of the absolute emission reductions that are possible when a practice is widely implemented. ? AAPI promotes AWD, an irrigation practice for rice that reduces the amount of water used and results in decreased emissions. AAPI tested AWD on a pilot scale (21,000 ha). Climate change mitigation benefits would increase dramatically if adoption of AWD were more widespread. ? Due to increased rice yields, UDP and AWD reduce the emission intensity (CO<sub>2</sub>e emitted per kg production) from rice production by 10–48%.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** BANGLADESH

**Keywords:** CLIMATE, AGRICULTURE, WATER, FOOD SECURITY, CLIMATE CHANGE

**Citation:** Nash J, Grewer U, Bockel L, Galford G, Pirolli G, White J. 2016. Accelerating Agriculture Productivity Improvement in Bangladesh: Mitigation co-benefits of nutrient and water use efficiency. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77620>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
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- Bockel, - Louis
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**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2652 - ACCESO in Honduras: Mitigation co-benefits of perennial crop expansion, soil management, and livestock improvements**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

<Not Defined>

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77618>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** ACCESO in Honduras: Mitigation co-benefits of perennial crop expansion, soil management, and livestock improvements

**Description / Abstract:** The agricultural development project ACCESO reduced greenhouse gas emissions (GHG) and led to net carbon sequestration due to perennial crop expansion. ? Increased fertilizer use was a moderate source of emissions that was more than offset by reduced emissions from other ACCESOsupported practices, including improvements in soil, water, and fertilizer management, and in feed and grassland use by dairy cows. ? Compared to conventional practices, ACCESOsupported activities reduced emission intensity (GHG emissions per kilogram of output) for carrots (-106%), cabbages (-99%), maize (-99%), and potatoes (-98%) compared to conventional production methods. Emission intensity increased due to greater fertilizer use for plantain (55%) and coffee (247%).

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** HONDURAS

**Keywords:** CLIMATE,AGRICULTURE,LIVESTOCK,CROPS,CLIMATE CHANGE,FOOD SECURITY

**Citation:** Nash J, Grewer U, Bockel L, Galford G, Pirolli G, White J. 2016. ACCESO in Honduras: Mitigation co-benefits of perennial crop expansion, soil management, and livestock improvements. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77618>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
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- Bockel, - Louis
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## Deliverable Quality check

**FAIR Compliant:** **F** **A** **I** **R**

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2653 - Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77619>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity

**Description / Abstract:** Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) showed a notable decrease in emission intensity (GHG emissions per unit of meat or milk). PRIME enabled farmers to increase production significantly, between 24% and 96%, which led to a decrease in emission intensity ranging from -4% to -42%. ? Due to improvements in feed quantity, PRIME projected an increase in average animal weight for all livestock (8.3 million head), which resulted in an increase in GHG emissions by an estimated 1.5 million tCO<sub>2</sub>e/yr. ? PRIME empowered stakeholders collectively to design and establish plans for effective management of pastures and water. The project supported soil and water conservation measures, enclosing degraded pastures, selective bush thinning, and clearing the invasive plant Prosopis. These practices improved pasture plant quality and reduced bare soil and overgrazing, which resulted in increased sequestration of soil carbon. These grassland improvements were estimated to sequester -0.1 million tCO<sub>2</sub>e/yr.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** ETHIOPIA

**Keywords:** CLIMATE, AGRICULTURE, LIVESTOCK, CLIMATE CHANGE, FOOD SECURITY

**Citation:** Nash J, Grever U, Bockel L, Galford G, Pirolli G, White J. 2016. Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77619>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
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- Bockel, - Louis
- Galford, - Gillian
- White, - Julianna

**Deliverable Quality check**

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

D2654 - Resilience and Economic Growth in Arid Lands - Accelerated Growth in Kenya

Main Information

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

Deliverable dissemination

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77619>

**Open access:** Yes

**License adopted:** No

Deliverable Metadata

**Disseminated title:** Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity

**Description / Abstract:** Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) showed a notable decrease in emission intensity (GHG emissions per unit of meat or milk). PRIME enabled farmers to increase production significantly, between 24% and 96%, which led to a decrease in emission intensity ranging from -4% to -42%. ? Due to improvements in feed quantity, PRIME projected an increase in average animal weight for all livestock (8.3 million head), which resulted in an increase in GHG emissions by an estimated 1.5 million tCO<sub>2</sub>e/yr. ? PRIME empowered stakeholders collectively to design and establish plans for effective management of pastures and water. The project supported soil and water conservation measures, enclosing degraded pastures, selective bush thinning, and clearing the invasive plant Prosopis. These practices improved pasture plant quality and reduced bare soil and overgrazing, which resulted in increased sequestration of soil carbon. These grassland improvements were estimated to sequester -0.1 million tCO<sub>2</sub>e/yr.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** ETHIOPIA

**Keywords:** CLIMATE, AGRICULTURE, LIVESTOCK, CLIMATE CHANGE, FOOD SECURITY

**Citation:** Nash J, Grever U, Bockel L, Galford G, Pirolli G, White J. 2016. Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) in Ethiopia: Mitigation co-benefits of livestock productivity. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77619>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
- Grewer, - Uwe
- Bockel, - Louis
- Galford, - Gillian
- White, - Julianna

## Deliverable Quality check

**FAIR Compliant:** F A I R

### Partners contributing to this deliverable:

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2655 - Peru Cacao Alliance: Carbon sequestration as a co-benefit of cacao expansion**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

- N/A

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77617>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Peru Cacao Alliance: Carbon sequestration as a co-benefit of cacao expansion

**Description / Abstract:** The agricultural development project, Peru Cacao Alliance (PCA), has contributed to climate change mitigation. Estimated carbon sequestration from perennial crop expansion, which was -211,467 tCO<sub>2</sub>e metric tonnes of carbon dioxide equivalent per year, more than offset increased greenhouse gas emission (GHG) from fertilizer and pesticide management (10,286 tCO<sub>2</sub>e). The net difference, -201,180 tCO<sub>2</sub>e, is equivalent to the carbon content of 465,774 barrels of oil. ? The agroforestry system promoted by PCA included cacao and shade trees. Since PCA could not provide definitive data detailing the presence of existing shade trees compared to the planting of new shade trees, this analysis did not include carbon dynamics of shade trees. If new trees were planted for shade, there would be greater carbon uptake by the system than presented in this analysis. ? PCA reduced emissions intensity for cacao (CO<sub>2</sub>e emitted per kg production) through improved carbon sequestration and increased yields. PCA improved cacao postharvest handling (proper pod selection, storage, drying and fermentation methods) by building knowledge and capacity in producer organizations.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** PERU

**Keywords:** CLIMATE, AGRICULTURE, DEVELOPMENT, CLIMATE CHANGE, FOOD SECURITY

**Citation:** Nash J, Grewer U, Bockel L, Galford G, Pirolli G, White J. 2016. Peru Cacao Alliance: Carbon sequestration as a co-benefit of cacao expansion. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77617>

**DOI:** <Not Defined>

**Creator / Authors:**

- Nash, - Julie
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- Bockel, - Louis
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**Deliverable Quality check**

**FAIR Compliant:** F A I R

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

**D2656 - Agricultural Development and Value Chain Enhancement Activity II: Climate change mitigation co-benefits from sustainable intensification**

**Main Information**

**Type:** Reports and other publications

**Subtype:** Policy brief/policy note/briefing paper

**Status:** Complete

**Year of expected completion:** 2016

**New expected year:** <Not Defined>

**Cross-cutting dimension:**

<Not Defined>

**Deliverable dissemination**

**Is this deliverable already disseminated:** Yes

**Dissemination Channel:** CGSpace

**Dissemination URL:**

<http://hdl.handle.net/10568/77623>

**Open access:** Yes

**License adopted:** No

**Deliverable Metadata**

**Disseminated title:** Agricultural Development and Value Chain Enhancement Activity II in Ghana: Climate change mitigation co-benefits from sustainable intensification of maize, soybean, and rice

**Description / Abstract:** An analysis of the potential climate change mitigation impact of the project entitled Agricultural Development and Value Chain Enhancement Activity II (ADVANCE II) in Ghana shows that an approximate reduction in greenhouse gas (GHG) emissions of 100% will be possible. When project targets are achieved, ADVANCE II will transform the project area from a low net source of GHG emissions to roughly carbon neutrality. \* ? ADVANCE II is estimated to achieve moderate GHG mitigation benefits that are driven by soil management improvements (-9,223 tCO<sub>2</sub>e/yr), crop residue burning reductions (-4,249 tCO<sub>2</sub>e/yr), and alternate wetting and drying (AWD) of irrigated rice (-858 tCO<sub>2</sub>e/yr). ? The moderate increase in fertilizer and pesticide use supported by the project leads to small increases in GHG emissions (1,244 tCO<sub>2</sub>e/yr and 2,514 tCO<sub>2</sub>e/yr respectively). ? ADVANCE II provides important benefits for low emission development (LED) by significantly reducing the crop GHG emission intensity (GHG emissions per unit of production). This is achieved mainly through strong growth in agricultural productivity and reductions in postharvest losses.

**Publication / Creation date:** 2016-11-01

**Language:** en

**Country:** GHANA

**Keywords:** AGRICULTURE,CLIMATE,CROPS,SUSTAINABILITY,FOOD SECURITY,CLIMATE CHANGE

**Citation:** Grever U, Bockel L, Nash J, Galford G. 2016. Agricultural Development and Value Chain Enhancement Activity II (ADVANCE II) in Ghana: Climate change mitigation co-benefits from sustainable intensification of maize, soybean and rice. CCAFS Info Note. Copenhagen, Denmark: International Center for Tropical Agriculture (CIAT) and the Food and Agriculture Organization of the United Nations (FAO).

**Handle:** <http://hdl.handle.net/10568/77623>

**DOI:** <Not Defined>

**Creator / Authors:**

- Grewer, - Uwe
- Bockel, - Louis
- Nash, - Julie
- Galford, - Gillian

**Deliverable Quality check**

**FAIR Compliant:** **F** **A** **I** **R**

**Partners contributing to this deliverable:**

Institution	Partner	Type
CIAT - Centro Internacional de Agricultura Tropical	Wollenberg, Lini <Lini.wollenberg@uvm.edu>	Responsible

## 5.3 Project Highlights

### Project highlight 147

**Title:** A target to guide ambitious action on agricultural GHG emissions

**Author:** Lini Wollenberg

**Subject:** 2 degree target, mitigation

**Publisher:** Global Change Biology

**Year reported:** 2016

**Project highlights types:**

- Successful communications
- Inter-center collaboration
- Policy engagement

**Is global:** Yes

**Start date:** Jan 2016

**End date:** Dec 2016

**Keywords:** 2 degree target, mitigation

**Countries:**

**Highlight description:** By convening partners from 18 institutions to calculate and then publish a high-profile journal article on the necessary reduction in agricultural greenhouse gas (GHG) emissions to limit warming in 2100 to less than 2 °C above preindustrial level,, CCAFS shaped the conversation on low emissions agriculture among policy makers.

**Introduction / Objectives:** The 2015 Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) aims to hold the rise in global average temperatures by 2100 to 'well below 2 °C above pre-industrial levels. Over 100 countries pledged to reduce their agricultural GHG emissions for the agreement in their Intended Nationally Determined Contributions to the UNFCCC. Yet there was little technical information about how much mitigation is needed in the sector to meet this target vs. how much is feasible.

**Results:** To address this gap, CCAFS Flagship 3 led a group of 34 authors from 18 partner institutions to calculate a target for global mitigation of agricultural GHG emissions, based on the best available data from integrated assessment models and bottom-up estimates of economic mitigation potential. Scenarios that limit warming to 2 °C indicated that a preliminary goal for agricultural non-CO2 emissions mitigation by 2030 would be 0.92–1.37 GtCO<sub>2</sub>e yr<sup>-1</sup> or about 1 GtCO<sub>2</sub>e yr<sup>-1</sup>. The goal represents an 11–18% reduction relative to the scenarios' respective 2030 business-as-usual baselines. However, comparing this goal with two plausible development pathways indicates that current agronomic and policy interventions compatible with food production would achieve only 21–40% of the needed mitigation. The large gap between desired and plausible mitigation outcomes indicates that more transformative technical and policy options will be needed to reduce non-CO2 emissions or that mitigation from other sources will be needed to offset them. The results were published Global Change Biology in May, 2016 (<http://onlinelibrary.wiley.com/doi/10.1111/gcb.13340/full>). With support from a media campaign (organized with the CU) and outreach through co-authors, the article has since earned the highest altmetric score of any GCB article (440). It was reported by 29 news outlets, 10 blogs, 2 policy sources, 184 tweeters, and 13 Facebook pages. The article was one of the top 15 GCB articles downloaded in 2016. Flagship 3 organized a side event at SBSTA 44 on setting targets for mitigation of agricultural emissions, and also presented the target at the SBSTA Research Dialogue. New Zealand's agriculture

negotiator used the analysis in a SBSTA workshop on issues related to agriculture. Subsequently, the UNFCCC secretariat picked up on it and suggested it as a theme for discussion in the global negotiations.

**Partners:** This publication was an integrative effort, involving collaboration across 6 centers and 12 non-CGIAR partners. University of Aberdeen IASA New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) FAO Wageningen University and Research Centre (WUR) Netherlands Environmental Assessment Agency (PBL) California Environmental Associates (CEA), ICRAF IRRI CIAT Pacific Northwest National Laboratory (PNNL) Commonwealth Scientific and Industrial Research Organisation (CSIRO) CIFOR CIMMYT ILRI Institute on the Environment (IONE), University of Minnesota French National Institute for Agricultural Research (INRA), World Bank

**Links / Sources for further information:** Journal article: <http://hdl.handle.net/10568/73438> Blog on SBSTA side event: <https://ccafs.cgiar.org/blog/negotiators-and-scientists-discuss-country-emissions-targets-agriculture-sbsta-44> SBSTA side event announcement: <https://ccafs.cgiar.org/sb44-side-event-establishing-country-emission-reduction-targets-agriculture-w-hat-fair-ambitious> Press release: <https://ccafs.cgiar.org/news/media-centre/press-releases/paris-climate-agreement-cannot-be-met-without-emissions-reduction> Research highlight: <https://ccafs.cgiar.org/MitigationTargetAgriculture#.V-vcr5MrK9Y> Poster presented at SBSTA Research Dialogue 8: <http://www.slideshare.net/cgiarclimate/reducing-emissions-from-agriculture-to-meet-the-paris-agreement-goals> Mention of CCAFS participation in summary of SBSTA Research Dialogue 8 (see page 7): [http://unfccc.int/files/science/workstreams/research/application/pdf/researchdialogue\\_2016\\_2\\_summaryreport.pdf](http://unfccc.int/files/science/workstreams/research/application/pdf/researchdialogue_2016_2_summaryreport.pdf) Altmetric summary of media on the publication: <https://www.altmetric.com/details/7541646>

### Project highlight 167

**Title:** Reducing methane emissions from rice production in Vietnam

**Author:** Meryl Richards

**Subject:** Low emission development

**Publisher:** CCAFS

**Year reported:** 2016

**Project highlights types:**

- Innovative non-research partnerships
- Capacity enhancement
- Policy engagement

**Is global:** Yes

**Start date:** Jan 2016

**End date:** Dec 2016

**Keywords:** rice, mitigation

**Countries:**

**Highlight description:** According to Vietnam's 2014 National Communication to the UNFCCC, 18.1% of total greenhouse gas (GHG) emissions in Vietnam in 2010 come from rice production. Alternate wetting and drying (AWD) is a management practice that has the potential to reduce methane emissions by 30-40% and can save water and reduce irrigation pumping costs. Because of these benefits, and with input from CCAFS, Vietnam's Ministry of Agriculture and Rural Development (MARD) has prioritized AWD as a mitigation option in its action plan for implementing GHG emission reductions in agriculture sector under Vietnam's Nationally Determined Contribution (NDC) to the Paris Agreement. The challenge for the country now is to scale up the practice into widespread use.

**Introduction / Objectives:** With support from the Climate and Clean Air Coalition (CCAC) and USAID, CCAFS and IRRI are collaborating with partners from MARD, the Ministry of Planning and Investment (MPI), Institute for Agricultural Environment (IAE), and Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD) to bring AWD to scale. Research objectives include understanding suitability and feasibility of AWD in Vietnam, barriers and incentives for adoption, developing the business case for AWD, and analyzing finance needs.

**Results:** The first step was to identify geographic zones within the country where the practice is suitable. By overlaying information about rainfall, soils, and cropping systems, CCAFS scientists at IRRI created maps of suitability, which showed that AWD would be most suitable for spring rice crops in Vietnam's Red River Delta in the north and winter-spring crops in the Mekong Delta in the south. MARD incorporated this information into its NDC implementation plan, setting targets for use of AWD and similar water management practices on 2.5 million hectares. Now, research is digging deeper into barriers and incentives for use AWD and other mitigation practices for irrigated rice. Initial findings indicate that while AWD can save money on irrigation costs, the way that payment is structured eliminates the incentive for saving water; farmers generally pay a flat fee to pump operators. Adopting the practice also requires coordination among all the farmers serviced by a pump operator, otherwise farmers on different irrigation schedules may not have access to water when they need it. Contract farming arrangement with rice companies offer a potential mechanism for disseminating information about mitigation practices and coordinating large groups of farmers. Some rice exporters are eager to meet standards such as the Sustainable Rice Platform—which includes AWD-like water management in its requirements—in order to access new markets for their products. CCAFS researchers are developing the business case for such efforts and identifying finance needs and sources, which may include potentially innovative mechanisms such as an "auction" for the rights to sell emission reductions from rice.

**Partners:** US Agency for International Development (USAID) Office of Global Climate Change Climate and Clean Air Coalition (CCAC)/UNEP International Rice Research Institute Ministry of Agriculture and Rural Development (MARD) Ministry of Planning and Investment (MPI) Institute for Agricultural Environment (IAE) Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD) Net-Positive Solutions Loc Troi Group World Bank

**Links / Sources for further information:** <https://sites.google.com/a/irri.org/ccac/>  
[http://books.irri.org/CCAFS\\_brochure.pdf](http://books.irri.org/CCAFS_brochure.pdf)  
<https://ccafs.cgiar.org/blog/viet-nams-agriculture-sector-hastens-emissions-mitigation-joins-global-climate-deal>  
<https://ccafs.cgiar.org/blog/negotiators-and-scientists-discuss-country-emissions-targets-agriculture-sbsta-44>  
<https://prezi.com/z3eveptj28en/building-the-business-case-for-low-emission-agriculture-alternate-wetting-and-drying-as-a-case-example/>

## 6. Activities

### A155 - Analysis of the impacts of smallholder mitigation on climate targets, mitigation priorities (Link activity 479-2014)

**Description:** IIASA identified low emissions agricultural pathways and priorities for mitigation in agricultural landscapes using integrated assessment modelling and scenarios. The project contributed to the development of a new set socio-economic and climate scenarios (SSPs, RCPs). These scenarios show clearly the role agriculture has to play in climate change stabilization, and they are likely to become the backbone of the climate assessments, not only within IPCC, for the next decades. Scenarios were used to assess trade-offs between climate change mitigation on food security, quantify regional mitigation potentials and develop cost-effective mitigation pathways for the agricultural sector. The results showed that at least in the medium term that if policies are not carefully designed carefully, the effects of GHG mitigation could be worse in terms of food availability than the effects of climate change itself.

**Start date:** Jan 2015

**End date:** Dec 2016

**Activity leader:** IIASA - International Institute for Applied Systems Analysis Obersteiner, Michael  
<oberstei@iiasa.ac.at>

**Status:** Complete

**Overall activity or progress made during this cycle:** Objective 1 (Analyze the extent of agricultural mitigation necessary in developing countries and the effect of selected emissions floors on meeting future climate target thresholds). was successfully finished by the end of 2015. In 2016, objective 2 (conduct a spatial analysis of mitigation priorities globally for selected policy pathways) and 3 (determine a target for agricultural mitigation and the necessity of mitigation in the sector globally and regionally) were accomplished. The following scientific outputs were foreseen for 2016 according to the TOR: four full-length scientific journal articles, three policy briefs related to the findings, and up to two international meeting presentations to deliver key messages from scientific papers. Five journal articles and one report to the World Bank were completed, or are in in submission.. Thirteen workshops, capacity building events or presentations were held/made. Three policy briefs have been initiated and will be produced in 2017.

**Deliverables in this activity:**

- D1637: Global food efficiency of climate change mitigation in agriculture: Presentation at ICAE conference
- D1410: Negotiators and scientists discuss country emissions targets for agriculture at SBSTA 44
- D2684: Reducing emissions from agriculture to meet ambitious limits on global temperature increase

**A156 - Capacity building in quantification of GHG emissions from farms and landscape (Link to activity 819-2014)**

**Description:** Capacity building of PhD students and regional and national partners in GHG quantification methods through the Climate, Food and Farming Network (CLIFF)

**Start date:** Jan 2015

**End date:** Dec 2016

**Activity leader:** AU - Aarhus University Kandel, Tanka <Tanka.Kandel@agrsci.dk>

**Status:** Complete

**Overall activity or progress made during this cycle:** FP3 supported capacity building of 8 PhD students from developing countries in 2015, including five women. 11 more grants were awarded in late 2016, also including five women. Previous CLIFF students published 2 journal articles in 2016. An additional 2 journal articles were accepted for publication, with 2017 issue dates.

**Deliverables in this activity:**

- D2671: Effects of nitrogen fertilizer and manure application on storage of carbon and nitrogen
- D2665: Joining the dots: Social networks and community resilience in post-conflict, post-disaster Indonesia
- D2965: Long-term assessment of soil and water conservation measures on soil organic matter in SE Kenya
- D2664: Limits of agricultural greenhouse gas calculators to predict soil N<sub>2</sub>O and CH<sub>4</sub> fluxes

**A158 - Avoided deforestation and reduced emissions through sustainable cattle certification in Brazil (GII)**

**Description:** With Global Innovation Institute Funding and additional support from CCAFS to USP, Oxford and the Rainforest Alliance, a consortium of CCAFS, the Universities of Michigan, Oxford and São Paulo, the Rainforest Alliance and Imaflora supported an interdisciplinary team to investigate how to enhance the scale and impacts of private sector certification to avoid deforestation and reduce emissions from cattle farming in Brazil. A team of master's students, scientists and certification specialists collected and analyzes biophysical, socio-economic, and institutional data from the cattle and coffee sectors in Brazil. Analysis included determination of land use change, carbon sequestration and modeling of direct greenhouse gas emissions. Funds were provided to Imaflora to disseminate project results through presentations to the GTPS, Brasil Forest Climate and Agriculture Coalition, Simpósio Internacional sobre Gases de Efeito Estufa na Agropecuária and FAO's Global Agenda for Sustainable Livestock. Funds to USP supported reporting back to farmers.

**Start date:** Jan 2015

**End date:** May 2016

**Activity leader:** CIAT - Centro Internacional de Agricultura Tropical Wollenberg, Lini  
<Lini.wollenberg@uvm.edu>

**Status:** Complete

**Overall activity or progress made during this cycle:** This project was completed with the publication of two working papers, two journal articles, and a brief. Blog and Policy papers in Portuguese and English were published to support dissemination. Results were presented to farmers participating in the study, stakeholders within Brazil at the Brazil Forest Climate and Agriculture Coalition, Simpósio Internacional sobre Gases de Efeito Estufa na Agropecuária, International Coffee Week, Seminário Anual do Grupo de Trabalho da Pecuária Sustentável, as well as in Panama at FAO's conference on the Global Agenda for Sustainable Livestock.

**Deliverables in this activity:**

- D1267: How Brazil's sustainable cattle schemes could beef up to conserve forests and sustainable rural livelihoods
- D1265: Reducing deforestation and enhancing sustainability in commodity supply chains: ... cattle certification in Brazil
- D1275: Information resource for Avoided deforestation and reduced emissions through sustainable cattle certification in Brazil
- D1605: Reducing deforestation, enhancing sustainability in commodity supply chains: governance interventions and cattle certification in Brazil.
- D304: Policy Brief - Transitioning to more sustainable, low-emissions agriculture in Brazil
- D2679: Climate change mitigation through intensified pasture management: Estimating greenhouse gas emissions on cattle farms
- D1266: Report - A sustentabilidade é um bom negócio para a agricultura
- D2617: Innovation and support for cattle producers needed to reduce emissions from cattle in Brazilian Amazon

## A159 - Global synthesis of gender and mitigation technology

**Description:** Analysis of the opportunities for increasing benefits to women and gender equity from technical agronomic practices that reduce greenhouse gas emissions among smallholder farmers/livestock keepers in Kenya, Vietnam, Costa Rica and India.

**Start date:** Jan 2015

**End date:** Dec 2016

**Activity leader:** CIAT - Centro Internacional de Agricultura Tropical Wollenberg, Lini  
<Lini.wollenberg@uvm.edu>

**Status:** Complete

**Overall activity or progress made during this cycle:** Three literature reviews were published as working paper, on gender dynamics related to cattle and mitigation in Central America and Kenya, and rice and mitigation in Vietnam. Gender workplans were developed for CCAFS projects on livestock mitigation in Costa Rica and Kenya, and rice in Vietnam. Three articles were completed that will be published in 2017.

**Deliverables in this activity:**

- D2675: Gender dynamics in dairy production in Kenya: A literature review
- D2678: Gender dynamics in rice-farming households in Vietnam: A literature review
- D2649: Gender dynamics in the cattle sector in Central America: A literature review

## A160 - Financing the transition to low-emission agriculture

**Description:** This research activity reviewed the evidence for a cost-benefit analysis or business case of farm-level mitigation practices in rice (AWD) and cereals (nitrogen fertilizers), using cases from four countries, to identify incentives needed for farmers and national level finance. It also analyzed evidence for the costs of the national infrastructure needed to support MRV and investments for technical change for reduced emissions in agriculture. A review of finance sources for mitigation was compiled.

**Start date:** Jan 2015

**End date:** Jun 2016

**Activity leader:** CIAT - Centro Internacional de Agricultura Tropical Wollenberg, Lini  
<Lini.wollenberg@uvm.edu>

**Status:** Complete

**Overall activity or progress made during this cycle:** 2 working papers on costs and benefits of mitigation practices for rice and nitrogen fertilizer, respectively, were published. A working paper on the analysis of the cost of MRV systems was published. A compilation of sources for climate finance was produced. The consultant, Rishi Basak, participated in a global finance workshop. Materials were also distributed in a World Bank seminar and to a project at the University of Aberdeen to improve marginal abatement cost curves. F3 contributed to the IFAD Economic Advantage report.

### **Deliverables in this activity:**

- D1507: Financing low emissions agriculture: Building the business case for AWD in irrigated rice
- D2616: How much will climate change mitigation in agriculture cost?
- D2672: Benefits and costs of climate change mitigation technologies in paddy rice: Focus on Bangladesh, Vietnam
- D2673: Benefits and costs of nitrogen fertilizer management for climate change mitigation: Focus on India, Mexico
- D2674: Monitoring, reporting, and verification requirements and implementation costs for climate change mitigation activities
- D2682: The Economic Advantage

## A191 - Managing and delivering on the FP3 impact pathway

**Description:** Managing and delivering on the FP3 impact pathway includes: Strategic planning and direction for flagship and program management of CCAFS as a whole Support and collaboration with regional leaders, impact pathways Strategic and technical assistance to and collaboration with partners, including travel Monitoring and evaluation, including evaluating lessons learned and updating strategy Administrative facilitation and financial management, including contracts, budget tracking, travel support - including \$96,002 in overhead for all FP3 activities managed by CIAT Communications and engagement in support of flagship goals, including support for events, general and technical writing for website and journals, newsletters, etc. Activities with project partners, regional and national decision-makers

**Start date:** Jan 2015

**End date:** Dec 2016

**Activity leader:** CIAT - Centro Internacional de Agricultura Tropical Wollenberg, Lini  
<Lini.wollenberg@uvm.edu>

**Status:** Complete

**Overall activity or progress made during this cycle:** <Not Defined>

### Deliverables in this activity:

- D1507: Financing low emissions agriculture: Building the business case for AWD in irrigated rice
- D1261: Reducing emissions from agriculture to meet the 2°C target
- D1262: Aspirational global targets for climate change mitigation - Media outreach
- D1263: Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture
- D1265: Reducing deforestation and enhancing sustainability in commodity supply chains: ... cattle certification in Brazil
- D1266: Report - A sustentabilidade é um bom negócio para a agricultura
- D1267: How Brazil's sustainable cattle schemes could beef up to conserve forests and sustainable rural livelihoods
- D1269: Quantifying Greenhouse Gas Emissions from Managed and Natural Soils
- D1272: SAMPLES database and website
- D1273: GACSA practice brief: Improved ruminant genetics: Implementation guidance for policymakers and investors
- D13

## A425 - IRRI Mitigation strategies in rice production: Support for national partners in CCAC project

**Description:** IRRI and CIAT facilitated with national governments technical and policy guidance for countries to implement mitigation options at large scales in paddy rice systems in Vietnam, Bangladesh, and Colombia, with the intent of scaling up impacts to regions. The program focused on alternate wetting and drying (AWD) and associated management practices. Phase I was 18 months and started October 2014. Majority of funding was from the Climate and Clean Air Coalition (CCAC), also a major partner. Project was e led by an IRRI-based coordinator. F3 provided funding of 50K for a national focal point in each Bangladesh and in Vietnam, for 100K total, plus overhead costs for IRRI. The national focal point will identify areas with high mitigation potential and design agricultural development interventions for the up-scaling of mitigation practices in those areas.

**Start date:** Jan 2015

**End date:** Mar 2016

**Activity leader:** IRRI - International Rice Research Institute Sander, Bjoern Ole <b.sander@irri.org>

**Status:** Complete

**Overall activity or progress made during this cycle:** An information kiosk on GHG mitigation in rice systems has been established. Bangladesh and Vietnam have submitted AWD implementation plans. A first round of suitability maps have been completed for Colombia, Bangladesh and Vietnam. A Phase II CCAC proposal was drafted and awarded funding of 500K for Bangladesh and Vietnam.

**Deliverables in this activity:**

- D1098: (BILATERAL) Spatially referenced central information base and website
- D1268: Alternate wetting and drying in irrigated rice

## A523 - Development of the CCAFS mitigation options tool (CCAFS-MOT)

**Description:** The CCAFS- MOT is a calculator and demonstration tool that provides policymakers and project managers an understanding of crop and livestock management practices available to reduce greenhouse gas emissions (GHG) and of their mitigation potential in different regions in the world. The tool has been under development since 2015 and this is an updated version that provides the impact of mitigation options on yield; a wider range of livestock mitigation options; and a pilot version for livestock section.

**Start date:** Dec 2015

**End date:** Jun 2016

**Activity leader:** University of Aberdeen-United Kingdom Hillier, Jonathon <j.hillier@abdn.ac.uk>

**Status:** Complete

**Overall activity or progress made during this cycle:** Updated version of the CCAFS-MOT (version ?) with impact of mitigation options on yield; wider range of livestock mitigation options; improved livestock section; pilot on indicative costs of mitigation practices - (Deliverable 1); CCAFS-MOT user guidelines updated (Deliverable 2). A yields database was created (Deliverable 3). Mitigation options for livestock were collected from literature and organised in a database (Deliverable 4). Data on crop productivity, fertilisation, climate and soil data at the global level were collected and organised in a database (Deliverable 5) but will be implemented in an online version of the tool. The pilot section on indicative costs requires more secondary data. Video Lecture PowerPoint delivered to The National University of Ireland, Galway -Deliverable 7. Presentation at Global Landscape Forum December, Paris. Training session with the World Bank January 2016.

### **Deliverables in this activity:**

- D1643: CCAFS-MOT (Mitigation Options Tool)
- D1654: CCAFS- MOT Presentations and Webinars
- D1415: Journal article on CCAFS-MOT methodology
- D1661: Poster: CCAFS-MOT Mitigation Options Tool
- D292: CCAFS Mitigation Options Tool, Delta version

## 7. Leverages

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No leverages added