

CCAFS
6th INDEPENDENT SCIENCE PANEL MEETING
20-21 May, 2014
Managua, Nicaragua
MINUTES

Participants: Thomas Rosswall (Chair)
Bruce Campbell (Program Director) (*ex officio*)
Arona Diedhiou
Fatima Denton
Brian Keating
Holger Meinke
Charles Rice (*ex officio*, CIAT BoT)
Mary Scholes
Ram Badan Singh
Carolina Vera (*ex officio*, Future Earth)
Christof Walter (Vice-Chair)

Apologies: Lindiwe Majele Sibanda

Invited participants: *Program Management Committee*
Andy Jarvis, Theme 1 (for agenda items 1-11)
Lini Wollenberg, Theme 3 (for agenda items 1-11)
Robert Zougmore, West Africa (for agenda items 1-11)
Pramod Aggarwal, South Asia (for agenda items 1-11)
Sonja Vermeulen, Coordinating Unit (for agenda items 1-11)

Others
Jim Hansen, Theme 2 (for agenda items 6-7)
Philip Thornton, Theme 4 (for agenda items 6-10)
Ana Maria Loboguerrero, Latin America (for agenda items 6-7)
Leocadio Sebastian, Southeast Asia (for agenda items 6-7)
James Kinyangi, East Africa (for agenda items 6-7)
Torben Timmermann, Coordinating Unit (Secretary) (for agenda items 1-17)
Gloria Rengifo, Coordinating Unit (for agenda items 8-11)
Angela Samundengo, Coordinating Unit (for agenda items 1-11)
Jacob van Etten, Bioversity (for agenda item 6)
Chris Elliott (for agenda item 8.1 by phone)
Mai Van Trinh (for agenda item 8.1 by phone)

1) Welcome by the Chair and announcements

The Chair opened the meeting and welcomed the participants and noted that Lindiwe Sibanda was unable to attend the meeting. He welcomed the new ISP members, Brian Keating and Arona Diedhiou, and the new Future Earth *ex officio* member, Carolina Vera. He also welcomed the new CCAFS Senior Manager Finance, Contracts & Liaison, Angela Samundengo. He expressed his warm thanks to Gloria Rengifo and Misha Wolsgaard-Iversen for all their hard work for CCAFS and wished them both best of luck with their new jobs. He thanked the CCAFS Latin America and CIAT teams for an excellent field trip in terms of content and organization.

2) Agenda, minutes, matters arising and *ex officio* update

2.1 Adoption of agenda

The Chair invited the members to review the agenda and suggest any additional issues that might be discussed under agenda item #17 Any other business. The Chair asked that CCAFS ISP members voluntarily and openly declare any conflict of interest and that, in such cases, they will be excused from the particular discussion. He recalled that the ISP conflict of interest policy was decided upon in October 2013. It requires that each member signs a conflict of interest disclosure form annually. ISP members were requested to fill in the form and return to the ISP Secretary, Torben Timmermann, by 10 June 2014.

Decisions:

- To send the conflict of interest disclosure form to Torben Timmermann by 10 June 2014.
- To adopt the agenda.

2.2 Minutes of the previous meeting and matters arising

Minutes

The minutes were approved following an email consultation with the ISP in the weeks after the 5th ISP meeting. The approved minutes have been placed on the CCAFS website.

Matters arising

Many of the decisions taken at the previous meeting were covered in substantive agenda items in this meeting. Some of the matters arising that were not addressed elsewhere are as follows.

Meeting 5, Item 3.1 Prioritization tools for improving national level decision-making

In this agenda item, CCAFS was asked to engage with the CFS secretariat coordinated by FAO and establish a mechanism for receiving information on scheduled topics for the annual High-Level Panel of Experts reports, with the intention to contribute content on subjects relevant to climate change on agriculture and food security. CCAFS has established regular contact with CFS so that interaction can take place when appropriate.

Meeting 5, Item 3.4 Mobilizing effective partnerships

In this agenda item the ISP noted the recommendation from the EC/IFAD review suggesting that CCAFS convene a stakeholder consultation each year in conjunction with an ISP meeting. The ISP suggested that for

2014, such a consultation could preferably be arranged in conjunction with the planned GCARD 3 conference and to communicate this to the Consortium Office. Unfortunately, the GCARD 3 conference has been postponed. CCAFS is currently going through an email consultation with 60 partners on the extension phase of CCAFS. It was suggested that this takes the place of an in-person meeting for 2014. CCAFS will explore whether it is possible to link up with GCARD in 2015.

PMC was requested to prepare a document on how the program engages with farmers, to use as a reference document in guiding CCAFS stakeholder interaction with the farming community. A document has been prepared by Sonja Vermeulen and will be published as a CCAFS Working Paper.

PMC was asked to prepare a focused and strategic set of outreach activities aimed towards the private sector in 2014. A new Global Policy Engagement Manager, Dhanush Dinesh, started on 1 April, and will lead this activity over 2014.

Meeting 5, Item 12 Reflections on the ISP and CCAFS, incl. self-assessment from the 4th meeting

The Program Director was asked to put key actions and follow-ups on decisions from previous meetings on future agendas as a standard item. This has been done, through the background paper to Matters Arising.

Decisions:

- To note that the minutes from the 5th ISP meeting have been approved by the ISP via email consultation.
- To note the progress on matters arising from the previous meeting.

2.3 Updates from *ex officio* members

Program Director

The Fund Council and Consortium Board of the CGIAR have finalized the next steps for CRPs. CCAFS had an initial mandate until the end of 2015, but now it has been decided that the entire CRP portfolio will only start its second phase in 2017, not earlier as had been initially assumed. Thus CCAFS and other CRPs have been asked to write a proposal for the extension period. CCAFS has opted for an extension proposal that covers both 2015 and 2016, because CCAFS is so advanced in its plans to move into the second phase that changing sooner rather than later is preferable. The extension phase concept note had to be submitted to the Consortium Office (CO) on 25 April. Comments on the concept note (from ISPC, CO and peer review) can be expected by 14 July, and CCAFS has to provide responses and an updated concept note by 30 August. Once the concept note passes the Consortium Board and Fund Council, in late 2014, a revised proposal will be needed, taking into account the commentaries.

The second phase of CRPs is delayed to 2017 in order to complete two activities: (a) an external review of all the CRPs (CCAFS' review is due in 2015) and a review of the entire system (Mid-Term Review (MTR) – led by John Beddington); and (b) a revision of the CGIAR Strategy and Results Framework (SRF).

Funding to CGIAR continues to be positive, though there are indications that there may be future shifts among the Windows.

CGIAR will hold a “signature event” in New York, September 2014, to coincide with the Climate Summit of the UN Secretary General. CCAFS will contribute, as appropriate.

It is expected that the Climate-Smart Agriculture (CSA) Alliance will form one of the announcements to be made at the Climate Summit of the UN Secretary General. The next few months are critical in terms of seeing how many governments buy into having the CSA Alliance announced at the summit. There is much activity related to the CSA Alliance, including a series of preparatory meetings which CCAFS has attended (Washington, The Hague, Abu Dhabi). There are three CSA working groups in the lead up to the Summit, and CCAFS jointly leads one of those together with FAO – the knowledge working group. A series of knowledge products are being produced by various partners, with CCAFS contributing to a number of these. CCAFS is also involved in a number of partnership activities related to the CSA Alliance. CCAFS is a founding partner of a major NGO alliance around CSA.

Future Earth

A Future Earth Projects meeting was organized in Washington D.C. in January 2014. The aim of the meeting was: a) for the project community to get to know each other and the scope of the science undertaken within the projects; b) to start the process of developing new collaborations; c) to develop the science priorities for Future Earth; and d) to address operational aspects of Future Earth (e.g. development of data policy). There were 74 participants in the meeting, predominantly from the GEC Core Projects and Programmes community, along with representatives from the Future Earth Science Committee, the Interim Engagement Committee and the Interim Secretariat. The meeting resulted in substantial input for the Interim Secretariat in terms of research priorities, co-design, draft Fast Tracked Initiative (FTI)/Cluster proposals; and a number of voluntary task forces were set up, e.g. on data policy, strategic partnerships, funding coordination, communications and science-policy interface.

The Science Committee met in November 2013 and the next meeting is in June 2014. That meeting will be combined with the Interim Engagement Committee. A call has been out for the Permanent Engagement Committee, and it is expected that it will be closed by June. As well, there has been a call for the Permanent Secretariat and it is expected that the successful bidder will be selected by June. The first round of FTI/Cluster proposals was closed in April and the Science Committee will make its decisions in June. Under development is the Strategic Research Agenda, which is expected to be launched in September/October this year.

In terms of communications, CCAFS and Future Earth collaborate on a regular basis on campaigns ensuring that the knowledge reaches each other’s communities and networks.

CIAT Board of Trustees

The CIAT BoT approved the new CIAT strategy at its last meeting in November in Cali. The Mission of CIAT is now *“To reduce hunger and poverty, and improve human nutrition in the tropics through research aimed at increasing the eco-efficiency of agriculture.”*

There are three strategic objectives, linked to specific outcome metrics:

- a) *Affordable, high-quality food*: improved crop varieties and practices to enhance the food security and income potential of at least 10 million rural households across the tropics, while providing more affordable and nutritious food for at least 15 million net food-consuming households.
- b) *Market-Oriented Agriculture*: at least 3 million smallholder farmers in the tropics will gain additional entrepreneurial capacities to improve access to agricultural markets and seize new opportunities.
- c) *Sustainable, Climate-Smart Agriculture*: at least 1 million smallholder farmers will gain access to environmentally friendly technologies that reduce the rate of land degradation by 5%, while greenhouse gas emissions from agriculture will be reduced and climate-smart policies established in 10 target countries.

CIAT's work will focus on a number of strategic initiatives:

- a) Bringing eco-efficiency to livestock production through tropical forages ("Livestock Plus"): tropical forage-based systems can reverse soil degradation and mitigate climate change by reducing methane and nitrous oxide emissions per unit livestock produced and sequester carbon.
- b) Sustainable Food Systems for a Rapidly Urbanizing World: expand CIAT's traditional agenda of research on linking farmers to markets and ongoing research on consumer preferences with respect to bio-fortified crops.
- c) Reducing Yield Gaps – A Multi-disciplinary Challenge in Agriculture: difference between the current yield produced by farmers and what studies suggest their farmland is able to produce given more effective farming techniques.
- d) Realizing the Value of Ecosystem Services for Human Well-being: healthy ecosystems are seen as a prerequisite for more resilient food systems and enhanced human well-being. Expand current work on ecosystem services to better realize their potential for improving livelihoods incorporating gender analysis and non-monetary indicators, such as those related to food security, dietary diversity, and nutrition.

The strategic objectives and initiatives link to multiple CRPs, but as can be seen, CCAFS will play a crucial part in this strategy.

Decisions:

- To note the updates.
- To welcome the new strategy of CIAT and request the Program Director, Theme 1 Leader and Latin America RPL continue to build the links between CCAFS and CIAT, ensuring that CCAFS work that contributes to the CIAT strategy is brought to the attention of CIAT management.
- To request a timeline for CRP development strategic dates be added to the minutes (Annex 1).
- To circulate to ISP members a summary of Future Earth and provide a link on the CCAFS website.

3) **Chair's report from the CIAT Board of Trustees meeting in November 2013**

The CIAT BoT held its 68th meeting in November 2013. The ISP Chair attended as an observer. Other observers were Marion Guillou (representing the CGIAR Consortium Board), Luis Solórzano (Consortium Office, Director of Staff), Nguyen Van Bo (President, Vietnam Academy of Agricultural Sciences), and Malu Ndavi (IFAD). Thus, the meeting provided excellent opportunities to interact not only with BoT members and CIAT staff, but also with the other observers.

In the CCAFS presentation to the BoT, the CCAFS Program Director participated via conference call. The presentation included a programmatic update, the CCAFS budget, plans for the second phase of the CRPs, and location of the CCAFS Coordinating Unit. Charles Rice reported on the recent ISP meeting, focusing on external reviews.

The Board approved the 2014 Business Plan and Budget and there were also very positive comments on the development of CCAFS from the Consortium and IFAD. In the discussion, the issue of budgeting for new initiatives was raised. There was also a clarification on the amounts in the budget coming from W3 (c. 10%) vs. bilateral. There was also a brief discussion on CCAFS policies in relation to data for public good.

Decisions:

- To note the Chair's report.

4) **Assessment of 2013 achievements**

The CCAFS annual report to the Consortium indicates some of the achievements of CCAFS in 2013. These are some highlights, focusing on the outcomes.

Reaching millions of farmers

In Kenya, CCAFS partnered with 'Shamba Shape-Up', a weekly reality TV show on farm makeovers that reaches over 3 million viewers, the majority from rural areas. CCAFS helped bring the science into the makeovers – scaling out gender-sensitive climate smart practices. In Senegal, participatory research revealed what kinds of forecasts farmers, both men and women, wanted and in what format. CCAFS then worked with four community radio stations to get these new kinds of weather forecasts to farmers, reaching an estimated 3 million farmers. In Nepal, CCAFS teamed up with the Nepal Development Research Institute to develop one-minute radio jingles and Public Service Announcements to reach a million farmers with information on climate change adaptation. This work has demonstrated that innovative communication partnerships can help reach deep into rural areas.

Getting results on the ground

CCAFS has worked with a multitude of partners to establish 15 Climate-Smart Villages (CSVs) in West Africa, East Africa and South Asia. These villages (or districts or landscapes) serve as a crucial testing ground for different adaptation strategies, technologies and practices. They do this through an empowering, action research model; after a potential site is selected, a steering group of community representatives and researchers together identify appropriate climate-smart options for testing, and there is constant interaction between researchers and local people. This model of working has been taken up by partners, e.g. Practical

Action will implement CSVs in three districts in Nepal. In India, through working with the Agricultural Insurance Company of India, CCAFS has helped insure 50,000 farmers with a new insurance product released in 2013, based on a weather index. The intention is to reach millions through this partnership. Elsewhere, in East Africa, CCAFS' partner Centers, ILRI and ICRAF, gave input into the East Africa Dairy Development (EADD) program of Heifer International which in its first phase reached 179,000 farming families. Heifer have now adopted Climate-Smart Agriculture as a program objective amidst the mounting evidence that better feeding and manure management can contribute to both greenhouse gas reduction and improved income for farmers.

Enhancing capacity of farmers, local leaders and service agencies

Capacity strengthening runs throughout CCAFS and at every level, from farmer to global negotiator. In 2013, CCAFS in partnership with government agencies, helped to train nearly 15,000 local women leaders in climate-smart agriculture in Bihar (India) and Nepal, through a training of trainers program. In Colombia, 2,800 farmers were trained on a web-based diagnostic tool for farming decisions. In West Africa, over 600 farmers were trained on crop planning linked to weather forecasts. And in South Asia, CCAFS helped train over 600 farmers in precision nutrient management for wheat and maize, leading to yield gains of 0.5-1.5 t/ha. One area of focus is on National Meteorological Services (NMS). As a result of research and capacity investments by CCAFS and partners, the NMS organisations in three countries (Ethiopia, Tanzania and Madagascar) and AGRHYMET regionally in West Africa now produce climate information at a scale that is relevant to rural communities, using methods, tools and results from CCAFS. There have also been changes in the policies and activities of at least four NMS organisations (Tanzania, Ethiopia, Malawi, Lesotho), based on an improved understanding of farmers' perceptions and information needs, together with the design and implementation of methods for providing climate information services that better meet those needs. WMO has endorsed the approach and is involved in further scaling up initiatives, while the major NGOs; Oxfam, Farm Africa, Practical Action and World Vision, have incorporated the approach into training materials and activities.

Creating conducive policies for resilience building

Creating an enabling environment will be vital if we are to achieve ambitious development goals. In 2013, CCAFS analysed the state of national climate change adaptation plans, policies and processes in 12 countries across West Africa, East Africa and South Asia. In 2013, Kenya released its National Adaptation Plan with the support of CCAFS. In Tanzania and Malawi, CCAFS has supported the first national implementation project of the UN Global Framework for Climate Services. CCAFS also played a part in the climate change adaptation strategy adopted by the Ethiopian government and has helped shape Nicaragua's new national adaptation strategy, resulting in major investments for coffee and cocoa (USD 24 million) as a direct result of CCAFS research.

Changing research agendas

CCAFS work has fed into breeding strategies for beans, maize, rice, cassava and potatoes, in the search for climate-proof crops. Together with partners, including FAO, CARE, IFAD, We Effect and GROOTS, CCAFS is also re-orientating research to better focus on gender issues. For example, in 2013 the CCAFS-FAO gender and climate change manual for research was translated into French and Spanish and saw over 10,000 downloads. More generally, all CCAFS research is available online through open access platforms. These platforms are a

vital tool, enhancing the reach and impact of the knowledge we produce and aiding us to achieve development goals. In total, more than 60,000 unique users visited CCAFS' open access databases in 2013. Some 135,000 files were downloaded from CCAFS-Climate alone.

The science behind the achievements

The percentage of total journal articles that were published in ISI journals rose from 77% in 2012 to 83% in 2013, reflecting the increasing maturity of climate change research in CGIAR. Several articles were in high-impact journals, including Science, Nature, PNAS and Global Environmental Change.

Decisions:

- To note the excellent progress in 2013.
- In future annual reports to also highlight more specifically important scientific achievements.

5) Status of performance indicators

CCAFS has two sets of indicators by which performance is assessed: (a) 12 outcome-related indicators; and (b), internal performance management indicators.

a) Outcome-related indicators

In Theme 1, Targets 1.1 and 1.2 were achieved, while 1.3 was surpassed. Target 1.2 has largely been accomplished through collaboration with some of the commodity CRPs. Climate modelling has helped to inform global and national breeding strategies. For example, the Global Cassava Partnership, an alliance of many agencies and including at least a dozen breeding organisations, has adopted the concept of the Rambo root, promoting cassava as a substitution crop and identifying biotic constraints as the priority for future breeding efforts. For Target 1.3, CCAFS science has informed adaptation policy processes in three regions (LAM, EA, and SA).

Progress has been good in Objective 2.1 of Theme 2. One of the most promising outcomes involves the partnership with the Agricultural Insurance Company of India. Progress in 2.2 has been slow, mostly because this is a largely new area for CGIAR – dealing with the whole food system and crisis response. Nonetheless, the pipeline of activities is promising. Target 2.3 has been surpassed, with some major successes.

For two Objectives in Theme 3 the targets were achieved, but the targets for Objective 3.2 were not met. This Theme focuses on mitigation, an area where there are major differences in opinion in the global climate negotiations, making progress on the ground difficult. The two new regions established by CCAFS (LAM and SEA) were partly selected because of their higher mitigation potential. They have only recently become fully functional. These issues explain the slow progress on target 3.2 related to institutions and incentives for mitigation. In Theme 3, new pathways and practices for agriculture to achieve low emissions agricultural development were developed with partners, resulting in new policies and strategies: in Vietnam, related to Alternate Wetting and Drying (AWD) in rice; in the East African Dairy Development program of Heifer International, through its adoption of CSA as a program objective; in Colombia, through incorporating

agricultural mitigation in the national climate strategy; in India, through adopting a new agroforestry policy that seeks 33% tree cover and creates incentives to farmers; and in China, by establishing the methodology that will link herders to the carbon market. CCAFS also focussed on global policies and had successes related to both the UNFCCC and IPCC (in the case of the former, “agriculture” was recognised in the Durban Agreement, and in the case of the latter, CGIAR science has been well cited in AR5).

Targets 4.1 and 4.2 in Theme 4 (Integration for decision-making) were achieved. For 4.1, CCAFS has played a major role in various global processes, in collaboration with other regional and global bodies and has worked directly with negotiators to strengthen knowledge on agriculture. CCAFS has conducted scenario development (visioning and modelling) in all target regions – participatory processes involving key stakeholders. At least USD 600,000 has been contributed to the processes by partners. Objective 4.2 focusses on data and models. The CCAFS-Climate website continues to be a success. International and regional agencies that downloaded climate data and/or produced publications that made use of the data include FAO, GIZ, CDC, CIRAD, JRC, World Bank, the Asian Development Bank, WWF, SADC, ASARECA and CORAF. Objective 4.3 did not meet its target. This is partly related to restructuring in relation to Phase 2 of CCAFS.

b) Internal management indicators

Of the 20 indicators PMC plans to measure, two were not done for 2013: (a) The partnership satisfaction indicator is based on Consortium Office data collection and will not be done every year; (b) The proportion of gold standard data sets is only due to be collected from 2014, given that our data manager is only now establishing the system. 2012 and 2013 cannot be compared for the # and % of open access journal articles because this indicator was only started in 2013.

Of the remaining 17 measured indicators, 10 show better results in 2013 compared to 2012, five are more or less the same for 2012 and 2013, and two show a poorer situation for 2013 compared to 2012. Of the 17, one indicator is judged to show poor performance and four are regarded as needing to be better, while the rest are regarded as “good”.

Improved results. The number of complaint emails was down to zero in 2013. More favourable results were recorded for outcome statements, inter-Center activity, numbers of publications (totals, as well as those in the “top journal” list, and those in ISI journals), percentage of publications with advanced research institutes) and level of support from bilateral funding. Website usage was better with respect to page views and visitors but the download indicator showed a decline. The very high downloads in 2012 were related to the Commission report, and so the 2012 number is probably higher than what would be the case for “normal” years. There was improvement in CCAFS being cited in major global reports, but citation levels remain low. Of all these indicators, we regard numbers of outcomes reported and level of citations as needing further improvement.

Similar results. The proportion of budget going to partners remains about the same compared to 2012, as does the percent of papers published with NARS partners (though absolute numbers of papers are up). Budget execution has remained good, no audit issues have been raised, and Google page ranking of our web site is

similar to 2012 (but higher than the average of other CRPs). We believe we need to see improved performance in the Google page rank and in the budget going to partners.

Poorer results. In 2012 no reports from Centers were found to be unacceptable, but in 2013 one Center failed to deliver the bulk of their report. CCAFS also performed less well on data delivered to the central repository. The lack of a report from a Center is regarded as an unacceptable situation.

Decisions:

- To note progress and challenges.
- To request a bibliometric analysis and capture rate before the 2015 evaluation of CCAFS, and to suggest that the Terms of Reference be discussed by the ISP.

6) CCAFS science issues

6.1 CCAFS-Future Earth strategic directions

CCAFS and Future Earth held a conference call in late 2013 to discuss future directions in the food and agriculture research area. This was held when the Future Earth Scientific Committee had been announced but was yet to meet. At that stage it was agreed that CCAFS would work with Future Earth to convene a meeting to discuss a future global initiative on food systems. CCAFS' position was that it hoped that Future Earth would act as a convener of the current major programs (e.g. CCAFS, JPI FACCE).

In January, CCAFS attended the Future Earth meeting in Washington where Fast Tracked Initiatives (FTIs) and Cluster Activities were initiated. The former are to kick-start Future Earth integrated activities while the latter will create the opportunity for existing GEC projects to join together in either longer-term collaborations or mergers. Through the University of Oxford, the scenarios team has put in a proposal to do cross-project scenarios work in West Africa, and CCAFS has been asked to partner on 3-5 other initiatives.

Decisions:

- To endorse the decision to host a CCAFS-Future Earth meeting in October 2014 back-to-back with the IARU sustainability science congress in Copenhagen.

6.2 How to enable a cross-theme, multi-region contribution to CCAFS: a Center perspective

Jacob van Etten briefed the ISP on Bioversity's work in CCAFS. For Bioversity, making a meaningful contribution to CCAFS is part of a transition to a more development-oriented way of working while incorporating more environmental science. Bioversity is an organization that grew around the issue of crop germplasm conservation, but has since then expanded to issues of use of agrobiodiversity for resilient crops and agroecosystems, and healthy nutrition. The challenge is to make this work in the context of CCAFS. In the first phase of CCAFS, Bioversity has started a number of new initiatives, including Seeds for Needs, work in multi-strata systems and crop diversification; and including a gender and social differentiation focus in the work through climate vulnerability analysis.

Challenges involve getting the right human capacity to support this work, making the structures of the Center work, transitioning to a focus on development outcomes and attracting bilateral funding. In the second phase, the plan is to consolidate and integrate this work more and to work towards citizen science approaches that involve diverse seeds but also management practices, a systems perspective on adaptation, policy analysis of CSA, and a whole food system perspective - to analyze trade-offs and synergies between agroecosystem and community resilience, food security/nutrition and GHG emissions.

Collaboration with leaders in CCAFS has been good to excellent in most cases, but there could be more opportunities to jointly explore innovative ideas coming from the different Centers and fund the best of them, outside of the 4-year planning horizon for Flagship Projects (e.g. an “innovation fund” for exploring novel ideas through scoping papers, seed money for new partnerships). The current transition to Flagship Projects is rather abrupt. Personnel in the Centers are on 3-year contracts. It would be good to be able to jointly plan a transition in human capacity within the Centers, to make sound staffing decisions, which are an important determinant for the success of CCAFS.

Decisions:

- To create a mechanism of aligning CCAFS needs with those of Centers to facilitate human resources planning.
- To create an internal competitive fund for exploring innovative ideas.

6.3 Climate information services: status and outlook

CCAFS investment in climate-related information (Objective 2.3.1) and climate services for agriculture and food security (Objective 2.3.2) is intended to support a range of risk management and adaptation interventions. At the recommendation of the ISP, Theme 2 hired Dr. Arame Tall to help strengthen and coordinate work in this area across the program. The opportunities that have arisen in this area have exceeded expectations and warrant continued investment. CCAFS has established a relationship with most major donors and initiatives that are investing in climate information services for agriculture and food security.

Key recent developments are as follows:

- CCAFS is one of the core partners in the first national implementation project under the UN Global Framework for Climate Services (GFCS). The project is funded by Norway (USD 10 million, 3 years) and targets Tanzania and Malawi. CCAFS co-leads, with WFP, the development of climate services for the agriculture sector.
- CCAFS is now part of a global GFCS Agriculture and Food Security technical working group (with WMO, WFP, FAO and UNDP). This is expected to open the door to the broader scope of CCAFS work on climate services being recognized as a contribution to the GFCS.
- The Climate Services Partnership (CSP) is a network of climate information users, providers, donors and researchers who share an interest in climate services and are actively involved in the climate services community. CCAFS' active and visible leadership and co-sponsorship role in the CSP has helped it gain the attention of several development organizations, including USAID, World Bank and World Vision, as

a program that can help them meet their goals of building the resilience of rural communities through climate information and advisory services.

- USAID sees CCAFS as a mechanism for achieving its goal of investing in climate adaptation through climate services. The USAID partnership is evolving rapidly, with several recent breakthroughs (still too preliminary to share in detail) that show promise for significant funded CCAFS involvement.
- World Bank has reached out to CCAFS for guidance and collaboration on their investments in climate services, particularly in the Pilot Program for Climate Resilience (PPCR).
- Work on climate services funded by CCAFS is scaling up and out. Work that was piloted with farmers at the Kaffrine, Senegal, Climate-Smart Village site is being scaled up in Senegal and is being replicated in all CCAFS countries in West Africa. In East Africa, climate services pilots are being replicated in all CCAFS focus countries, and are scaling up in two adjacent counties around the Wote, Kenya CCAFS site. Two Centers are leading innovative work on mobile phone dissemination of weather information and advisories in South Asia and East Africa.
- By leveraging and contributing to efforts by IRI and University of Reading (with USAID and WMO co-funding), three African meteorological services (Ethiopia, Tanzania, Madagascar) and one regional climate institution (AGRHYMET) now have the capacity to provide climate information (historic and monitored) at a spatial resolution that is relevant to farmers, with complete national coverage.

There is a proposal to move the host of the CSP secretariat administratively from IRI (via Columbia University) to CCAFS (via CIAT), which has the support of all parties involved. Embedding the CSP secretariat in an international organization, with a visible ongoing leadership role, will: (a) provide USAID with an efficient mechanism for channeling funds for climate services; (b) reduce the obstacle to non-US donors who wish to support the community and specific activities through the CSP; and (c), prepare the way for a more formal connection between CSP and GFCS.

It seems likely that bilateral funding for CCAFS' work on climate services will substantially exceed activities funded through Window 1 and 2 via Flagship 2. Relevant expertise must be mobilized rapidly within CGIAR plus partners if we are to take advantage of the emerging opportunities.

CCAFS collaborates with both national and regional meteorological services. The regional services tend to have more capacity than the national ones. CCAFS is also integrating crop modelling into its work with climate information services, and has invested in a modelling platform which enhances crop production forecasting. One of the key added values of CCAFS involvement is the capacity enhancement it brings to meteorological services to reach vulnerable people.

Decisions:

- To reaffirm the need to continue to give sufficient priority to emerging opportunities, external partnerships, and mobilization of external funds to bring climate information services into agricultural development and policy.
- To endorse, in principle, plans for CCAFS, via CIAT, to serve as administrative host of the Climate Services Partnership.

6.4 Progress in the Climate-Smart Village concept and implementation

CCAFS launched the Climate-Smart Villages (CSVs) project in 2011, with 15 sites located in West Africa, East Africa and South Asia. In 2014, additional villages will be located in Southeast Asia and Latin America and the Centers will expand their work in these sites under the emerging Phase 2 portfolio of projects. All the villages are in high-risk areas, among agricultural communities in rural settings where climate change is impacting negatively on livelihoods. Due to the local contexts, villages may differ from location to location and could be a series of villages such as in Asia and Africa or landscapes such as in Latin America. This also makes landscapes an appropriate level for working with communities. CSVs continue to be developed as a means of achieving full integration of the four CCAFS Flagships, testing technologies and adaptive agricultural practices that build resilience and reduce GHG emissions intensity, with clear pathways for scaling out. In cases where CCAFS works at partner sites, the focus may be on one or more Flagship areas. ISP discussed progress of implementation of the Climate-Smart Village concept in the initial regions; South Asia, West Africa and East Africa. The concept is gaining wide recognition for its potential to deliver on climate-smart agriculture from development partners such as the World Bank and acceptability by governments as models for reaching thousands of farmers with climate-smart practices; for example in Nepal and India. CGIAR is expected to work on the sites and conduct the science behind these. Upscaling is important, and this requires strong communication between the different scales from community to sub-national to national and regional levels. CCAFS is involved in a number of Climate-smart Agriculture initiatives, and hence the CSVs are linked to these initiatives.

Decisions:

- To note the excellent progress in the implementation of Climate-Smart Villages in Africa and South Asia.
- To establish additional villages in Southeast Asia and Latin America considering lessons learnt.

6.5 Regional strategies

2013 was the first year of operation for the Latin America Regional Program and in late 2013, the Southeast Asia Program was geared up through the appointment of the Regional Program Leader. Both programs are now ready to present their regional strategies.

6.5.1 Latin America

(i) Stakeholder engagement to devise strategy

The CCAFS LAM strategy was developed through a participatory approach by consulting key stakeholders using interviews to understand their perceptions with respect to the agricultural sector in Latin America, climate change and food security challenges in the region, as well as their role in terms of activities to increase resilience. Stakeholders were also interviewed about work mechanisms and partners in relation to climate change, agriculture and food security. The information gathered by this process was used to elaborate an overall diagnostic of the region. The diagnostic was the foundation of the CCAFS LAM strategy. The strategy was presented and discussed among regional stakeholders during a workshop held in Costa Rica in September 2013 where representatives from CGIAR Centers (CIAT, Bioversity, CIMMYT, CIP, ICRF, IFPRI), regional institutions (CAC, IICA, CATIE, CATHALAC, CRRH), Ministries of Agriculture and/or Environment (Nicaragua, Honduras, Guatemala, El Salvador, Mexico, Brazil), academic institutions (Earth University, Zamorano, UCI) and multilateral institutions (BID, CEPAL, FAO, GIZ, UNEP) participated and

provided their inputs to elaborate a coherent strategy for the implementation of the CCAFS Regional Program in Latin America. The role which Future Earth and other partners can play will also be examined.

(iii) Main impact pathways

The CCAFS LAM theory of change will help to transform how research and technology transfers are developed in the region. Current challenges related to climate resilience in agriculture require transformations which demand efficient research, innovation and transfer systems that are truly participative and effective. This can be achieved, recognizing and promoting cultural identity, by strengthening horizontal communication methodologies practiced by indigenous people and small farmers. This will also help to establish and/or improve links between local knowledge and science responding to the interests of the majority, especially the most vulnerable groups working closely with private (producer's organizations) and public (ministries, regional bodies and NARS) institutions, as well as partners working in the region supporting research for development initiatives. Detailed impact pathways will be developed starting in September.

(iii) Focus countries

CCAFS LAM proposes to focus its work in Honduras, Nicaragua, El Salvador and Guatemala due to their vulnerability to climate risks (positions in the Climate Risk Index: Honduras (1st), Nicaragua (4th), Guatemala (10th), El Salvador (13th)) associated with extreme events (floods and droughts) and also because their economies are based mainly on agriculture with a strong component of subsistence agriculture. These are small countries in terms of both area (the area of all 4 countries is 372,393 km²) and population (total population of all four countries is approximately 34 million). Therefore, due to their size and high similarity in social, economic, political and agricultural characteristics, they are perceived as a sub-region (CA-4). CCAFS LAM, through CAC (Central American Agricultural Council), will be mainly focusing in this sub-region as a whole with some bilateral activities as needed in order to achieve greater impact and economies of scale. On the other hand, CCAFS LAM is also suggesting focusing on Colombia and Peru, which are considered relevant due to: i) the opportunity of sharing and contributing to consolidate their advances in terms of articulating climate change into their agricultural sector policy; as well as in adaptation to climate variability (particularly in Colombia, CCAFS LAM has strong relations with public institutions which enables a good work environment and also, strategic ongoing activities exist that are already being targeted by other countries in the region (Honduras) to be replicated); ii) their significant potential in terms of mitigation. Both countries are leading their policy towards a low-carbon economy. The latter means high potential for fund raising, high levels of potential carbon sequestration and the possibility of scaling up current initiatives (LEDS, REDD+ and NAMAs); and iii) their high vulnerability in the agricultural sector (especially in terms of food security when facing climate extreme events) as an important driver of poverty. Finally, Colombia and Peru present a relatively strong institutional background and complementary initiatives that address, in Colombia's case adaptation and in Peru's case mitigation, which would push forward one of CCAFS LAM's main strategies of promoting cooperation within LAM countries based on in-house experiences.

(iv) *Focus sites*

The sites where CCAFS LAM will focus its work were also proposed and discussed by regional stakeholders during the workshop in Costa Rica. As a result, CCAFS LAM is proposing to establish three CSVs, where multiple Flagships will work: two in Central America (Trifinio and Central Nicaragua) and one in Colombia (Cauca). 1. Trifinio: This is an area where the frontier of 3 countries (Honduras, El Salvador and Guatemala) meets and is one of the most vulnerable areas in Central America, representing 3 of the CA-4 countries. 2. Tuma La Dalia: This one is located in Nicaragua, where some important work is ongoing. Household baseline surveys have been done and high vulnerability and poverty are the main issues to address. 3. Cauca: It is located in Colombia, where there is high vulnerability to extreme climate events; it is a strategic place to work because its conditions could be found in Peru and in some areas in Central America. Sites 1 and 3 have different indigenous communities; in all three sites, CCAFS LAM has already established local partners; CGIAR Centers and other CRPs are working there, as well as some donors; and we have also engaged with national governments. In addition to these CSVs, CCAFS will work in other sites organized together with partners in the focus countries in the different Flagships.

(v) *General principles of the strategy*

In order to develop adequate portfolios of activities to address the challenges that the agricultural sector of the prioritized countries face, the CCAFS LAM strategy includes three main components. These respond to specific characteristics of the region discussed by regional stakeholders in the workshop mentioned above. The strategy components are: (i) *Articulation/Coordination* of activities among knowledge and research areas and partners. This component addresses the high atomization of activities in the region, as well as the high number of stakeholders with diverse targets that seek similar results and outcomes for the agricultural sector; (ii) *Demand-Driven Response* to government needs at every level so that farmers become more resilient to climate change and variability. This component acknowledges that LAM governments and farmers usually know their needs and where impacts are more severe based on their experiences; and (iii) *Seek and Take Best Bets*, LAM governments are starting to organize their focal topics related to climate risk management in their agricultural sectors and will shape their partners' activities towards those topics. CCAFS will build on those ongoing activities by supporting initiatives where CCAFS research and expertise would make the difference in terms of impact.

(vi) *Main focus research areas*

The main impacts of climate change that will be addressed in LAM are climate/weather variability related to climate extreme events such as floods and droughts. CCAFS LAM countries will be focusing on Climate-Smart Agriculture practices and innovations (including ICT, improved varieties, planning and investment prioritization tools) that complement traditional knowledge; climate information services and networks (agro-climate seasonal forecasts), as well as supporting index insurance implementation; measurement of GHG emissions for mitigation-in-adaptation (practices that are achieving mitigation goals through implementing practices framed as adaptation), practices in coffee, rice, cocoa and livestock; and support to national governments on development and implementation of National Adaptation Plans (NAPs) and Nationally Appropriate Mitigation Actions (NAMAs) with CCAFS tools such as socioeconomic scenarios and SAMPLES, with a focus on commodity agriculture and avoided conversion of forest lands, ecosystem

restoration and mitigation-in-adaptation options. A food systems approach, as opposed to a production approach, will be applied in the LAM research.

Decisions:

- To approve the general regional program strategy for Latin America.
- To approve Colombia, Peru, Guatemala, Honduras, El Salvador and Nicaragua as the target countries in LAM.

6.5.2 Southeast Asia

(i) Stakeholder engagement to devise strategy

As one of the new regions, CCAFS SEA conducted a convergence meeting with CGIAR CCAFS focal persons/representatives (Bioversity, CIAT, CIP, ICRISAT, ICRAF, IFPRI, IRRI, IWMI and WorldFish Center) and selected partners (FAO, Japan NARO, JIRCAS, RIMES, GIZ-ASEAN) in Bangkok, Thailand, in December 2013, that identified and defined the tentative regional impact pathway and priority areas of regional collaboration. This was followed up by another workshop involving a broader group of partners on mapping out a CCAFS regional R4D agenda and strategy. This was held in March 2014 in Hanoi, Vietnam, in collaboration with IRRI, CIAT and the Vietnam Academy of Agricultural Science (VAAS). About 70 participants from six countries (Cambodia, Indonesia, Lao PDR, Myanmar, Philippines and Vietnam), 11 collaborating CGIAR Centers, FAO, RIMES, IIRR, GIZ-ASEAN, AON Benfield and CCAFS staff participated in the workshop. The role which Future Earth and other partners can play will also be examined.

(ii) Main impact pathways

The output of the two workshops put the four CCAFS Flagships into the SEA context by identifying and defining their corresponding regional outcomes, next users, milestones, outputs and R4D priority activities. The main impacts of climate change that will be addressed in SEA are sea level rise and climate/weather variability. Priority is also given on mitigating greenhouse gas emissions from rice production and the impact of oil palm as a driver of deforestation. The desired outcome is to have more resilient agriculture in the SEA region with reduced GHG emissions, contributing to a sustained and stable food supply, with consumers, particularly low income rural and urban people, having adequate access and use of quality nutritious food commodities. CCAFS SEA will work towards enhanced institutional capacities and capabilities of the public and private sector in implementing climate change measures enabling farmers and communities to practice climate-smart technologies supportive of equitable and sustainable rural development.

(iii) Focus countries

Based on an earlier assessment study conducted by CCAFS, CCAFS SEA is proposed to have 3 focus countries in SEA: Vietnam, Cambodia and Laos. These countries are among the most vulnerable climate change impacts (hotspots) in the region, with high developmental intervention needs (high poverty, medium HDI). Parts of Lao PDR, Cambodia and Vietnam also have significant vulnerable hotspots which could be good benchmark sites for CCAFS. Most of the CCAFS interventions and action will be implemented in these focus countries. In addition, Indonesia will be the focus of work on mitigating impact of oil palm as a driver of deforestation, the Philippines on the effect of sea level rise (risk mitigation and coping with tidal surge in

coastal areas), and Myanmar as a highly climate change vulnerable area that will targeted for future expansion.

(iv) Focus sites

CSVs will be established in Laos (2), Vietnam (3) and Cambodia (1), in areas representing different climate change challenges, agroecosystems and landscapes, and with existing CGIAR, government and other partner activities and programs. In implementing the CSV approach, the smallholder landscape approach (landscape around a village or within one or two villages) is adapted for SEA. The CSVs will also serve as the convergence point of the Flagships. There will be other sites organized together with partners in the focus countries or in other countries as expansion of CSVs or in implementing the different Flagships (e.g. FP2, FP3).

(v) General principles of the strategy

From the convergence and landscape approach at the local level, both national governments and regional bodies, particularly ASEAN, will be engaged to influence climate change related agricultural policies and programs. This will be done by designing CCAFS sites and regional research projects with concerned line ministries in order to ensure integration with national programs. CCAFS SEA will work closely with partners to map out co-development, co-funding and implementation (REDD/NORAD, IFAD, WB, ADB). The presence of several advance research organizations and innovative development organizations in the region will also enable mobilization of science-based and local knowledge solutions to climate change challenges as well as the implementation of innovative processes to deliberately reach women, indigenous peoples and marginalized sectors.

(vi) Main focus research areas

The priority R4D interventions will include participatory action research aimed at building the capacity of local communities and local governments in upscaling CSA (mitigation and adaptation measures) through a smallholder landscape (CSV) approach. Efforts will be done to understand and act on agro-meteorological information needs of end-users and their support network. These efforts will help explore innovative ways of providing early warning systems (e.g. for climate change impacted pests and diseases in crops and livestock) and effective on-farm delivery systems (e.g. local innovation and ICT) of climate information and products.

CCAFS SEA will also support Vietnam's effort to reduce GHG emissions in rice-based production systems by supporting the development of approaches/strategies for up-scaling/out-scaling of AWD and the development of quantification procedure/protocols guidelines. Improved landscape governance in oil palm areas will be targeted in Indonesia. Regional support systems (e.g. clearing house) for more effective NAMA implementation among SEA countries, providing technical advice, options and services will also be initiated. CCAFS SEA will also help SEA countries establish a decision-support mechanism on agriculture, climate change and food security policies that uses newly generated data, model output and innovative scenario assessment through collaborative work and partnerships with the regional economic and development

bodies, major regional organizations and the concerned national agencies. A food systems approach, as opposed to a production approach, will also be applied in the SEA research.

Decisions:

- To approve the general regional program strategy for Southeast Asia.
- To approve Cambodia, Laos and Vietnam as the target countries in SEA.

6.6 IPCC report

Released in April 2014, the contributions of Working Groups II and III of the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) offer the first opportunity since 2007 for a full appraisal of global scientific consensus on climate change impacts, adaptation and mitigation. AR5 findings on the impacts of climate change on food security and agriculture are provided in WGII Chapter 7. CCAFS scientists from CGIAR and partner organizations have been active in preparation of the WGII Chapter 7, notably Andy Challinor as Lead Author, Philip Thornton as a Contributing Author and Pramod Aggarwal as a Review Editor. CCAFS held two events related to the release of the contributions of IPCC Working Groups II and III. The first event, held in London in April, in partnership with IFAD, DFID, Willis (London-based insurance company), World Bank and Prince Charles's International Sustainability Unit (ISU) was focused at policy-makers and the financial sector to discuss the implications of the AR5 for food security, smallholder farmers and investment in adaptation. CCAFS prepared a summary of WGII Chapter 7 for this event and shared this with the ISP as a background document. The second event, held in Washington DC also in April, in partnership with the World Bank and the Global Research Alliance on Greenhouse Gas Emissions, engaged scientists to describe mitigation opportunities and implementation mechanics, and practitioners and financiers to identify actionable steps to achieve mitigation in the agricultural sector. A review of citations of CCAFS work in the contributions of IPCC Working Groups II and III is advised to inform future strategy for contributions to possible future reports and associated knowledge management processes.

Decisions:

- To note the release of IPCC AR5 WGII and WGIII and its implications for smallholder agriculture and food security.
- To conduct a review of CCAFS and CGIAR citations in AR5, to inform future strategy.
- To ask the PMC to consider creating a database of scientists in the CCAFS regions that will extend the pool of scientists who can make a contribution to, e.g., IPCC reports and use the bibliometric analysis to identify scientists.
- ISP wishes to examine activities regarding capacity enhancement in the context of plans for Phase 2.

7) Engagement and communications

Achieving outcomes on the ground requires policy engagement at all levels from local government through to global processes. The CCAFS Program Plan lays out policy change (getting climate change into agriculture policies and agriculture into climate change policies) as one of two program objectives. The CCAFS Coordinating Unit strives for the most strategic balance across the domains of climate change and agriculture, and between

leading policy engagement at the global level (e.g. the proposed CSA Alliance, the UNFCCC and its subsidiary SBSTA, as well as IPCC, and the Committee on Food Security deliberations on climate-related issues) and supporting CCAFS Regional Programs in their policy engagement at regional and national levels (e.g. NEPAD/CAADP programs on climate and agriculture, NAPs and NAMAs).

In order to strengthen engagement and communication in the CCAFS regions, the ISP, at its meeting in October 2012, decided to ask the Coordinating Unit to increase its activities with Regional Program Leaders, even if this meant downscaling global engagement and communication.

This strategic adjustment has manifested itself in overall priorities and concrete initiatives set out in the Business Plans for 2013 and 2014 in terms of engagement and communications management vis-à-vis Regions, Themes and Centers; political engagement and communications (including media outreach); and publications.

Current priorities

In 2014, the Coordinating Unit has prioritized the following activities focused on Climate-Smart Agriculture:

- April 3 – IPCC WG II report release event with IFAD, DFID, World Bank, Willis and ISU - London
- April 14 – IPCC WG III report release event with World Bank and others – Washington DC
- June – UNFCCC SBSTA – Bonn side event on Climate-Smart Agriculture in Africa
- Date TBC – National Adaptation Plan workshop - Mali
- September 23 – Launch of CSA Alliance at the UN Climate Summit – New York. Including launch of CSA 101 training guide and field trip to Indian Climate-Smart Villages
- September 25 – CGIAR Development Dialogues 2014
- December – UNFCCC COP20 – Lima

For each of these events, detailed plans are being developed including close collaboration with relevant regions and themes to promote innovative research. It is noted that this year CCAFS is not co-organizing Global Landscapes Forum (GLF) but may organize a session at the meeting if the opportunity occurs and it fits with other priorities for COP20.

Vision going forward

In 2014, the new CSA Alliance provides a critical strategic opportunity for CCAFS research to achieve impact at scale. Capitalizing on this opportunity will require renewed investment of Coordinating Unit resources at the global level, on both policy engagement with key global partners and associated communications. CCAFS is participating closely in the policy processes of the CSA Alliance, including co-leading the Knowledge Action Group with FAO. The CSA Alliance at global level is closely coupled with emerging actions by parties at all levels, including national governments, cross-governmental frameworks such as CAADP, a cohesive NGO community and early movers in the private sector. In addition, in the lead-up to agreement of post-2015 arrangements under the UNFCCC, CCAFS recognizes a need to continue global-level work with partners to reinforce discourse on agriculture, not least for COP21 in Paris (2015), which would involve close collaboration with French partners. In this regard the CSA Science meeting in Montpellier in 2015 is important.

Looking ahead, CCAFS engagement and communications needs to be further strengthened to integrate outcome priorities in regions as an integrated part of the regional impact pathways. The goal in 2014 is to support the regions in ensuring that communications and knowledge management is strategically oriented to support achievement of regional outcomes. In 2014, the Coordinating Unit is working with regional communicators to take the lead on specific tasks and campaigns, with a goal to reduce the amount of time and energy spent at “central” level while keeping momentum going.

In 2015, the Coordinating Unit envisions regional communicators, through their Regional Program Leaders and still with overall central coordination, taking a more proactive leadership role in planning and delivering strategic communications activities that link well with global objectives and tap into the strong set of skills and experiences in the wider communications team, as well as in the CGIAR host Centers where many regional communicators are based.

Key events in 2015 will include:

- CSA conference, Montpellier – March
- Gender, climate change and food systems, Paris – March
- International Conference on Environment and Climate Change, Paris - July
- UNFCCC COP21, Paris – December

Decisions:

- To underline the importance of balancing engagement and communications at global, regional and national levels noting that additional efforts may be necessary at the global level due to the development of the Climate-Smart Agriculture Alliance.
- To ask the Coordinating Unit to ensure a flexible engagement and communications approach which fits the adjusted Flagship Project structure and priorities of CCAFS in the Extension Phase in 2015 and 2016.

8) External evaluations

To fulfil the formal requirements by the CGIAR Independent Evaluation Arrangement (IEA) for CCEEs in terms of structural setup, it has been agreed by the ISP Chair and CIAT DG that:

- The Evaluation Manager is Torben Timmermann.
- The Reference Group (RG) will be chaired by the CIAT BoT member who is ISP *ex officio*.
- The RG will consist of the ISP, management representatives and two stakeholders relevant to the particular CCEEs.
- RG meetings will take place at the same time as ISP meetings (i.e. twice per year, in May and October) with email/video discussions at other times where needed.
- The ISP is tasked with deciding on programmatic topics for CCEEs and approving plans for evaluations.
- The CIAT BoT be tasked with similar roles related to evaluations that cover administrative, fiduciary and reputational issues.
- The RG will make inputs to the evaluation Framework, including Terms of Reference and lists of key questions for such evaluations; select the reviewers to undertake the evaluations; provide feedback on

the inception report and evaluation workplan; and provide feedback on the draft report and, if the Program Director sees a need for it, the management response.

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- In terms of final approval of evaluation report and management response:
 - For evaluations that cover programmatic issues the final report and management response will be approved by the ISP, and report and response will subsequently be sent to CIAT BoT for information.
 - For evaluations that cover administrative, fiduciary and reputational issues, or other evaluations requested by the CIAT BoT, the final report will be noted and the management response endorsed by the ISP. Report and response will subsequently be tabled for approval by the CIAT BoT.

This has been discussed with the IEA.

8.1 Framework for evaluation of CCAFS Theme 3

Chuck Rice welcomed the two external partners on the Reference Group (RG) for the evaluation of Theme 3 – Mai Van Trinh, Institute of Agricultural Environment, Vietnam and Chris Elliott, Climate and Land Use Alliance (CLUA), who joined remotely via online platform. The ISP decided in October 2013 to commission a CRP-Commissioned External Evaluation (CCEE) on CCAFS' Theme 3 on Pro-poor Climate Change Mitigation. The focus would be on the degree to which original objectives and deliverables have been achieved, an assessment of how successful CCAFS has been in co-designing research with partners and stakeholders, the role of the global environmental change community in the research process, and the degree to which the Theme has fostered productive inter-Center relationships.

This CCEE was commissioned based on the CCAFS ISP decision in October 2012 that CCAFS should undertake at least one programmatic external review per year. CCAFS' external reviews should be designed to provide input to the expected 2015 evaluation of the whole of CCAFS commissioned by the Internal Evaluation Arrangement (IEA).

The basis of the evaluation required by the CCEE guidelines is a Framework which includes Terms of Reference for the evaluation, information about the structure of the review, people involved and key evaluation questions.

The CCEE guidelines require a Reference Group (RG). An RG is a "sounding board", giving views and inputs at key decision stages in the evaluation design and implementation process. The RG for the evaluation has been constituted and consists of the following people:

- Governance – CCAFS Independent Science Panel (ISP). ISP member, *ex officio*, CIAT Board of Trustees – Chuck Rice – is Chair of the Reference Group.
- Management – Program Director (Bruce Campbell); Theme Leader 3 (Lini Wollenberg); Regional Program Leader East Africa (James Kinyangi).

- Partners – Institute of Agricultural Environment, Vietnam (Mai Van Trinh); Climate and Land Use Alliance (CLUA) (Chris Elliott).

The RG discussed the Framework for the evaluation, and selected possible evaluators to conduct the evaluation based on a suite of names proposed by the PMC.

An inception report and evaluation work plan, including proposed visits, will be prepared by the evaluators for approval during the first five days of work. The inception report will be sent to the RG for comment. A draft report will be delivered by the evaluators no later than 15 September 2014. At the ISP meeting in October, the RG will consider the draft evaluation report. The final report will be delivered no later than 28 November 2014. As the evaluation covers programmatic issues the final report and draft management response will be put on the agenda for approval by the ISP at its meeting in May 2015, and will subsequently be share with the CIAT BoT for information at its meeting also in May 2015.

Decisions:

- To approve, in principle, the Framework for the evaluation (Annex 2), subject to changes requested by the Reference Group.
- To agree on a prioritized list for two evaluators, and to ask the Coordinating Unit to ensure implementation, including to revert to the RG in writing with new proposals should the selected list not suffice.
- To request that the inception report and evaluation work plan, including proposed visits, will be prepared by the evaluators during the first two weeks of work.
- To request that the inception report be received electronically by the Reference Group for approval.
- To agree that the final report and draft management response will be tabled for approval by the ISP at its meeting in May 2015, and to send report and response to the CIAT BoT for information at its meeting in May 2015.

8.2 CCAFS theme by region matrix evaluation report and proposed response

The ISP decided in May 2013 that an evaluation be conducted of how the CCAFS Theme by Region matrix is being managed to deliver on International Public Goods (IPGs: publications, databases and other knowledge products) and development outcomes. As the review notes there is an additional matrix to be managed: that involving the 15 CGIAR Centers delivering activities in the Themes and Regions. Given time limitations, this review focused on the South Asia region so there was little opportunity for cross-region comparison. It is regarded as the first CCEE for CCAFS, though all the guidelines could not be followed. The evaluation was undertaken by Andrew Ash (CSIRO). The report and proposed response were considered.

The review had many positive remarks, including CCAFS having a “good balance of activities at local, national, regional and global scales. The focus of the management response prepared by PMC is on how the 15 recommendations from the evaluation will be dealt with.

Decisions:

- To approve the evaluation report (Annex 3) and the response (Annex 4), subject to changes to be made by the Program Director.
- To table report and response for information at the CIAT Board of Trustees at its meeting in May.
- To ask the Coordinating Unit to place report and response on the CCAFS website.

8.3 CCEE plan for CCAFS

Next in line is a major full program evaluation of CCAFS in 2015 to be undertaken by the IEA. This fits well with the previous evaluations, which (i.e. the ones under CCAFS control) were structured to build up to the 2015 review:

- 2012: first external evaluation of CCAFS conducted by the European Commission (EC), focused on how CCAFS was performing in relation to the CGIAR reform process.
- 2013 (first half): CCAFS governance and management functions, commissioned by the CIAT Board of Trustees (BoT).
- 2013 (second half) CCAFS Theme by Region Matrix, commissioned by the ISP.
- 2013: IEA-led evaluation of governance and management functions of all CGIAR Research Programs (CRPs)
- 2014: CCAFS Theme 3 on Pro-poor Climate Change Mitigation, commissioned by the ISP.

It is noted that the EC evaluation recommended that after 3-4 years the ISP should commission a review examining the role of participatory action research approaches to climate change adaptation and mitigation, specifically addressing scientific outputs. At its meeting in October 2013 the ISP endorsed the PMC proposal to focus an evaluation on this topic in early 2016.

All final CCAFS evaluations and responses are placed on the CCAFS website: <http://ccaafs.cgiar.org/reviews-and-evaluations#.UvoWb2JdX2U>.

Decisions:

- To agree that other future topics for evaluations will be discussed in late 2015 after the external evaluation of CCAFS is completed.
- To note that the EC evaluation called for a review of the role of participatory action research approaches to climate change adaptation and mitigation, specifically addressing scientific outputs, after 3-4 years. This will be considered in the late 2015 discussions.

9) Reflection on draft decisions from 20 May

The ISP reflected on the draft decisions from the first day of the meeting.

10) CCAFS Extension Proposal

10.1 Extension Proposal

CCAFS management submitted an extension proposal to the Consortium Office in late April. It followed the earlier proposal discussed by the ISP at its Rome meeting in October, with the difference being that it is now for the extension period 2015-2016 rather than for Phase 2, given the change in the timetable by the CGIAR. The proposal was sent for comments to the main CCAFS partners. The CIAT BoT made comments on a previous version of the proposal and CCAFS responded to them. The proposal is still important for Phase 2 as it incorporates all the proposed changes to be made for Phase 2, notably (a) a restructuring of the current Themes (now called Flagships); (b) results-based management throughout the portfolio of activities; (c) changes in the way cross-cutting activities are dealt with, (d) changes in the relationships between Regions and Themes, and (e) a more focused set of CGIAR Center activities contributing to each Flagship.

a) Changes in thematic structure

The major changes in thematic structure are as follows. In the previous Themes it was found difficult to separate the work on technologies/practices that was in Theme 1 (progressive climate change) from that in Theme 2 (managing climate risk) and from that in Theme 3 (pro-poor mitigation) (as an example conservation agriculture could be placed in any of the above Themes). Thus all work on technologies and practices is now consolidated in a single Flagship (#1: Climate Smart Practices). This leaves Flagship #2 to focus largely on climate information services and associated climate-informed decision-making. Flagship #3 hosts the low emissions development work. In essence, it is for the specialized work on mitigation and low emissions development (GHG measurement methods, possible mitigation institutions (e.g. NAMAs), agricultural drivers of deforestation). There is now a separate Flagship #4 on Policies and Institutions, dealing with sub-national (e.g. States in large countries such as India) to global policies, but this largely focusses on food security, development and agriculture policies, not those related to low emissions development. This Flagship replaces the previous Theme on “Integration for decision-making”, many elements of which (knowledge to action, gender mainstreaming, data and models) are mainstreamed into or cross-cut all Flagships. A particular challenge with mitigation research has developed, where many of CCAFS’s external global stakeholders want to see this as a major part of CCAFS but it is not a theme that is prioritised by many developing country governments.

In the previous meeting the ISP called for more clarity on the sub-divisions in Flagship 1. These are now framed as the following research areas: (1) Improved technologies, practices and portfolios for CSA that meet the needs of farmers, including women and marginalized groups; (2) Methods and approaches for equitable local adaptation planning and governance, including transformative options; (3) Innovative incentives and mechanisms for scaling up that address the needs of farmers, including women and marginalized groups. The first area is the traditional area of CGIAR. The second area focusses on adaptation planning at local levels, and needs to be closely implemented with what is covered in Flagship 4 at higher levels. The third area is a knowledge-action topic.

b) Results-based management (RBM) throughout the portfolio of activities

The final form of RBM has yet to be decided, partly dependent on the results of the RBM trial and partly dependent on principles to be developed by the Consortium Office. A budget item for an Innovation Fund has been created. The proposal is to allocate this to the best performing Centers.

c) Changes in the way cross-cutting activities are dealt

In Phase 1, there was a separate Theme for Linking Knowledge with Action (Theme 4.1) and data management was catered for under Theme 4.1 (data and models). In the Extension Phase, linking knowledge with action has been mainstreamed into all the Flagships. It thus is now dealt with in a similar manner to gender and social differentiation. Funds are also included for all the activities needed for building the impact pathways: partnerships, capacity enhancement and communications. These are now all connected to planning for impact and embedded in the Flagships, rather than being seen as being part of the Coordinating Unit. This is a subtle change but it is significant for achieving impact (e.g. the activities conducted will now be reported as part of Flagship reporting linked into impact pathways, rather as a separate Coordinating Unit report). Data management is now a separate cross-cutting activity and the visibility of M&E has been elevated by making it another cross-cutting activity. Flagship Leaders or Coordinating Unit staff will take oversight responsibility for specific cross-cutting and mainstreamed activities, though CCAFS will have a single dedicated staff member to cover gender and social differentiation.

d) Changes in the relationships between regions and themes

Many of these changes have been alluded to in the management response to the Andrew Ash evaluation. They include: (i) greater focus on building impact pathways from a regional perspective; (ii) regional planning to get an integrated set of activities from Centers; (iii) higher budgets to Regional Program Leaders than Flagship Leaders; and (iv), Regional Program Leaders playing a larger role in overall reporting from CCAFS.

e) More focused set of CGIAR Center activities contributing to each Flagship

CCAFS inherited Center activities and associated budgets that were proposed by the Centers. This led to a portfolio of activities that was not necessarily coherent or strategic. During the past three years CCAFS has been trimming and modifying the portfolio on an annual basis, through feedback to Centers and performance management criteria communicated to Centers. With the extension and Phase 2, CCAFS has the opportunity for more significant shifts in focus and composition of sub-components. This has been managed through: (i) calls for concept notes; (ii) selection of a subset of concept notes; (iii) integrated planning amongst proponents of selected concept notes; and (iv), filling gaps in the overall set of planned activities through commissioned research. Parts of Flagship 1 and all of Flagship 2 have now reached stage (ii) above, while part of Flagship 4 is well advanced on (iii). The remaining parts of the portfolio, together with all gap filling will be completed by the October ISP meeting.

A challenge is that some components of CCAFS Phase 1 can only be phased out in 2015, so the entire portfolio can only start to be implemented in 2016. Phasing will be discussed once the full portfolio in the extension and Phase 2 is known.

Decisions:

- To note the good progress in reconfiguring CCAFS for the Extension Phase in relation to strategic objectives and needs.
- The revised concept note to be circulated to ISP in August for comment, and again before the final proposal is submitted in late 2014 based on comments from the Consortium Board and Fund Council.
- To support the currently proposed allocation of resources amongst Flagships and Regions, and to request the management team to provide additional written justification in the revised concept note for the Extension Phase.
- To note that there will be budget shifts amongst Centers from Phase 1 to the Extension Phase in relation to strategic priorities and performance.
- To request the management team to present the proposed new portfolio at the ISP meeting in October.
- To recommend a rapid shift of the portfolio from Phase 1 to the Extension Phase so that the new strategy (including impact pathways and M&E) can be fully tested in the Extension Phase.

10.2 Result-based management trial (Flagship Project 4: Policies and Institutions for Climate-Resilient Agriculture)

Six projects for the FP4 trial in RBM were selected by PMC, Contact Points and external reviewers in August 2013. Concept notes were developed into full proposals during the last quarter of 2013, and representatives of each project attended a two-day meeting at IFPRI in Washington DC in late January 2014, to work on project impact pathways and theories of change and to discuss a monitoring and evaluation process for the RBM trial. Project documents were finalized by early March 2014. A core group of scientists (mostly from CCAFS and CIAT) have worked hard over the last few months to help develop a coherent set of project activity plans with project Principal Investigators. Project activities are underway and a roadmap has been developed for monitoring and evaluating these trial projects in time for an annual progress report to be delivered to the Consortium Office in late November 2014. Several lessons have been learnt from the process so far and a continual learning environment is being encouraged via a communal wiki set up for project participants, as well as a series of “learning notes”, the first of which has been published.

Decisions:

- To note the progress made on the RBM trial and the efforts being made to distil, disseminate and act on the lessons learnt from the process.
- To request the draft annual progress report to be put on the agenda for the next meeting.
- To make available to ISP members the summary of the six projects.

11) Financial related matters 2013, 2014 and 2015

11.1 Procedure on use of additional funds

Given that W1&2 allocations may vary throughout the year it was proposed that when adjustments need to be made, the PMC, guided by the Program Director, decides how funds should be allocated/used when these adjustments do not exceed 10% of the overall W1&2 budget for that same year. The Program Director will

report back to the ISP on decisions made. When funding shifts exceed 10% of the overall budget, it was suggested that the Program Director discusses the PMC plan with the ISP Chair and seeks approval.

11.2 2013 year-end report

The CCAFS 2013 budget was \$71.6 million including funds from the CGIAR Fund and other bilateral sources. Total execution in 2013 was \$67.5 million (94%). Final and total 2013 allocated W1&2 budget was \$44.8 million as per the final Financing Plan received early in December. The final confirmed amount received late in the year meant that there were yet \$2million extra funds to be allocated. After discussions within the PMC it was decided to roll these over and not rush into further activities. The year-end over expenditure amounted to \$970k (compared to \$655k that was forecasted).

Partnership execution equalled to 24% of the total execution, while Gender related activities equalled to 8%. Center-led overall execution was 98%, Theme and Region led 95% and the Coordinating Unit 98%. Out of the \$67.5 million execution, 38% correspond to Bilateral funding sources while the remaining corresponds to Windows 1&2 funding.

The first tranche of W2 2013 funds (2%) was received in mid-June and the first W1 tranche (30%) late in July. Thereafter, several other disbursements were made, amounting to 67% of the total 2013 W1&W2 budget as of end of 2013. In January 2014, two more tranches were received (28%) which means that as of March 31st 2014, 95% of the 2013 budget has been funded. Final 2013 disbursement was made in mid-April.

11.3 2014 budget and financial update

CCAFS' budget is funded by two main sources; 1) Window 1&2 and 2) Window 3 & Bilateral. Windows 1&2 are funds coming from Donors that desire to allocate their funds to CRPs and Window 3 & Bilateral are funds that Donors allocate to Centers directly. When W3 & Bilateral projects are related to CRPs, these are mapped within the respective Program, contributing therefore to the research agenda and regarded as a part of the entire CRP budget.

The CGIAR Consortium has adopted a new “multi-year approach” in the attempt to resolve many concerns expressed by Centers and CRP Leaders in the past (such as funding uncertainty). So for the first time, CRPs were given a two year W1&2 indicative budget which they could use for planning purposes. According to this two year Financing Plan (2014 – 2015), CCAFS is planned to receive \$45.54 million of W1&2 funds in 2014. That includes \$1.5 million for the Flagship 4 trial. During the 2014 budgeting process, which started early in July 2013 before the announcement of the Financing Plan, the PMC assumed a conservative W1&2 budget of \$41.5 million plus \$3 million of W3 funds coming from the EU, which means \$4 million extra needed to be allocated. The PMC decision was to increase the Center performance bonus pool by \$800k (currently at \$1.2 million) and to use the remaining funds (\$3.2 million) to cover strategic priorities and gaps such as: Strengthening CSVs and new initiatives in South Asia; topping up the 2 new Regional Program (LAM and SEA) budgets to a similar level as the other 3 regions; strengthening partner relationships in West Africa; developing the Climate-Smart Agriculture practices database (currently under development); strengthening of CCAFS 2.2 Objective related

activities; developing NAMAs under Theme 3; scaling out of new Gender CSA-tool; LAM Regional Scenarios and IFAD Adaptation for Smallholder Agriculture Programme (ASAP) /CCAFS knowledge partnership.

The main variances between the budget in the Business Plan and the updated budget will be presented as well the strategic budget considerations (gender, partnerships).

As of March 31st, no 2014 W1&2 funds have been received from the Consortium Office.

11.4 Financial outlook to 2015

The Consortium Office has taken a multiyear approach to provide CRPs funding stability, hence has given all CRPs an indicative W1&2 budget for 2015 which equals the 2014 budget plus a 10% growth (\$48.4 million for CCAFS). From 2016 onwards, budgets will be allocated by the Consortium Office based on performance.

Decisions:

- To agree that, in the case of additional funds being made available, the PMC guided by the Program Director, decides how funds should be allocated/used when these adjustments do not exceed 10% of the overall W1&2 budget for that same year. The Program Director will report back to the ISP on decisions made. When funding shifts exceed 10% of the overall budget, it is suggested that the Program Director discusses the PMC plan with the ISP Chair and seeks approval.
- To note the status of 2014 budget and the cash flow status.
- To note the assumed 2015 W1&2 funding level.

12) Guidelines for ISP governance

ISP decided in October 2013 to ask the Coordinating Unit, together with the Chair, to prepare a set of guidelines which outlines what is expected from ISP members, including a set of recommendations – see CCAFS ISP6/12.1. The guidelines include Terms of Reference; information about requirements for meetings; travel, accommodation and honorarium policy; and conflict of interest policy.

Decisions:

- To endorse the Guidelines for ISP governance (Annex 5), and to submit the document for approval by the CIAT BoT.

13) Discussion of new ISP members (confidential)

14) Prioritization of items for the coming ISP meetings

The following topics, previously prioritized by the ISP, were discussed for possible presentation at the October 2014 meeting:

- Institutions and incentives for pro-poor mitigation (Theme 3, Objective 2)
- Progress in the implementation of the Gender Strategy
- Implementation of the Data Management Strategy

- Progress in Theme 2 in getting synergies across CGIAR Centers (Objective 2.2, index insurance, climate risk modelling).

In addition, other topics that are important to cover either in the next meeting or in 2015, were discussed:

- Extension Phase and Phase 2 of CRPs
- Science frame for Climate-Smart Agriculture, linking to aspects such as sustainable intensification and green economy
- Science focus in climate-smart villages (main research questions and hypotheses, main methods, key findings)
- Linking knowledge and action: status and outlook
- Scenarios development: global overview of progress and detailed perspective from one region
- Private sector engagement: update
- Linking from field to region: a South Asia perspective

Decisions:

- To agree that the following topics should be covered in the October meeting (other topics can be postponed to future meetings):

- Extension Phase and Phase 2 of CRPs
- Science frame for Climate-Smart Agriculture, linking to aspects such as sustainable intensification and green economy
- Progress in the implementation of the Gender Strategy
- Implementation of the Data Management Strategy
- Scenarios development, including food systems: global overview of progress and detailed perspective from one region
- Private sector engagement: update

15) Future meetings, incl. date and place for the 8th and 9th ISP meetings

It has been decided to hold the 7th ISP meeting on 30-31 October 2014 in Washington DC and organize meetings with Washington based agencies on 29 October. ISP discussed date and place for the 8th and 9th meetings in 2015.

Decisions:

- To confirm that the 7th meeting will be held in Washington DC on 30-31 October 2014 and that meetings will be organized with Washington based agencies on 29 October.
- To ask the Coordinating Unit to follow up with a Doodle for dates for the 8th and 9th meetings in 2015.

16) ISP self-assessment

As agreed in the annual timeline for the CCAFS ISP, the self-assessment form was discussed. It probes a member's level of satisfaction with the current performance of the ISP, compared with that member's expectation of desired ISP performance. At the end of each section, ISP members are asked to suggest actions the ISP could take to improve its performance in the area of that specific ISP responsibility.

The ISP Vice-Chair is assigned responsibility to collate, summarize and analyze the results (with the assistance of the Coordinating Unit), for discussion at the next meeting.

The Vice-Chair proposed to review the content of the self-assessment and table a possible revision at the meeting in October 2014 with a view to start using the new form in May 2015.

Decisions:

- To request that members fill in the self-assessment survey immediately or at the latest by 28 May 2014.
- To ask the Vice-Chair to collect the results from the survey and present the results at the ISP meeting in October 2014.
- To ask the Vice-Chair to propose a revised self-assessment form at the meeting in October 2014.

17) Any other business

There was no other business.

18) Closed meeting with Program Director

19) Closed meeting without management

20) Closed meeting without management and Chair

Thomas Rosswall
Chair

Bruce Campbell
Program Director

Annex 1

Strategic dates for CGIAR Research Program development (tentative)

1 December 2014 : The CB calls for Pre-proposals for Phase 2 to be submitted (10 pages) by the end of March 2015

31 March 2015: CRPs submit Pre-Proposals for Phase 2

July 31, 2015: CO, FO and ISPC complete their review of the Pre-Proposals for Phase 2 and submit their recommendations to the CB (for the CO) and FC (for FO and ISPC)

15 September 2015: The CRPs submit a response to the reviews and recommendations of the ISPC, CO and FO to their pre-proposals on Phase 2

30 November 2015: the CB and FC determine which proposals for Phase 2, and/or key components of proposals they want to see developed into full proposals

31 March 2016: CRPs submit Full Proposals, maximum 40 pages

April – September 2016: six months for ISPC, CO, and FO and to review the proposals.

30 September 2016: A full set of (a) CRP proposals; (b) ISPC reviews; and (c) CO FO, IEA recommendations is available for review and feedback from CB and FC members

15 November 2016: CB and FC complete funding /approval decisions.

31 December 2016: all new CRP contracts in place

Annex 2

FRAMEWORK FOR CCAFS REVIEW

Managing CCAFS Theme 3: Pro-poor Climate Change Mitigation

Endorsed by the Reference Group on 21 May 2014.

Introduction

This is the Framework for the implementation of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS) review on *CAAFS Theme 3: Pro-poor Climate Change Mitigation*. The review has been planned and will be carried out in line with the guidelines for CRP-Commissioned External Evaluations (CCEEs). The Reference Group (see below) has provided input for the Framework, and it was approved at the CCAFS Independent Science Panel (ISP) meeting in May 2014.

Evaluation Manager and Evaluation Reference Group

- Evaluation Manager – CCAFS Head of Program Coordination and Communications, Torben Timmermann (t.timmermann@cgiar.org)
- Evaluation Secretary – CCAFS Program Manager, Martin Lund (m.lund@cgiar.org)

A Reference Group is a structure set up to work with the evaluation manager to ensure good communication with, learning by and appropriate accountability to primary evaluation clients and key stakeholders, while keeping the independence of evaluators. The Reference Group can be thought of as a ‘sounding board’, giving views and inputs at key decision stages in the evaluation design and implementation process. The full CGIAR Independent Evaluation Arrangement (IEA) guidance note on Evaluation Reference Groups can be found here:

https://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_guidance_note8_march_2012.pdf

The Reference Group consists of the following people:

- Governance – CCAFS Independent Science Panel (ISP). ISP is made up of representatives from research, NGOs, private sector and international organizations. ISP member, *ex officio*, CIAT Board of Trustees – Chuck Rice (cwrice@ksu.edu) is Chair of the Reference Group
- Management – CCAFS Program Director, Bruce Campbell (b.campbell@cgiar.org); CCAFS Theme Leader 3, Lini Wollenberg (lini.wollenberg@uvm.edu); CCAFS Regional Program Leader East Africa, James Kinyangi (j.kinyangi@cgiar.org)

- External partners - Specialist, Institute of Agricultural Environment, Vietnam, Mai Van Trinh (maivantrinh@gmail.com); Executive Director of Climate and Land Use Alliance (CLUA), Chris Elliott (chris.elliott@climateworks.org)

Evaluation, reporting and approval process

The evaluation and reporting process will consist of the following steps:

1. Briefing of evaluator
2. Inception and implementation of evaluation
3. Reporting
4. Approval

1. Briefing of lead evaluator

There will be two evaluators for the evaluation. The Evaluation Manager will brief the lead evaluator before the actual evaluation starts. The briefing will take the evaluator through the general Framework and provide an overview of key documents and information, including possible people to interview. This will be further developed for the “Inception” (see below) phase. The briefing will also include information about the standards and ethics expected in CGIAR evaluations, an overview can be found below in Annex 2. The briefing of the evaluator also includes key framework documents, including:

- “Overall IEA Guidance document” regarding external reviews of CGIAR Research Programs (CCEEs). This includes an overview of what CCEEs should address; key roles and responsibilities; planning, design and management; follow-up; and evaluation design matrix:
https://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_guidance_note2_march_2012_0.pdf
- “Template for an Evaluation Report (T2)”. It outlines the elements that the evaluation report needs to contain:
https://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_template_2_march_2012.pdf
- “Quality assurance checklists (T3 and 4) for evaluation reports”. These are FYI as to how reports will be assessed by the Reference Group:
http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_template_3_march_2012.pdf
http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_template_4_march_2012.pdf
- “Standards for Independent External Evaluation in the CGIAR”. They are intended primarily as a reference work by those planning, commissioning and carrying out ‘evaluations’:
http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_cgjar_standards_independent_external_evaluation_march_2012.pdf

2. Inception and implementation of evaluation

An inception report and evaluation workplan, including proposed visits, will be prepared by the evaluators for approval during the first two weeks of work. The inception report will be sent to the RG for comment.

For the inception and implementation of the evaluation, CCAFS has prepared a package of key documents and information. An overview of the bulk of the documents and information is included in Annex 3 below with links to the CCAFS website and Dropbox.

Evaluation matrix template

The evaluation matrix template outlines the evaluation criteria, evaluation questions to be addressed, expected evaluation product and expected approach and sources of information. Using this matrix template is a requirement in the CGIAR guidelines.

Definitions of the evaluation criteria can be found here:

http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_evaluation_standards_annexes1to7_march_2012.pdf (p. 7ff)

[For the content of the evaluation matrix template see Terms of Reference in Annex 1 below.](#)

Interviews

It is recommended that interviews be conducted with some of the following people:

CCAFS management members with considerable Theme 3-related work

- Bruce Campbell – Program Director – b.campbell@cgiar.org
- Lini Wollenberg – Theme 3 Leader - lini.wollenberg@uvm.edu
- Theme Leaders - Jim Hansen (jhansen@iri.columbia.edu) Leader of Theme 2 ; Andy Jarvis Leader of Theme 1 (a.jarvis@cgiar.org)
- Regional Program Leaders - James Kinyangi (j.kinyangi@cgiar.org), RPL for East Africa; Leo Sebastian (l.sebastian@irri.org) RPL for SE Asia, Ana María Loboguerrero (a.m.loboguerrero@cgiar.org) RPL for Latin America

CCAFS governance

- Thomas Rosswall – Independent Science Panel, Chair – thomas.rosswall@gmail.com
- Mary Scholes – Independent Science Panel - mary.scholes@wits.ac.za

CGIAR Centers

- Reiner Wassmann – CCAFS Contact Point at IRRI, SAMPLES and CCAC project – r.wassmann@cgiar.org
- Alex de Pinto – CCAFS Contact Point at IFPRI - a.depinto@cgiar.org
- Clare Stirling – CCAFS Contact Point at CIMMYT – c.stirling@cgiar.org
- Todd Rosenstock ICRAF scientist co-leading SAMPLES project – t.rosenstock@cgiar.org
- M.L. Jat - CIMMYT scientist in India supporting N management and protocol development - M.Jat@cgiar.org

CCAFS partners

More comprehensive list available in Appendix 4, organized by Theme objective and project

- Ministry of Agriculture, Colombia - Nestor Hernandez nestor.hernandez@minagricultura.gov.co
- Climate and Clean Air Initiative, Government of Canada - Sunny Uppal sunny.uppal@ec.gc.ca
- Ministry of Agriculture Bangladesh – Sultan Ahmed sulbul2002@yahoo.com
- International Institute for Sustainability (Brazil) - Helena Nery helenanap@gmail.com
- Vi Agroforestry – Amos Wekesa amos.wekesa@viafp.org
- Unique Forestry and Land Use - Timm Tennigkeit Timm.Tennigkeit@unique-landuse.de
- EcoAgriculture Partners - Sara Scherr sscherr@ecoagriculture.org
- Maseno University - Prof. Collins Ouma Director of Research, Publications and Innovations, couma@maseno.ac.ke
- University of Michigan - Arun Agarwal arunagra@umich.edu and Peter Newton newtonp@umich.edu
- Duke University - Lydia Olander lydia.olander@duke.edu
- Climate, Food and Farming (CLIFF) network - Ngonidzashe Chirinda n.chirinda@cgiar.org, formerly at Aarhus University
- FAO - Christina Seeberg Elverfeldt, now at BMZ (Christina.Seeberg-Elverfeldt@bmz.bund.de).
- Global Research Alliance on Agricultural Greenhouse Gases –, Andy Reisinger Andy.Reisinger@nzagrc.org.nz, Brian McConkey Brian.McConkey@AGR.GC.CA, Alan Franzluebbers ajfranzl@ncsu.edu, Kazuyuki Yagi kyagi@affrc.go.jp
- CIAT Board of Trustees – Geoffrey Hawtin - geoff.hawtin@croptrust.org
- Future Earth - one of the following: Mark Stafford-Smith mark.staffordsmith@csiro.au, Carolina Vera - carolina@cima.fcen.uba.ar

3. Reporting

A draft report will be delivered by the evaluators no later than 15 September 2014. At the ISP meeting in October, the RG will consider the draft evaluation report. The final report will be delivered no later than 28 November 2014.

As mentioned above the evaluator should use the above mentioned “Template for an Evaluation Report (T2)”.

Evaluation procedures

http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_evaluation_standards_a_nnex8_march_2012.pdf outline that evaluation Recommendations should be clearly supported by evaluation evidence, action-oriented, practical and specific, with where possible clearly-defined responsibility for each action. Although there is no set limit on the number of Recommendations, they should be focused on a practical number of priority issues to be addressed mainly by management or governing bodies. More detailed working-level suggestions can be usefully made by the evaluators in separate communications or annexes, but will not have the status of recommendations with an official response and follow-up.

4. Approval

The final report will be noted and the draft management response will put on the agenda for endorsement by the ISP at its meeting in May 2015, and will subsequently be tabled for approval by

the CIAT BoT at its meeting also in May 2015. Once approved report and response will be placed on the CCAFS website.

Annex 1

TERMS OF REFERENCE

CCAFS CCEE REVIEW 2014

CCAFS Theme 3: Pro-poor Climate Change Mitigation

Introduction

In 2012, the first external evaluation of CCAFS was conducted by the European Commission (EC) which focused on how CCAFS was performing in relation to the CGIAR reform process. A review of the CCAFS governance and management functions commissioned by the CIAT Board of Trustees (BoT) was carried out in the first half of 2013. In the latter part of 2013, as commissioned by the Independent Science Panel, the CCAFS management of its Theme by Region matrix for international public goods and development outcomes went through an external review as the first CRP-Commissioned External Evaluation (CCEE) for CCAFS, though all the guidelines could not be followed in this first CCEE.

At its 3rd meeting in October 2012 the CCAFS Independent Science Panel (ISP) decided that CCAFS should undertake at least one programmatic external review per year commissioned by the ISP in addition to possible annual reviews on administrative, legal and/or financial issues commissioned by the CIAT BoT. These external reviews should be designed so that they can be inputs into the major evaluation expected to happen in 2015, commissioned by the Internal Evaluation Arrangement (IEA). This follows the policy approved by the the CGIAR Fund Council that includes a regular Independent External Evaluation of each CGIAR Research Program (CRP) managed by the Independent Evaluation Arrangement (IEA). One of the key building blocks for this external evaluation is the CRP-Commissioned Independent External Evaluations (CCEEs).

According to the guidelines CCEEs should cover a minimum of 50% of the budgeted activities of the CRP over a five-year cycle. A provisional plan for CCEEs should be put in place. Independence of the CCEE evaluations is promoted through: (a) A reference group (RG) that represents the views of a variety of key stakeholders; (b) the Chair of the RG being from the governance structures of the CRP, rather than management; (c) transparency in documenting and publicising the decisions taken on CCEE design, scope and selection of evaluators; and (d) the management of the design process being the responsibility of an Evaluation Manager who will normally work in the CRP but with some structural independence from CRP management.

Evaluation focus

At its meeting in October 2013 the ISP decided that the second CCEE should take place in 2014, and would evaluate CCAFS' research Theme 3 on pro-poor climate change mitigation. The focus would be on the degree to which original objectives and deliverables have been achieved, an assessment of how successful CCAFS has been in co-designing research with partners and stakeholders, the role of global environmental change community in the research process, and the degree to which the Theme has fostered productive inter-Center relationships.

The argument for focusing on Theme 3 was as follows. Theme 3's work has been ambitious in its aim, involving complex linkages between environment and development goals, synergies with adaptation, sensitive international politics, and a dearth of data that has required expensive investments. The program was initiated practically from ground zero in the CGIAR and has been the Theme to pioneer and go furthest with cross center collaboration. It is also in some ways the most challenging and risky of the CCAFS themes, given the priority that most countries and development organizations give to climate change adaptation. Many actively oppose

mitigation. Evaluation of Theme 3 should therefore shine an early light on how well CCAFS is addressing the challenges of the program and the strengths and weaknesses of new features of research that have been made possible by the current phase of reform.

Objective

To undertake an evaluation of how the CCAFS Theme 3: Pro-poor Climate Change Mitigation is being managed to deliver on International Public Goods (IPGs: publications, databases and other knowledge products) and development outcomes.

Evaluation matrix template

Evaluation criteria	Evaluation questions to be addressed	Expected evaluation product	Expected approach and sources of information
1. Relevance	<p>a. Is Theme 3 being managed in line with the vision in the CCAFS Program Plan and CCAFS Theory of Change?</p> <p>b. Is Theme 3 management in line with the reform process in the CGIAR? This includes a) the degree to which the Theme has fostered productive inter-Center relationships; b) an assessment of how successful CCAFS has been in co-designing research with partners e.g. to what extent have external stakeholders been consulted in designing the research?)</p>	<p>Analysis of whether the theme's resources, strategy, outcomes and IPGs are in line with the CCAFS Program Plan and CCAFS Theory of Change</p> <p>How do Theme 3 strategy, outcomes and IPGs contribute to understanding of mitigation related to agricultural landscapes and land use?</p> <p>Analysis of the Centers and partners involved in the management of the Theme and how this fits with the reform process (e.g. are there productive cross-Centre relationships?).</p> <p>Evaluation of how the Theme incorporates multiple land uses addressed by centers</p> <p>Assessment of the degree to which partner and stakeholder concerns shape strategic</p>	<p>Program Plan and Concept Note; see Annex 3 documents under Basic Information about CCAFS; Interviews of program participants and partners</p> <p>See Annex 3 documents under Theme 3 International Public goods; Theme 3 Management;</p> <p>Annual Technical Report 2010-2013; Interviews of program participants and partners;</p> <p>See "Inter-Center collaboration" under "Theme 3 IPGs"</p> <p>Interviews of program participants and partners; example of workshop reports where stakeholders are engaged See Annex 3 under "Theme 3 Partnerships."</p> <p>Interviews of regional program leaders and partners</p>

2. Effectiveness	<p>c. Is there evidence of demand for the Theme 3 from intended beneficiaries in CCAFS regions (low income smallholder farmers) and how is the Theme managed in relation to demand for thematic and regional topics?</p> <p>a. How successful is Theme 3's management in CCAFS in terms of progress made?</p>	<p>directions and research products; and how the matrix is managed to get partner and stakeholder input.</p> <p>Analysis of constraints and opportunities created by lack of regional demand or engagement with mitigation relative to adaptation. How has Theme 3 managed countries' preference for adaptation over mitigation?</p> <p>Analysis of scientific and development progress against the Theme's objectives:</p> <ul style="list-style-type: none"> - Inform decision makers about the impacts about the impacts of alternative agricultural development pathways - Identify institutional arrangements and incentives that enable smallholder farmers and common-pool resource users to reduce GHGs and improve livelihoods - Test and identify desirable on-farm practices and their landscape-level implications <p>Analysis of cross-Theme interactions, particularly across</p>	<p>Theme 3 Annual Technical Reports; Interviews of program participants and partners</p>
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	<p>b. Is sufficient attention paid to ensuring synergies are achieved across mitigation and adaptation, and is their sufficient evidence of synthesis in the IPGs?</p> <p>c. Does the Theme effectively connect to regional programs in planning, implementation and evaluation?</p> <p>d. How well is the local-to-global set of activities managed, in terms of having an appropriate mix of activities at different scales and managing the cross-scale connections, including engagement and communication activities?</p> <p>e. Are Theme 3's management systems tracking progress and proposing adjustments to research as necessary? Is this system working well?</p>	<p>(1) adaptation and mitigation, and (2) integration for decision making, and the evidence of synthesis in the IPGs</p> <p>Analysis of theme- and cross-region interactions and synthesis products, with attention to the match with regional priorities, including capacity building.</p> <p>Analysis of activities from field and household levels to landscapes, national government and international scales. Evidence of cross-scale products</p> <p>Analysis of management procedures to assess how effective the systems are</p>	<p>See Annex 3 under "Theme 3 IPGs"); Interviews of program participants and partners</p> <p>IPGs (see lists in Annex 3 under "Theme 3 IPGs"); Interviews of program participants and partners</p> <p>See lists in Annex 3 under "Theme 3 IPGs"; Interviews of program participants and partners</p> <p>See Annex 3 under "CAAFS planning processes," "Theme 3 IPGs." Interviews of program participants and partners</p>
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3. Efficiency	a. How successful is Theme 3 with respect to efficiency of its research achievements?	<p>Analysis of program participants' perceptions of transaction costs relative to achievements. Cost and need for 3-5 year investments in GHG measurements, and the value thereof, and what the priorities are in terms of where the focus of measurements should be.</p> <p>Assessment of theme's administrative costs and arrangements versus funds for research.</p> <p>Assessment of University of Vermont as host.</p>	Interviews of program participants and partners; budget for T3. See Annex 3 "Theme 3 IPGs." Cost of GHG measurement.
4. Impact	a. Are the initial outcomes or incipient outcomes being reported by Theme 3 of sufficient scale for its budget of about USD 10 million/year and staff?	Analysis of the number and significance of outcomes reported for 2012 and 2013	See lists and analysis in Annex 3 under "Outcomes"; Interviews of program participants and partners
	b. Are the IPGs influential?	Analysis of outcomes and IPGs reported for 2012 and 2013 in relation to the degree to which they are or could be influential for achieving low emissions development in the AFOLU sector in CCAFS regions.	See lists and analysis in Annex 3 under "Outcomes" and "IPGs"; Interviews of program participants and partners
	c. Is it likely that the IPGs produced and outcomes will lead to impacts in regard to the CCAFS IDOs: Enhanced food security;	Analysis of outcomes and IPGs reported for 2011-2013 in relation to their relevance to the SLOs	See lists and analysis in Annex 3

	benefits to women and marginalised groups; enhanced adaptive capacity to climate risks; policies supporting climate-resilient agriculture; reduced GHGs and forest conservation?		under “Outcomes” and “IPGs”; Interviews of program participants and partners
5. Sustainability	a. To what extent are the benefits of the Theme expected to continue based on the international public goods and initial outcomes produced? Why or why not?	Analysis of outcomes and IPGs reported for 2011-2013 in relation to (a) the likelihood of outcomes leading to long-lasting impacts and (b) IPGs having long-term value.	See lists and analysis in Annex 3 under “Outcomes” and “IPGs”; Interviews of program participants and partners
6. Quality of science	a. Are the IPGs of sufficient number and quality for a Theme of about USD 10 million/year?	Analysis of the numbers of IPGs and the degree to which they are in “high impact” journals. Assess the quality of a sample of the IPGs.	See lists in Annex 3 under “IPGs”; Interviews of program participants and partners

Review process

The review will take place during the second and third quarters of 2014. Two evaluators will work on the assignment. The evaluators should be experts in research for development, preferably with experience in agricultural pro-poor climate change mitigation and from one or more of the three initial CCAFS regions (East Africa, West Africa and South Asia). The experts would be engaged for an estimated 30 and 20 working days, respectively.

The evaluators will work closely with CCAFS Evaluation Manager in Copenhagen, and will visit one of the CCAFS Regional Program Leaders. It is expected that most interviews will be conducted remotely. If feasible the evaluators may attend one of the meetings or workshops hosted by Theme 3. An inception report including proposed visits will be prepared for approval during the first two weeks of work.

A draft report will be delivered by the evaluator on 15 September 2014. The final detailed report should be delivered no later than 28 November 2014. Invoice will be delivered to the CCAFS Senior Manager Finance, Contracts & Liaison Angela Samundengo (a.samundengo@cgiar.org) no later than 10 December 2014 upon approval of work by the Evaluation Manager.

Annex 2

EVALUATORS

Evaluators should:

- a) Conduct systematic, objective investigations based on evidence.
- b) Communicate their methods and approaches accurately, clearly and in sufficient detail to allow others to understand, interpret and critique their work; making clear any limitations.
- c) Ensure that the team contains the needed skills and expertise and decline to conduct evaluations for which the team is not adequately qualified.
- d) Uphold ethical principles in their dealings with clients and stakeholders, including declaring and avoiding any conflict of interest.
- e) Fairly and clearly represent their findings and conclusions. Within reasonable limits, they should attempt to correct misrepresentation or misuse of their work by others.
- f) Respect the security, dignity and self-worth of respondents, program participants, clients, and other evaluation stakeholders, and protect sources.
- g) Acknowledge intellectual property and the work of others.
- h) Be prudent in using evaluation resources and account accurately for them.
- i) Work for the public interest, and maintain a balance between client needs and those of other stakeholders.

**

More information can be found via the following link to the formal description responsibilities – responsibilities for evaluators see page 19:

http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/iea_res_evaluation_standards_annexes1to7_march_2012.pdf

ANNEX 3

- a. Key CCAFS Document
- b. Other resources

A. KEY CCAFS DOCUMENTS FOR REVIEWER

The below table contains information about key CCAFS documents and international public goods (IPGs) for the reviewer. The reviewer can request more documents, IPGs and examples to be provided if available.

Document type/information source	Key documents and key content	Link/availability
Basic information about CCAFS	<p>CCAFS website The primary repository for information about CCAFS governance, management, research and international public goods</p> <p>CCAFS Program Plan summary The Program Plan is the basic document of CCAFS about goals, objectives, research areas and governance. This is a summary, below is the full document.</p> <p>CCAFS Phase 2 – second order draft Describes vision, targets and Theory of Change for CCAFS in Phase 2 of the program (2016-2024). This includes a new organizational structure based on “Flagships” instead of “Themes” and “Regions”. The basic structures of Theme 3 transform into Flagship 3.</p>	<p>www.ccafs.cgiar.org</p> <p>http://ccafs.cgiar.org/publications/ccaafs-program-plan-summary</p> <p>http://ccafs.cgiar.org/sites/default/files/files/CCAFS%20Phase%20%20Second%20Order%20Draft%20plus%20ToC.pdf</p>
Basic information about CCAFS Theme 3	<p>CCAFS Theme 3 website The primary repository for information about CCAFS Theme 3</p>	<p>http://ccafs.cgiar.org/themes/low-emissions-agriculture</p>

	publications, activities, stories, events, partners, etc.	
Theme 3 International Public Goods	<p>List of CCAFS Theme 3 publications 2011-2014 Contains list of all CCAFS-funded Theme 3 publications</p> <p>Annual technical report for T3 2010-2013</p> <p>Summary of impacts and outcomes</p> <p>Baseline studies and methods</p> <p>Major syntheses Climate change mitigation and agriculture, edited volume. About 1400 copies purchased and distributed.</p> <p>GHG quantification special journal issue</p> <p>Climate readiness report</p> <p>NAMA Review report and Guidelines (with FAO)</p>	<p>Pending</p> <p>Dropbox</p> <p>Dropbox</p> <p>http://www.routledge.com/books/details/9781849713931See examples of chapters: http://ccafs.cgiar.org/publications/designing-agricultural-mitigation-smallholders-developing-countries-comparative http://ccafs.cgiar.org/publications/livelihood-and-environmental-trade-offs-climate-mitigation-smallholder-coffee</p> <p>http://iopscience.iop.org/1748-9326/focus/Quantification%20of%20Greenhouse%20Gases</p> <p>Pending</p> <p>http://ccafs.cgiar.org/publications/national-</p>

	<p>Governance of agricultural drivers special issue</p> <p>Corporate social responsibility and supply agreements in the private-sector</p> <p>Strategy for addressing gender in climate change mitigation and gender work</p> <p>Cross-theme interactions and synthesis</p> <p>Cross-Center/region interactions and synthesis</p>	<p>integrated-mitigation-planning-agriculture-review-paper http://www.fao.org/docrep/018/i3324e/i3324e.pdf</p> <p>Pending</p> <p>http://ccaafs.cgiar.org/publications/corporate-social-responsibility-and-supply-agreements-private-sector-decreasing-land</p> <p>http://ccaafs.cgiar.org/publications/gender-strategy-pro-poor-climate-change-mitigation Dropbox</p> <p>http://ccaafs.cgiar.org/publications/large-scale-implementation-adaptation-and-mitigation-actions-agriculture</p> <p>http://ccaafs.cgiar.org/publications/agriculture-and-climate-change-national-green-growth-strategies</p> <p>http://ccaafs.cgiar.org/publications/climate-smart-agriculture-success-stories-farming-communities-around-world</p> <p>http://ccaafs.cgiar.org/publications/can-agriculture-support-climate-change-adaptation-</p>
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	<p>Likelihood of IPG impacts on CCAFS IDOs and long-term value and impacts of IPGs</p>	<p>greenhouse-gas-mitigation-and-rural</p> <p>http://ccaafs.cgiar.org/publications/workshop-report-farm-household-modelling-focus-food-security-climate-change-adaptation</p> <p>http://www.samples.ccaafs.cgiar.org/Dropbox Summary of Samples project</p> <p>http://ccaafs.cgiar.org/climate-food-and-farming-network#.U2KFmCiu_go</p> <p>http://ccaafs.cgiar.org/publications/measurement-and-mitigation-greenhouse-gases-african-livestock-systems-building#.U2Kctiu_gp</p> <p>Pending: 2-3 page analysis</p>
<p>Theme 3 Partnerships</p>	<p>Overview of Theme 3 experience co-designing research with partners, including the global change community</p> <p>Inter-Center collaboration in Theme 3 –SAMPLES project and IITA-CIAT Tropical Perennials project</p>	<p>Pending: listing of inter-Center collaboration (2-3 pages), with details on how successful CCAFS has been in co-designing research with partners, including the global change community</p> <p>http://www.samples.ccaafs.cgiar.org/</p> <p>http://dapa.ciat.cgiar.org/launching-workshop-of-bmz-project-trade-offs-and-synergies-in-climate-change-adaptation-and-mitigation-in-coffee-and-cocoa-systems/</p>

	<p>Stakeholder engagement</p> <p>FAO MICCA workshop series Dialog on Food, Fiber and Fuel in Forests</p> <p>IPCC SBSTA panels (2011, 2013)</p> <p>IPCC WGIII report release event with GRA and World Bank</p> <p>Participatory Action Research EcoAgriculture Partners with Vi Agroforestry and EcoTrust</p> <p>Capacity building CLIFF PhD network</p> <p>Global Research Alliance greenhouse gas inventory training</p>	<p>Pending http://tfd.yale.edu/dialogue/field-dialogue-4fs-indonesia</p> <p>http://ccafs.cgiar.org/publications/actions-needed-halt-deforestation-and-promote-climate-smart-agriculture</p> <p>http://ccafs.cgiar.org/blog/meeting-global-food-needs-lower-emissions-ipcc-report-findings-climate-change-mitigation</p> <p>http://www.ecoagriculture.org/publication_details.php?publicationID=588</p> <p>http://ccafs.cgiar.org/climate-food-and-farming-network#.U2KFmCiu_go Summary of capacity building: Dropbox</p> <p>http://ccafs.cgiar.org/publications/measurement-and-mitigation-greenhouse-gases-african-livestock-systems-building#.U2KGFyiu_gp</p>
Theme 3 Management	<p>Comprehensive timeline of Theme 3 developments</p> <p>Management of local-to-global set of activities in terms of mix of activities at different scales and managing the cross-scale connections, including engagement and communication</p>	<p>Dropbox</p> <p>Pending: T3 specific case study of app. 2 pages</p>

	activities; role of participatory action research Theme Leader feedback and analysis of Center plans and logframes 2012-2014 Fundraising	Dropbox Pending
Theme 3 Administration	Budget, including breakdown of % administrative costs, partnerships and gender-dedicated work Staffing history University of Vermont host relations	Pending: Dropbox Dropbox Dropbox
Resource and strategy documents	Scholes, Palm and Hickman CCAFS working paper 2013 Strategies for Mitigating Climate Change in Agriculture, Climate and Land Use Alliance report 2014	http://ccafs.cgiar.org/publications/agriculture-and-climate-change-mitigation-developing-world#.U2KLGciu_go http://www.climateandlandusealliance.org/en/introduction/?utm_source=CLUA+Quarterly+Email+Newsletter&utm_campaign=3e3d10c42f-Newsletter_Issue_5_Mitigating_Climate_Change_in_Ag&utm_medium=email&utm_term=0_b2faff125f-3e3d10c42f-62462353

Other Resources for Reviewers

Document type/information source	Key documents and key content	Link/availability
Basic information about CGIAR	A STRATEGY AND RESULTS FRAMEWORK FOR THE CGIAR	http://consortium.cgiar.org/wp-content/uploads/2011/08/CGIAR-SRF-Feb_20_2011.pdf
CCAFS planning processes	<p>Business Plans 2013 and 2014 Outlines the annual CCAFS planning on research, synthesis, capacity enhancement, engagement, communication and budgets (format for 2012 onwards)</p> <p>Governance and management discussions about the theme by region matrix (reference to minutes)</p> <p>CCAFS management system – reporting, M&E</p>	<p>2013 http://ccafs.cgiar.org/publications/2013-business-plan#.Uk8BFtLdfsc</p> <p>2014 https://www.dropbox.com/s/n72dxkmw6qlobwi/CCAFS%20Business%20Plan%20and%20Budget%202014.pdf</p> <p>https://www.dropbox.com/s/b5ogzmyffo55lwa/Governance%20and%20management%20discussions%20about%20theme%20by%20region%20matrix.docx</p>

	<p>Satisfaction survey Satisfaction survey based on feedback from Contact Points and CCAFS Management</p>	<p>http://ccaafs.cgiar.org/publications/strategy-priority-setting-monitoring-and-evaluation#.U2apjoGSxn4</p> <p>https://www.dropbox.com/s/hx4wwt3fgd4aoh8/MiniSurvey%20compilation%20Contact%20Point%20and%20Management.docx</p>
Outcomes	<p>All CGIAR Centers, Regional Program Leaders and Theme Leaders have to report outcome stories annually.</p> <p>CCAFS Annual Report 2013</p> <p>CCAFS Annual Report 2012 pp. 3-8</p> <p>CCAFS Outcome Cases</p>	<p>http://ccaafs.cgiar.org/research/annual-report/2013#ar-chapter-intro</p> <p>http://ccaafs.cgiar.org/publications/unfolding-results-ccaafs-research-action-annual-report-2012#.Uk8CmdLdfsc</p> <p>http://ccaafs.cgiar.org/publications/archive?keys=%22outcome+case%22</p>

International Public Goods (IPGs)	<p>List of CCAFS publications 2011-2014 Contains list of all CCAFS-funded publications in the period 2011 to 2014.</p> <p>CCAFS publications (usage statistics) Gives an overview of: top 25 publications downloads from CCAFS databases for 2012 and top 10 publications downloaded so far in 2013</p> <p>Gender CCAFS Gender Theory of Change and Outcome Strategies</p>	<p>http://ccafs.cgiar.org/publications/archive?keys=&field_type_tid=All&field_themes_tid=All&field_regions_tid=All&language=All</p> <p>https://www.dropbox.com/s/dkka1qoem9l0i7k/CCAFS%20Publications%20%20-%20overview%20and%20usage.docx</p> <p>https://www.dropbox.com/s/h3rjvz3er1olnhhy/CCAFS%20Gender%20Theory%20of%20Change%20and%20Outcome%20Strategies.pptx</p>

Appendix 4

Partners for Potential Interviews, by Theme Objective and Project

Objective 3.1 Decision support

Colombia low emissions planning - Nestor Hernandez
nestor.hernandez@minagricultura.gov.co Ministry of Agriculture; Cesar Cortes, coordinator of Colombian Low Emissions Strategy for Agricultural Sector
cesar.cortes@minagricultura.gov.co; Erick Fernandes, World Bank
efernandes@worldbank.org, Silvia Calderon Coordinator of Climate Change Group
scalderon@dnpp.gov.co, Sebastian Lema Colombian Low Emissions Strategy for Agricultural Sector
mlema@dnpp.gov.co

Setting LED agriculture priorities: scenario analysis and planning tools (new project) – IIASA, Michael Obersteiner michael.obersteiner@gmail.com, Petr Havelik havlik.petr@gmail.com.

Objective 3.2 Institutional arrangements and incentives

Development of nationally appropriate mitigation actions systems - [Unique Forestry and Land Use](#) - Timm Tennigkeit Timm.Tennigkeit@unique-landuse.de; Kenya Ministry of Agriculture, Esther Magambo ekrnagarnbo@yahoo.co.uk

Improving the viability of community-managed carbon projects EcoAgriculture Partners – Seth Shames sshames@ecoagriculture.org, Sara Scherr sscherr@ecoagriculture.org, Vi Agroforestry – Amos Wekesa amos.wekesa@viafp.org, Bo Lager bosse.lager@telia.com (now in Korea)

Upscaling mitigation practices through innovation networks, with a gender lens - Prolinnova and University of Virginia: David Edmunds dse7r@Virginia.EDU, Chesha Wettasinha c.wettasinha@ETCNL.NL or Ann Waters-Bayer waters-bayer@web.de.

Private sector investment in LED agriculture - Munden Project, Lou Munden
lou@mundenproject.com

Governance of agriculture –forest landscapes for climate change mitigation Arun Agarwal (arunagra@umich.edu) and Peter Newton newtonp@umich.edu University of Michigan; Helena Nery helenanap@gmail.com International Institute for Sustainability (Brazil).

Scaling up Mitigation in Paddy Rice (new project) - Climate and Clean Air Initiative, Sunny Uppal, Government of Canada sunny.uppal@ec.gc.ca, Keiichi Sugita Government of Japan keiichi_sugita@nm.maff.go.jp, Kazuyuki Yagi kyagi@affrc.go.jp; Sultan Ahmed Ministry of Agriculture Bangladesh sulbul2002@yahoo.com

Objective 3.3 GHG mitigation quantification and feasibility

Standard Assessment of Mitigation Potential and Livelihoods in Smallholder Systems (SAMPLES) research and capacity building - Prof. Collins Ouma Director of Research, Publications and Innovations, couma@maseno.ac.ke Maseno University; Martin Herold,

Wageningen University martin.herold@wur.nl (working with CG scientists Mariana Rufino and Todd Rosenstock)

Climate, Food and Farming (CLIFF) network - Ngonidzashe Chirinda n.chirinda@cgiar.org, formerly Aarhus University

State of *Quantification for agricultural GHGs* - Duke University - Lydia Olander lydia.olander@duke.edu; Francesco Tubiello Francesco.Tubiello@fao.org.

Emissions baselines at CCAFS sites - Applied Geosolutions, Bill Salas wsalas@appliedgeosolutions.com

General partnerships

FAO, with collaboration on FAO-CCAFS workshop series on establishing frameworks for mitigation in agriculture (four workshops, 2010-2012)- Mitigation, Climate Change and Agriculture (MICCA) project at FAO - Christina Seeberg Elverfeldt, now at BMZ (Christina.Seeberg-Elverfeldt@bmz.bund.de). See report on [Expert workshop on NAMAs](#) as example.

Global Research Alliance on Agricultural Greenhouse Gases with collaboration on GHG inventory training, quantification of GHGs, CCAC Paddy Rice project, seminar - Global Research Alliance on Agricultural Greenhouse Gases –Andy Reisinger (Andy.Reisinger@nzagrc.org.nz), Brian McConkey (Brian.McConkey@AGR.GC.CA) , Alan Franzluebbers (ajfranzl@ncsu.edu), Kazuyuki Yagi (kyagi@affrc.go.jp)

CIAT Board of Trustees – Geoffrey Hawtin - geoff.hawtin@croptrust.org

Future Earth - one of the following: Mark Stafford-Smith mark.staffordsmith@csiro.au , Carolina Vera - carolina@cima.fcen.uba.ar

Annex 3

**Managing the CCAFS Theme by Region
matrix for international public goods and
development outcomes**

December 2013

**Andrew Ash, Commonwealth Scientific and Industrial
Research Organisation, Australia**

Commissioned by the CCAFS Independent Science Panel

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Finally, I would like to thank everyone who participated in the series of interviews as these insights provided a solid basis for the findings and recommendations in this review.

Executive Summary and Recommendations

This review was commissioned to undertake an evaluation of how the Climate Change, Agriculture and Food Security (CAAFS) Theme by Region matrix is being managed to deliver on International Public Goods (IPGs) and development outcomes.

The CGIAR is going through a significant reform process with CGIAR Research Programs (CRPs) now the main organizational mechanism for research outputs and outcomes. This has involved establishment of a matrix management structure requiring close interaction between CRPs and CGIAR Centers.

It was evident from this review that CCAFS has embraced this reform process in structure, function and the necessary behaviours and leadership to make it effective. The overall CCAFS goal and the Themes and their outcomes are all well aligned to the CGIAR System Level Outcomes.

CAAFS has an added dimension to the matrix in the form of Regions, originally established to provide a facilitation role between Themes and delivery of activities by Centers in the focus regions for CCAFS. However, as CCAFS has evolved the role of this regional dimension of the matrix has strengthened. The regional function now plays an important role in on-ground delivery of activities, in implementing participatory action research and in setting priorities for research and outcome delivery. Within the regions, Climate Smart Villages have become an important mechanism for delivery and integration. This growing role of the regional function and Regional Program Leaders needs greater support to ensure its ongoing effectiveness.

Centers are pivotal to the delivery of activities, IPGs and outcomes. CCAFS has involvement from all 15 Centers further demonstrating the leading role CCAFS is playing in the reform process. However, the engagement by Centers in CCAFS has been slow to develop and needs to accelerate. There is good evidence that is occurring in South Asia, particularly through Climate Smart Villages and the central and influential role of the Regional Program Leader. While leadership is critical to effectiveness of the matrix, stronger processes of resourcing and accountability between Themes and Centers is required to achieve desired outputs and outcomes, including adequate investment in engagement processes and incentives to strengthen cross-Center collaboration.

Leadership is central to an effective matrix and it was evident from this review that CCAFS has a highly effective leadership team that makes decisions in a transparent way. This approach to leadership is supported by effective governance, management and reporting systems that make it possible to efficiently monitor the progress to achieving milestones and outcomes.

Theme Leaders work effectively and collaboratively, but there was, apart from gender research activities and some of the other Theme 4 cross-cutting activities, not strong evidence of cross-Theme synergies. The demands on Themes to deliver on their milestones, and work in different regions and with a large number of Centers leaves little time for

effective strategic engagement. Mechanisms to foster more strategic cross-Theme engagement are required.

This review focused on the South Asia region so there was little opportunity for cross-region comparison. However, it is clear that the regions differ significantly in both the key drivers and the research approach required. There is a good appreciation that a top-down “one-size fits all” from Themes to regions is not appropriate though some concepts can be applied universally e.g. Climate Smart Villages.

There is a good balance of activities at local, national, regional and global scales. There are recognised challenges in working across these various scales e.g. how to scale out work at village scale to achieve wider impact yet maintain the rigour and long-term monitoring at a range of key sites; how to better integrate policy work at a national scale with lessons and insights from village scale on-ground activities; achieving better contextualization of global models at local scales to increase relevance to decision-makers. Amongst these challenges, successful initiatives are emerging such as climate analogues, which are assisting not just in providing a way of exploring new options, but also as a mechanism for cross-region integration.

The final area the review examined related to Outcomes and International Public Goods. An analysis of Annual Outcomes across CCAFS shows that 19% are relevant to the local scale, 22% at the national/regional scale, 44% are cross-regional, and 14% global. About two-thirds of the Annual Outcomes have good linkages to Theme level Outcomes and System Level Outcomes. An assessment of Theme Level Outcomes suggests about two-thirds are on track to achievement in 2015/16 but about one-third need more effort to bring them back on-track.

CCAFS invests considerable effort in a range of International Public Goods that fall into three broad groups of: Data and Tools; Reports, Working Papers and Policy Briefs; and scientific publications. A new website was launched in July 2013 and it provides a highly effective and open platform for accessing outputs from CCAFS.

Cross-cutting policy briefs and synthesis reports attract a lot of interest, as measured by downloads, and opportunities exist to build on this success through synthesis of a wider range of research activities. Journal publications produced by CCAFS are of a high quality and are collaborative, with on average 5.5 authors per paper. The papers are published in journals with a high impact factor for agriculture (average 3.0). However, the numbers of journal publications are quite low relative to other CRPs and to one international benchmark (CSIRO). This may be related to the relatively new area of research, particularly for Centers. Effort needs to be spent on lifting publications rates from Centers but in a way that doesn't compromise the efforts on achieving outcomes and impacts.

In conclusion, CCAFS has put together an impressive research program that effectively embraces the matrix organization, with the Theme x Region dimension of the broader matrix being critical to its success. An effective and functional leadership team underpins CCAFS. There are a number of areas that could be strengthened in relation to involvement

of Centers, cross-Theme synergies, outcomes and outputs, and these are detailed in the following recommendations.

Recommendation 1:

Recognise the growing importance and role of Regions in the Theme x Region x Center matrix by:

- (a) Elevating of the role of Regions and regional needs in the framing of both science and outcomes as CCAFS moves into Phase 2 and as the CGIAR moves to Intermediate Development Outcomes*
- (b) Continue to strengthen and grow activities such as Climate Smart Villages as a means of achieving full integration of Themes and Centers at a regional scale*
- (c) Develop ways of more explicitly communicating and reporting achievements and outcomes at a Regional scale, such as annual reports.*

Recommendation 2:

Increased effort should be invested by the CCAFS management team in developing increased Window 3/Bilateral investment in CCAFS by working closely with Centers and donors. This will require developing a strong value proposition as to the long term benefits of investment in adaptation and mitigation.

Recommendation 3:

- (a) Develop a clear process for resourcing and accountability of activities between Centers (and other non-Center partners) and the CCAFS management team but in a way that fosters joint ownership and collaboration rather than it becoming a transactional purchaser/provider model.*
- (b) Provide adequate resources to Themes and Regional Program Leaders to nurture the collaboration and engagement between Centers and the CCAFS management team.*

Recommendation 4:

Put in place a set of targeted incentives and capacity building initiatives to achieve increased cross-Center involvement in CCAFS activities.

Recommendation 5:

Establish a monitoring and evaluation activity to capture longitudinally the depth and breadth of external partnerships, how they evolve through time, and the influence on decision-making in CCAFS and the external partners.

Recommendation 6:

- (a) Provide opportunities at PMC meetings, or if required dedicated meetings, to engage in more strategic discussions on cross-Theme synergies and for these to be reflected in cross-Theme activities.*
- (b) Include overt reporting of cross-Theme synergies, outputs and incipient outcomes in Annual Reports and Milestones.*

Recommendation 7:

Develop clear plans with associated implementation strategies for undertaking participatory research at local scales in the future that offer the rigour associated with focused effort at a manageable number of sites but builds in approaches for scale out to achieve wider impact.

Recommendation 8:

Clearly articulate the role, if any, for working with vulnerable commercial scale farmers and have this strategy visible in business plans.

Recommendation 9:

Develop approaches to more explicitly link outcomes from local scale research activities to national scale policies.

Recommendation 10:

For effective application of global models at local scales, increased effort should be placed on activities that connect the down-scaled climate models, crop models and their application to local scale farming systems and their social and economic dynamics.

Recommendation 11:

Increased effort should be invested in developing a coherent structure that links Milestones, Annual Outcomes and higher level, longer term outcomes (IDOs). A key aspect of this should be development of an approach to Impact Pathways that is consistent across Themes and Regions. This Impact Pathways approach should be developed in a way that facilitates close integration between Annual and Intermediate Development Outcomes.

Recommendation 12:

Increased effort should be directed to the Theme Outcome areas that are currently progressing slowly and at risk of not achieving their planned outcomes by 2015-16. In particular, areas relevant to the System Level Outcome on food security, with an emphasis on wider system aspects of food security, should receive some focus.

Recommendation 13:

Invest more effort in producing cross-cutting, synthesis reports and policy briefs given the strong external interest in these products. This will require identifying research activities that lend themselves to these synthesis publications and may provide additional benefit as a stimulant for cross-Theme interactions.

Recommendation 14:

CCAFS should develop a plan to lift publication rates in ISI journals. This will require a mix of measures ranging from performance indicators to short term incentives to longer term capacity building in Centers and done in a way that doesn't compromise a focus on achieving outcomes.

Recommendation 15:

CCAFS should maintain its investment in a diversity of IPGs as a means of influencing decision-making and achieving desired outcomes and impacts.

Introduction

1. Background

In 2012 the first external evaluation of the Climate Change, Agriculture and Food Security (CCAFS) Research Program was conducted by the European Commission (EC) which focused on how CCAFS was performing in relation to the Consultative Group on International Agricultural Research (CGIAR) reform process. A review of the CCAFS governance and management functions commissioned by the CIAT Board of Trustees (BoT) was carried out in the first half of 2013 in line with the CCAFS Program Plan.

At its 3rd meeting in October 2012 the CCAFS Independent Science Panel (ISP) decided that CCAFS should undertake at least one programmatic external review per year commissioned by the ISP in addition to possible annual reviews on administrative, legal and/or financial issues commissioned by the CIAT BoT. These external reviews should be designed so that they can be inputs into the major evaluation that is expected to happen in Year 5, commissioned by the Internal Evaluation Arrangement (IEA).

The ISP decided that the first programmatic review would take place in late 2013, and would evaluate CCAFS' interim outcomes and science products, based on two years of implementation. The focus would be on how the CCAFS Theme by Region matrix is being managed to deliver outcomes and international public goods. The review would also examine efforts to ensure integration across themes, and how CCAFS achieves an appropriate mix of local, national, regional and global activities.

1.1 Review Objective

To undertake an evaluation of how the CCAFS Theme by Region matrix is being managed to deliver on International Public Goods (IPGs: publications, databases and other knowledge products) and development outcomes.

1.2 Review Terms of Reference

1. How successful is the matrix management in CCAFS?
2. Is sufficient attention paid to ensuring synergies are achieved across themes, and is their sufficient evidence of synthesis in the IPGs?
3. Is there a sufficient level of comparability across regions, and is this reflected in the IPGs?
4. How well is the local-to-global set of activities managed, in terms of having an appropriate mix of activities at different scales and managing the cross-scale connections?
5. Are the initial outcomes or incipient outcomes being reported by CCAFS of sufficient scale for a program of this size, and do they reflect an integrated program?

2. Approach and Methods

By design, this review was intended to be largely desk-top, supplemented by telephone/skype interviews and if practical, some face to face interviews in country. A wide range of materials was made available by CCAFS for the review, from various plans and reports to minutes of meetings of the Independent Science Panel and the Program Management Committee. While not stated in the Terms of Reference, there was a request to provide some focus of the review on the South Asia region, to limit the need for face-to-face interviews in multiple regions. This was achieved by concentrating the interview component of the Review in South Asia while the assessment of documents, plans and reports encompassed all of CCAFS.

The Review document has been structured around the Terms of Reference. However, detailed Evaluation Criteria were provided (Annex 1) and these have been addressed within the Terms of Reference as set out below.

1. How successful is the matrix management in CCAFS? *Evaluation Criteria: 1,2,3,4,5,9,10*
2. Is sufficient attention paid to ensuring synergies are achieved across themes, and is their sufficient evidence of synthesis in the IPGs? *Evaluation Criteria: 6*
3. Is there a sufficient level of comparability across regions, and is this reflected in the IPGs? *Evaluation Criteria: 7*
4. How well is the local-to-global set of activities managed, in terms of having an appropriate mix of activities at different scales and managing the cross-scale connections? *Evaluation Criteria: 8*
5. Are the initial outcomes or incipient outcomes being reported by CCAFS of sufficient scale for a program of this size, and do they reflect an integrated program? *Evaluation Criteria: 11,12,13,14,15,16*

The methodological approach to the Review was:

- (i) Review of material provided which includes: CCAFS strategic planning documents; CCAFS operational planning and management processes e.g. annual Business Plans, Minutes of PMC and ISP meetings; Outputs e.g. IPGs; and Performance and Outcomes e.g. Annual Reports, previous external assessments of outcomes (Annex 2). An evidence-based approach was taken to the review of this material and where possible quantitative analyses were undertaken. This assessment was made using the evaluation matrix as a guiding framework.
- (ii) Face to face interviews in Delhi. Two senior level CSIRO scientists familiar with CCAFS and South Asia agriculture (Dr Mark Howden and Dr Christian Roth) travelled to Delhi for a workshop in early November and while in Delhi they conducted interviews with the Regional Program Leader, a Center partner, and two external partners of CCAFS. A structured list of questions was used to guide the interviews.
- (iii) Telephone/Skype interviews with the CCAFS Director, three Theme Leaders, Regional Program Leaders in East and West Africa, two ISP members, two Center

participants in South Asia, and the Communications function within the CCAFS Coordinating Unit (see Annex 3 for full list of interviewees) and other external partners of CCAFS.

- (iv) The analysis of written materials and information and insights gained from the interviews were then synthesised in the review report to address the Terms of Reference taking into account the evaluation criteria. Where appropriate, specific recommendations were provided.
- (v) Timeframes

Milestone	Date
Briefing from Evaluation Manager	October 18, 2013
Inception Report	October 29, 2013
Face to face interviews in Delhi	November 4-7, 2013
Telephone interviews	November 4-30, 2013
Review and analysis of written materials	November 4-December 14, 2013
Draft Evaluation Report submitted	December 21, 2013
Final Evaluation Report submitted (provided timely feedback on draft received)	March 12, 2014

3. Findings and Recommendations

3.1 How successful is the matrix management in CCAFS?

(Evaluation Criteria 1,2,3,4,5,9,10)

3.1.1 Context and Opportunity

The CGIAR has in recent years embarked on a reform process to more effectively deal with the world's pressing issues relating to food security, climate, the environment and poverty. Its vision for addressing these challenges is embodied in its four System Level Outcomes: to reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience.

To achieve this vision, a fundamental change in strategy was adopted which sees CGIAR Research Programs (CRPs) as the main organizational mechanism of CGIAR research. This research is undertaken by the fifteen CGIAR Centers in what is a matrix management structure.

Climate Change, Agriculture and Food Security (CCAFS) is one of the CRPs. CCAFS is not only a new organizational structure - it is also a new area of research having first emerged as a CGIAR Challenge Program in 2009. This increased emphasis on climate change, agriculture and food security has been recognized by the CGIAR as a new area of competency that needs to be developed and strengthened:

“understanding the impact of climate change on agriculture and devising strategies for adaptation and mitigation that will benefit the poor” (CGIAR Strategy and Results Framework 2011).

Commencing a new program of research in a relatively new area of scientific endeavour coupled with a new organizational design process still in its formative stages provides some significant challenges. However, it also provides opportunities for innovation both in research and research management as this new area of research is not shackled by the history of past structures and embedded processes, culture and behaviours. With the right strategy and the right leadership (essential in every organization but especially so in matrix organizations) there is an opportunity for a new program like CCAFS to be leading the way for the organization.

3.1.2 CCAFS alignment to CGIAR reform process and System Level Outcomes

It is evident from the CCAFS Research Program Plan (2011) that CCAFS has embraced the reform process both in alignment of objectives and outcomes to System Level Outcomes (SLOs), in drawing on relevant skills from across the Centers in the CGIAR, and in leadership.

The overall goal of CCAFS, which is to: *“promote a food secure world through the provision of science-based efforts that support sustainable agriculture and enhance livelihoods while adapting to climate change and conserving natural resources and environmental services”*, closely links to the SLOs.

At a lower scale, the twelve Theme Outcomes also align well with the SLOs. At finer scales of organization such as Annual Outcomes there is less obvious alignment with SLOs e.g. about two-thirds of Annual Outcomes have good alignment with SLOs. A detailed analysis of Outcomes can be found in 3.5.4 and their alignment to SLOs is covered more fully in that section.

3.1.3 Matrix effectiveness - Theme by Region

Implementing a matrix management system in a complex and geographically dispersed organization like the CGIAR is challenging. Based on experience in other organizations full and effective implementation of matrix organizational design can take up to a decade. CGIAR is a few years into this process so it would not be expected to yet have in place a matrix that is fully effective.

CGIAR have introduced the matrix with the CRPs as the main organizational mechanism for research with Centers providing the capability to undertake the research in a way that facilitates the CGIAR system to achieve its System Level Outcomes.

While the focus of the CGIAR reform process has been on getting effective CRP-Center and cross-Center interactions, CCAFS implementation of this two-dimensional matrix is interesting in that a third axis in the matrix in the form of Regions was introduced from the outset. There is a view amongst management consultants that building matrix organizations with three axes runs the risk of increasing management complexity, leading to poor decision-making and increasing overhead costs. In contrast there are real world examples of where multi-axis matrix organizations have been successful e.g. Proctor & Gamble.

Based on various interviews with CCAFS senior leaders and with Centers it has become clear that the Region dimension of the matrix provides a significant value add in effectiveness and clarity rather than contributing complexity and confusion. However, to reach this point has taken some learning and evolution.

At the outset of CCAFS, Themes were viewed as providing the science leadership and directions to CCAFS with the aim of drawing in Centers to deliver on the goals and outcomes of CCAFS. The regions were always designed to play an important role but in the early stages this was viewed as a facilitation role - effectively providing the glue between Themes, Centers, partners and stakeholders at national and regional scales.

CCAFS made the decision to initially focus in three regions (East Africa, West Africa and South Asia) though that has now expanded to five regions with South-East Asia and Latin America now actively engaged.

It became evident during this review process that the importance of the Regional function has grown since the inception of CCAFS. It plays an important role not just in facilitation but in ensuring on-ground delivery of activities is achieved and in implementing participatory action research. This is essential given the increasing emphasis being placed within CGIAR on outcomes and impact because it is likely that most of CCAFS outcomes will be expressed

via the regionally based activities. More critically, it was made clear by a number of interviewees across Regional Program Leaders and Themes Leaders that the Regions are increasingly providing an important role in setting the priorities for science and outcome delivery for Themes rather than a more top-down driven process that characterized earlier design and implementation.

This is leading to more overt expression of research needs from a regional perspective. For example, the East Africa Region has produced a needs document to contribute to ongoing discussions about research priorities (Developing a Climate Change, Agriculture and Food Security Research Agenda for East Africa: Identifying Research Needs and Priorities).

Another important dimension of the design of the Theme by Region matrix in CCAFS is the use of core sites and Climate Smart Villages across the various regions. The establishment of these sites and associated baseline surveys and technology interventions provide a consistent research approach that will permit integration and scaling up of outcomes from local to global scales. These sites are also designed to be a focal point for cross-Theme and cross-Center activities within regions.

While there are issues with achieving good cross-Center involvement in Climate Smart Villages (see Center discussion below in 3.1.4) and regional activities more generally it was clear from the discussions with Centers in South Asia that there is relatively good interaction across the three dimensions of Theme x Region x Center in NW and NE India. Much of the success in this implementation of the Theme by Region matrix and involvement of Centers in South Asia can be attributed to the leadership of the Regional Program Leader. Broader aspects and importance of leadership in effective implementation of the matrix are discussed in more detail in 3.1.5.

There was less of a sense of genuine cross-Theme interaction within these on-ground activities in Climate Smart Villages within South Asia. While the Themes are working co-operatively at these local scales there were not clear examples of cross-Theme synergies adding value over and above the individual Theme activities, which appeared to be proceeding very positively. Broader aspects of cross-Theme synergies are explicitly addressed in Section 3.2.

In establishing a Theme by Region matrix, it would be logical to try to develop research approaches at a Thematic level that can be applied consistently across different regions. It was suggested by Regional Program Leaders that care must be exercised in taking this approach that the individual context, issues and priorities of different regions are taken into account. An expression of this sentiment was “the five regions are not five replicates”.

Given the growing importance of regions it would be useful to see greater expression of the outcomes in a regional context in both the strategy and in reporting e.g. CCAFS Annual Report. It was difficult in this review process to more explicitly get an integrated view of the activities and milestones at a regional scale because the way they are reported is at the level of Center and Regional led activities. Some consideration should be given to ways of being able to demonstrate achievements and outcomes at this regional scale.

Recommendation 1:

Recognise the growing importance and role of Regions in the Theme x Region x Center matrix by:

- (a) Elevating of the role of Regions and regional needs in the framing of both science and outcomes as CCAFS moves into Phase 2 and as the CGIAR moves to Intermediate Development Outcomes*
- (b) Continue to strengthen and grow activities such as Climate Smart Villages as a means of achieving full integration of Themes and Centers at a regional scale*
- (c) Develop ways of more explicitly communicating and reporting achievements and outcomes at a Regional scale, such as annual reports.*

3.1.4 Matrix effectiveness - involvement of Centers

A clear goal of the CGIAR reform process is to harness the skills, experience and geographic spread of activities from across the Centers to deliver the goals and outcomes of the CGIAR Research Programs.

It is clear from the spread of activities across Centers in CCAFS that CCAFS has embraced the reform process. All 15 Centers have activities in CCAFS and in addition to this reflecting CCAFS leadership in the reform process it also highlights that climate change will affect all aspects of agriculture and food security. Table 1 shows the distribution of research activities across Centers based on the 218 Activities in CCAFS in 2012.

This table highlights a good spread of activities across most Centers. With the exception of CIFOR (one Theme Objective), all other Centers are involved in at least three Theme Objectives with 13 of the 15 Centers being involved in at least four Theme Objectives.

However, allocation of resources to Centers and activities does not on its own necessarily represent effective buy-in and engagement by Centers into CCAFS. There was a general view expressed by the ISP, Director, Theme Leaders and Regional Program Leaders that the genuine engagement from Centers has been slow to develop, as reflected by involvement in activities, and needs to accelerate. In particular, the core sites were designed to draw in the Centers to be working together on common sites, thereby achieving not only effective CCAFS-Center engagement but also deeper cross-Center collaboration. This ambition has not yet been fully realized with Centers still focusing much of their efforts in long established sites and relationships which limit room for cross-Centre engagement. There is also a concern within CCAFS that the activities being undertaken by the Centers do not always have a strong alignment with the Theme and Region objectives and outcomes and within Regions the ability or willingness of Centers to fully embrace participatory action research approaches has been slow to develop.

There is, however, evidence of where that engagement is starting to work effectively. In South Asia, there are close interactions between the key Centers and the Regional Program Leader and the development of Climate Smart Villages has seen good engagement from Centers with Centers like CIMMYT and Bioversity taking the lead on various activities across Climate Smart Villages, e.g. CIMMYT in NW India. In the policy domain IFPRI has been closely engaged with CCAFS in South Asia. Centers were very clear in stating their intent to further

develop the working relationship with CCAFS in South Asia. Indeed all the Centers interviewed in South Asia were very positive about their engagement with CCAFS. While this in part can be attributed to the intent of CCAFS to embrace the reform process, the role of key individuals and relationships can't be under-estimated. In this regard there was a clear message from all Centers about the important and influential role the Regional Program Leader is playing in South Asia. This reinforces earlier comments about the importance of Regions in the effective operation of the matrix between Themes and Centers.

The current organizational design model that empowers and encourages Centers to attain Window 3/Bilateral funding that may or may not have strong alignment to the strategies of

Table 1. Analysis of activities by Theme objective and Region/Center. The blue dots within each cell of the matrix illustrate the intensity of effort (numbers of activities) undertaken across CCAFS in 2012. Blank cells = no activities, smallest dot = 1 to 2 activities, medium dot = 3 to 5 activities, large dot = 6 to 9 activities, very large dot = >9 activities.

Region	Theme Objective											
	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3
East Africa	●		●	●		●	●		●	●	●	
West Africa	●					●			●	●	●	
South Asia	●		●	●	●	●			●	●	●	
Africa Rice	●	●	●								●	
Bioversity	●	●	●	●								
CIAT	●	●	●				●		●		●	●
CIFOR									●			
CIMMYT	●			●	●	●		●	●	●	●	●
CIP		●		●		●					●	●
ICARDA	●	●		●								
ICRAF	●			●			●	●	●	●	●	●
ICRISAT	●	●		●		●			●		●	
IFPRI				●		●	●		●	●		●
IITA	●	●					●		●	●		
ILRI	●	●	●	●			●	●	●	●	●	●
IRRI	●			●					●	●		
IWMI	●			●		●					●	
WorldFish	●			●			●			●		●

CRPs may act as a disincentive to much closer alignment of Center activities and CRPs. This would appear to be a particular issue for CCAFS given its relatively small amount of Window 3/Bilateral funding compared with most other CRPs i.e. 24% Window3/Bilateral funding compared with a CGIAR average of 63% in 2012 (Annex 4). It is also clear that many donors prefer the bilateral funding approach as it better aligns to their own strategies and objectives so any incentives need to be designed with this reality in mind.

Given the reform process underway in the CGIAR system and the evolution of CRPs, it would in fact be more desirable in the medium to long term to have a greater proportion of funding available to CRPs via Window 1 and Window 2 funding. However, given the current realities of the high level of Window 3/Bilateral funding flowing directly to Centers it is essential for CCAFS to work closely with Centers and donors to achieve a greater investment in CCAFS. While it was not possible to explore it as part of this review it would be useful to understand the reasons for relatively low levels of Window 3/Bilateral investment in CCAFS. It is likely that there is in fact a greater level of activity underway that is closely connected to the goals of CCAFS but it is climate related work that is being mainstreamed into the work of other CRPs, particularly via Window 3/Bilateral funding. While ultimately, climate adaptation and mitigation does need to be mainstreamed into broader development objectives, there is a risk that premature or ill-informed mainstreaming may lead to ineffective adaptation and mitigation or even mal-adaptation. Close engagement with Centers and other CRPs is needed to avoid this risk.

Recommendation 2:

Increased effort should be invested by the CCAFS management team in developing increased Window 3/Bilateral investment in CCAFS by working closely with Centers and donors. This will require developing a strong value proposition as to the long term benefits of investment in adaptation and mitigation.

Achieving more effective engagement from Centers requires building relationships, confidence and trust, and ensuring expectations are and deliverables are clear. On this second point, the CCAFS Program Management Committee has instituted a system of appraisal of performance of Centers with the level of performance and alignment to CCAFS objectives influencing the level of funding in the following year. As CCAFS moves into Phase 2, the model of funding to Centers will move from one of allocation or grant to one based on bidding for activities based on the ability to deliver on what is needed by CCAFS.

It is also important that measures are put in place to continue to build the relationships between Regional Program Leaders and Centers and between Themes and Centers. CRPs have been established with relatively little supporting soft infrastructure to develop and nurture internal engagement and collaboration. Given the geographic spread of the activities of all Themes in CCAFS it has been difficult for Theme Leaders to reach out to Centers as effectively as they might give the significant nature of the reform process in CGIAR. There is clearly an important role for Regional Program Leaders in this area but given their growing roles, the issue of resources to support engagement and collaboration with participating Centers is of concern.

Recommendation 3:

- (a) *Develop a clear process for resourcing and accountability of activities between Centers (and other non-Center partners) and the CCAFS management team but in a way that fosters joint ownership and collaboration rather than it becoming a transactional purchaser/provider model.*
- (b) *Provide adequate resources to Themes and Regional Program Leaders to nurture the collaboration and engagement between Centers and the CCAFS management team.*

Another key ambition of the reform process is through the establishment of CRPs to achieve much greater levels of cross-Center collaboration. As indicated above, the establishment of core sites within CCAFS provides a mechanism for fostering cross-Center collaboration.

The ISP Minutes from the meeting held in May 2013 indicate that cross-Center collaboration has reached an “optimum level” and that all Centers have acceptable cross-Center collaboration. However, Program Management Committee minutes and the 2012 Annual Report indicate the need to further strengthen cross-Center involvement in CCAFS. The 2013 Business Plan contains specific sections within each Theme to strengthen cross-Center activities so the issue is recognized and actions are being put in place to address this concern.

One measure of cross-Center collaboration is through publications. Table 2 summarises all the journal publications attributed to CCAFS in 2011 and 2012. It should be noted that papers published in 2011 and 2012 would for the most part be a result of work that was undertaken for some years prior. Given that Challenge program only commenced in 2009 and CCAFS as a CRP in 2011 as part of the CGIAR reform process, then it would not necessarily be expected that publications in 2011 and 2012 to yet reflect full cross-Center collaboration. However, the analysis provides a reasonable benchmark by which publications in the future can be judged.

The vast majority of journal papers (125) published in 2011 and 2012 were from a single Center (86%), with just 23 papers (14%) having authors from more than one Center. In contrast, there was quite a reasonable number and diversity of institutions involved in papers with a mean of 3.4 institutions per paper. Likewise there were 5.5 different authors per paper. So there is good evidence of external to CGIAR collaboration in papers produced by CCAFS but there is relatively little cross-Center collaboration.

Table 2. Analysis of journal publications in 2011 and 2012 in the context of cross-Center and cross-institutional involvement.

Centers involved	0	1	2	3	4	5
# of papers	14	125	17	2	2	2
	Mean		Median		Range	
No. Institutions	3.4		2		1-15	
No. Authors	5.5		4		1-21	

Recommendation 4:

Put in place a set of targeted incentives and capacity building initiatives to achieve increased cross-Center involvement in CCAFS activities.

Consideration should be given to incentives to encourage cross-Center authorship of papers. The foundation to achieving this is of course research activities involving multiple Centers. Clearly incentives for cross-Center collaboration can be provided through funding mechanisms but there should also be put in place some capacity building initiatives to stimulate this collaborative approach.

3.1.5 Matrix effectiveness - leadership

A critical factor in the success of a matrix organisation reform process is that of leadership. It is clear from various interviews with ISP members and senior leaders within CCAFS that CCAFS has embraced this reform process with a strategic and operational approach that is closely aligned to the reform agenda. This quality of leadership is not just evident from the structural aspects such as a wide level of Center engagement by CCAFS in the portfolio of activities but also in the culture, systems and processes put in place by CCAFS. In addition to the various interviews, a review of the Program Management Committee and ISP Minutes over the last year reveals a leadership team committed to both the reform process and the goals of CCAFS and the delivery of its outcomes.

A key element to emerge in the various interviews and the wide range of material that is publicly available is that of transparency. For matrix organizations to work effectively there needs to be a high level of trust and communication across the various axes. An essential element of building effective relationships, collaborations and trust is through processes, systems and decisions being transparent.

From interviews with a wide range of people across CCAFS and with partners it is apparent that CCAFS has built transparency across many elements of its operations. This ranges from research operations e.g. all data collected at core sites being publicly available, to the management systems that are in place to report on achievement of Activities and Milestones, to the way funding is allocated to centers based on well defined and communicated performance indicators. This “open access” approach being implemented by CCAFS has benefits that reach far beyond internal dimensions of a more effective matrix e.g. evidence of third parties using and analyzing the data available from baseline surveys of core sites. There are some valuable lessons that can be shared more widely across the CGIAR System based on the systems and processes in place in CCAFS. Reaching this conclusion is somewhat at odds with the CCAFS 2012 Annual Report to the Consortium, where a partnership survey suggested that transparency was an indicator in which CCAFS performed least strongly. I have trouble reconciling these conclusions based on the interviews conducted with the ISP, Centers and external partners.

A critical factor in the success of the Regional dimension of the matrix is the leadership provided by the Regional Program Leaders and the Theme Leaders. The leadership required is not just across the Theme x Region dimensions of CCAFS but also across into Centers and

with other research partners and key stakeholders. Through this review process it has become clear that there is generally a close working relationship between Theme Leaders and Regional Program Leaders across the three established regions in East Africa, West Africa and South Asia. Within South Asia, where this review had more focus, it was clear this effective leadership extended beyond CCAFS Theme Leader – Regional Program Leader relationships into interactions with Centers and external partners. In particular, the Regional Program Leader, and his leadership and engagement skills were seen as being particularly important to the growing success of CCAFS in South Asia.

3.1.6 Matrix efficiency and management systems

The governance structure of CCAFS is shown in Annex 5. Core elements of this governance structure for the effective and efficient operation of CCAFS are the Independent Science Panel (strategy), the Program Director (strategy and operations), the Program Management Committee (strategy and operations), and the Coordinating Unit (operations).

The Program Management Committee (PMC) is the key entity for the successful implementation of CCAFS strategy and the successful operation of the matrix, not just between Themes and Regions and across-Themes but also in setting the culture and approaches to engaging with Centers. While the PMC's formal membership (with voting rights) is the Director, four Theme Leaders and one Regional Program Leader (currently South Asia), in practice its participants include all Regional Theme Leaders and key staff from the Coordinating Unit. This more inclusive mode of the PMC is desirable for achieving effective within-CCAFS matrix and management operations.

Based on an investigation of the Minutes of the PMC meetings there would appear to be frank and constructive discussions at the PMC meetings which suggest a healthy culture which is essential for effective matrix operations in any organization. This view is reinforced by the external review of governance in CCAFS, conducted earlier in 2013. However, the minutes do reveal a strong focus on operational matters with little space for more strategic discussions on matrix effectiveness and efficiency and the processes, systems, and collaborative and cultural mechanisms needed to improve matrix effectiveness (see Recommendation 7).

One area of matrix efficiency that CCAFS would appear to be taking a lead on is in the area of formal systems for reporting of activities and milestones. It was quite easy as a reviewer to get a sense of accomplishment within Themes, Regions and Centers from the consistent and systemic approach to Technical Reports on Activities, Summary of outputs, Case studies and Publications. While there was some unevenness in the quality of the reporting across Themes, Regions and Centers, this reporting provides a high level of accountability. I have no doubt that the nature of the reporting structure would cause frustration for some individual scientists who would view it as an unnecessary administrative task but it does add value. Moving to a web-based system (in train) with some degree of pre-fill or rollover functionality would alleviate some of these concerns.

3.1.7 Matrix effectiveness - external partnerships and demand for research

A critical success factor in the Theme by Region matrix structure, and CCAFS more generally, is strong engagement with key partners and stakeholders who are intended beneficiaries of the research. Through the evidence provided in the 2012 Annual Reports (Report to the CGIAR and the external Annual Report – Unfolding results) it is clear that effective external partnerships are in place to deliver outcomes, particularly in the area of policy at regional and national levels. Some evidence of effective external engagement is provided at more local scales such as NGOs and agricultural advisory services though it was not as strong as the examples given for policy interactions.

To assess the effectiveness of external partnerships at the scale of the Theme x Region matrix, specific questions were asked of Theme Leaders and Regional Program Leaders. In addition, in South Asia two face to face interviews were conducted with external partners.

Based on the discussions with Theme Leaders and Regional Program Leaders, it was clear that the Regional Program Leaders take on a critical role of establishing relationships with key external partners within Regions and individual countries for Regional and Theme led activities. Theme Leaders engage more with external partners and donors operating at the regional to global scale and with research institutions external to the CG system, principally the five CCAFS partner universities, who have key roles in delivery of specific research outputs or in housing data platforms. This arrangement appears to be working reasonably effectively and it reinforces the importance of Regional Program Leaders in the matrix structure in terms of engaging key partners within regions.

Another area of significant external engagement with external partners within Regions is through the Centers via Window 3/Bilateral funding. This is likely to lead at times to multiple engagement of stakeholders via Regional Program Leaders and Centers leading to some potential for confusion. However, within South Asia this was not seen as a major concern but rather a reality of the CGIAR organizational design. At the very least there should be a good understanding and level of communication between Centers and Regional Program Leaders to ensure there is consistency in engagement with external stakeholders. There was a view expressed that a focus by CCAFS on external engagement was occurring at the expense of interactions with Centers. Coordinating with Centers in external engagement might overcome this concern and achieve the appropriate balance of attention to external engagement and Centers within regions.

The two external partners in South Asia who were interviewed were both very positive about their dealings with CCAFS and that the research engagements are highly relevant to their needs. Both commented that the engagement occurred early on in the research design process, allowing for good ownership of the research activities. They both indicated that a strong relationship with the Regional Program Leader was critical to successful engagement and one indicated that good interactions with key Centers was also important.

The research projects are still in their early stages so neither stakeholder could identify evidence as yet that the projects were influencing decision-making. Both believed that CCAFS could have a significant impact though one of the stakeholders indicated that the

magnitude of the challenge was such that a program the size of CCAFS in South Asia could not hope to have country level impacts but rather the scale of impact is likely to be at local to sub-national scales within jurisdictions.

It would be valuable to capture in a comprehensive way through a formal monitoring and evaluation process the nature of these external engagements, how they evolve with time and the impact on decision-making.

Recommendation 5:

Establish a monitoring and evaluation activity to capture longitudinally the depth and breadth of external partnerships, how they evolve through time, and the influence on decision-making in CCAFS and the external partners.

3.2 Is sufficient attention paid to ensuring synergies are achieved across themes, and is there sufficient evidence of synthesis in the IPGs?
(Evaluation Criteria 6)

In the design of CCAFS, it was the intention from the outset to have close linkages and synergies across the Themes, as depicted in Figure 1, reproduced from the CCAFS Program Plan 2011. In particular, Theme 4, is set up to play an integrating cross-cutting role with other Themes in delivery of climate scenarios, data, tools, policy analyses, and research in gender and social differentiation. While Theme 1 is focused on long term adaptation and Theme 3 on mitigation, the trade-offs and synergies between adaptation and mitigation are clearly an avenue for a coherent cross-Theme suite of activities. Similarly, Themes 1 and 2 should link closely at the intersection of climate variability and climate change, particularly at multi-year to decadal timescales.

A number of mechanisms have been put in place to facilitate these cross-Theme synergies such as: joint planning sessions based on a team approach to Theme planning; role of Regional program Leaders in bringing different Theme activities together in a regional, national, and local context; establishment of core sites and Climate Smart Villages to bring different Theme activities together; and ultimately integration of outputs and outcomes to achieve System Level Outcomes.

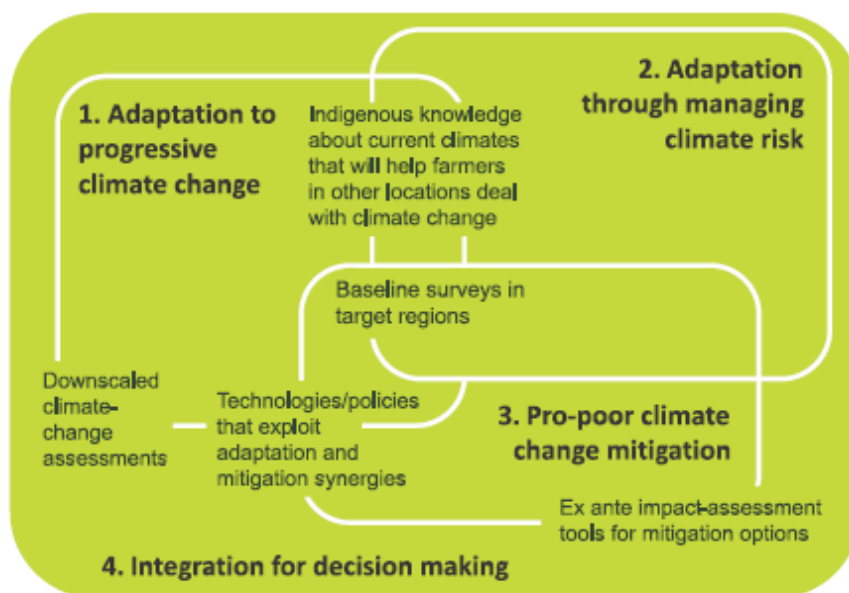


Figure 1. Anticipated interactions between CCAFS Themes as originally envisaged in the CCAFS Program Plan 2011.

It was clear from both the interviews and the Minutes of Program Committee meetings that there is a high level of trust and cooperation between Theme Leaders and a willingness to share. There is little or no evidence of “turf protection” or “empire building” amongst the Theme Leaders.

There is evidence of some cross-Theme activities e.g. Theme 1 hosting down-scaled climate data originating from Theme 4, household modeling work in Theme 2 working closely with

Theme 4 in dynamic treatment of climate risk. There is also good evidence of cross-cutting gender activities in the Themes (see more detailed discussion below on gender integration). However, with the exception of the gender activities, highly visible evidence of strong cross-Theme synergies in the conceptual thinking, design and implementation of research and in outputs is, on the whole, lacking. The 2012 Annual Report reports on individual Research Themes and it is not obvious in the synthesis reporting of Products/Tools, Significant Achievements and Outcomes the degree to which these were a result of cross-Theme work.

The specific issue of evidence of cross-Theme synergies in International Public Goods is addressed in Section 3.5.6.

A number of factors may be at play in this lack of visibility of cross-Theme activities and synergies:

- the hierarchical structure of the research in CCAFS i.e. Activities, Milestones, Theme Objectives, Theme Outcomes and the nature of the reporting structures for these entities tends to compartmentalize research into individual Themes and works against more overt expression of cross-Theme synergies
- the demands on Themes to work across a number of Regions and interact closely with a number of Centers to deliver on Activities are very significant, which leaves relatively little time to strategically and operationally invest in cross-Theme activities
- a view from a couple of CCAFS leaders was that the necessary operational aspects of PMC meeting agendas left little bandwidth for more strategic discussions on issues such as cross-Theme synergies.

If these factors are combined it is not surprising that cross-Theme synergies and outputs are not as evident as anticipated. The challenge is how to achieve greater cross-Theme engagement at the project activity level and reporting of those synergies without adding additional complexity and process to existing organizational design and management systems. It is clear that the Theme leaders engage and communicate well with each other so a hard system response to achieve greater synergies in activities across Themes is not preferred.

Recommendation 6:

- Provide opportunities at PMC meetings, or if required dedicated meetings, to engage in more strategic discussions on cross-Theme synergies and for these to be reflected in cross-Theme activities. For example, it would appear that increased activity in Themes 1 and 2 in integrating the adaptation responses to climate variability and climate change (especially where timescales merge) would be beneficial. Likewise more emphasis on adaptation-mitigation co-benefits and trade-offs (Themes 1 and 3) would be useful.*
- Include overt reporting of cross-Theme synergies, outputs and incipient outcomes in Annual Reports and Milestones.*

3.2.1 Gender and Social Differentiation

An important cross-Theme synergy for CCAFS is the work in gender and social differentiation. This work aims to integrate gender analysis in climate change, agriculture and food security research across the Themes and Regions. It is anticipated that this research will lead to more equitable inclusion of women in decision-making at levels of the household, village, and institutions through capacity development and organizational gender mainstreaming. This work is well coordinated at the whole of CCAFS level but the budgets are mainstreamed across, Themes, Regions and Center activities with targets of 15-20% of budgets allocated to gender work being realized. To further achieve institutional mainstreaming of the gender research within CCAFS, staff have been recruited into the CCAFS core team who have gender research experience, Theme and Regional research leaders have gender-related objectives and Centers have been recruiting gender specialists. A community of practice is evolving within CCAFS and tools and approaches are being shared on the CCAFS website.

In the area of research activities, the baseline surveys have been designed to allow data on gender to be collected, analysed and disaggregated, which has included working closely with key Centers to develop shared standards and tools. A range of gender indicators and approaches to monitoring them have been developed in a bottom-up way with research partners and these indicators are being used to assess gender equity against targets.

Based on the available evidence it would appear CCAFS has fully embraced the CGIAR goal for gender equity to be embedded in CRPs as a cross-cutting priority and there is good evidence of synergies across Themes and Regions in the way the program is being implemented in CCAFS.

3.3 Is there a sufficient level of comparability across regions, and is this reflected in the IPGs? (Evaluation Criteria 7)

This review had a focus in South Asia and apart from talking with the East and West Africa Program Leaders there was little direct engagement with other Regions making it somewhat difficult to undertake cross-Region comparisons. However, information that could be disaggregated according to region has been assessed.

Budget breakdown by Region was not available for 2012 but the 2011 numbers (Annex 6) show that the budget was relatively even across the Regional Themes with West Africa receiving about \$1.8M less in funding than the other two Regions (c. \$10.5M each).

The three Regional Program Leaders interviewed stressed that the issues, research needs and external engagement differed significantly amongst Regions and a top-down, “one size fits all” research approach is not appropriate. Likewise, the individuality of regions means that comparisons must be made in the context of place-based drivers, technologies and tools differentially suited to different regions, diversity of institutions, capacity and partners. For example, better managing existing climate variability through better weather and climate information (climate services) is a high priority in East and West Africa while the rapid scale-out in South Asia of Climate Smart Villages that target specific farming system interventions is starting to have significant outcomes. The comments below therefore need to be interpreted within that context of considerable regional diversity.

The activities in Regions are made up of the Region’s own budget and initiatives, that of the Centers which makes up the majority of research undertaken, and to a lesser extent Theme Leader led activities. It is difficult to compare regions based on annual Activity Reports because it is not possible to disaggregate the Center Reports into regions. However, the Region led Activities can be assessed based on Technical Reports per Activity.

In West Africa and South Asia, completion of Activities was 75% and 64%, respectively, while in East Africa, only 30% of Activities were assessed to be fully completed (Table 3). All three Regions demonstrated significant integration of gender activities. East and West Africa each had three journal publications while South Asia had ten listed. The Regional Program Leader synthesis summaries all suggested good levels of engagement and pathways to impact, which is a little at odds with the assessment of Activity completion. It would be worth exploring this relatively low level of Activity completion in East Africa as it may reflect some inconsistency in achievement rankings based on the synthesis summaries which suggested similar levels of achievement across Regions.

Table 3. Analysis of Region led Activity Reports

	East Africa	West Africa	South Asia
Activities			
- Completed	7	6	9
- Partially completed	11	2	5
- Uncompleted	5	0	0
Publications	3	3	10
Gender activities and integration	✓	✓	✓
Synthesis - path to impact, incipient outcomes	✓	✓	✓

IPGs are dealt with in more detail in Section 3.5.6 but in terms of the different Regions there appears to be a good level of comparability in data and tools, such as baseline surveys (data, reports and atlas) in their consistency and quality. For tools such as future scenarios or climate services these will necessarily be different amongst and within regions but they are being used appropriately in different regions. Most other data and tools are global and more generic in nature e.g. downscaled climate projections, climate analogues, food security maps though they need to be applied with the appropriate context in different regions.

3.4 How well is the local-to-global set of activities managed, in terms of having an appropriate mix of activities at different scales and managing the cross-scale connections? (Evaluation Criteria 8)

At the establishment of CCAFS there was a clear strategy to undertake research activities that ranged from global to local in scale and to establish a network of stakeholders and partners also from the global to local scale. While it is not possible to determine the relative split across different scales of activities there is significant investment in modeling, policy relevant activities, technologies e.g. pre-breeding and testing of varieties more pre-disposed to a future climate, and participatory action research at household/village scale to test climate smart interventions.

The research at local scales has had three strong foci: the establishment of core sites and Climate Smart Villages, agricultural climate services, and gender related research activities. This scale of research work has also included activities relevant to but not necessarily restricted to CSVs e.g. index based insurance, use of ICT in disseminating weather and other value-adding market information, crop diversification.

The original plans in CCAFS were to place most emphasis at local scales within the cores sites/Climate Smart Villages, working with smallholders. A rich information base will be built up at these sites and through strong protocols on consistent data collection and reporting, an ability to synthesise and value add at national and regional and cross-regional scales is being created. Central to this local to regional model is the anticipated role of Centers in investing their allocated resources into these sites. While this is increasingly happening, there is still significant investment by Centers in a wider range of local sites due to history of activity and strength of local relationships. In addition, other research partners often have established local sites and to achieve both effective collaboration and impact it is proving desirable to work at these other local scale sites.

This throws up a number of challenges and questions of balance, including: how to achieve increasing investment in climate smart villages from Centers; how to scale out CSVs to achieve wider impact that is measurable at sub-national and national scales yet maintain the rigour and effort in existing CSVs; how to exploit new opportunities at local scale that don't lend themselves to operating within the concept of CSVs.

Recommendation 7:

Develop clear plans with associated implementation strategies for undertaking participatory research at local scales in the future that offer the rigour associated with focused effort at a manageable number of sites but builds in approaches for scale out to achieve wider impact.

The discussion above is very much in the context of smallholder farmers. Not all vulnerable farmers are smallholders yet from the materials available for this review it was not evident that there is a substantive effort into more market-oriented farmers wishing to operate at commercial scales. This maybe a conscious decision by CCAFS to not invest too much effort at this more commercial scale or it is happening but the work is not as visible as the work with smallholders.

Recommendation 8:

Clearly articulate the role, if any, for working with vulnerable commercial scale farmers and have this strategy visible in business plans.

At national scales, much of the work occurs in a policy context, informing national policy in a diverse range of areas but with some emphasis in National Adaptation Plans (NAPs) and Nationally Appropriate Mitigation Actions (NAMAs) and in building capacity at the national scale to more effectively participate in global discussions such as the UNFCCC. It is not clear that there is much linkage between the national scale policy work and local scale participatory action research but there would appear to be good opportunities to be working with policy makers to have national scale policies that are informed by the local scale in the types of incentives and facilitation needed to support adaptation and mitigation.

Recommendation 9:

Develop approaches to more explicitly link outcomes from local scale research activities to national scale policies.

The climate analogues work provides a good example of work that is relevant to national, regional and cross-regional scales in that climate analogues of future climates in one region may only be found in the present in other regions. The nature of this approach is likely to encourage co-operation across regions (particularly South-South) as people within one region start to explore the farming systems of other climate analogue regions. The most visible component of the climate analogue work is the modeling work, which requires a reasonably strong understanding of the different Global Climate Models (GCMs) and associated emissions scenarios, dissimilarity analysis and weighting loadings, for the tool to be used effectively. A challenge remains in being able to then take the analogue climate and apply it locally and with the right socio-economic to explore different cropping and farming system options.

Likewise, a significant activity in CCAFS has been the tool development in down-scaled climate projections. This draws on efforts undertaken at global scales, through the IPCC process and the development and public access to a range of GCMs to build a portal that allows production of down-scale climate projections. This provides a basis for linking work undertaken at the global scale and producing relevant information for local scale analysis, scenario development, and testing of different intervention options and policies.

However, as with the climate analogue tool the down-scaled climate modeling approaches require a reasonably strong understanding of the different GCMs and the different emission scenarios for it to be used appropriately. It is not clear of the process for the intermediate step of taking these down-scaled climate projections and applying them to more local scale applications that are contextualized to not just the physical climate analogue but also the appropriate social and economic drivers.

Recommendation 10:

For effective application of global models at local scales, increased effort should be placed on activities that connect the down-scaled climate models, crop models and their application to local scale farming systems and their social and economic dynamics.

The other aspect of global scale activities is the work of CCAFS at the policy level via the IPCC, UNFCCC and WMO's global framework for climate services. These activities are important for CCAFS, not just in their own right, but for connection to more regionally based activities e.g. climate services in AGRHYMET.

3.5 Are the initial outcomes or incipient outcomes being reported by CCAFS of sufficient scale for a program of this size, and do they reflect an integrated program?

(Evaluation Criteria 11,12,13,14,15,16)

3.5.1 Definition of outcomes

There can be quite a bit of confusion about what constitutes outputs, outcomes and impacts. For the purposes of this review, the following simple definitions have been adopted:

- Output:* products, tools or services produced by the research
- Outcomes:* use of the research to change policy or practice, usually in the short to medium timeframe and at a reasonable scale
- Impact:* longer term, deeper changes in people's lives and livelihoods that have occurred as a result of the research.

The outcome definition is consistent with that adopted by CCAFS, namely: 'An outcome is the use of the research by non-research partners to change policies and practices. In many cases the users of the research will be policy makers (or those influencing the policy process), national development agencies, service providers to farmers including non-governmental agencies, and sometimes farmers themselves.'

3.5.2 Approach and process for development of outcomes in CCAFS

In the strategic planning for CCAFS covering the period 2012-2015, a Log Frame approach was adopted. The Log Frame is quite standard in its implementation, consisting of a nested set of Milestones, Outputs, Outcomes and Objectives with each of the Milestones having a date for completion, narrative/description, performance indicator, means of verification, assumptions and partners.

For each of the CCAFS Themes there are three Objectives each with an Outcome, giving a total of 12 Outcomes across CCAFS (Table 4). Although not explicitly stated in each of the 12 Outcome statements it is assumed these Outcomes are to be delivered by 2015.

Table 4. List of CCAFS Outcome statements as presented in Log Frame 2012-2015.

Theme 1. Adaptation to Progressive Climate Change
Outcome 1.1: Agricultural and food security strategies that are adapted towards predicted conditions of climate change promoted and communicated by the key development and funding agencies (national and international), civil society organizations and private sector in at least 20 countries
Outcome 1.2: Strategies for addressing abiotic and biotic stresses induced by future climate change, variability and extremes, including novel climates mainstreamed among the majority of the international research agencies who engage with CCAFS, and by national agencies in at least 12 countries
Outcome 1.3: Improved adaptation policies from local to international level supporting farming communities, rural institutions and food system actors adapted to future climate conditions in at least 20 countries.
Theme 2. Adaptation through Managing Climate Risk
Outcome 2.1: Systematic technical and policy support by development agencies for farm- to community-level agricultural risk management strategies and actions that buffer against climate shocks and enhance livelihood resilience in at least 20 countries
Outcome 2.2: Better climate-informed management by key international, regional and national agencies of food crisis response, post-crisis recovery, and food trade and delivery in at least 12 countries
Outcome 2.3 Enhanced uptake and use of improved climate information products and services, and of information about agricultural production and biological threats, by resource-poor farmers, particularly vulnerable groups and women, in at least 12 countries
Theme 3. Pro-Poor Climate Change Mitigation
Outcome 3.1: Enhanced knowledge and tools about agricultural development pathways that lead to better decisions for climate mitigation, poverty alleviation, food security and environmental health, used by national agencies in at least 20 countries
Outcome 3.2: Improved knowledge about incentives and institutional arrangements for mitigation practices by resource-poor smallholders (including farmers' organizations), project developers and policy makers in at least 10 countries
Outcome 3.3: Key agencies dealing with climate mitigation in at least 10 countries promoting technically and economically feasible agricultural mitigation practices that have co-benefits for resource-poor farmers, particularly vulnerable groups and women
Theme 4. Integration for Decision Making
Outcome 4.1: Appropriate adaptation and mitigation strategies mainstreamed into national policies in at least 20 countries, in the development plans of at least five economic areas (e.g. ECOWAS, EAC, South Asia) covering each of the target regions, and in the key global processes related to food security and climate change
Outcome 4.2 Improved frameworks, databases and methods for planning responses to climate change used by national agencies in at least 20 countries and by at least 10 key international and regional agencies
Outcome 4.3 New knowledge on how alternate policy and program options impact agriculture and food security under climate change incorporated into strategy development by national agencies in at least 20 countries and by at least 10 key international and regional agencies.

The Outcome statements are fairly high level in their description and the key metric used in nearly all the Outcome statements is the number of countries in which the outcome will be achieved. This rather generic approach to the development of Outcomes creates some challenges for assessing whether they are of sufficient scale or in getting a feel for different

emphases in the various regions in which CCAFS operates. Indeed the “Regions” dimension of the CCAFS matrix is almost lost within the whole Log Frame approach, which is strongly centered around Themes.

The inherent design of the Log Frame doesn’t allow for expression of more intermediate or incipient outcomes to judge whether the various activities are on track to achieving the overall 2015 Outcomes. It has to be assumed that the achievement of Milestones will ultimately lead to the achievement of the Theme Outcomes.

This structural/design shortcoming in being able to demonstrate incipient or intermediate outcomes appears to have been addressed to some degree by the inclusion of Outcome reports in the Annual Technical Reports for Themes, Regions and Centers. For 2012, there were 36 Outcomes reported.

Annual Outcomes are decided at the commencement of each year with an expectation that each of the Annual Outcomes will have a linkage through to one of the 12 Theme Outcomes. However, it doesn’t appear that there has been in place a formal process for linking these Annual Outcomes to the higher level Theme Outcomes.

This is dealt with to some extent through increased emphasis and effort on the development of Impact Pathways. Impact Pathway roadmaps are provided in the 2013 CCAFS Business Plan for two of the four Themes (Themes 1 and 4) and for the three established Regional Programs (East Africa, West Africa, South Asia). This is a positive and constructive initiative. However, it is clear that this process is still in its early stages of development as each Theme and Regional Program has adopted a different approach for developing Impact Pathways and the use of some terminology is a little confusing. For example, outcomes are listed in most Impact Pathways and while these are consistent with Theme Level Outcomes there is not a direct alignment and so a new set of outcome statements are introduced.

In addition, to these two approaches to Outcome reporting, the CGIAR has introduced a process of Intermediate Development Outcomes (IDOs). CCAFS has proposed five Intermediate Development Outcomes, focusing on behavioural changes at farmer, local, institutional, national and international levels, as well as one directed towards gender equity. IDOs will become the main mechanism for CCAFS to demonstrate its contribution towards the CGIAR System Level Outcomes.

This linkage between Activities, Milestones and Outcomes is illustrated in Figure 2.

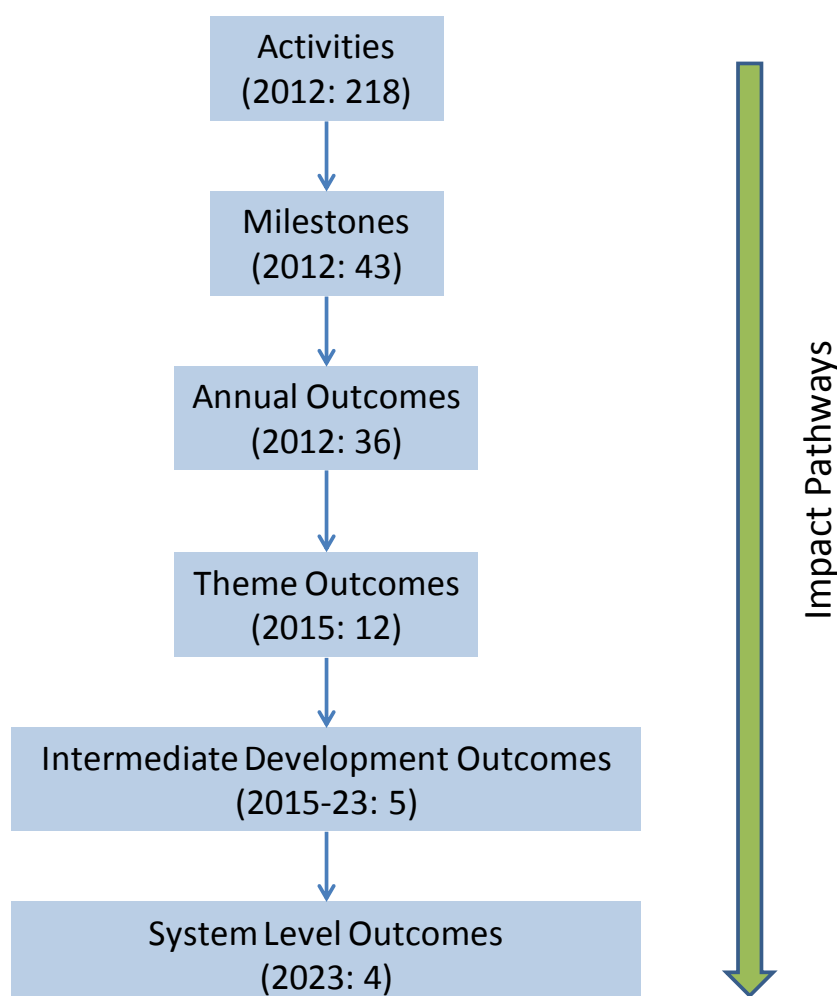


Figure 2. Connectivity between Activities, Milestones, Outcomes and Impact Pathways

It is clear from the interviews with various senior leaders in CCAFS that the process of developing outcomes and pathways to impact is a relatively new one, not just for CCAFS, but for the CGIAR more broadly. It is also evident from the interviews that CCAFS is embracing the need to move to a more outcomes and impacts focus and is leading the way within the CGIAR and this is to be commended.

As the whole process of outcomes and impacts develops consideration should be given to a more coherent and systematic linkage between milestones, annual outcomes and higher level outcomes (Theme Level Outcomes and IDOs as they in time replace Theme Level Outcomes) and the integration of impact pathways. The Annual Outcomes are a key building block to achieving longer term outcomes and impact. They also provide an opportunity to more overtly demonstrate outcomes at regional and local scales to demonstrate the linkages and achievements at global to local scales. At the moment they are largely determined in a bottom-up process. In contrast the Intermediate Development Outcomes are established in a broader top-down process. There is a risk of these two scales of outcomes not connecting effectively unless a more planned approach to their integration is taken.

Recommendation 11:

Increased effort should be invested in developing a coherent structure that links Milestones, Annual Outcomes and higher level, longer term outcomes (IDOs). A key aspect of this should be development of an approach to Impact Pathways that is consistent across Themes and Regions. This Impact Pathways approach should be developed in a way that facilitates close integration between Annual and Intermediate Development Outcomes.

3.5.3 Assessment of outcomes – milestones

A precursor to achieving nearer term incipient outcomes and medium term Theme Outcomes is achievement of Milestones. Table 5 shows the degree to which 2012 milestones were accomplished. Across all Theme outputs, 67% of Milestones were accomplished with 33% partially accomplished and no milestones that were not accomplished. These assessments of Milestone accomplishment represent the views of Theme Leaders and Regional Program Leaders and would appear to be thoroughly assessed based on the explanations and evidence.

Table 5. Accomplishment of Milestones in CCAFS in 2012.

Milestone Output	Milestones in 2012	Accomplished	Partially Accomplished	Not Accomplished
1.1	7	5	2	0
1.2	1	0	1	0
1.3	3	2	1	0
2.1	5	4	1	0
2.2	1	1	0	0
2.3	2	2	0	0
3.1	2	1	1	0
3.2	3	2	1	0
3.3	4	1	3	0
4.1	5	5	0	0
4.2	6	5	1	0
4.3	4	1	3	0
Total	43	29	14	0

3.5.4 Assessment of outcomes - Annual Outcomes/Incipient Outcomes

In 2012 and 2013 there were two separate assessments of the Annual Outcomes in CCAFS. The first was an assessment from the Director of CCAFS of the Annual Outcomes for 2011 and 2012 and the second was an examination of the 2012 Annual Outcomes by an external consultant. Both of these assessments focused on whether the stated outcomes really fitted the definition of an outcome and whether there was sufficient evidence to support their achievement.

Both the Director and the external consultant found that over half of the reported outcomes were unacceptable. The vast majority of unacceptable outcomes related to them not being

outcomes at all but rather outputs or achievements of activities. Some were rated as unacceptable because of the lack of evidence to support them.

This assessment reflects a learning process for CCAFS and CGIAR more broadly as the introduction of outcomes is relatively new to the CGIAR.

Rather than revisit these earlier assessments of 2012 Annual Outcomes, for this Review the focus has been on the key evaluation criteria relating to impact i.e. are the outcomes of sufficient scale for a program of CCAFS's scale, are the outcomes having much influence or likely to have much influence, are the outcomes building blocks for the achievement of the Theme Outcomes and IDOs, and are the outcomes aligned well to the System Level Outcomes of CGIAR.

Rather than dismiss the greater than 50% of 2012 Outcomes which are deemed not to be acceptable because of poor fit with the acceptable definition of an outcome, a likely outcome was inferred based on the nature of the described outcome. Each of the 36 outcomes for 2012 were rated using the following criteria:

1. Level of influence: 1 = Low; 2 = Moderate; 3 = High, noting that influence is separate to scale or extent e.g. a high level of influence can be achieved at local scales
2. Extent of influence: 1 = Local; 2 = National/Regional; 3 = Across regions; 4 = Global
3. Building block for Theme Outcome: 1 = Little evidence of linkage; 2 = Good linkage
4. Relevance to System Level Outcome: 1 = Little/moderate relevance; 2 = Strong relevance

The results of this assessment are shown in Table 6. The intention is not to focus on individual assessments or comparisons as the relatively subjective nature of the assessment process means that there is only a medium level of confidence around any individual assessment. However, there is a greater level of confidence in the overall assessment.

The analysis suggests that:

- the current level of influence of the annual outcomes is moderate (mean = 2.1)
- the outcomes are occurring at a range of scales (19% local, 22% national/regional, 44% across regions, and 14% global)
- 69% of the Annual Outcomes have good linkages to Theme Level Outcomes
- 67% of Annual Outcomes appear to be relevant to the CGIAR System Level Outcomes.

Table 6. Assessment of the 2012 Annual Outcomes in terms of likely influence, spatial scale, and alignment to Theme and System Level Outcomes.

Center Region Theme	Outcome	Influence	Extent	Link to Theme Outcome	SLO relevance
Biodiversity	Farmers' field experimentation	1	1	1	1
CIAT	Coffee systems	2	3	2	2
CIAT	Crop wild relatives and pre-breeding	3	4	2	2
CIFOR	GHG inventories	2	4	2	1
CIMMYT	Institutions and adaptive farming IGP	2	2	2	2
CIMMYT	ICT and managing farmers' risks	3	3	2	2
CIP	Greenhouses in the Andes	3	1	2	2
ICARDA	Breeding and CC related traits	1	3	1	1
ICRAF	Forests and local adaptation	1	3	2	2
ICRAF	Forests and sequestration in China	2	2	1	2
ICRAF	Vegetation and CC, Tibetan Plateau	1	1	1	1
ICRAF	Philippines and Vietnam activities	1	1	1	1
ICRAF	Capacity building nationally REDD	2	3	2	1
ICRAF	Soil carbon stocks	1	3	1	1
ICRISAT	Seasonal climate forecasts in Kenya	2	2	2	2
ICRISAT	Seasonal climate forecasts in Zimbabwe	2	2	2	2
IFPRI	Mitigation and market access	2	3	1	1
IITA	Climate-smart banana-coffee systems	3	2	2	2
ILRI	Mitigation protocols for IPCC	2	4	1	1
ILRI	East Africa Scenarios	2	2	2	2
IRRI	Rice water saving and GHG	3	3	2	2
IRRI	Improved rice varieties - Mekong	3	3	2	2
IWMI	Vulnerability mapping Sri Lanka	3	2	2	2
IWMI	Use of vulnerability assessment	2	3	2	2
WorldFish	Iligan Bay project buy-in	2	1	1	2
Theme 1 led	Use of downscaled climate products	2	4	2	2
Theme 1 led	Capacity building in Nepal	2	1	2	2
Theme 2 led	Influence on investment priorities	2	3	2	2
Theme 3 led	Linking agriculture and REDD+	2	3	2	1
Theme 3 led	Govts and NGOs using CCAFS results	2	3	2	2
Theme 4 led	CC impact on agricultural commodities	1	4	1	1
Theme 4 led	Gender research at CCAFS sites	2	3	2	2
East Africa Region led	Agriculture included in UNFCCC	3	4	1	1
East Africa Region led	Strengthened research agenda	1	2	2	1
West Africa Region led	Uptake of climate products	3	2	2	2
South Asia Region led	Participatory CSVs at benchmark sites	3	2	2	2

3.5.5 Assessment of outcomes – Theme level Outcomes

3.5.5.1 Likely Achievement of Outcomes

Given the relatively early stage development of the CCAFS program and the implementation of the 2012-2015 Log Frame it would be unlikely that any of the planned Outcomes for 2015 would be close to being achieved. However, based on the Technical Reports for 2012, including the progress on Milestones and the 36 Outcome reports, as well as the synthesized 2012 annual report to the CGIAR, it is possible to at least determine whether progress is on track, slow, or whether there is inadequate evidence to make an assessment (Table 7).

Table 7. Assessment of progress of Theme level Outcomes.

Theme Outcome	Progress
Theme 1: Adaptation to Progressive Climate Change	
Outcome 1.1: Agricultural and food security strategies that are adapted towards predicted conditions of climate change promoted and communicated by the key development and funding agencies (national and international), civil society organizations and private sector in at least 20 countries	<i>On-track.</i> Nine annual outcomes (25%) for 2012 relate to this Theme outcome. National programs and strategies now being influenced by this research.
Outcome 1.2: Strategies for addressing abiotic and biotic stresses induced by future climate change, variability and extremes, including novel climates mainstreamed among the majority of the international research agencies who engage with CCAFS, and by national agencies in at least 12 countries	<i>On-track.</i> Good outcome to date on \$US50m wild relatives and pre-breeding program. Other evidence a little more patchy.
Outcome 1.3: Improved adaptation policies from local to international level supporting farming communities, rural institutions and food system actors adapted to future climate conditions in at least 20 countries.	<i>On-track.</i> Good progress demonstrated through banana-coffee systems, capacity building in Nepal, scale out of Climate Smart Villages
Theme 2. Adaptation through Managing Climate Risk	
Outcome 2.1: Systematic technical and policy support by development agencies for farm- to community-level agricultural risk management strategies and actions that buffer against climate shocks and enhance livelihood resilience in at least 20 countries	<i>On-track.</i> Evidence for impact through Outcome with CIMMYT and 6000 farmers and from insurance work in India
Outcome 2.2: Better climate-informed management by key international, regional and national agencies of food crisis response, post-crisis recovery, and food trade and delivery in at least 12 countries	<i>Slow.</i> There are no annual outcomes relevant to this Theme outcome and little other evidence to suggest much progress.
Outcome 2.3 Enhanced uptake and use of improved climate information products and services, and of information about agricultural production and biological threats, by resource-poor farmers, particularly vulnerable groups and women, in at least 12 countries	<i>On-track.</i> Good evidence of products relating to climate information being used and influencing other programs. Potentially significant outcome.
Theme 3. Pro-Poor Climate Change Mitigation	
Outcome 3.1: Enhanced knowledge and tools about agricultural	<i>Slow.</i> Good evidence of research

development pathways that lead to better decisions for climate mitigation, poverty alleviation, food security and environmental health, used by national agencies in at least 20 countries	outputs and links to national agencies but evidence of uptake is not clear.
Outcome 3.2: Improved knowledge about incentives and institutional arrangements for mitigation practices by resource-poor smallholders (including farmers' organizations), project developers and policy makers in at least 10 countries	<i>Slow.</i> No annual outcomes relevant to this Theme outcome evident and little other material to suggest much progress.
Outcome 3.3: Key agencies dealing with climate mitigation in at least 10 countries promoting technically and economically feasible agricultural mitigation practices that have co-benefits for resource-poor farmers, particularly vulnerable groups and women	<i>On-track.</i> Good evidence that this outcome is progressing well, especially from IRRI rice work.
Theme 4. Integration for Decision Making	
Outcome 4.1: Appropriate adaptation and mitigation strategies mainstreamed into national policies in at least 20 countries, in the development plans of at least five economic areas (e.g. ECOWAS, EAC, South Asia) covering each of the target regions, and in the key global processes related to food security and climate change	<i>On-track.</i> Good evidence from east Africa scenarios work and vulnerability mapping in Sri Lanka that the research is being mainstreamed into national policies/strategies.
Outcome 4.2 Improved frameworks, databases and methods for planning responses to climate change used by national agencies in at least 20 countries and by at least 10 key international and regional agencies	<i>On-track</i> Evidence that outputs (GHG inventories, mitigation protocols, REDD) are influential but it is not clear whether the scale of outcomes (20 countries, 10 agencies) is achievable though there are a large number of activities underway.
Outcome 4.3 New knowledge on how alternate policy and program options impact agriculture and food security under climate change incorporated into strategy development by national agencies in at least 20 countries and by at least 10 key international and regional agencies.	<i>Slow.</i> Available evidence points to the IFPRI work as the only significant activity that relates to this outcome in terms of alternative policies.

Overall, the CCAFS program appears to be on-track to achieving most of the Theme Outcomes in 2015-16. However, based on the evidence available for this review, it would appear that about one-third of the Theme Outcomes are progressing too slowly at their current pace to be achieved by 2015-16. It may be possible that the Outcomes that appear to be struggling are actually on-track but the evidence to support that is not readily apparent. Some intervention may be necessary to get these outcomes on-track or alternatively if they are actually progressing reasonably well then much better evidence in the form of tangible annual outcomes (as opposed to outputs) needs to be developed.

Many of the Theme Outcomes have a prescribed number of countries in which the outcome will be achieved. A number of the Annual Outcomes give an indication of how many countries in which they are working and having an impact but it is not clear from the information provided or available whether the target number of countries will be achieved.

3.5.5.2 Scale and Relevance of Outcomes

Based on the assessed relevance of the Annual Outcomes and the description of the Theme Outcomes there would appear to be an appropriate level of alignment and consistency with the four CGIAR System Level Outcomes (SLOs): less rural poverty, better food security, better nutrition and health, sustainably managed resources.

It is difficult to determine objectively whether the scale of the outcomes, both incipient and expected by 2015-16, is in proportion to the level of investment and expenditure in CCAFS. However, my assessment is that if the 12 Theme Level Outcomes can be substantively achieved then the CCAFS program would have done well given both the level of resourcing and the fact CCAFS is a relatively new research program, initiated from effectively a zero base in 2009.

The main risks in being able to achieve this scale of outcome relate to (a) the outcome areas that are currently progressing slowly not receiving the required effort to accelerate their progress and (b) not achieving the outcomes in the prescribed numbers of countries, which ranges from 10 to 20 countries.

An area of outcome performance that is not captured by the Theme Outcomes in listing numbers of countries in which activity is occurring, is the intensity of that activity. For example, in South Asia the Climate Smart Village concept, where a range of intervention strategies are introduced, is being taken up quite rapidly. For example, the State of Maharashtra is planning to implement >1000 CSVs and the World Bank is also looking to scale out the CSV concept to Nepal with proposed implementation in 1000 CSVs. At a sub-national scale, the outcomes from this level of scale-out are likely to be very significant.

Notwithstanding CCAFS involvement in the Commission on Sustainable Agriculture and Climate Change, the Theme Outcome areas that appear to be making slower progress have a stronger alignment with the System Level Outcome relating to broader aspects of food security, as opposed to local scale production elements of food security. Some additional effort may need to be directed to ensure that CCAFS is able to contribute well to this SLO. There is some evidence that this gap is recognized with the 2013 Business Plan indicating that a food security information expert has been acquired and a new scientist hired to work at the interface of climate services and food security.

Recommendation 12:

Increased effort should be directed to the Theme Outcome areas that are currently progressing slowly and at risk of not achieving their planned outcomes by 2015-16. In particular, areas relevant to the System Level Outcome on food security, with an emphasis on wider system aspects of food security, should receive some focus.

3.5.5.3 Do the outcomes reflect an integrated program of research?

It is difficult to assess whether the outcomes reflect an integrated program based simply on the Annual Outcomes and the Annual Report to CGIAR. To get a better understanding of how well integrated the program is in terms of likely outcomes the matrix analysis of

Activities (Theme x Centre and Regional Program) was used (Table 1). This analysis indicates a program of activity that is quite well integrated. East Africa, West Africa and South Asia all have some activities that they lead across all four Themes. Focusing in on the South Asia region, it has a fairly even spread across Themes of activities it leads, participating in 8 of the 12 Theme objectives.

The analysis also reveals that the Theme objectives with the greatest amount of activity (1.1, 2.1, 3.3 and 4.2) also tend to have the greatest breadth across Regions and Centers.

While the two assessments were conducted independent of each other, there would appear to be a fairly close correlation between the assessment of progress in the 12 Theme Outcomes (Table 7) and the level of effort directed towards activities in each of the corresponding Theme objectives. Indeed the four Theme objectives with the lowest numbers of activities in 2012 were also the four Theme outcomes where progress was assessed to be slowest.

3.5.6 International Public Goods – scale, comprehensiveness and quality

Within CCAFS, International Public Goods take a number of forms including data, tools, policy briefs, working papers, technical reports, journal papers, conference proceedings and book chapters.

A new website was launched in July 2013 and it provides an easy to use interface to navigate all forms of IPGs. Published articles, policy briefs and reports are easily searchable and accessible and while accessing journal articles requires visiting the publishers' websites, links are provided and it would appear open access has been arranged for all journal articles.

A particularly useful aspect of the accessibility of the IPGs on the website in the context of this Theme by Region review is the ability to easily get to Regional and Theme relevant information. The communication team is to be commended for the functionality and ease of use of the new website interface.

To understand the quality and impact of the IPGs it is useful to break them into three groups; Reports, Working Papers, Policy Briefs; Journal papers, Conference proceedings; and Data and Tools.

3.5.6.1 Reports, Working Papers, Policy Briefs

Download statistics provide some useful information on the value of this category of IPGs. The data for the top 20 downloaded publications in 2012 and the top 10 downloaded publications in 2013 (until October) are shown in Table 8.

The data reveals that the most downloaded publications are strongly dominated by those that synthesise CCAFS work across Themes and across Regions. These publications tend to be written for a general audience and with a focus on policy makers and key decision-

makers. This assessment was supported by comments made by the Communication and Knowledge Manager, and is reflected in recent efforts at synthesis e.g. climate smart agriculture success stories, which was released in November 2013 and there were over 2000 downloads in a week. This suggests that in this class of publications most effort should be directed towards more cross-cutting, integrated reports, papers and policy briefs.

There were relatively few publications in the top 20/10 that clearly stood out as a combined effort of two or three Themes explicitly working together to develop the report or paper. They tended to be either single Theme or whole of CCAFS synthesis outputs.

In terms of individual Themes where the work was not cross-cutting, there was a much larger number of top 20/10 publications from Theme 3 than other Themes. It is not known whether this reflects higher output from this Theme or a high level of interest in specific mitigation opportunities. Given, a number of these Theme 3 publications were also in more specific regions it may suggest a more context specific and targeted interest in mitigation issues.

Recommendation 13:

Invest more effort in producing cross-cutting, synthesis reports and policy briefs given the strong external interest in these products. This will require identifying research activities that lend themselves to these synthesis publications and may provide additional benefit as a stimulant for cross-Theme interactions.

Table 8. Download statistics for top 20 publications in 2012 and top 10 in 2013 until October. "Synthesis" denotes across all Themes and "CCAFS" denotes where the publication is led by CCAFS as a whole rather than from a particular Theme. Asterisk numbers in 2013 reflect publications that were also in the top 20 in 2012.

Publication title	# downloads	Themes	Regions
2012			
1. Final Report from the Commission on Sustainable Agriculture and Climate Change	30,021	CCAFS - synthesis	All
2. Summary for policy makers from the Commission on Sustainable Agriculture and Climate Change	14,752	CCAFS - synthesis	All
3. Climate Change and Crop Production. Chapter 1: Adapting Crops to Climate Change: A Summary (Matthew P. Reynolds and Rodomiro Ortiz)	4,149	T1	All
4. Recalibrating Food Production in the Developing World: Global Warming Will Change More Than Just the Climate	3,500	T4 lead - synthesis	All
5. Farming's climate smart future	2,769	CCAFS - synthesis	All

6. Impacts of climate change on the agricultural and aquatic systems and natural resources within the CGIAR's mandate #	2,601	T4 lead - synthesis	All
7. Actions needed to halt deforestation and promote climate-smart agriculture	2,431	CCAFS - synthesis	All
8. Climate Analogues	1,931	T1, T3	All
9. Mapping hotspots of climate change and food insecurity in the global tropics	1,895	T4 lead - synthesis	All
10. Testing Climate Models for Agricultural Impacts	1,763	T4 lead - synthesis	All
11. Mechanisms for agricultural climate change mitigation incentives for smallholders	1,717	T3	All
12. Institutional innovations in African smallholder carbon projects	1,641	T3	Africa
13. The State of Climate Information Services for Agriculture and Food Security in East African Countries	1,436	T2	East Africa
14. Towards policies for climate change mitigation: Incentives and benefits for smallholder farmers	1,317	T3	All
15. Baseline GHG emissions from the agricultural sector and mitigation potential in countries of East and West Africa	1,234	T3	Africa
16. Helping smallholder farmers mitigate climate change	1,191	T3	All
17. Changing climate adaptation strategies of Boran pastoralists in southern Ethiopia	1,151	T1, T2	East Africa
18. Corporate social responsibility and supply agreements in the private sector: Decreasing land and climate pressures	1,090	T3	All
19. Agro-climate tools for a new climate-smart agriculture	1,073	T2	All
20. Annual Report 2011	911	CCAFS	All
2013			
1. Achieving food security in the face of climate change: Summary for policy makers from the Commission on Sustainable Agriculture and Climate Change	3200*	CCAFS - synthesis	All
2. Impacts of climate change on the agricultural and aquatic systems and natural resources within the CGIAR's mandate	2500*	T4 lead - synthesis	All
3. Helping smallholder farmers mitigate climate change	2100*	T3	All
4. Institutional innovations in African smallholder carbon projects	1500	T3	Africa

5. Climate change communication and social learning - Review and strategy development for CCAFS	810	CCAFS - synthesis	All
6. Recalibrating Food Production in the Developing World: Global Warming Will Change More Than Just the Climate	800*	T4 lead - synthesis	All
7. Mapping hotspots of climate change and food insecurity in the global tropics	800*	T4 lead - synthesis	All
8. Methods for the quantification of emissions at the landscape level for developing countries in smallholder contexts	700	T3	All
9. Setting the agenda: Climate change adaptation and mitigation for food systems in the developing world	530	CCAFS - synthesis	All
10. How can small-scale farmers benefit from carbon markets?	520	T3	All

3.5.6.2 Journal papers

Some of the analysis relating to journal publications has already been discussed in Section 3.1.4 in the context of cross-Center collaboration. It was not possible to assign individual journal publications to Themes to determine the level of synergy across Themes. However, it is worth assessing whether the quantum and quality of the journal papers from CCAFS is sufficient for a program of its size.

Table 9 shows the numbers of ISI journal papers for each CRP in 2012, where data was available from individual CRP Annual Reports. It was not possible to access the numbers of scientists in each CRP to make the ideal comparison of journal papers per scientist FTE. Instead the total number of \$ expended by each CRP in 2012 was used as the normalizing factor, recognizing that this is not ideal. The expenditure numbers were sourced from the CGIAR 2012 Annual Report. This table that reveals in terms of journal papers per \$M of budget that CCAFS performed below average in comparison with other CRPs producing 1.2 papers per \$M compared with an overall average of 2.0 papers per \$M.

Table 9. Analysis of ISI publications in different CRPs relative to Program expenditure.

CRP	# ISI journal papers in 2012	Expenditure in 2012 (\$M)	Papers per \$M expended
Livestock and Fish	78	16	4.9
Dryland Cereals	24	7	3.4
A4NH	115	37	3.1
Wheat	121	41	3.0
Water, Land and Ecosystems	158	56	2.8
Rice	215	99	2.2
Forests, Trees and Agroforestry	151	71	2.1
Maize	112	74	1.5
Aquatic Agricultural Systems	30	20	1.5

Roots, Tubers and Bananas	75	51	1.5
Policies, Institutions and Markets	105	75	1.4
CCAFS	77	63	1.2
Grain Legumes	15	22	0.7
Average	1276	632	2.0

To make an international comparison, Table 10 shows the number of journal publications in CCAFS in 2012 compared with CSIRO's Sustainable Agriculture Flagship Program. Flagship Programs in CSIRO are not dissimilar to CRPs in many respects. They are cross-cutting research programs drawing on staff from Divisions (akin to Centers) in a matrix management organizational structure. Also like the CGIAR system, CSIRO is a mission-oriented research organization that aims to achieve significant impact in policy, industry and communities and at the same time maintain a high standard of research outputs.

Table 10. Comparison of CSIRO Sustainable Agriculture Flagship and CCAFS in journal paper metrics. CSIRO data extracted from internally available statistics.

Organization	Scientists (FTE)	# journal papers in 2012	Papers/FTE	Ave ISI Impact factor
CCAFS	132	77	0.58	3.0
CSIRO Sustainable Agriculture Flagship	104	212	2.04	3.2

The journal paper productivity per scientist FTE in the Sustainable Agriculture Flagship is considerably higher than in CCAFS. However, there is little difference in the journal quality where papers are published, using ISI Impact factor as the quality metric. It is also apparent from the analysis of journal papers in Section 3.1.4 that journal papers in CCAFS are highly collaborative, generally involving multiple authors and institutions (Annex 7).

In terms of citation numbers, the average citations per journal paper over 2011 and 2012 5.6 and 1.7, respectively. Table 11 shows the top ten citation papers for the 2011 and 2012 years. All except one of these top ten papers were published in 2011. There is no particular pattern in the type of article that has been well cited as they range from specific aspects of climate change on plant physiology or plant disease to land use and management to broader issues of food security.

Table 11. Citation metrics for the ten most highly cited papers published in 2011 and 2012.

Paper title	Journal and IF (brackets)	Citation # ISI
Agriculture and food systems in sub-Saharan Africa in a 4 degrees C+ world	Philosophical Transactions of the Royal Society Series A (2.9)	30
Agricultural biotechnology for crop improvement in a variable climate: hope or hype?	Trends in Plant Science (11.8)	23
Complexity in climate-change impacts: an analytical framework for effects mediated by plant disease	Plant pathology (2.7)	19

Potential impacts of climate change on the environmental services of humid tropical alpine regions	Global Ecology and Biogeography (7.2)	18
Climate Change Affects Winter Chill for Temperate Fruit and Nut Trees	Plos One (3.7)	18
Monitoring and assessment of land degradation and desertification: towards new conceptual and integrated approaches	Land Degradation and Development (2.0)	17
What Next for Agriculture After Durban?*	Science (31.0)	17
Application of indicator systems for monitoring and assessment of desertification from national to global scales	Land Degradation and Development (2.0)	14
Assessing the vulnerability of traditional maize seed systems in Mexico to climate change	PNAS (9.7)	13
Management and land use change effects on soil carbon in northern China's grasslands: a synthesis	Agriculture, Ecosystems and Environment (2.9)	12

* Published in 2012

There are likely to be multiple factors contributing to the relatively low number of journal publications in CCAFS. First, the whole area of climate change, agriculture and food security is relatively new and this domain of research was first established in the CGIAR system in 2009. It takes quite a few years for work to be undertaken and to appear in journal papers so the low number of journal publications in CCAFS may in part be explained by the relatively recent emergence of climate change. Certainly, the quality of journals in which the papers are being published cannot be questioned as an Impact Factor of 3.0 is high in the field of agriculture, which on average across a range of journals has an Impact Factor of around 1. As indicated earlier in the Section 3.1.4 the engagement from Centers in CCAFS has taken some time and so the early drive in journal paper publication has come from the Theme Leaders. As the Centers become more deeply engaged in CCAFS it would be expected that publication rates would increase but this may need some performance management to ensure this occurs given that between two-thirds and three-quarters of the CCAFS budget flows through Centers.

Another contributing factor may relate to the effort CCAFS has put into producing a diversity of IPGs ranging from data and tools to working papers and policy briefs to journal papers. This goal to create a range of products to address the needs of end users has most likely diluted the effort and resources available to devote to journal publications. Nevertheless, the publication rate in journals could and should be increased.

There is a note of caution in suggesting journal publication rates be increased and that is the need to maintain balance between high quality publications in numbers in keeping with a research program the size of CCAFS and the need to have impact in policy and on the ground. This is a challenging balance for a research organization that has dual goals of outcomes and high quality research outputs. Increasing publication output should not be at the expense of delivering outcomes critical to the success of CCAFS.

Recommendation 14:

CCAFS should develop a plan to lift publication rates in ISI journals. This will require a mix of measures ranging from performance indicators to short term incentives to longer term capacity building in Centers and done in a way that doesn't compromise a focus on achieving outcomes.

3.5.6.3 Data and tools

CCAFS has put considerable effort into making available data, e.g. baseline surveys from core sites, and tools such as downscaled climate projections, climate analogues, climate services for managing today's variability, and food security maps. Usage statistics are available for these outputs.

In terms of data, CCAFS-Climate is heavily used with 27,000 visitors to the site in 2012, with more than 39,000 individual downloads of data totaling more than 28 terabytes. This data was cited 37 times in peer reviewed journals in 2012. Other key databases (Agtrials, Dataverse- baseline surveys) were used less frequently but the information and data contained in them is much more targeted and location specific. There was considerable interest in the methods and approaches used in the baseline surveys, indeed receiving more visitors than the baseline data itself.

Of the tools, Climate Analogues was the most heavily used, with 3287 visits in 2012. A feature of this tool was the wide diversity of users, suggesting the analogue approach is an innovative way of communicating and engaging about climate change. The MarkSim stand-alone tool was also popular, receiving over 2500 visits.

It is almost impossible to benchmark these usage statistics given the individual nature of all web-based tools and databases. The most "like for like" comparison is the CCAFS-Climate database which can be compared with other sites that offer climate projections for a range of climatic variables for different emission scenarios and from different climate models. For example, the Climate Change in Australia website (www.climatechangeinaustralia.com.au/), was established in 2007 to provide climate projections for different regions in Australia based on the 2007 IPCC CMIP3 model runs. It received between 350,000 and 500,000 unique visitors per year between 2007 and 2010. It of course had a national coverage and was relevant to all sectors of the economy, not just agriculture.

3.5.7 International Public Goods - influence and lasting impact of IPGs

There is strong evidence to suggest that the IPGs are influential and contributing to decisions being made from scales of national policy to farm-scale management. The CCAFS Annual Report – "Unfolding results: CCAFS research into action" provides details of how a range of IPGs are influencing decision-makers. These include:

- The recommendations of the Commission on Sustainable Agriculture and Climate Change have been readily accepted and embraced by a large number of national governments and international agencies even though the goal of the Commission to have agriculture incorporated into the UNFCCC has not yet been successful

- Influencing the development and implementation of Nationally appropriate mitigation actions (NAMAs) (Policy Brief)
- Scaling up climate services to reach a much wider group of farmers and government agencies e.g. national frameworks in West Africa, application of seasonal forecasts (Workshops, Tools, Reports)
- Research outputs demonstrating innovations in coffee-banana systems influencing policy decisions in Rwanda (Papers, Workshops, Reports)
- Influencing youth through modern ICT methods (Tools)
- Building capacity in measurement and mitigation of greenhouse gases (Reports, Workshops)
- Disaggregating gender data from household surveys to target different actions based on gender in areas such as adaptation and innovation in carbon financing for smallholders (Data, Reports, Training Guides)
- Development of future scenarios and back-casting to influence policy decisions (Tools, Data, Workshops)

This list, which isn't comprehensive and provides a series of examples, highlights the value in having a wide range of IPGs in the "toolkit" to influence decision-making. It is apparent from these examples that the investment in a diversity of approaches is paying off and having them available in a well produced web site is essential.

Recommendation 15:

CCAFS should maintain its investment in a diversity of IPGs as a means of influencing decision-making and achieving desired outcomes and impacts.

Based on this diverse approach to IPGs, it is likely that they will continue to have important influence into the future. While some IPGs have immediacy in influencing decisions (e.g. Policy Briefs) and won't have a long life-span, others will play an important long-term role in influencing decision-making. For example, baseline data from core sites and climate smart villages will be valuable when the impact of interventions need to be assessed in future years. Similarly, having data on various agricultural trials will be a valuable resource into the future.

The significant up-front investment in tools such as climate scenarios, seasonal climate forecasts, climate analogues should have a long-term benefit, particularly where those tools provide information that can be contextualized for decision-making at local scales. There is no doubt that these various tools will need to be refined or even replaced as needs change and technology improves but they provide an important long-term mechanism for engaging with and influencing decision-makers across a range of scales. Likewise, research papers in journals provide the scientifically robust platform on which to develop policy and management recommendations. There is often a significant lag between publication of research papers and their impact so the research publications currently being produced by CCAFS should provide benefits into the foreseeable future.

Annex 1. Evaluation matrix to be used in the CCAFS Theme by Region Review.

Evaluation criteria	Evaluation questions to be addressed	Expected evaluation product	Expected approach and sources of information
Relevance	<ol style="list-style-type: none"> 1. Is the matrix being managed in line with the main goals and System Level Outcomes (SLOs) of the CGIAR? 2. 3. Is this matrix management in line with the reform process in the CGIAR? 4. Is there evidence of demand for the program from intended beneficiaries and how is the matrix managed in relation to assessing demand for thematic and regional topics? 5. Are appropriate stakeholders consulted at appropriate moments in the research? 	<p>Analysis of whether the CCAFS outcomes, Intermediate Development Outcomes, and IPGs are in line with the SLOs</p> <p>Analysis of the Centers involved in the management of the matrix and how this fits with the reform process (e.g. are there cross-centre relationships)</p> <p>Assessment of the degree to which partner and stakeholder concerns shape strategic directions and research products; and how the matrix is managed to get partner and stakeholder input.</p>	<p>For SLOs see “Strategic Results Framework”; see Annex 3 documents under “outcomes” and “IPGs”.</p> <p>See the “Strategic Results Framework” for information on the reform; Interviews of program participants and partners</p> <p>Interviews of program participants and partners; example of workshop reports where stakeholders are engaged (see Annex 3 under “Basic information about CCAFS in South Asia”</p>
Effectiveness	<ol style="list-style-type: none"> 6. How successful is the matrix management in CCAFS in terms of progress made? 7. Is sufficient attention paid to ensuring synergies are achieved across themes, and is their sufficient evidence of synthesis in the IPGs? 8. Is there a sufficient level of comparability across regions, and is this reflected in the IPGs? 9. How well is the local-to-global set of activities 	<p>Analysis of the most recent annual report of CCAFS, augmented by views from Theme Leaders and Centre participants</p> <p>Analysis of cross-theme interactions and the evidence of synthesis in the IPGs</p> <p>Analysis of how South Asia’s structures and partnerships compare with those of West Africa</p>	<p>“CCAFS Annual Report CGIAR Consortium 2012” – see Annex 3 under “Outcomes”; Interviews of program participants and partners</p> <p>IPGs (see lists in Annex 3 under “IPGs”); Interviews of program participants and partners</p> <p>IPGs (see lists in Annex 3 under “IPGs”); Interviews of program participants and partners</p>

	<p>managed, in terms of having an appropriate mix of activities at different scales and managing the cross-scale connections?</p> <p>10. Are management systems tracking progress and proposing adjustments to research as necessary? Is this system working well?</p>	<p>Analysis of activities across scales and evidence of cross-scale products</p> <p>Analysis of management procedures, PMC and ISP Minutes to assess how effective the systems are performing and evolving</p>	<p>See lists in Annex 3 of IPGs under “IPGs”; Interviews of program participants and partners</p> <p>See documents in Annex 3 under “CCAFS planning processes”; Interviews of program participants and partners</p>
Efficiency	11. How successful is the matrix management in CCAFS with respect to efficiency?	Analysis of program participant perceptions of transaction costs	Interviews of program participants and partners
Impact	<p>12. Are the initial outcomes or incipient outcomes being reported by CCAFS of sufficient scale for a program of this size?</p> <p>13. Do the initial outcomes or incipient outcomes reflect an integrated program?</p> <p>14. Are the IPGs and initial outcomes influential?</p> <p>15. Is it likely that the IPGs produced and outcomes will lead to impacts in regard to the CGIAR System Level Outcomes (SLOs): Less rural poverty; better food security; better nutrition and health; sustainably managed resources?</p>	<p>Analysis of the number and significance of outcomes reported for 2012, augmented by views of partners</p> <p>Analysis of degree to which the emerging outcomes can be the building blocks for outcomes at a larger scale; and whether outcomes represent integrated efforts?</p> <p>Analysis of outcomes and IPGs reported for 2012 in relation to the degree to which they are or could be influential</p> <p>Analysis of outcomes and IPGs reported for 2012 in relation to their relevance to the SLOs</p>	<p>See lists and analysis in Annex 3 under “Outcomes”; Interviews of program participants and partners</p> <p>See lists and analysis in Annex 3 under “Outcomes”; Interviews of program participants and partners</p> <p>See lists and analysis in Annex 3 under “Outcomes” and “IPGs”; Interviews of program participants</p> <p>See lists and analysis in Annex 3 under “Outcomes” and “IPGs”; Interviews of program participants and partners</p>
Sustainability	16. To what extent are the benefits of the program expected to continue based on the international public goods and initial outcomes produced? Why or why not?	Analysis of outcomes and IPGs reported for 2012 in relation to (a) the likelihood of outcomes leading to long-lasting impacts and (b) IPGs having long-term value.	See lists and analysis in Annex 3 under “Outcomes” and “IPGs”; Interviews of program participants and partners

Quality of science	17.Are the IPGs of sufficient number and quality for a program of this size?	Analysis of the numbers of IPGs and the degree to which they are in “high impact” journals. Assess the quality of a sample of the IPGs.	See lists in Annex 3 under “IPGs”; Interviews of program participants and partners
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Annex 2. List of documents accessed and examined for the review.

Document type/information source	Key documents and key content	Link/availability
Basic information about CGIAR	<p>A STRATEGY AND RESULTS FRAMEWORK FOR THE CGIAR</p> <p>CGIAR Financial Report 2012</p>	<p>http://consortium.cgiar.org/wp-content/uploads/2011/08/CGIAR-SRF-Feb_20_2011.pdf</p> <p>http://library.cgiar.org/bitstream/handle/10947/2869/2012_CGIAR_Financial_Report.pdf?sequence=1</p>
Basic information about CCAFS	<p>CCAFS website The primary repository for information about CCAFS governance, management, research and international public goods</p> <p>Two-page overview of CCAFS Provides a brief overview of CCAFS activities and where CCAFS works</p> <p>CCAFS Program Plan summary The Program Plan is the basic document of CCAFS about goals, objectives, research areas and governance. This is a summary, below is the full document.</p> <p>CCAFS Program Plan See above</p>	<p>www.ccafs.cgiar.org</p> <p>http://ccafs.cgiar.org/publications/climate-change-agriculture-and-food-security#.Uk77-tLdfsc</p> <p>http://ccafs.cgiar.org/publications/ccaafs-program-plan-summary</p> <p>http://ccafs.cgiar.org/publications/ccaafs-program-plan#.Uk785dLdfsc</p>

<p>CCAFS planning processes</p>	<p>Terms of Reference for Theme Leaders, Regional Program Leaders and Contact Points Outlines the basic tasks of CCAFS research leaders who implement the theme by region matrix</p> <p>CCAFS Strategy for Priority Setting, Monitoring and Evaluation The document shows how CCAFS is dealing with monitoring and evaluation (M&E), and to demonstrate the cascade from the overarching logframe down to project activities in specific sites</p> <p>Consolidated Logframe of Activities, 2012-2015 A rolling three-year document. Identifies Objectives, Outcomes, Outputs and Milestones with associated performance indicators and means of verification (i.e. outputs), assumptions, and partners involved.</p> <p>Business Plan 2013 Outlines the annual CCAFS planning on research, synthesis, capacity enhancement, engagement, communication and budgets (format for 2012 onwards)</p> <p>Theme and Regional Program Leader Workplans 2013 - consolidated Provides an in depth outline of the consolidated activities in the</p>	<p>http://ccafs.cgiar.org/about/governance/theme-leaders#.Uk79WdLdfsc</p> <p>http://ccafs.cgiar.org/about/governance/regional-program-leaders#.Uk79dtLdfsc</p> <p>http://ccafs.cgiar.org/about/governance/cgiar-contact-points#.Uk79t9Ldfsc</p> <p>http://cgspace.cgiar.org/handle/10568/25108</p> <p>http://ccafs.cgiar.org/sites/default/files/assets/docs/ccafs_consolidated_logframe-2012-2015.pdf</p> <p>http://ccafs.cgiar.org/publications/2013-business-plan#.Uk8BFtLdfsc</p> <p>https://www.dropbox.com/s/dw6fz8ptheo8efmc/TL%20%20RPL%20Consolidated%202013%20Activities.xlsx</p>
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	<p>theme by region matrix for those activities directly implemented by these Leaders (i.e. excludes the Centre activities)</p> <p>Management and management discussions about annual planning (reference to minutes) An overview of the discussions about annual planning. Example of the management and governance discussions about annual CCAFS planning for 2013.</p> <p>Governance and management discussions about the theme by region matrix (reference to minutes)</p> <p>2013 external governance and management review of CCAFS by Maureen Robinson reflecting on the relationship between themes and regions (excerpts from review report)</p> <p>2012 external review of CCAFS by EC/IFAD (excerpts from review report)</p>	<p>https://www.dropbox.com/s/3fejcbeounpnms1/Management%20and%20governance%20discussions%20about%20annual%20planning.docx</p> <p>https://www.dropbox.com/s/b5ogzmyffo55lwa/Governance%20and%20management%20discussions%20about%20theme%20by%20region%20matrix.docx</p> <p>https://www.dropbox.com/s/jl2z5gnl5z92l4s/2013%20external%20governance%20and%20management%20review%20of%20CCAFS%20by%20Maureen%20Robinson.docx</p> <p>Link to the full report: http://ccafs.cgiar.org/governance-and-management-review#.UIMkWdLdfsc</p> <p>https://www.dropbox.com/s/jt0phzc1mup04xe/EC%20IFAD%20review%20of%20CCAFS%20excerpt.docx</p> <p>Link to the full report:</p>
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	<p>Satisfaction survey Satisfaction survey based on feedback from Contact Points and CCAFS Management</p>	<p>https://www.dropbox.com/s/3itngig62lcwnk4/EC%20IFAD%20review%20CCAFS.docx</p> <p>https://www.dropbox.com/s/hx4wwt3fgd4aoh8/MiniSurvey%20compilation%20Contact%20Point%20and%20Management.docx</p>
Outcomes	<p>All CGIAR Centers, Regional Program Leaders and Theme Leaders have to report outcome stories annually.</p> <p>CCAFS Annual Report 2012 pp. 3-8</p> <p>CCAFS Annual Report CGIAR Consortium 2012 p. 1, 2-6 (for outcomes)</p> <p>External assessment of 2012 outcomes (by Peter Cooper)</p> <p>External assessment of 2012 outcomes (summary by Bruce Campbell of the Peter Cooper assessment)</p> <p>The three below a), b) and c) are examples of planning for outcomes: a) Draft Knowledge to Action Strategy</p>	<p>http://ccaafs.cgiar.org/publications/unfolding-results-ccaafs-research-action-annual-report-2012#.Uk8CmdLdfsc</p> <p>http://ccaafs.cgiar.org/publications/2012-annual-report-cgiar-consortium-cgiar-research-program-climate-change-agriculture#.Uk8Cx9Ldfsc</p> <p>https://www.dropbox.com/s/4ewems54es4wa72/CCAFS%20Outcome%20Review..docx</p> <p>https://www.dropbox.com/s/elcede0pzhbghlu/Summary%20analysis%20of%20Outcomes.pdf</p> <p>https://www.dropbox.com/s/cnepgg8ggefrral/Theme%204%20M%20BE%20strategy%20draft%20Sept6.docx</p>

	<p>b) CCAFS Engagement and Communications Strategy</p> <p>c) Collaboration with IFAD</p>	<p>https://www.dropbox.com/s/47aukg1uup2funv/Linking%20Knowledge%20with%20Action%20Research%20Summary.docx</p> <p>https://www.dropbox.com/s/035c4msiuw55wie/CCAFS%20T4%201%20Impact%20Pathway.pdf</p> <p>http://ccafs.cgiar.org/publications/ccafs-engagement-and-communications-strategy#.Uk8DvdLdfsc</p> <p>https://www.dropbox.com/s/ig1k4z46mkrkdet/IFAD%20partnership.docx</p>
International Public Goods (IPGs)	<p>CCAFS list of publications 2011-2012 Contains list of all CCAFS funded outputs in the period 2011 to 2012.</p> <p>CCAFS publications (usage statistics) Gives an overview of: top 25 publications downloads from CCAFS databases for 2012 and top 10 publications downloaded so far in 2013</p>	<p>2011 http://cgspace.cgiar.org/bitstream/handle/10568/32802/Annex%25203%2520-%2520Full%2520list%2520of%25202011%2520publications.pdf?sequence=4</p> <p>2012 http://cgspace.cgiar.org/bitstream/handle/10568/32803/2012publicationslist.pdf?sequence=21</p> <p>All 2011-2012 Publications are being made available via the CCAFS website and will be complete by 2013 http://ccafs.cgiar.org/publications</p> <p>https://www.dropbox.com/s/dkka1qoem9l0i7k/CCAFS%20Publications%20%20-%20overview%20and%20usage.docx</p>

	<p>CCAFS databases Contains an overview of CCAFS databases on our website</p> <p>CCAFS databases A summary overview and usage statistics. The data if for 2012 and is updated once a year.</p> <p>Other CCAFS knowledge products overview and usage statistics In addition to being made freely available online, CCAFS knowledge products are promoted online via a number of channels including the CCAFS Website (http://ccafs.cgiar.org) and Blog (http://ccafs.cgiar.org/blog), e-bulletins (including regionally targeted bulletins), Facebook and Twitter channels.</p> <p>Gender CCAFS Gender Theory of Change and Outcome Strategies</p> <p>CCAFS gender material</p> <p>Journal publications from other CRPs</p>	<p>http://ccafs.cgiar.org/resources/tools-maps-models-and-data</p> <p>https://www.dropbox.com/s/f2fufsyppwrbtla/CCAFS%20portals%20data%20Access%20usage%202012.pdf</p> <p>https://www.dropbox.com/s/yuvv88jvqef6x7x/Other%20CCAFS%20knowledge%20products.docx</p> <p>https://www.dropbox.com/s/h3rjvz3er1olnh/C/CAFS%20Gender%20Theory%20of%20Change%20and%20Outcome%20Strategies.pptx</p> <p>http://www.ccafs.cgiar.org/gender</p> <p>http://www.cgiar.org/resources/crp-documents/</p> <p>https://www.dropbox.com/s/gevguaigwn4vyp3/Mobilizing%20effective%20partnerships.docx</p> <p>https://www.dropbox.com/s/nqv8d5h5gy0v4yn/Mobilizing%20effective%20partnerships.pptx</p>
CCAFS partnerships	<p>Stock-take and recommendations on mobilizing effective partnerships in CCAFS – discussed at CCAFS ISP meeting October 2013</p>	<p>https://www.dropbox.com/s/gevguaigwn4vyp3/Mobilizing%20effective%20partnerships.docx</p> <p>https://www.dropbox.com/s/nqv8d5h5gy0v4yn/Mobilizing%20effective%20partnerships.pptx</p>

<p>Basic information about CCAFS in South Asia</p>	<p>CCAFS South Asia website The primary repository for information about CCAFS South Asia publications, activities, stories, events, partners, etc.</p> <p>Two-page overview of CCAFS South Asia Provides a brief overview of CCAFS South Asia activities and where we work</p> <p>South Asia Regional Program Leader workplan 2013 This is an excerpt of the above mentioned consolidated workplan for 2013 to provide a specific overview of the South Asia Regional Leader workplan for 2013</p> <p>Workshop report: APAARI meeting One example of a stakeholder meeting to help define the research agenda</p>	<p>http://ccafs.cgiar.org/regions/south-asia</p> <p>https://www.dropbox.com/s/pu3ojf64nkph8i3/CCAFS%20South%20Asia%20in%20brief.pdf</p> <p>https://www.dropbox.com/s/dfraqilprkgu41q/South%20Asia%202013%20Workplan.xlsx</p> <p>https://www.dropbox.com/s/0k25eilrz7y306y/APAARI%20conference%20report.pdf</p>
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Annex 3. List of interviews undertaken for the review.

Person	Role	Date	Interview type
P.J. Joseph	External partner, Chairman and MD, Agricultural Insurance Company of India	04/11/2013	In person, Delhi
P.K. Joshi	Center partner, Director, IFPRI, South Asia	04/11/2013	In person, Delhi
Thomas Rosswall	Chair, ISP	05/11/2013	Skype
Philip Thornton	Theme Leader (Theme 4)	06/11/2013	Skype
Pramod Aggarwal	Regional Program Leader, South Asia	07/11/2013	In person, Delhi
Alok Sikka	External partner, Deputy Director-General, ICAR	07/11/2013	In person, Delhi
Andy Jarvis	Theme Leader (Theme 1)	08/11/2013	Skype
Robert Zougmore	Regional Program Leader, West Africa	08/11/2013	Skype
Bruce Campbell	Program Director, CCAFS	11/11/2013	Skype
Ram Badan Singh	Member ISP, President National Academy of Agricultural Sciences, India	18/11/2013	Skype
M. Lal Jat	Center partner, CIMMYT, Delhi	18/11/2013	Skype
James Kinyangi	Regional Program Leader, East Africa	18/11/2013	Skype
James Hansen	Theme Leader (Theme 2)	19/11/2013	Skype
Prem Mathur	Center partner, Bioversity, Delhi	19/11/2013	Skype
Torben Timmerman Vanessa Meadu	Head of Coordination & Communications Communication and Knowledge Manager	22/11/2013	Skype

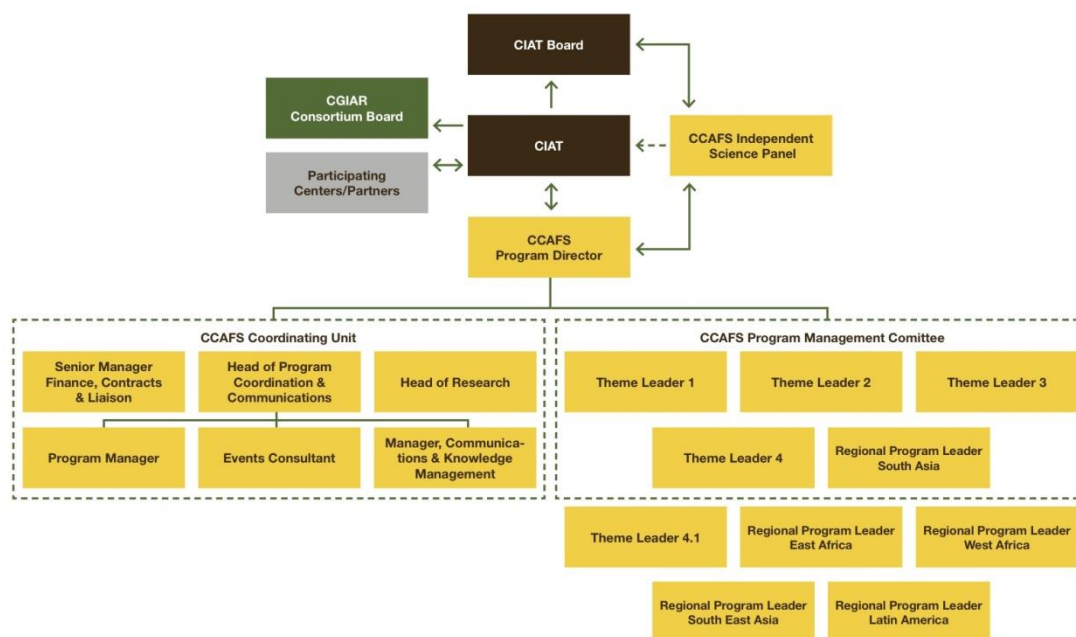
Annex 4. Extract from CGIAR Financial Report 2012 showing the sources of funding for each of the CRPs.

Table 5: Summary of CGIAR Research Program funding 2012 US\$ million								
	From financial statements of individual Centers				% of individual CRP funding			Total (% of Total)
	W1/2	W3	Bilateral	Total	W1/2	W3	Bilateral	
Dryland Systems	9.1	2.8	18.6	30.5	30%	9%	61%	4%
Humidtropics	7.2	2.9	9.9	20.0	36%	11%	53%	3%
AAS	7.5	1.0	11.6	20.1	36%	5%	59%	3%
PIM	15.2	9.5	50.4	75.1	21%	13%	66%	11%
WHEAT	11.4	2.3	27.0	40.7	28%	5%	67%	6%
MAIZE	13.5	9.2	51.5	74.2	18%	12%	69%	11%
GRiSP	35.4	12.7	50.9	99.0	35%	13%	52%	14%
RTB	22.3	2.6	26.3	51.2	44%	7%	49%	7%
Grain Legumes	7.5	3.8	11.1	22.4	33%	19%	47%	3%
Dryland Cereals	3.2	0.1	4.1	7.4	43%	2%	55%	1%
Livestock and Fish	7.7	0.3	7.9	15.9	47%	2%	51%	2%
A4NH	9.1	1.2	27.1	37.4	24%	3%	73%	5%
WLE	22.4	5.1	28.4	55.9	38%	10%	51%	8%
Forests, Trees and Agroforestry	29.4	1.3	40.5	71.2	41%	1%	58%	10%
CCAFS	46.4	0.5	16.0	62.9	73%	1%	26%	9%
Genebanks	12.6	-	3.3	15.9	79%	0%	21%	2%
Total	260	56	384	700	37%	8%	55%	100%

Annex 5. Governance structure of CCAFS.

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Organizational structure



Annex 6. Budget allocation by Region and Theme in 2011 \$USD. 2011 numbers as data could not be disaggregated to region for 2012.

Theme	West Africa (WA)	East Africa (EA)	Indo-Gangetic Plains (IGP)	Global	Other Regions	Sub-total	CCAFS, Theme and Regional Coordination	CGIAR System Costs (2%)	Total
Theme 1 Adaptation to Progressive Climate Change	3.1	4.5	4.4	3.8	5.4	21.2			21.2
Theme 2 Adaptation through Managing Climate Risk	1.5	2.2	1.9	1.3	1.4	8.3			8.3
Theme 3 Pro-poor climate change mitigation	1.7	1.8	2.5	2.4	2.4	10.9			10.9
Theme 4 Integration for decision making	2.3	1.9	1.8	8.1	1.5	15.6			15.6
CCAFS, Theme and Regional Coordination	-	-	-	-	-	-	1.8		1.8
Subtotal	8.6	10.4	10.5	15.7	10.8	56.0	1.8	-	57.8
CGIAR System Costs (2%)								0.8	0.8
TOTAL	8.6	10.4	10.5	15.7	10.8	56.0	1.8	0.8	58.6
Percentage	15%	18%	18%	27%	18%	96%	3%	1%	100%

Annex 7. Analysis of journal publications in CCAFS using 2011 and 2012 publication lists

Journal title	Impact factor	Article title, authors, affiliations	Citation rate	No of Centers	No of Institutions	No of Authors
Acta horticulturae	N/A					
		Climate Change in the Subtropics: the Impacts of Projected Averages and Variability on Banana Productivity / Van den Bergh, I ; Ramirez, J ; Staver, C ; Turner, DW ; Jarvis, A ; Brown, D. 2012. 1. Biovers Int, Montpellier, France	0	2	6	6
Advances in agronomy	5.06					
		Maize production in a changing climate: impacts, adaptation, and mitigation strategies / Cairns, JE ; Sonder, K ; Zaidi, PH ; Verhulst, N ; Mahuku, G ; Babu, R ; Nair, SK ; Das, B ; Govaerts, B ; Vinayan, MT ; Rashid, Z ; Noor, JJ ; Devi, P ; Vicente, FS ; Prasanna, BM. 2012. 1. Int Maize & Wheat Improvement Ctr CIMMYT, Mexico City, DF, Mexico 2. Int Maize & Wheat Improvement Ctr CIMMYT, Hyderabad, Andhra Pradesh, India 3. Katholieke Univ Leuven, Dept Earth & Environm Sci, Louvain, Belgium 4. Int Maize & Wheat Improvement Ctr CIMMYT, Nairobi, Kenya	4	1	2	4
African crop science journal	N/A					
		Assessing climate change impacts and adaptation strategies for smallholder agricultural systems in Uganda / Bagamba, F. ; Bashaasha, B. ; Claessens, I. ; Antle, J. 2012. 1. College of Agricultural and Environmental Sciences, Makerere University, P. O. Box 7062, Kampala, Uganda 2. International Potato Center (CIP), P. O. Box 25171, 00603 Nairobi, Kenya 3. Department of Agricultural and Resource Economics, Oregon State University, Corvallis OR 97331, USA	0	1	3	3

		<p>Farmer perceptions on climate change and variability in semi-arid Zimbabwe in relation to climatology evidence / Moyo, M. ; Mvumi, B. M. ; Kunzekweguta, M. ; Mazvimavi, K. ; Craufurd, P. ; Dorward, P. 2012. [NOTE: <i>this article title is different to that given in list. The listed article features in Asian Jnl of Agric Research</i>]</p> <p>1. International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), P. O. Box 776, Bulawayo, Zimbabwe</p> <p>2. Department of Soil Science and Agricultural Engineering, Faculty of Agriculture, University of Zimbabwe, P. O. Box MP 167, Mt Pleasant, Harare, Zimbabwe</p> <p>3. International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru 502-324, India</p> <p>4. School of Agriculture Policy and Development, University of Reading, Box 236, Reading, RG6 6AT, UK</p>	0	1	4	6
African journal of ecology	0.631					
		<p>Ecological adaptation of the shea butter tree (<i>Vitellaria paradoxa</i> CF Gaertn.) along climatic gradient in Benin, West Africa / Kakai, Romain Glele; Akpona, T. Jean Didier; Assogbadjo, Achille E.; Gaoue, Orou Gande; Chakeredza, Sebastian; Gnangle, P. Cesaire; Mensah, Guy Apollinaire; Sinsin, Brice. DEC 2011.</p> <p>1. Univ Abomey Calavi, Fac Agron Sci, Cotonou, Benin</p> <p>2. Univ Tennessee, Natl Inst Math & Biol Synth, Knoxville, TN 37996 USA</p> <p>3. ANAFE, Nairobi, Kenya</p> <p>4. Natl Inst Agr Res Benin INRAB, Cotonou, Benin</p>	2	0	4	8
Agricultural and forest meteorology	3.421					
		<p>Assessing relevant climate data for agricultural applications / Ramirez-Villegas, Julian; Challinor, Andy. AUG 2012.</p> <p>1. Int Ctr Trop Agr CIAT, Cali, Valle Del Cauca, Colombia</p> <p>2. CGIAR Res Program Climate Change Agr & Food Secur, Cali, Colombia</p> <p>3. Univ Leeds, Inst Climate & Atmospher Sci ICAS, Sch Earth &</p>	4	1	2	2

		Environm, Leeds, W Yorkshire, England				
Agricultural systems	2.504					
		<p>A method for evaluating climate change adaptation strategies for small-scale farmers using survey, experimental and modeled data / Claessens, L ; Antle, JM ; Stoorvogel, JJ ; Valdivia, RO ; Thornton, PK ; Herrero, M. SEP 2012.</p> <p>1. Int Potato Ctr CIP, Nairobi, Kenya</p> <p>2. Wageningen Univ, NL-6700 AA Wageningen, Netherlands</p> <p>3. Oregon State Univ, Corvallis, OR 97331 USA</p> <p>4. Int Livestock Res Inst, Nairobi, Kenya</p> <p>5. ILRI, CCAFS, Nairobi, Kenya</p>	1	2	4	5
		<p>Interpretation of commercial production information: A case study of lulo (Solanum quitoense), an under-researched Andean fruit / Jimenez, Daniel; Cock, James; Jarvis, Andy; Garcia, James; Satizabal, Hector F.; Van Damme, Patrick; Perez-Urbe, Andres; Barreto-Sanz, Miguel A. MAR 2011.</p> <p>1. Int Ctr Trop Agr CIAT, Decis & Policy Anal DAPA, Cali 6713, Colombia</p> <p>2. Univ Ghent, Fac BioSci Engn Agr Sci, Lab Trop & Subtrop Agron & Ethnobot, B-9000 Ghent, Belgium</p> <p>3. Univ Lausanne, Hautes Etud Commerciales HEC, Inst Syst Informat ISI, CH-1015 Lausanne, Switzerland</p> <p>4. Univ Appl Sci Western Switzerland HEIG VD, REDS Inst, CH-1401 Yverdon, Switzerland</p> <p>5. BIOTEC, Preci Agr & Construct Field Crop Models Trop Fru, Cali, Colombia</p>	1	1	5	8
Agricultural water management	2.203					
		<p>Water and land productivities of wheat and food legumes with deficit supplemental irrigation in a Mediterranean environment / Karrou, M.; Oweis, T. 2012.</p> <p>1. Int Ctr Agr Res Dry Areas ICARDA, Aleppo, Syria</p>	2	1	1	1

		<p>Role of groundwater in buffering irrigation production against climate variability at the basin scale in South-West India / Pavelic, P ; Patankar, U ; Acharya, S ; Jella, K ; Gumma, MK. JAN 2012.</p> <p>1. Int Crops Res Inst Semi Arid Trop, Int Water Management Inst, Patancheru 502324, Andhra Pradesh, India</p> <p>2. Groundwater Surveys & Dev Agcy, Pune, Maharashtra, India</p> <p>3. Int Rice Res Inst, Manila 1099, Philippines</p>	3	2	3	3
		<p>Comparisons of energy balance and evapotranspiration between flooded and aerobic rice fields in the Philippines / Alberto, Ma Carmelita R.; Wassmann, Reiner; Hirano, Takashi; et al. JUL 2011</p> <p>1. Int Rice Res Inst, Los Banos 4031, Laguna, Philippines</p> <p>2. Hokkaido Univ, Res Fac Agr, Sapporo, Hokkaido 060, Japan</p> <p>3. Natl Inst Agroenvironm Sci, Tsukuba, Ibaraki 305, Japan</p>	4	1	3	3
		<p>Drought is a major yield loss factor for rainfed East African highland banana / van Asten, P. J. A.; Fermont, A. M.; Taulya, G. FEB 2011.</p> <p>1. Int Inst Trop Agr, Kampala, Uganda</p>	7	1	1	1
Agriculture and food security	N/A					

		<p>The role for scientists in tackling food insecurity and climate change / Beddington, J. R. ; Asaduzzaman, M. ; Clark, M. E. ; Bremauntz, A. F. ; Guillou, M. D. ; Jahn, M. M. ; Lin ErDa ; Tekalign Mamo ; Negra, C. ; Nobre, C. A. ; Scholes, R. J. ; Rita Sharma ; Nguyen Van Bo ; Wakhungu, J. JUL 2012.</p> <p>1. Government Office of Science, London, UK</p> <p>2. Bangladesh Institute of Development Studies, Dhaka, Bangladesh</p> <p>3. CSIRO, Campbell, Australia</p> <p>4. Universidad Autónoma Metropolitana, Mexico City, Mexico</p> <p>5. INRA, French National Institute for Agricultural Research, Paris, France</p> <p>6. University of Wisconsin, Madison, WI, USA</p> <p>7. Chinese Academy of Agricultural Sciences, Beijing, China</p> <p>8. Ministry of Agriculture, Addis Ababa, Ethiopia</p> <p>9. Commission on Sustainable Agriculture and Climate Change, New York, NY, USA</p> <p>10. Ministry of Science, Technology and Innovation, Brasília, DF, Brazil</p> <p>11. Council for Scientific and Industrial Research, Pretoria, South Africa</p> <p>12. National Advisory Council, Prime Minister's Office, New Delhi, India</p> <p>13. Vietnam Academy of Agricultural Science, Thanh Tri, Ha Noi, Viet Nam</p> <p>14. African Center for Technology Studies, Nairobi, Kenya</p>	0	0	14	14
		<p>Reducing subsistence farmers' vulnerability to climate change: evaluating the potential contributions of agroforestry in western Kenya / Thorlakson, T.; Neufeldt, H. 2012.</p> <p>1. Sustainability Science Program, Harvard University, Cambridge, MA, USA.</p> <p>2. World Agroforestry Centre (ICRAF), Nairobi, Kenya.</p> <p>3. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)</p>	0	1	2	2

		Eating patterns and food systems: critical knowledge requirements for policy design and implementation / Guyomard, H. ; Darcy-Vrillon, B. ; Esnouf, C. ; Marin, M. ; Russel, M. ; Guillou, M. 2012. 1. INRA Paris, 147 rue de l'universite, 75 338 Paris, Cedex 07, France	0	0	1	6
		Re-orienting crop improvement for the changing climatic conditions of the 21st century / Mba, C.; Guimaraes, E. P.; Ghosh, K. 2012. 1. Plant Genetic Resources and Seeds Team, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy 2. International Centre for Tropical Agriculture (CIAT), Cali, Colombia	0	1	2	3
		Food price volatility and hunger alleviation - can Cannes work? / Hajkowicz, S. ; Negra, C. ; Barnett, P. ; Clark, M. ; Harch, B. ; Keating, B. 2012. 1. CSIRO, Ecosciences Precinct, PO Box 2583, Brisbane 2. Secretariat, Commission on Sustainable Agriculture and Climate Change, Copenhagen, Denmark. 3. CSIRO, 343 Royal Parade, Parkville, Victoria	0	1	2	6
Agriculture and human values	1.355					
		Strengthening understanding and perceptions of mineral fertilizer use among smallholder farmers: evidence from collective trials in western Kenya / Misiko, Michael; Tittonell, Pablo; Giller, Ken E.; Richards, Paul. FEB 2011. 1. Africa Rice Ctr AfricaRice, Cotonou, Benin 2. CIRAD Persyst, Unite Rech Syst Culture Annuels, F-34398 Montpellier 5, France 3. Wageningen Univ, NL-6700 AK Wageningen, Netherlands 4. Wageningen Univ, NL-6700 EW Wageningen, Netherlands	1	1	3	4
Agriculture, ecosystems and environment	2.859					

		<p>Soil carbon sequestration and associated economic costs for farming systems of the Indo-Gangetic Plain: A meta-analysis / Grace, PR ; Antle, J ; Aggarwal, PK ; Ogle, S ; Paustian, K ; Basso, B. 2012.</p> <p>1. QUT, Inst Sustainable Resources, Brisbane</p> <p>2. Michigan State Univ, WK Kellogg Biol Stn, Hickory Corners, MI 49060 USA</p> <p>3. Oregon State Univ, Dept Agr & Resource Econ, Corvallis, OR 97331 USA</p> <p>4. Int Water Management Inst, CGIAR Res Program Climate Change Agr & Food Secur, New Delhi 110012, India</p> <p>5. Colorado State Univ, Nat Resource Ecol Lab, Ft Collins, CO 80521 USA</p> <p>6. Colorado State Univ, Dept Soil & Crop Sci, Ft Collins, CO 80521 USA</p> <p>7. Univ Basilicata, I-85100 Potenza, Italy</p>	1	1	6	6
		<p>Methane production and emission in surface and subsurface rice soils and their blends / Mitra, Sudip; Majumdar, Deepanjan; Wassmann, Reiner. SEP 2012.</p> <p>1. Jawaharlal Nehru Univ, Sch Environm Sci, New Delhi 110067, India</p> <p>2. Natl Environm Engn Res Inst, CSIR, Air Pollut Control Div, Nagpur 440020, Maharashtra, India</p> <p>3. IRRI, Los Banos, Philippines</p>	0	1	3	3
		<p>Carbon sequestration and land rehabilitation through <i>Jatropha curcas</i> (L.) plantation in degraded lands / Wani, SP ; Chander, G ; Sahrawat, KL ; Rao, CS ; Raghvendra, G ; Susanna, P ; Pavani, M. OCT 2012.</p> <p>1. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, Andhra Pradesh, India</p>	1	1	1	7

		<p>Long-term soil quality degradation along a cultivation chronosequence in western Kenya / Moebius-Clune, B. N.; van Es, H. M.; Idowu, O. J.; Schindelbeck, R. R.; Kimetu, J. M.; Ngoze, S.; Lehmann, J.; Kinyangi, J. M. APR 2011.</p> <p>1. Cornell Univ, Dept Crop & Soil Sci, Ithaca, NY 14853 USA</p> <p>2. New Mexico State Univ, Dept Extens Plant Sci, Las Cruces, NM 88003 USA</p> <p>3. Int Livestock Res Inst, CGIAR ESSP Program Climate Change Agr & Food Secu, Nairobi, Kenya</p>	11	1	3	8
		<p>Management and land use change effects on soil carbon in northern China's grasslands: a synthesis / Wang, Shiping; Wilkes, Andreas; Zhang, Zhicai; Chang, Xiaofeng; Lang, Rong; Wang, Yanfen; Niu, Haishan. AUG 2011. <i>Title differs from that in pubs list.</i></p> <p>1. World Agroforestry Ctr ICRAF China Programme, Beijing 10049, Peoples R China</p> <p>2. Chinese Acad Sci, Inst Tibetan Plateau Res, Beijing 100085, Peoples R China</p> <p>3. Chinese Acad Sci, Kunming Inst Bot, Ctr Mt Ecosyst Studies, Kunming 650204, Peoples R China</p> <p>4. World Agroforestry Ctr ICRAF China Programme, Beijing 100081, Peoples R China</p> <p>5. Chinese Acad Sci, NW Inst Plateau Biol, Key Lab Adapt & Evolut Plateau Biota, Xining 810008, Peoples R China</p>	12	1	2	5
Agroforestry systems	1.373					

		<p>Climate change and tree genetic resource management: maintaining and enhancing the productivity and value of smallholder tropical agroforestry landscapes. A review / Dawson, Ian K.; Vinceti, Barbara; Weber, John C.; Neufeldt, H ; Russell, J ; Lengkeek, AG; Kalinganire, A ; Kindt, R ; Lilleso, JPB ; Roshetko, J ; Jamnadass, R. JAN 2011.</p> <p>1. World Agroforestry Ctr, Nairobi, Kenya 2. Biovers Int, I-00057 Rome, Italy 3. World Agroforestry Ctr, W & Cent Africa Sahel Reg Off, Bamako, Mali 4. Scottish Crop Res Inst, Dundee DD2 5DA, Scotland 5. Tree Domesticat Team, NL-6708 PW Wageningen, Netherlands 6. Univ Copenhagen, DK-2970 Horsholm, Denmark 7. Winrock Int Livestock Res & Training Ctr, Morrilton, AR USA 8. World Agroforestry Ctr, SE Asia Reg Off, Bogor, Indonesia</p>	8	1	6	11
Agronomy journal	1.518					
		<p>Can Integration of Legume Trees Increase Yield Stability in Rainfed Maize Cropping Systems in Southern Africa? / Sileshi, Gudeta W.; Debusho, Legesse Kassa; Akinnifesi, Festus K. 2012.</p> <p>1. World Agroforestry Ctr ICRAF, So Africa Reg Programme, Chitedze Agr Res Stn, Lilongwe, Malawi 2. Univ Pretoria, Dep Stat, ZA-0028 Hatfield, South Africa 3. CFNI, Dallas, TX 75224 USA</p>	0	1	3	3
American journal of botany	2.586					
		<p>ISOLATION AND CHARACTERIZATION OF NOVEL MICROSATELLITE MARKERS FOR AVENA SATIVA (POACEAE) (OAT) / Wu, Bin; Zhang, Zongwen; Chen, Lingyun; He, Minggao. FEB 2012.</p> <p>1. Chinese Acad Agr Sci, Inst Crop Sci, Beijing 100081, Peoples R China 2. Chinese Acad Agr Sci, Off E Asia, Beijing 100081, Peoples R China</p>	1	0	1	4

Animal feed science and technology	1.608					
		<p>Livestock and greenhouse gas emissions: The importance of getting the numbers right / Herrero, M ; Gerber, P ; Vellinga, T ; Garnett, T ; Leip, A ; Opio, C ; Westhoek, HJ ; Thornton, PK ; Olesen, J ; Hutchings, N ; Montgomery, H ; Soussana, JF ; Steinfeld, H ; McAllister, TA. JUN 2011.</p> <p>1. Int Livestock Res Inst, Nairobi, Kenya</p> <p>2. Food & Agr Org United Nations, Anim Prod & Hlth Div, Rome, Italy</p> <p>3. Univ Wageningen & Res Ctr, Anim Sci Grp, Wageningen, Netherlands</p> <p>4. Univ Surrey, Ctr Environm Strategy, Surrey, England</p> <p>5. Commiss European Communities, Joint Res Ctr, Inst Environm & Sustainabil, I-21020 Ispra, VA, Italy</p> <p>6. Netherlands Environm Assessment Agcy PBL, Bilthoven, Netherlands</p> <p>7. Aarhus Univ, Dept Agroecol & Environm, Tjele, Denmark</p> <p>8. Minist Agr Forestry, Wellington, New Zealand</p> <p>9. Inst Natl Rech Agronom, Clermont Ferrand, France</p> <p>10. Agr & Agri Food Canada, Lethbridge Res Ctr, Calgary, AB, Canada</p>	3	1	10	14
Annual review of environment and resources	4.968					
		<p>Climate Change and Food Systems / Vermeulen, Sonja J.; Campbell, Bruce M.; Ingram, John S. I. 2012.</p> <p>1. Univ Copenhagen, Dept Plant & Environm Sci, DK-1958 Frederiksberg C, Denmark</p> <p>2. Consortium Int Agr Res Ctr Res Program Climate Ch, DK-1958 Frederiksberg C, Denmark</p> <p>3. Ctr Int Agr Trop, Cali, Colombia</p> <p>4. Univ Oxford, Environm Change Inst, Oxford OX1 3QY, England</p> <p>5. NERC, Swindon SN2 1EU, Wilts, England</p>	3	1	3	3

Asian journal of agricultural research	N/A					
		Effect of drought on <i>Oryza glaberrima</i> rice accessions and <i>Oryza glaberrima</i> derived-lines / Ndjondjop, M. N. ; Seck, P. A. ; Lorieux, M. ; Futakuchi, K. ; Yao, K. N. ; Djedatin, G. ; Sow, M. E. ; Bocco, R. ; Cisse, F. ; Fatondji, B. 2012. 1. Africa Rice Center, Cotonou, Benin 2. Institut d'Economie Rurale, Sikasso, Mali 3. IRD/CIAT, Agrobiodiversity and Biotechnology Unit, Int Center for Tropical Agriculture, Cali, Colombia	0	2	3	10
Bioscience	4.739					
		Crop Wild Relatives-Undervalued, Underutilized and under Threat? / Ford-Lloyd, Brian V.; Schmidt, Markus; Armstrong, Susan J.; Barazani, O ; Engels, J ; Hadas, R ; Hammer, K ; Kell, SP ; Kang, DM ; Khoshbakht, K ; Li, YH ; Long, CL ; Lu, BR ; Ma, KP ; Nguyen, VT ; Qiu, LJ ; Ge, S ; Wei, W ; Zhang, ZW ; Maxted, N. JUL 2011. 1. Univ Birmingham, Sch Biosci, Birmingham B15 2TT, W Midlands, England 2. Org Int Dialogue & Conflict Management, Vienna, Austria 3. Inst Plant Sci, Israel Plant Gene Bank, Bet Dagan, Israel 4. Biovers Int, Rome, Italy 5. Univ Kassel, Witzenhausen, Germany 6. China Agr Univ, Coll Agron & Biotechnol, Plant Genet Breeding Dept, Beijing 100094, Peoples R China 7. Chinese Acad Agr Sci, Inst Crop Sci, Beijing 100193, Peoples R China 8. Chinese Acad Sci, Kunming Inst Bot, Yunnan, Peoples R China 9. Fudan Univ, Shanghai 200433, Peoples R China 10. Chinese Acad Sci, Inst Bot, Beijing, Peoples R China 11. Hanoi Univ Agr, Hanoi, Vietnam 12. Biovers Int, Beijing, Peoples R China	10	1	11	20
British journal of environment and climate	N/A					

change						
		<p>Potential impact of climate change on termite distribution in Africa / Ahmed, B. M. ; Nkunika, P. O. Y. ; Sileshi, G. W. ; French, J. R. J. ; Nyeko, P. ; Jain, S. 2011.</p> <p>1. Dept of Forest and Ecosystem Science, University of Melbourne</p> <p>2. Dept of Biological Sciences, University of Zambia, P.O. Box 32379, Lusaka, Zambia</p> <p>3. World Agroforestry Centre (ICRAF), P.O. Box 30798, Lilongwe, Malawi</p> <p>4. Faculty of Science, Health and Education, University of the Sunshine Coast, Maroochydore, Australia</p> <p>5. Dept of Forestry, Biodiversity and Tourism, Makerere University, P.O. Box 7062, Kampala, Uganda</p> <p>6. Dept of Mathematics and statistics, University of Zambia, P.O. Box 32379, Lusaka, Zambia</p>	1	1	6	6
Canadian journal of plant science	0.716					
		<p>Identification of early-maturing maize inbred lines based on multiple traits under drought and low N environments for hybrid development and population improvement / Badu-Apraku, B.; Akinwale, R. O. 2011.</p> <p>1. IITA UK Ltd, IITA, Croydon CR9 3EE, England</p>	2	1	1	2
Carbon management	2.068					
		<p>Lessons from Reducing Emissions from Deforestation and Degradation: advancing agriculture in the UN Framework Convention on Climate Change / Negra, Christine; Wollenberg, Eva. APR 2011.</p> <p>1. H John Heinz III Ctr Sci Econ & Environm, Washington, DC 20006 USA</p> <p>2. Univ Vermont, Propoor Climate Change Mitigat Program Climate Ch, Burlington, VT 05405 USA</p>	0	0	2	2
Climatic change	3.634					

		Multi-year variability or unidirectional trends? Mapping long-term precipitation and temperature changes in continental Southeast Asia using PRECIS regional climate model / Lacombe, Guillaume; Chu Thai Hoanh; Smakhtin, Vladimir. 2012. 1. Int Water Management Inst, Headquarters 127, Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka 2. SE Asia Off, Int Water Management Inst, Viangchan, Laos 3. Int Water Management Inst, Pelawatte, Battaramulla, Sri Lanka	3	1	1	3
		Carbon sequestration potential of parkland agroforestry in the Sahel / Luedeling, Eike; Neufeldt, Henry. DEC 2012. 1. World Agroforestry Ctr ICRAF, Nairobi, Kenya	1	1	1	2
		Can agriculture support climate change adaptation, greenhouse gas mitigation and rural livelihoods? insights from Kenya / Bryan, E ; Ringler, C ; Okoba, B ; Koo, J ; Herrero, M ; Silvestri, S. MAY 2013. 1. Int Food Policy Res Inst, Washington, DC 20006 USA 2. Kenya Agr Res Inst Kabete, Nairobi, Kenya 3. Int Livestock Res Inst, Nairobi 00100, Kenya	0	2	3	6
		A way forward on adaptation to climate change in Colombian agriculture: perspectives towards 2050 / Ramirez-Villegas, J ; Salazar, M ; Jarvis, A ; Navarro-Racines, CE. DEC 2012. 1. CGIAR Res Program Climate Change Agr & Food Secur, Cali, Colombia 2. Ctr Int Agr Trop, Cali 6713, Colombia 3. Univ Leeds, Sch Earth & Environm, Leeds, W Yorkshire, England 4. Reg Off Amer, Biovers Int, Cali 6713, Colombia	2	2	3	4

		<p>East African food security as influenced by future climate change and land use change at local to regional scales / Moore, N ; Alagarswamy, G ; Pijanowski, B ; Thornton, P ; Lofgren, B ; Olson, J ; Andresen, J ; Yanda, P ; Qi, JG. FEB 2012.</p> <p>1. Michigan State Univ, Dept Geog, E Lansing, MI 48823 USA</p> <p>2. Zhejiang Univ, Coll Environm & Resource Sci, Hangzhou 310003, Zhejiang, Peoples R China</p> <p>3. Michigan State Univ, CGCEO, E Lansing, MI 48823 USA</p> <p>4. Purdue Univ, Dept Forestry & Nat Resources, W Lafayette, IN 47906 USA</p> <p>5. Int Livestock Res Inst, Nairobi 00100, Kenya</p> <p>6. Great Lakes Env Res Lab, Ann Arbor, MI 48108 USA</p> <p>7. Univ Dar Es Salaam, Inst Resources Assessment, Dar Es Salaam, Tanzania</p>	3	1	7	8
Crop science	1.513					
		<p>Drought Adaptive Traits and Wide Adaptation in Elite Lines Derived from Resynthesized Hexaploid Wheat / Lopes, Marta S.; Reynolds, Matthew P. JUL 2011.</p> <p>1. CIMMYT, Mexico City 06600, DF, Mexico</p>	4	1	1	2
Current opinion in environmental sustainability	3.168					
		<p>A vision for attaining food security / Misselhorn, A ; Aggarwal, P ; Ericksen, P ; Gregory, P ; Horn-Phathanothai, L ; Ingram, J ; Wiebe, K. MAR 2012.</p> <p>1. Univ KwaZulu Natal, Hlth Econ & HIV & Aids Res Div, ZA-4000 Durban, South Africa</p> <p>2. Int Water Management Inst, CGIAR Res Program Climate Change Agr & Food Secur, New Delhi 110012, India</p> <p>3. Int Livestock Res Inst, Nairobi 00100, Kenya</p> <p>4. E Malling Res, E Malling ME19 6BJ, England</p> <p>5. Univ Reading, Ctr Food Secur, Sch Agr Policy & Dev, Reading RG6 6AR, Berks, England</p> <p>6. World Resources Inst, Washington, DC 20002 USA</p>	3	2	7	7

		<p>7. Univ Oxford, Environm Change Inst, Ctr Environm, Oxford OX1 3QY, England</p> <p>8. Food & Agr Org United Nations FAO, Agr Dev Econ Div ESA, I-00153 Rome, Italy</p>				
		<p>Climate change, agriculture and food security: a global partnership to link research and action for low-income agricultural producers and consumers / Vermeulen, S ; Zougmore, R ; Wollenberg, E ; Thornton, P ; Nelson, G ; Kristjanson, P ; Kinyangi, J ; Jarvis, A ; Hansen, J ; Challinor, A ; Campbell, B ; Aggarwal, P. MAR 2012.</p> <p>1. Univ Copenhagen, CCAFS Coordinating Unit, Dept Agr & Ecol, Fac Life Sci, DK-1958 Frederiksberg C, Denmark</p> <p>2. Int Crops Res Inst Semi Arid Trop, Bamako, Mali</p> <p>3. Univ Vermont, Burlington, VT 05405 USA</p> <p>4. Int Livestock Res Inst, Nairobi 00100, Kenya</p> <p>5. Int Food Policy Res Inst, Washington, DC 20006 USA</p> <p>6. World Agroforestry Ctr, Nairobi 00100, Kenya</p> <p>7. Ctr Int Agr Trop, Cali, Colombia</p> <p>8. Columbia Univ, Int Res Ctr Climate & Soc, Palisades, NY 10964 USA</p> <p>9. Univ Leeds, Inst Climate & Atmospher Sci, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England</p> <p>10. Int Water Management Inst, New Delhi 110012, India</p>	3	5	10	12
Current science	0.905					
		<p>Low-cost facility for assessing impact of carbon dioxide on crops / Chakrabarti, B ; Singh, SD ; Kumar, SN ; Aggarwal, PK ; Pathak, H ; Nagarajan, S. APR 2012.</p> <p>1. Indian Agr Res Inst, New Delhi 110012, India</p> <p>2. CGIAR Res Programme Climate Change Agr & Food Sec, Int Water Management Inst, New Delhi 110012, India</p>	0	1	2	6
		<p>Impact of climate change on crop productivity in Western Ghats, coastal and northeastern regions of India / Kumar, S. Naresh; Aggarwal, P. K.; Rani, Swaroopa; Jain, Surabhi; Saxena, Rani; Chauhan, Nitin. AUG 2011.</p>	2	1	2	6

		1. Indian Agr Res Inst, Div Environm Sci, New Delhi 110012, India				
Ecology and Society	2.831					
		<p>Using Coupled Simulation Models to Link Pastoral Decision Making and Ecosystem Services / Boone, Randall B.; Galvin, Kathleen A.; BurnSilver, Shauna B.; et al. 2011.</p> <p>1. Colorado State Univ, Nat Resource Ecol Lab, Ft Collins, CO 80523 USA.</p> <p>2. Colorado State Univ, Dept Forestry Rangeland & Watershed Stewardship, Ft Collins, CO 80523 USA.</p> <p>3. Colorado State Univ, Dept Anthropol, Ft Collins, CO 80523 USA.</p> <p>4. Univ Alaska, Agr & Forestry Expt Stn, Fairbanks, AK 99701 USA.</p> <p>5. Univ Edinburgh, Edinburgh EH8 9YL, Midlothian, Scotland</p>	2	1	5	5
Economía Agraria y Recursos Naturales	N/A					
		<p>The economics of agrobiodiversity conservation for food security under climate change / Pascual, U.; Narloch, U.; Nordhagen, S.; Drucker, A. G. 2011.</p> <p>1. Department of Land Economy, University of Cambridge, 19 Silver Street, CB39EP, Cambridge, UK.</p> <p>2. Basque Centre for Climate Change (BC3) and IKERBASQUE, Basque Foundation for Science. Alameda Urquijo, 48011 Bilbao, Basque Country.</p> <p>3. Bioversity International, Rome, Via dei Tre Denari 472/a, 00057 Maccarese Fiumicino, Rome, Italy.</p>	0	1	3	3
Ecosphere	N/A					

		<p>A metamodeling framework for extending the application domain of process-based ecological models / Sparks, A. H.; Forbes, G. A.; Hijmans, R. J.; Garrett, K. A. 2011.</p> <p>1. Department of Plant Pathology, Kansas State University, Manhattan, Kansas 66506-5502 USA</p> <p>2. International Potato Center, Apartado 1558, Lima 12, Peru</p> <p>3. Department of Environmental Science and Policy, University of California, Davis, California 95616 USA</p>	2	1	3	3
Environmental modelling & software	3.476					
		<p>Improving daily rainfall estimation from NDVI using a wavelet transform / Quiroz, Roberto; Yarleque, Christian; Posadas, Adolfo; Mares, Victor; Immerzeel, Walter W. FEB 2011.</p> <p>1. Int Potato Ctr, Lima, Peru</p> <p>2. FutureWater, Wageningen, Netherlands</p>	5	1	2	5
Environmental science and policy	2.978					

	<p>Challenges and opportunities in linking carbon sequestration, livelihoods and ecosystem service provision in drylands / Stringer, LC ; Dougill, AJ ; Thomas, AD ; Spracklen, DV ; Chesterman, S ; Speranza, CI ; Rueff, H ; Riddell, M ; Williams, M ; Beedy, T ; Abson, DJ ; Klintenberg, P ; Syampungani, S ; Powell, P ; Palmer, AR ; Seely, MK ; Mkwambisi, DD ; Falcao, M ; Siteo, A ; Ross, S ; Kopolo, G. MAY-JUN 2012.</p> <p>1. Univ Leeds, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England</p> <p>2. Manchester Metropolitan Univ, Sch Sci & Environm, Manchester M1 5GD, Lancs, England</p> <p>3. Univ Bern, CDE, CH-3012 Bern, Switzerland</p> <p>4. BioClimate, Res & Dev, Edinburgh EH16 6AE, Midlothian, Scotland</p> <p>5. Univ Edinburgh, Sch Geosci, Edinburgh EH9 3JN, Midlothian, Scotland</p> <p>6. World Agroforestry Ctr So Africa, Lilongwe, Malawi</p> <p>7. Desert Res Fdn Namibia, Board Trustees, Windhoek, Namibia</p> <p>8. Copperbelt Univ, Sch Nat Resources, Dept Plant & Environm Sci, Kitwe, Zambia</p> <p>9. Ecolivelihoods Ltd, Apricot Cottage, Collingham LS22 5AR, W Yorks, England</p> <p>10. Agr Res Council Anim Prod Inst, Grahamstown, South Africa</p> <p>11. Univ Malawi, Bunda Coll Agr, Lilongwe, Malawi</p> <p>12. Eduardo Mondlane Univ, Dept Forestry, Maputo, Mozambique</p> <p>13. D1 Oils Plc, London EC4A 2AB, England</p> <p>14. Zambia Biochar Trust, Lusaka, Zambia</p> <p>15. Eduardo Mondlane Univ, Fac Agron & Forestry Engrn, Forestry Engrn Dept, Maputo, Mozambique</p>	9	1	15	21
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		<p>Modified taungya system in Ghana: a win-win practice for forestry and adaptation to climate change? / Kalame, Fobissie B.; Aicloo, Robert; Nkem, Johnson; Ajayie, Oluyede C.; Kanninen, Markku; Luukkanen, Olavi; Idinoba, Monica. AUG 2011.</p> <p>1. Univ Helsinki, Viikki Trop Resources Inst VTTRI, Dept Forest Sci, FIN-00014 Helsinki, Finland</p> <p>2. Kwame Nkrumah Univ Sci & Technol KNUST, Kumasi, Ghana</p> <p>3. United Nations Off Nairobi Gigiri, United Nations Dev Programme, Nairobi, Kenya</p> <p>4. World Agroforestry Ctr ICRAF, Lilongwe, Malawi</p> <p>5. African Union Commiss, Addis Ababa, Ethiopia</p>	0			
		<p>Options for support to agriculture and food security under climate change / Vermeulen, SJ ; Aggarwal, PK ; Ainslie, A ; Angelone, C ; Campbell, BM ; Challinor, AJ ; Hansen, JW ; Ingram, JSI ; Jarvis, A ; Kristjanson, P ; Lau, C ; Nelson, GC ; Thornton, PK ; Wollenberg, E. JAN 2012.</p> <p>1. Univ Copenhagen, Dept Agr & Ecol, Fac Life Sci, CGIAR ESSP, Program Climate Change Agr & Food Secu, DK-1958 Frederiksberg C, Denmark</p> <p>2. Univ Copenhagen, Fac LIFE, DK-1870 Frederiksberg C, Denmark</p> <p>3. Int Water Management Inst, Pelawatte, Battaramulla, Sri Lanka</p> <p>4. Oxford Brookes Univ, Dept Geog & Anthropol, Oxford OX3 0BP, England</p> <p>5. Univ Vermont, Burlington, VT 05401 USA</p> <p>6. Int Livestock Res Inst, Nairobi 00100, Kenya</p> <p>7. Univ Leeds, Inst Climate & Atmospher Sci, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England</p> <p>8. Columbia Univ, Earth Inst, Int Res Inst Climate & Soc, Palisades, NY 10964 USA</p> <p>9. Univ Oxford, Environm Change Unit, Oxford OX1 3QY, England</p> <p>10. Ctr Int Agr Trop, Cali, Colombia</p> <p>11. World Agroforestry Ctr, Nairobi 00100, Kenya</p> <p>12. Int Food Policy Res Inst, Washington, DC USA</p>	8	5	12	14

Euphytica	1.643					
		New genetic sources of resistance in the genus Phaseolus to individual and combined aluminium toxicity and progressive soil drying stresses / : Butare, Louis; Rao, Idupulapati; Lepoivre, Philippe; Polania, J ; Cajiao, C ; Cuasquer, J ; Beebe, S. OCT 2011. 1. Ctr Int Agr Trop CIAT, Cali, Colombia 2. Univ Liege ULg, Gembloux Agrobio Tech, Unite Phytopathol, B-5030 Gembloux, Belgium 3. Inst Sci Agron Rwanda ISAR, Kigali, Rwanda	2	1	3	7
European journal of agronomy	2.8					
		Variation in time of day of anthesis in rice in different climatic environments / Julia, Cecile; Dingkuhn, Michael. 2012. 1. CIRAD, BIOS Dept, UMR AGAP, F-34398 Montpellier, France 2. Int Rice Res Inst, CESD, Manila, Philippines	1	1	2	2
Experimental agriculture	1.062					
		ASSESSING AND ADDRESSING CLIMATE-INDUCED RISK IN SUB-SAHARAN RAINFED AGRICULTURE FOREWORD TO A SPECIAL ISSUE OF EXPERIMENTAL AGRICULTURE / Cooper, P. J. M.; Coe, R. APR 2011. [See also article below; not in pubs list, but similar title and authors] 1. Univ Reading, Reading RG6 2AH, Berks, England 2. World Agroforestry Ctr, Nairobi, Kenya	3	1	2	2
		ASSESSING AND ADDRESSING CLIMATE-INDUCED RISK IN SUB-SAHARAN RAINFED AGRICULTURE: LESSONS LEARNED / Coe, R ; Stern, RD. APR 2011. 1. Univ Reading, Reading RG6 2AH, Berks, England 2. World Agroforestry Ctr, Nairobi 00100, Kenya	1	1	2	2
		ADDING VALUE TO FIELD-BASED AGRONOMIC RESEARCH THROUGH CLIMATE RISK ASSESSMENT: A CASE STUDY OF MAIZE PRODUCTION IN KITALE, KENYA / Dixit, P. N.; Cooper, P. J. M.; Dimes, J.; Rao, K. P. APR 2011. 1. Int Crops Res Inst Semi Arid Trop, Nairobi 00623, Kenya 2. Int Crops Res Inst Semi Arid Trop, Bulawayo, Zimbabwe	5	1	1	4

		CLIMATE-AND LAND USE-INDUCED RISKS TO WATERSHED SERVICES IN THE NYANDO RIVER BASIN, KENYA / Gathenya, Mwangi; Mwangi, Hosea; Coe, Richard; Sang, Joseph. APR 2011. 1. Jomo Kenyatta Univ Agr & Technol, Nairobi, Kenya 2. World Agroforestry Ctr, Nairobi, Kenya	3	1	2	4
		REVIEW OF SEASONAL CLIMATE FORECASTING FOR AGRICULTURE IN SUB-SAHARAN AFRICA / Hansen, James W.; Mason, Simon J.; Sun, Liqiang; Tall, Arame. APR 2011. 1. Columbia Univ, Challenge Program Climate Change Agr & Food Secur, Palisades, NY USA 2. Columbia Univ, Int Res Inst fir Climate & Soc, Earth Inst, Palisades, NY USA 3. Johns Hopkins Univ, African Studies SAIS, Baltimore, MD USA	11	1	2	3
		AN INTEGRATED ADAPTATION AND MITIGATION FRAMEWORK FOR DEVELOPING AGRICULTURAL RESEARCH: SYNERGIES AND TRADE-OFFS / Jarvis, Andy; Lau, Charlotte; Cook, Simon; Wollenberg, Eva; Hansen, James; Bonilla, Osana; Challinor, Andy. APR 2011. 1. Int Ctr Trop Agr CIAT, Cali, Colombia 2. Univ Vermont, Burlington, VT 05405 USA 3. Columbia Univ & Palisades, Earth Inst, Int Res Inst Climate & Soc, New York, NY USA 4. Univ Leeds, Leeds LS2 9JT, W Yorkshire, England	9	1	4	7
		CLIMATE VARIABILITY AND CHANGE: FARMER PERCEPTIONS AND UNDERSTANDING OF INTRA-SEASONAL VARIABILITY IN RAINFALL AND ASSOCIATED RISK IN SEMI-ARID KENYA / Rao, K. P. C.; Ndegwa, W. G.; Kizito, K.; Oyoo, A. APR 2011. 1. Int Crops Res Inst Semi Arid Trop, Nairobi, Kenya	6	1	1	4
Field Actions Science Reports	N/A					

		Scaling up Agroforestry to Achieve Food Security and Environmental Protection among Smallholder Farmers in Malawi / T.L. Beedy, O.C. Ajayi, G.W. Sileshi, G. Kundhlande, G. Chiundu, A.J. Simons. 2012. 1. World Agroforestry Centre (ICRAF)-Southern Africa, Lilongwe, Malawi 2. World Agroforestry Centre (ICRAF), Nairobi, Kenya 3. World Agroforestry Centre (ICRAF)-Southern Africa, Lilongwe, Malawi	N/A	1	1	6
Field crops research	2.474					
		Climate effects on yield components as affected by genotypic responses to variable environmental conditions in upland rice systems at different altitudes / Shrestha, S ; Asch, F ; Dusserre, J ; Ramanantsoanirina, A ; Brueck, H. AUG 2012. 1. Univ Hohenheim, Inst Plant Prod & Agroecol Trop & Subtrop, Dept Plant Prod & Agroecol Trop & Subtrop, Sect Crop Water Stress Management, D-70599 Stuttgart, Germany 2. Agr Res Developing Countries CIRAD, Res Unit Partnership Sustainable Farming & Rice C, Antsirabe, Madagascar 3. Natl Ctr Appl Res & Rural Dev FOFIFA, Res Unit Partnership Sustainable Farming & Rice C, Antsirabe, Madagascar	1	0	3	5
		Influence of climate variability on seasonal and interannual variations of ecosystem CO2 exchange in flooded and non-flooded rice fields in the Philippines / Alberto, Ma Carmelita R.; Hirano, Takashi; Miyata, Akira; et al. AUG 2012. 1. Int Rice Res Inst, Los Banos 4031, Laguna, Philippines 2. Hokkaido Univ, Res Fac Agr, Sapporo, Hokkaido, Japan 3. Natl Inst Agroenvironm Sci, Tsukuba, Ibaraki 305, Japan 4. Karlsruhe Inst Technol, Karlsruhe, Germany	1	1	4	3
		Do barley and wheat (bread and durum) differ in grain weight stability through seasons and water-nitrogen treatments in a Mediterranean location? / Cossani, C. Mariano; Slafer, Gustavo A.; Savin, Roxana. MAR 2011. 1. Univ Lleida, Dept Crop & Forest Sci, Ctr UdL IRTA, Lleida	3	0	1	3

		25198, Spain				
		Wheat yield and tillage-straw management system x year interaction explained by climatic co-variables for an irrigated bed planting system in northwestern Mexico / Verhulst, Nele; Sayre, Ken D.; Vargas, Mateo; Crossa, Jose; Deckers, Jozef; Raes, Dirk; Goyaerts, Bram. DEC 2011. 1. CIMMYT, Int Maize & Wheat Improvement Ctr, Mexico City 06600, DF, Mexico 2. Katholieke Univ Leuven, Dept Earth & Environm Sci, B-3001 Heverlee, Belgium 3. Univ Autonoma Chapingo, Mexico City 56230, DF, Mexico	2	1	3	7
Food security	2.072					
		Are food insecure smallholder households making changes in their farming practices? Evidence from East Africa / Kristjanson, P ; Neufeldt, H ; Gassner, A ; Mango, J ; Kyazze, FB ; Desta, S ; Sayula, G ; Thiede, B ; Forch, W ; Thornton, PK ; Coe, R. 2012. 1. World Agroforestry Ctr, Climate Change Agr & Food Secur Program CCAFS, Nairobi 00100, Kenya 2. Makerere Univ, Dept Extens & Innovat Studies, Kampala, Uganda 3. Managing Risk Improved Livelihood MARIL, Addis Ababa, Ethiopia 4. Selian Agr Res Inst, Arusha, Tanzania 5. Cornell Univ, Ithaca, NY USA 6. Int Livestock Res Inst, CCAFS Program, Nairobi, Kenya 7. Int Livestock Res Inst, CGIAR Res Programme Climate Change Agr & Food Sec, Nairobi, Kenya	3	2	6	10
		Adaptation to climate change for food security in the lower Mekong Basin / Mainuddin, Mohammed; Kirby, Mac; Hoanh, Chu Thai. DEC 2011. 1. CSIRO Land & Water, Canberra 2. SE Asia Reg Off, Int Water Management Inst, Viangchan, Laos	1	1	2	2

		<p>The socioeconomics of food crop production and climate change vulnerability: a global scale quantitative analysis of how grain crops are sensitive to drought / Simelton, E ; Fraser, EDG ; Termansen, M ; Benton, TG ; Gosling, SN ; South, A ; Arnell, NW ; Challinor, AJ ; Dougill, AJ ; Forster, PM. JUN 2012.</p> <p>1. Univ Leeds, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England</p> <p>2. World Agroforestry Ctr ICRAF, Hanoi, Vietnam</p> <p>3. Univ Guelph, Dept Geog, Coll Human & Appl Social Sci, Guelph, ON N1G 2W1, Canada</p> <p>4. Univ Aarhus, Dept Environm Sci, Roskilde, Denmark</p> <p>5. Univ Leeds, Fac Biol Sci, Leeds LS2 9JT, W Yorkshire, England</p> <p>6. Univ Nottingham, Sch Geog, Nottingham NG7 2RD, England</p> <p>7. Univ Reading, Dept Meteorol, Walker Inst, Reading, Berks, England</p> <p>8. Univ Leeds, Sch Earth & Environm, Inst Climate & Atmospher Sci, Leeds LS2 9JT, W Yorkshire, England</p>	3	1	8	10
		<p>Cassava and overcoming the challenges of global climatic change: report of the second scientific conference of the Global Cassava Partnership for the 21st century / Glenn Hyman, Anthony Bellotti, Luis Augusto Becerra Lopez-Lavalle, Neil Palmer, Bernado Creamer. 2012.</p> <p>1. International Center for Tropical Agriculture (CIAT), Cali, Valle del Cauca, Colombia</p>	N/A	1	1	5
		<p>Threats to cassava production: known and potential geographic distribution of four key biotic constraints / Herrera Campo, Beatriz Vanessa; Hyman, Glenn; Bellotti, Anthony. SEP 2011.</p> <p>1. Ctr Int Agr Trop, Cali 6713, Colombia</p>	1	1	1	3
Food technology	0.363					
		<p>Perspective (: adapt now to climate change) / Luedeling, Eike. SEP 2011. <i>[article title differs in Web of Science]</i></p> <p>1. World Agroforestry Ctr ICRAF, Nairobi, Kenya</p>	0	1	1	1
Forests	1.094					

		<p>Do Anthropogenic Dark Earths Occur in the Interior of Borneo? Some Initial Observations from East Kalimantan / Sheil, D ; Basuki, I ; German, L ; Kuyper, TW ; Limberg, G ; Puri, RK ; Sellato, B ; van Noordwijk, M ; Wollenberg, E. JUN 2012.</p> <p>1. Inst Trop Forest Conservat, Kabale, Uganda</p> <p>2. So Cross Univ, Sch Environm Sci & Management, Lismore, NSW</p> <p>3. Ctr Int Forestry Res CIFOR, Bogor 16000, Indonesia</p> <p>4. Univ Georgia, Dept Anthropol, Athens, GA 30602 USA</p> <p>5. Wageningen Univ, Dept Soil Qual, NL-6700 AA Wageningen, Netherlands</p> <p>6. Komplek Lab Pusat UNAS, Fauna & Flora Int Indonesia Program, Jakarta 12550, Indonesia</p> <p>7. Univ Kent, Sch Anthropol & Conservat, Ctr BioCultural Divers, Canterbury CT2 7NR, Kent, England</p> <p>8. CNRS, Ctr Asie Sud Est, F-75016 Paris, France</p> <p>9. Ecole Hautes Etud Sci Sociales, F-75016 Paris, France</p> <p>10. Jalan CIFOR, ICRAF Southeast Asia, World Agroforestry Ctr, Bogor 16115, Indonesia</p> <p>11. Univ Vermont, Gund Inst Ecol Econ, Burlington, VT 05405 USA</p> <p>12. Univ Vermont, Rubenstein Sch Environm & Nat Resources, Burlington, VT 05405 USA</p>	1	2	10	9
Frontiers in physiology	N/A					
		<p>Bridging the phenotypic and genetic data useful for integrated breeding through a data annotation using the Crop Ontology developed by the crop communities of practice / Shrestha, Rosemary; Matteis, Luca; Skofic, Milko; Portugal, Arlet; McLaren, Graham; Hyman, Glenn; Arnaud, Elizabeth. 2012.</p> <p>1. Genetic Resources Program, Centro Internacional de Mejoramiento de Maiz y Trigo, Texcoco, Edo. de México, Mexico</p> <p>2. Bioversity International, Maccaresse, Rome, Italy</p> <p>3. Generation Challenge Programme, Centro Internacional de Mejoramiento de Maiz y Trigo, Texcoco, Edo. de México, Mexico</p> <p>4. Centro Internacional de Agricultura Tropical, Cali, Colombia</p>	0	2	4	7

Functional and integrative genomics	3.292					
		Carbohydrate metabolism and cell protection mechanisms differentiate drought tolerance and sensitivity in advanced potato clones (<i>Solanum tuberosum</i> L.) / Legay, Sylvain; Lefevre, Isabelle; Lamoureux, Didier; Barreda, Carolina; Luz, Rosalina Tincopa; Gutierrez, Raymundo; Quiroz, Roberto; Hoffmann, Lucien; Hausman, Jean-Francois; Bonierbale, Merideth; Evers, Daniele; Schafleitner, Rolan. JUN 2011. 1. Ctr Rech Publ Gabriel Lippmann, Dept Environm & Agrobiotechnol EVA, L-4422 Belvaux, Luxembourg 2. Int Potato Ctr, Germplasm Enhancement & Crop Improvement Div, Lima 12, Peru	7	1	2	12
Functional plant biology	2.471					
		Does susceptibility to heat stress confound screening for drought tolerance in rice? / Jagadish, Krishna S. V.; Cairns, Jill E.; Kumar, Arvind; Somayanda, Impa; Craufurd, Peter Q. 2011. 1. Univ Reading, Plant Environm Lab, Reading RG2 9AF, Berks, England 2. IRRI, Plant Breeding Genet & Biotechnol Div, Manila, Philippines 3. IRRI, Crop & Environm Sci Div, Manila, Philippines 4. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, AP, India	4	2	3	5
		Crop improvement in the era of climate change: an integrated, multi-disciplinary approach for common bean (<i>Phaseolus vulgaris</i>) / McClean, Phillip E.; Burrridge, Jimmy; Beebe, Stephen; Rao, Idupulapati M.; Porch, Timothy G. 2011. 1. N Dakota State Univ, Genom & Bioinformat Program, Fargo, ND 58102 USA 2. N Dakota State Univ, Dept Plant Sci, Fargo, ND 58102 USA 3. Penn State Univ, Dept Hort, University Pk, PA 16802 USA 4. Ctr Int Agr Trop, Bean Program, Cali 6713, Colombia 5. ARS, USDA, Trop Agr Res Stn, Mayaguez, PR 00680 USA	4	1	4	5

Genetic resources and crop evolution	1.593					
		Digitization and online availability of original collecting mission data to improve data quality and enhance the conservation and use of plant genetic resources / Thormann, I ; Gaisberger, H ; Mattei, F ; Snook, L ; Arnaud, E. JUN 2012. 1. Biovers Int, Rome, Italy	1	1	1	5
Geoderma	2.345					
		Carbon replacement and stability changes in short-term silvo-pastoral experiments in Colombian Amazonia / Mosquera, O ; Buurman, P ; Ramirez, BL ; Amezquita, MC. JAN 2012. 1. CIAT, Lab Analyt Serv, Cali, Colombia 2. Wageningen Univ, Earth Syst Sci Grp, NL-6700 AA Wageningen, Netherlands 3. Univ Amazonia, Caqueta, Colombia 4. Fdn Univ Catolica Lumen Gentium, Cali, Colombia	1	1	4	4
		Carbon stocks and dynamics under improved tropical pasture and silvopastoral systems in Colombian Amazonia / Mosquera, O ; Buurman, P ; Ramirez, BL ; Amezquita, MC. NOV 2012. 1. CIAT, Lab Analyt Serv, Cali, Colombia 2. Wageningen Univ, Earth Syst Sci Grp, NL-6700 AA Wageningen, Netherlands 3. Univ Amazonia, Caqueta, Colombia 4. Fdn Univ Catolica Lumen Gentium, Cali, Colombia	1	1	4	4
Global change biology	6.91					
		Towards an integrated global framework to assess the impacts of land use and management change on soil carbon: current capability and future vision / Smith, P ; Davies, CA ; Ogle, S ; Zanchi, G ; Bellarby, J ; Bird, N ; Boddey, RM ; McNamara, NP ; Powlson, D ; Cowie, A ; van Noordwijk, M ; Davis, SC ; Richter, DD ; Kryzanowski, L ; van Wijk, MT ; Stuart, J ; Kirton, A ; Eggar, D ; Newton-Cross, G ; Adhya, TK ; Braimoh, AK. JUL 2012. 1. Univ Aberdeen, Inst Biol & Environm Sci, Sch Biol Sci, Aberdeen AB24 3UU, Scotland	9	2	19	21

		<p>2. Shell Global Solut UK, Shell Technol Ctr Thornton, Chester CH1 3SH, Cheshire, England</p> <p>3. Colorado State Univ, Nat Resource Ecol Lab, Ft Collins, CO 80523 USA</p> <p>4. Colorado State Univ, Dept Ecosyst Sci & Sustainabil, Ft Collins, CO 80523 USA</p> <p>5. Joanneum Res, Resources Inst Water Energy & Sustainabil, A-8010 Graz, Austria</p> <p>6. Embrapa Agrobiol, BR-23890000 Rio De Janeiro, Brazil</p> <p>7. Lancaster Environm Ctr, Ctr Ecol & Hydrol, Lancaster LA1 4AP, England</p> <p>8. Rothamsted Res, Dept Sustainable Soils & Grassland Syst, Harpenden AL5 2JQ, Herts, England</p> <p>9. Univ New England, Natl Ctr Rural Greenhouse Gas Res, Armidale</p> <p>10. World Agroforestry Ctr ICRAF Situ Gede, Bogor 16115, Indonesia</p> <p>11. Univ Illinois, Dept Plant Biol, Urbana, IL 61801 USA</p> <p>12. Duke Univ, Nicholas Sch Environm, Durham, NC 27708 USA</p> <p>13. Govt Alberta Agr & Rural Dev, Land Use Sect, Edmonton, AB T6H 5T6, Canada</p> <p>14. Wageningen Univ, Plant Prod Syst Grp, NL-6708 PB Wageningen, NL, Netherlands</p> <p>15. ILRI, Nairobi, Kenya</p> <p>16. Soils Policy Team, London SW1P 3JR, England</p> <p>17. Inst Energy Technol, Loughborough LE11 3UZ, Leics, England</p> <p>18. BBSRC, Swindon SN2 1UH, Wilts, England</p> <p>19. Cent Rice Res Inst, Cuttack 753006, Orissa, India</p> <p>20. World Bank, Washington, DC 20433 USA</p>				
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		<p>Climate change effects on walnut pests in California / Luedeling, Eike; Steinmann, Kimberly P.; Zhang, Minghua; Brown, Patrick H.; Grant, Joseph; Girvetz, Evan H. JAN 2011.</p> <p>1. World Agroforestry Ctr ICRAF, Nairobi, Kenya</p> <p>2. Univ Calif Davis, Dept Plant Sci, Davis, CA 95616 USA</p> <p>3. Univ Calif Davis, Dept Land Air & Water Resources, Davis, CA 95616 USA</p> <p>4. Univ Calif Cooperat Extens, Stockton, CA 95206 USA</p> <p>5. Nat Conservancy Global Climate Change Program, Seattle, WA 98101 USA</p> <p>6. Univ Washington, Sch Forest Resources, Seattle, WA 98195 USA</p>	9	1	4	6
Global ecology and biogeography	7.223					
		<p>Potential impacts of climate change on the environmental services of humid tropical alpine regions / Buytaert, Wouter; Cuesta-Camacho, Francisco; Tobon, Conrado. JAN 2011.</p> <p>1. Univ London Imperial Coll Sci Technol & Med, London SW7 2AZ, England</p> <p>2. Consortium Sustainable Dev Andean Ecoreg CONDESAN, Quito, Ecuador</p> <p>3. Univ Nacl Colombia Con Sede Medellin, Medellin, Colombia</p>	18	0	3	3
Global environmental change	5.236					

		<p>Can marine fisheries and aquaculture meet fish demand from a growing human population in a changing climate? / Merino, G ; Barange, M ; Blanchard, JL ; Harle, J ; Holmes, R ; Allen, I ; Allison, EH ; Badjeck, MC ; Dulvy, NK ; Holt, J ; Jennings, S ; Mullon, C ; Rodwell, LD. OCT 2012.</p> <p>1. Plymouth Marine Lab, Plymouth PL1 3DH, Devon, England 2. Univ Sheffield, Sheffield S10 2TN, S Yorkshire, England 3. Proudman Oceanog Lab, Liverpool L3 5DA, Merseyside, England 4. WorldFish Ctr, George Town, Malaysia 5. Simon Fraser Univ, Burnaby, BC V5A 1S6, Canada 6. Univ E Anglia, Sch Environm Sci, Norwich NR7 4TJ, Norfolk, England 7. Ctr Environm Fisheries & Aquaculture Sci, Lowestoft NR33 OHT, Suffolk, England 8. Unite Rech Ecosyst Marins Exploites, F-34200 Sete, France 9. Univ Plymouth, Sch Marine Sci & Engr, Plymouth PL4 8AA, Devon, England</p>	7	1	9	13
Greenhouse gas measurement and management	N/A					
		<p>Appropriate frequency and time of day to measure methane emissions from an irrigated rice paddy in Japan using the manual closed chamber method / Minamikawa, K. ; Yagi, K. ; Tokida, T. ; Sander, B. O. ; Wassmann, R. 2012.</p> <p>1. Carbon and Nutrient Cycles Division, National Institute for Agro-Environmental Sciences, 3-1-3 Kannondai, Tsukuba 305-8604, Japan 2. Crop and Environmental Science Division, International Rice Research Institute, DAPO Box 7777, Metro Manila, Philippines</p>	0	1	2	5
Greenhouse Gases: Science and Technology (title differs in pubs list)	2.679					

		Greenhouse gas emission from rice- and wheat-growing areas in India: spatial analysis and upscaling / Bhatia, A (Bhatia, Arti) ; Aggarwal, PK (Aggarwal, P. K.) ; Jain, N (Jain, Niveta) ; Pathak, H (Pathak, H.). APR 2012. 1. Indian Agr Res Inst, Div Environm Sci, New Delhi 110012, India 2. Int Water Management Inst, CGIAR Res Program Climate Change, India Off, New Delhi, India	1	1	2	4
Hydro Nepal: journal of water, energy and environment	N/A					
		Hydrologic characterization of the Koshi Basin and the impact of climate change / Luna Bharati ; Pabitra Gurung ; Priyantha Jayakody. 2012. 1. International Water Management Institute, IWMI, Lalitpur, Nepal.	0	1	1	3
		Downstream impacts of the Melamchi inter-basin water transfer plan (MIWTP) under current and future climate change projections / Pabitra Gurung ; Luna Bharati. 2012. 1. International Water Management Institute, IWMI, Lalitpur, Nepal.	0	1	1	2
Hydrogeology journal	1.675					
		Confronting scale in watershed development in India / Syme, GJ ; Reddy, VR ; Pavelic, P ; Croke, B ; Ranjan, R. AUG 2012. 1. Edith Cowan Univ, Joondalup, WA 2. Livelihoods & Nat Resources Management Inst, Hyderabad 500067, Andhra Pradesh, India 3. Int Water Management Inst, Patancheru 502324, Andhra Pradesh, India 4. Australian Natl Univ, Fenner Sch Environm & Soc, ICAM, Canberra 5. Macquarie Univ, Grad Sch Environm, Sydney	1	1	5	5
Hydrological processes	2.497					

		The climate of cloud forests / Jarvis, Andy; Mulligan, Mark. JAN 2011. 1. Int Ctr Trop Agr CIAT, Cali 6713, Colombia 2. Kings Coll London, Dept Geog, Strand, London WC2R 2LS, England	7	1	2	2
Hydrological sciences journal	1.114					
		Drying climate in Ghana over the period 1960-2005: evidence from the resampling-based Mann-Kendall test at local and regional levels / Lacombe, G.; McCartney, M.; Forkuor, G. 2012. 1. Int Water Management Inst, SE Asia Reg Off, Viangchan, Laos 2. Int Water Management Inst, E Africa & Nile Basin Off, Addis Ababa, Ethiopia 3. Int Water Management Inst, Cantonments, Accra, Ghana	2	1	1	3
Hydrology and earth system sciences discussions	3.587					
		Patterns of water infiltration and soil degradation over a 120-yr chronosequence from forest to agriculture in western Kenya / G. Nyberg, A. Bargues Tobella, J. Kinyangi, and U. Ilstedt. 2011. 1. Department of Forest Ecology and Management, Swedish University of Agricultural Sciences, 901 83 Umea, Sweden 2. Climate Change, Agriculture and Food Security, c/o ILRI, P.O. Box 30709, Nairobi 00100, Kenya	N/A	1	2	4
		Soil property changes over a 120-yr chronosequence from forest to agriculture in western Kenya / Nyberg, G.; Tobella, A. Bargues; Kinyangi, J.; Ilstedt, U. 2012. 1. Swedish Univ Agr Sci, Dept Forest Ecol & Management, S-90183 Umea, Sweden 2. ILRI, Nairobi 00100, Kenya	0	1	2	4
ICES journal of marine science	2.277					

		Beam trawlermen take feet off gas in response to oil price hikes / Beare, Doug; Machiels, Marcel. JUL 2012. 1. WorldFish Ctr, Bayan Lepas 11960, Penang, Malaysia 2. IMARES, Dept Fisheries, NL-1970 AB Ijmuiden, Netherlands	3	1	2	2
Indian journal of agricultural sciences	0.177					
		Performance of potato (<i>Solanum tuberosum</i>) clones under water stress / Sharma, N ; Kumar, P ; Kadian, MS ; Pandey, SK ; Singh, SV ; Luthra, SK. SEP 2011. 1. Int Potato Ctr, New Delhi 110012, India	1	1	1	6
International journal for bio-resource and stress management	N/A					
		Food security and climate change in the Asia-Pacific Region: evaluating mismatch between crop development and water availability / Huda, S. ; Sadras, V. ; Suhas Wani ; Mei XuRong. 2011. 1. University of Western Sydney, Locked Bag 1797, Penrith South	0	0	1	4
International journal of agricultural sustainability	1.493					
		The role of agricultural biodiversity in strengthening resilience to climate change: towards an analytical framework / Mijatovic, D ; Van Oudenhoven, F ; Eyzaguirre, P ; Hodgkin, T. MAY 2013. 1. Biovers Int, Platform Agrobiodivers Res, I-00057 Rome, Italy 2. Biovers Int, I-00057 Rome, Italy	1	1	1	4
		Perceptions and outlook on intercropping coffee with banana as an opportunity for smallholder coffee farmers in Uganda / Jassogne, L ; van Asten, PJA ; Wanyama, I ; Baret, PV. MAY 2013. 1. Catholic Univ Louvain, Earth & Life Inst, B-1348 Louvain, Belgium 2. IITA, Kampala, Uganda	0	1	2	4
International journal of remote sensing	1.138					

		TRMM rainfall correction over the Andean Plateau using wavelet multi-resolution analysis / Heidinger, H ; Yarleque, C ; Posadas, A ; Quiroz, R. 2012. 1. Int Potato Ctr, Prod Syst & Environm Div, Lima 12, Peru	2	1	1	4
Journal for nature conservation	1.535					
		Analysis of threats to South American flora and its implications for conservation / Ramirez-Villegas, Julian; Jarvis, Andy; Touval, Jerry. DEC 2012. 1. CIAT, Ctr Int Agr Trop, Cali, Colombia 2. Univ Leeds, Sch Earth & Environm, Inst Climat & Atmospher Sci, Leeds LS2 9JT, W Yorkshire, England 3. CGIAR Res Program Climate Change Agr & Food Secur, Cali, Colombia 4. Nature Conservancy, Arlington, VA 22203 USA	0	1	3	3
Journal of agriculture and rural development in the tropics and subtropics	0.107					
		Yield gap analysis and assessment of climate-induced yield trends of irrigated rice in selected provinces of the Philippines / Angulo, Carlos; Becker, Mathias; Wassmann, Reiner. 2012. 1. Univ Bonn, Inst Crop Sci & Resource Conservat, D-53115 Bonn, Germany. 2. Int Rice Res Inst, Manila 1099, Philippines	0	1	2	3
Journal of agrometeorology	0.146					
		Evapotranspiration paradox at a semi-arid location in India / Rao, A. V. R. Kesava; Wani, Suhas P. JUN 2011. 1. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, Andhra Pradesh, India	1	1	1	3
Journal of agronomy and crop science	2.151					

		Crop Improvement, Ideotyping and Modelling for African Cropping Systems Under Climate Change / (conf papers; Introduction by Asch, F.; Giese, M.) OCT 2012. 1. Univ Hohenheim, Inst Plant Prod & Agroecol Trop & Subtrop 380, D-70599 Stuttgart, Germany	0	0	1	2
		Genetic Advances in Adapting Rice to a Rapidly Changing Climate / Jagadish, SVK ; Septiningsih, EM ; Kohli, A ; Thomson, MJ ; Ye, C ; Redona, E ; Kumar, A ; Gregorio, GB ; Wassmann, R ; Ismail, AM ; Singh, RK. OCT 2012. 1. Int Rice Res Inst, Crop & Environm Sci Div, Manila, Philippines 2. Int Rice Res Inst, Plant Breeding Genet & Biotechnol Div, Manila, Philippines 3. ESA Reg Off, IRRI, Dar Es Salaam, Tanzania	2	1	1	10
Journal of climate	4.362					
		Precipitation Characteristics of the South American Monsoon System Derived from Multiple Datasets / Carvalho, LMV ; Jones, C ; Posadas, AND ; Quiroz, R ; Bookhagen, B ; Liebmann, B. JUL 2012. 1. Univ Calif Santa Barbara, Dept Geog, Santa Barbara, CA 93106 USA 2. Univ Calif Santa Barbara, Earth Res Inst, Santa Barbara, CA 93106 USA 3. Int Potato Ctr CIP, Lima, Peru 4. CIRES Climate Diagnost Ctr, Boulder, CO USA	2	1	3	6
Journal of crop improvement	N/A					
		Climate change and the conservation of plant genetic resources / Hodgkin, T. ; Bordoni, P. 2012. 1. Platform for Agrobiodiversity Research and Bioversity International, Via dei Tre Denari 472/a, 00057 Maccarese, Rome, Italy 2. Bioversity International, Rome, Italy	0	1	1	2

		Genetic analysis of performance of maize inbred lines under drought stress / Meseke, S. K.; Menkir, A.; Atala, S. 2011. 1. International Institute of Tropical Agriculture, Maize Improvement Unit, International Institute of Tropical Agriculture, PMB 5320 Oyo Road, Ibadan, Nigeria.	0	1	1	2
Journal of environmental protection	N/A					
		Use of the environmental impact quotient to estimate health and environmental impacts of pesticide usage in Peruvian and Ecuadorian potato production / Kromann, P.; Pradel, W.; Cole, D.; Taipe, A.; Forbes, G.A. 2011. 1. International Potato Center (CIP), Quito, Ecuador 2. International Potato Center, Lima, Peru 3. Dalla Lana School of Public Health, University of Toronto, Toronto, Canada	3	1	2	5
Journal of environmental quality	2.353					
		Speciation and Long- and Short-term Molecular-level Dynamics of Soil Organic Sulfur Studied by X-ray Absorption Near-Edge Structure Spectroscopy / Solomon, Dawit; Lehmann, Johannes; de Zarruk, Katrin Knoth; Dathe, Julia; Kinyangi, James; Liang, Biqing; Machado, Stephen. MAY 2011. 1. Cornell Univ, Dep Crop & Soil Sci, Ithaca, NY 14853 USA 2. Bioforsk Norwegian Inst Agr & Environm Res, N-1432 As, Norway 3. Oregon State Univ, Columbia Basin Agr Res Ctr, Pendleton, OR 97801 USA	3	1	3	7
Journal of food, agriculture and environment	0.435					
		Stability of Striga gesnerioides resistance mechanism in cowpea under high-infestation level, low soil fertility and drought stresses / Muranaka, Satoru; Fatokun, Christian; Boukar, Ousmane. APR 2011. 1. Int Inst Trop Agr IITA Nigeria, Ibadan, Oyo State, Nigeria	1	1	1	3

Journal of hydrology	2.964					
		Balancing-out floods and droughts: Opportunities to utilize floodwater harvesting and groundwater storage for agricultural development in Thailand / Pavelic, P ; Srisuk, K ; Saraphirom, P ; Nadee, S ; Pholkern, K ; Chusanathas, S ; Munyou, S ; Tangsutthinon, T ; Intarasut, T ; Smakhtin, V. NOV 2012. 1. Natl Agr & Forestry Res Inst, Int Water Management Inst, Ban Nongviengkham Xaytha, Vientiane, Laos 2. Khon Kaen Univ, Fac Technol, Groundwater Res Ctr, Khon Kaen, Thailand 3. Minist Nat Resources & Environm, Dept Groundwater Resources, Bangkok, Thailand 4. HYDROGEOSCI Co Ltd, Nonthaburi, Thailand 5. Int Water Management Inst, Colombo, Sri Lanka	0	1	4	10
Journal of integrative environmental sciences	0.724					
		Changes in soil CH ₄ fluxes from the conversion of tropical peat swamp forests: a meta-analysis / Hergoualc'h, KA ; Verchot, LV. 2012. 1. Ctr Int Forestry Res CIFOR, Forests & Environm Programme, Bogor, Indonesia	0	1	1	2
Journal of irrigation and drainage engineering	1.126					
		Urban Weather Data to Estimate Reference Evapotranspiration for Rural Irrigation Management / Luo, YF ; Jiang, YL ; Peng, SZ ; Khan, S ; Cai, XL ; Wang, WG ; Jiao, XY. SEP 2012. 1. Hohai Univ, State Key Lab Hydrol Water Resources & Hydraul En, Nanjing 210098, Jiangsu, Peoples R China 2. UNESCO Div Water Sci, F-75732 Paris 15, France 3. Int Water Management Inst So Africa, Johannesburg Area, South Africa	0	1	3	7
Journal of photochemistry and photobiology, B. Biology	3.11					

		Chlorophyll index, photochemical reflectance index and chlorophyll fluorescence measurements of rice leaves supplied with different N levels / Shrestha, Suchit; Brueck, Holger; Asch, Folkard. AUG 2012. 1. Univ Hohenheim, Dept Plant Prod & Agroecol Trop & Subtrop, Crop Water Stress Management Sect, D-70599 Stuttgart, Germany	1	0	1	3
Journal of public interest intellectual property	N/A					
		Keeping germplasm flowing / Gea Galluzzi, Michael Halewood, Isabel López-Noriega and Ronnie Vernooij. 2012. 1. Biodiversity International, Cali, Colombia 2. Biodiversity International, Rome	N/A	1	1	4
Journal of soil and water conservation	1.722					
		Soil carbon stocks and stability across an altitudinal gradient in southern Peru / Segnini, A.; Posadas, A.; Quiroz, R.; Milori, D.; Vaz, C.; Martin-Neto, L. JUL-AUG 2011. 1. CIP, Environm Div, Lima, Peru 2. Embrapa Agr Instrumentat Ctr, Sao Carlos, SP, Brazil 3. EMBRAPA, Beltsville, MD USA 4. Embrapa Labex USA, Beltsville, MD USA	3	1	2	6
Land degradation and development	1.991					

		<p>APPLICATION OF INDICATOR SYSTEMS FOR MONITORING AND ASSESSMENT OF DESERTIFICATION FROM NATIONAL TO GLOBAL SCALES / Sommer, S.; Zucca, C.; Grainger, A.; Cherlet, M.; Zougmore, R.; Sokona, Y.; Hill, J.; Della Peruta, R.; Roehrig, J.; Wang, G. MAR-APR 2011.</p> <p>1. Commiss European Communities, Joint Res Ctr, IES, I-21027 Ispra, VA, Italy</p> <p>2. Univ Sassari, I-07100 Sassari, Italy</p> <p>3. Univ Leeds, Sch Geog, Leeds LS2 9JT, W Yorkshire, England</p> <p>4. Observ Sahara & Sahel, Tunis 1080, Tunisia</p> <p>5. Univ Trier, Fac Geog, Remote Sensing Dept, D-54286 Trier, Germany</p> <p>6. Inst Social Ecol Res ISOE, D-60486 Frankfurt, Germany</p> <p>7. State Forestry Adm, China Natl Inst Forest Inventory & Planning, Beijing 100714, Peoples R China</p>	14	1	7	10
		<p>MONITORING AND ASSESSMENT OF LAND DEGRADATION AND DESERTIFICATION: TOWARDS NEW CONCEPTUAL AND INTEGRATED APPROACHES / Vogt, J. V.; Safriel, U.; Von Maltitz, G.; Sokona, Y.; Zougmore, R.; Bastin, G.; Hill, J. MAR-APR 2011.</p> <p>1. Commiss European Communities, Joint Res Ctr, IES, I-21027 Ispra, VA, Italy</p> <p>2. Hebrew Univ Jerusalem, Dept Ecol Evolut & Behav, IL-91904 Jerusalem, Israel</p> <p>3. Jacob Blaustein Inst Desert Res, Ctr Environm Convent, IL-84990 Sede Boqer, Israel</p> <p>4. CSIR, ZA-0001 Pretoria, South Africa</p> <p>5. Observ Sahara & Sahel, Tunis 1080, Tunisia</p> <p>6. CSIRO Ctr Arid Zone Res, Alice Springs, NT 0871</p> <p>7. Univ Trier, Fac Geosci, D-54296 Trier, Germany</p>	17	1	7	7

Maydica	0.368					
		Selection of extra-early maize inbreds under low N and drought at flowering and grain-filling for hybrid production / Badu-Apraku, Baffour; Fakorede, Morakinyo A. B.; Oyekunle, Muhyideen; et al. 2011. 1. Int Inst Trop Agr UK Ltd, Croydon CR9 3EE, England. 2. Obafemi Awolowo Univ, Dept Crop Prod & Protect, Ife 220005, Osun State, Nigeria	0	1	2	3
Mitigation and adaptation strategies for global change	1.856					
		Land use and climate change adaptation strategies in Kenya / Adimo, Aggrey Ochieng; Njoroge, John Bosco; Claessens, Leaven; et al. FEB 2012. 1. Jomo Kenyatta Univ Agr & Technol, Dept Hort, Nairobi 00200, Kenya 2. Int Potato Ctr, Nairobi, Kenya	0	1	2	3
		Climate change and agricultural technology adoption: the case of drought tolerant maize in rural Nigeria / Tambo, JA ; Abdoulaye, T. MAR 2012. 1. Univ Copenhagen, Fac Life Sci, Copenhagen, Denmark 2. Int Inst Trop Agr, Ibadan, Nigeria	4	1	2	2
		Implications of a changing climate on food security and smallholders' livelihoods in Bogotá, Colombia / Anton Eitzinger; Peter Läderach; Christian Bunn; Audberto Quiroga; Andreas Benedikter; Antonio Pantoja; Jason Gordon; Michele Bruni. 2012. 1. International Center for Tropical Agriculture (CIAT), A.A. 6713 Cali, Colombia 2. International Center for Tropical Agriculture (CIAT), Managua, Nicaragua 3. Humboldt University (Faculty of Agriculture and Horticulture), Berlin, Germany 4. University of West Indies (UWI), Mona Campus, Kingston,	N/A	1	4	8

		Jamaica 5. Oxfam GB - Latin America Caribbean Region, Mexico City, Mexico				
Molecular breeding	3.251					
		Recombinant microsatellite amplification: a rapid method for developing simple sequence repeat markers / Wu, Bin; Lu, Ping; Zhang, Zongwen. JAN 2012. 1. Chinese Acad Agr Sci CAAS, Inst Crop Sci, Beijing 100081, Peoples R China 2. CAAS, Off E Asia, Biovers Int, Beijing 100081, Peoples R China	1	1	2	3
Mountain research and development	0.934					
		Climate Change in a Small Transboundary Tributary of the Syr Darya Calls for Effective Cooperation and Adaptation / Stucker, D ; Kazbekov, J ; Yakubov, M ; Wegerich, K. AUG 2012. 1. Sustainabil (sic) Leaders Network, Hartland, VT 05048 USA 2. Int Water Management Inst, Cent Asia Off, Tashkent 100000, Uzbekistan	0	1	1	4
Nature climate change	14.472					
		Agriculture: Forecasting food / Challinor, Andrew. MAY 2011. 1. Univ Leeds, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England	6	0	1	1
Philosophical Transactions of the Royal Society Series A	2.891					
		Agriculture and food systems in sub-Saharan Africa in a 4 degrees C+ world / Thornton, Philip K.; Jones, Peter G.; Ericksen, Polly J.; Challinor, Andrew J. JAN 2011. 1. ILRI, CGIAR ESSP Program CCAFS, Nairobi 00100, Kenya 2. Waen Associates, Dolgellau LL40 1TS, Gwynedd, Wales 3. Univ Oxford, Ctr Environm, GECAFS Programme, Environm Change Inst, Oxford OX1 3QY, England 4. Univ Leeds, Inst Climate & Atmospher Sci, Sch Earth & Environm, Leeds LS2 9JT, W Yorkshire, England	30	1	4	4

Plant and soil	2.638					
		Effects of organic and mineral fertilizer nitrogen on greenhouse gas emissions and plant-captured carbon under maize cropping in Zimbabwe / Mapanda, Farai; Wuta, Menas; Nyamangara, Justice; Rees, Robert M. JUN 2011. 1. Chem & Soil Res Inst, Dept Res, Harare, Zimbabwe 2. Chem & Soil Res Inst, Specialist Serv, Harare, Zimbabwe 3. Univ Zimbabwe, Dept Soil Sci & Agr Engr, Harare, Zimbabwe 4. Int Crops Res Inst Semi Arid Trop, Matopos Res Stn, Bulawayo, Zimbabwe 5. Scottish Agr Coll, Edinburgh EH9 3JG, Midlothian, Scotland	6	1	4	4
		Soil water content, maize yield and its stability as affected by tillage and crop residue management in rainfed semi-arid highlands / Verhulst, Nele; Nelissen, Victoria; Jespers, Niels; Haven, Heleen; Sayre, Ken D.; Raes, Dirk; Deckers, Jozef; Govaerts, Bram. JUL 2011. 1. CIMMYT, Int Maize & Wheat Improvement Ctr, Mexico City 06600, DF, Mexico 2. Katholieke Univ Leuven, Dept Earth & Environm Sci, B-3001 Louvain, Belgium	8	1	2	8
Plant cell and environment	5.135					

		<p>Acclimation to high CO₂ in maize is related to water status and dependent on leaf rank/ Prins, Anneke; Mukubi, Josephine Muchwesi; Pellny, Till K.; ; Verrier, PJ ; Beyene, G ; Lopes, MS ; Emami, K ; Treumann, A ; Lelarge-Trouverie, C ; Noctor, G ; Kunert, KJ ; Kerchev, P ; Foyer, CH. FEB 2011.</p> <p>1. Univ Leeds, Fac Biol Sci, Inst Integrat & Comparat Biol, Ctr Plant Sci, Leeds LS2 9JT, UK</p> <p>2. Univ Pretoria, Dept Plant Sci, Forestry & Agr Biotechnol Inst, ZA-0002 Pretoria, South Africa</p> <p>3. Rothamsted Res, Dept Plant Sci, Ctr Crop Genet Improvement, Harpenden, Herts, England</p> <p>4. Rothamsted Res, Dept Biomath & Bioinformat, Ctr Math & Computat Biol, Harpenden, UK</p> <p>5. CIMMYT, Mexico City 06600, DF, Mexico</p> <p>6. Newcastle Univ, NEPAF Proteome Anal Facil, Newcastle Upon Tyne NE1 7RU, Tyne & Wear, UK</p> <p>7. Univ Paris 11, Inst Biol Plantes, F-91405 Orsay, France</p>	7	1	6	13
Plant disease	2.455					
		<p>Assessing the Adequacy of the Simulation Model LATEBLIGHT Under Nicaraguan Conditions / Ulises Blandon-Diaz, Jorge; Forbes, Gregory A.; Andrade-Piedra, Jorge L.; et al. JUL 2011.</p> <p>1. Natl Univ Agr UNA, Dept Plant & Forest Protect, Managua, Nicaragua.</p> <p>2. Swedish Univ Agr Sci, Dept Forest Mycol & Pathol, S-75007 Uppsala, Sweden.</p> <p>3. Int Potato Ctr CIP, Lima 12, Peru.</p> <p>4. CIP, Quito, Ecuador</p>	0	1	3	4

		International Agricultural Research Tackling the Effects of Global and Climate Changes on Plant Diseases in the Developing World / Savary, Serge; Nelson, Andrew; Sparks, Adam H.; Willocquet, L ; Hodson, D ; Duveiller, E ; Mahuku, G ; Padgham, J ; Forbes, G ; Pande, S ; Sharma, M ; Garrett, KA ; Yuen, J ; Djurle, A. OCT 2011. 1. Int Rice Res Inst, Los Banos, Philippines 2. Int Maize & Wheat Improvement Ctr CIMMYT, Mexico City, DF, Mexico 3. Int Potato Ctr CIP, Lima, Peru 4. Kansas State Univ, Manhattan, KS 66506 USA 5. FAO, AGP Div, I-00100 Rome, Italy 6. Syst Anal Res & Training START, Washington, DC USA 7. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, Andhra Pradesh, India 8. Swedish Univ Agr Sci, Uppsala, Sweden	11	4	8	14
Plant genetic resources	0.728					
		Evaluation of cowpea (<i>Vigna unguiculata</i> (L.) Walp.) germplasm lines for tolerance to drought / Fatokun, CA ; Boukar, O ; Muranaka, S. DEC 2012. 1. Int Inst Trop Agr, Oyo Rd,PMB 5320, Ibadan, Nigeria	1	1	1	3
Plant pathology	2.729					
		Complexity in climate-change impacts: an analytical framework for effects mediated by plant disease / Garrett, K. A.; Forbes, G. A.; Savary, S.; Skelsey, P ; Sparks, AH ; Valdivia, C ; van Bruggen, AHC ; Willocquet, L ; Djurle, A ; Duveiller, E ; Eckersten, H ; Pande, S ; Cruz, CV ; Yuen, J. FEB 2011. 1. Kansas State Univ, Dept Plant Pathol, Manhattan, KS 66506 USA 2. Int Potato Ctr CIP, Lima, Peru 3. Int Rice Res Inst, Manila 1099, Philippines 4. Univ Missouri, Dept Agr & Appl Econ, Columbia, MO 65211 USA 5. Univ Florida, Dept Plant Pathol, Gainesville, FL 32611 USA 6. Univ Florida, Emerging Pathogens Inst, Gainesville, FL 32611	19	4	8	14

		USA 7. Swedish Univ Agr Sci, Dept Forest Mycol & Pathol, S-75007 Uppsala, Sweden 8. Int Maize & Wheat Improvement Ctr CIMMYT, Mexico City, DF, Mexico 9. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, Andhra Pradesh, India				
Plos One	3.73					
		Improving Index-Based Drought Insurance in Varying Topography: Evaluating Basis Risk Based on Perceptions of Nicaraguan Hillside Farmers / Kost, A ; Laderach, P ; Fisher, M ; Cook, S ; Gomez, L. DEC 2012. 1. Univ Bonn, Dept Geog, Bonn, Germany 2. Ctr Int Agr Trop, Managua, Nicaragua 3. Ctr Int Agr Trop, Cali, Colombia 4. Int Water Management Inst, Pelawatte, Battaramulla, Sri Lanka	0	2	3	5
		Seasonal Response of Grasslands to Climate Change on the Tibetan Plateau / Yu, Haiying; Xu, Jianchu; Okuto, Erick; Luedeling, Eike. NOV 2012. 1. World Agroforestry Ctr, Nairobi, Kenya 2. Chinese Acad Sci, Kunming Inst Bot, Key Lab Biodivers & Biogeog, Kunming, Peoples R China 3. E Asia Program, World Agroforestry Ctr, Kunming, Peoples R China	4	1	2	4
		Weather indices for designing micro-insurance products for small-holder farmers in the tropics / Diaz Nieto, Jacqueline; Fisher, Myles; Cook, Simon; Laderach, Peter; Lundy, Mark. JUN 2012. 1. Univ Sheffield, Kroto Res Inst, Catchment Sci Ctr, Sheffield, S Yorkshire, England 2. Ctr Int Agr Trop, Cali, Colombia	1	1	2	4

		Climate Change Affects Winter Chill for Temperate Fruit and Nut Trees / Luedeling, Eike; Girvetz, Evan H.; Semenov, Mikhail A.; Brown, Patrick H. MAY 2011. 1. World Agroforestry Ctr ICRAF, Nairobi, Kenya 2. Nature Conservancy, Seattle, WA USA 3. Rothamsted Res, Harpenden, Herts, England 4. Univ Calif Davis, Dept Plant Sci, Davis, CA 95616 USA	18	1	4	4
PNAS	9.737					
		Assessing the vulnerability of traditional maize seed systems in Mexico to climate change / Bellon, Mauricio R.; Hodson, David; Hellin, Jon. AUG 2011. 1. Biovers Int, Divers Livelihoods Programme, I-00057 Maccaresse, Italy. 2. UN, Food & Agr Org, Plant Prod & Protect Div, I-00153 Rome, Italy. 3. Int Maize & Wheat Improvement Ctr, Socioecon Program, Mexico City 06600, DF, Mexico	13	2	3	3
		Benefits of tropical crops for food security / Vermeulen, Sonja J.; Wollenberg, Eva K. MAR 2011. 1. Univ Copenhagen, CGIAR Res Program Climate Change Agr & Food Secur, DK-1958 Frederiksberg, Denmark 2. Univ Vermont, Burlington, VT 05405 USA	1	1	2	2
Potato journal	N/A					
		Perception of Gujarat farmers on heat-tolerant potato varieties / Rana, R. K. ; Neeraj Sharma ; Kadian, M. S. ; Girish, B. H. ; Arya, S. ; Campilan, D. ; Pandey, S. K. ; Carli, C. ; Patel, N. H. ; Singh, B. P. 2011. 1. Central Potato Research Institute, Shimla - 171 001, Himachal Pradesh, India 2. CIP-SWCA, NASC Complex, New Delhi 3. Jain Irrigation Systems Ltd, Jalgaon-425 001, Maharashtra, India 4. CIP-CAC, Murtazaeva Str. 6, Tashkent, Uzbekistan 5. Potato Research Station, Deesa, Banaskantha, Gujarat, India	1	1	3	10

Proceedings of the Royal Society B	5.683					
		<p>Food security and climate change: on the potential to adapt global crop production by active selection to rising atmospheric carbon dioxide / Ziska, Lewis H.; Bunce, James A.; Shimono, Hiroyuki; Gealy, DR ; Baker, JT ; Newton, PCD ; Reynolds, MP; Jagadish, KSV ; Zhu, CW ; Howden, M ; Wilson, LT. OCT 2012.</p> <p>1. USDA ARS, Crop Syst & Global Change Lab, Beltsville, MD 20705 USA</p> <p>2. Iwate Univ, Fac Agr, Morioka, Iwate 020, Japan</p> <p>3. USDA ARS, Dale Bumpers Natl Rice Res Ctr, Stuttgart, AR 72160 USA</p> <p>4. USDA ARS, Wind Eros & Water Conservat Lab, Big Spring, TX 79720 USA</p> <p>5. AgResearch, Land & Environm Grp, Palmerston North, New Zealand</p> <p>6. Int Maize & Wheat Improvement Ctr CIMMYT, Texcoco 06600, Mexico</p> <p>7. Int Rice Res Inst, Crop & Environm Sci Div, Manila, Philippines</p> <p>8. Chinese Acad Sci, State Key Lab Soil & Sustainable Agr, Nanjing 210008, Jiangsu, Peoples R China</p> <p>9. CSIRO Climate Adaptat Flagship, Adapt Primary Ind & Enterprises, Canberra</p> <p>10. Texas A&M Univ, Agrilife Res & Extens Ctr, Beaumont, TX 77713 USA</p>	8	2	8	11
Rangeland ecology and management	1.733					
		<p>Is Proactive Adaptation to Climate Change Necessary in Grazed Rangelands? / Ash, Andrew; Thornton, Philip; Stokes, Chris; Togtohyn, C. NOV 2012.</p> <p>1. CSIRO Climate Adaptat Flagship, Brisbane, Qld 4001, Australia</p> <p>2. Int Livestock Res Inst ILRI, Nairobi 00100, Kenya</p> <p>3. CSIRO Ecosyst Sci, Townsville, Qld 4814, Australia</p> <p>4. Natl Univ Mongolia, Ulaanbaatar 14250, Mongol Peo Rep</p> <p>5. Dryland Sustainabil Inst, Ulaanbaatar 14250, Mongol Peo Rep</p>	3	1	3	4

Regional environmental change	1.945					
		Options for water storage and rainwater harvesting to improve health and resilience against climate change in Africa / Boelee, E ; Yohannes, M ; Poda, JN ; McCartney, M ; Cecchi, P ; Kibret, S ; Hagos, F ; Laamrani, H. JUN 2013. 1. IWMI, Colombo, Sri Lanka 2. Mekelle Univ, Mekelle, Ethiopia 3. CNRST, IRSS, Ouagadougou, Burkina Faso 4. IWMI, Addis Ababa, Ethiopia 5. IRD UMR G EAU, IRD, Montpellier, France 6. Univ Addis Ababa, Addis Ababa, Ethiopia 7. IDRC, Cairo, Egypt	1	1	6	8
		Derivation of a household-level vulnerability index for empirically testing measures of adaptive capacity and vulnerability (title differs slightly from one in list) / Notenbaert, A ; Karanja, SN ; Herrero, M; Felisberto, M ; Moyo, S. APR 2013. 1. CGIAR (location unknown. In article: "implemented by ILRI in Nairobi and IAM in Mozambique")	0	1	1	5
		Climate change perception and adaptation of agro-pastoral communities in Kenya / Silvestri, S ; Bryan, E ; Ringler, C ; Herrero, M ; Okoba, B. DEC 2012. 1. ILRI, Nairobi 00100, Kenya 2. IFPRI, Washington, DC 20006 USA 3. KARI, NPC Soil & Water Management & Conservat Agr, Nairobi, Kenya	3	2	3	5
		Coping with climate-induced water stresses through time and space in the mountains of Southwest China / Su, YF ; Xu, JC ; Wilkes, A ; Lu, J ; Li, QH ; Fu, Y ; Ma, X ; Grumbine, RE. DEC 2012. 1. World Agroforestry Ctr, Heilongtan 650204, Kunming, Peoples R China 2. Yunnan Acad Social Sci, Inst Econ, Kunming 650034, Peoples R China 3. Kunming Inst Bot, Heilongtan 650204, Kunming, Peoples R China	0	1	3	8

		Participatory scenarios as a tool to link science and policy on food security under climate change in East Africa / Chaudhury, M ; Vervoort, J ; Kristjanson, P ; Ericksen, P ; Ainslie, A. APR 2013. 1. CGIAR Res Program Climate Change Agr & Food Secur, Nairobi, Kenya 2. Univ Oxford, Oxford, England 3. Int Livestock Res Inst, Nairobi, Kenya 4. Oxford Brookes Univ, Oxford OX3 0BP, England	1	2	3	5
		Smallholder farmers' perceptions of and adaptations to climate change in the Nigerian savanna / Tambo, JA ; Abdoulaye, T. APR 2013. 1. Univ Bonn, Ctr Dev Res ZEF, Bonn, Germany 2. Int Inst Trop Agr, Ibadan, Nigeria	0	1	2	2
Review of development economics	N/A					
		Economic Development under Climate Change / Arndt, Channing; Chinowsky, Paul; Robinson, Sherman; et al. AUG 2012. 1. Univ Copenhagen, Dept Econ, DK-1353 Copenhagen K, Denmark 2. Univ Colorado, Boulder, CO 80309 USA 3. Univ Sussex, Inst Dev Studies, Brighton BN1 9RE, E Sussex, England 4. MIT, Joint Program Sci & Policy Global Change, Cambridge, MA 02139 USA 5. UNU WIDER, FI-00160 Helsinki, Finland	1	0	5	3
		A Dynamic General Equilibrium Analysis of Adaptation to Climate Change in Ethiopia / Robinson, Sherman; Willenbockel, Dirk; Strzepek, Kenneth. AUG 2012. 1. IFPRI, Washington, DC 20006 USA 2. Univ Sussex, Inst Dev Studies, Brighton BN1 9RE, E Sussex, England 3. MIT, Joint Program Sci & Policy Global Change, Cambridge, MA 02139 USA	2	1	3	3
Rice	2.381					

		<p>Spikelet Proteomic Response to Combined Water Deficit and Heat Stress in Rice (<i>Oryza sativa</i> cv. N22) / Jagadish, S. V. Krishna; Muthurajan, Raveendran; Rang, Zhongwen W.; Malo, Richard; Heuer, Sigrid; Bennett, John; Craufurd, Peter Q. MAR 2011.</p> <p>1. Int Rice Res Inst, Plant Breeding Genet & Biotechnol Div, Manila, Philippines</p> <p>2. Univ Reading, Plant Environm Lab, Reading RG2 9AF, Berks, England</p> <p>3. Hunan Agr Univ, Coll Agron, Changsha 410128, Hunan, Peoples R China</p>	8	1	3	8
Science	31.027					
		<p>What Next for Agriculture After Durban? / Beddington, J. R.; Asaduzzaman, M.; Clark, M. E.; et al. JAN 2012.</p> <p>1. Univ Wisconsin, Madison, WI 53706 USA.</p> <p>2. Univ Autonoma Metropolitana, Mexico City, DF, Mexico.</p> <p>3. Univ Leeds, Leeds LS2 9JT, W Yorkshire, England</p>	17	1	14	14
Science of the total environment	3.258					
		<p>Greenhouse gas emissions under conservation agriculture compared to traditional cultivation of maize in the central highlands of Mexico / Dendooven, L ; Gutierrez-Oliva, VF ; Patino-Zuniga, L ; Ramirez-Villanueva, DA ; Verhulst, N ; Luna-Guido, M ; Marsch, R ; Montes-Molina, J ; Gutierrez-Miceli, FA ; Vasquez-Murrieta, S ; Govaerts, B. 2012.</p> <p>1. CINVESTAV, ABACUS, Lab Soil Ecol, Mexico City 07360, DF, Mexico</p> <p>2. Inst Tecnol Tuxtla Gutierrez, Plant Biotechnol Lab, Tuxtla Gutierrez, Chiapas, Mexico</p> <p>3. IPN, Escuela Nacl Ciencias Biol, Dept Microbiol, Mexico City 11340, DF, Mexico</p> <p>4. CIMMYT, Int Maize & Wheat Improvement Ctr, Mexico City 06600, DF, Mexico</p>	2	1	4	11

Scientia agricultura sinica	N/A					
		Construction and application of SSR molecular markers system for genetic diversity analysis of Chinese tartary buckwheat germplasm resources / Gao Fan ; Zhang ZongWen ; Wu Bin. 2012. 1. College of Life Science of Shanxi University, Taiyuan 030006, China	0	0	1	3
Systematic botany	1.287					
		Biogeographic Implications of the Striking Discovery of a 4,000 Kilometer Disjunct Population of the Wild Potato Solanum morelliforme in South America / Simon, Reinhard; Fuentes, Alfredo F.; Spooner, David M. OCT-DEC 2011. 1. Univ Wisconsin, USDA, Agr Res Serv, Dept Hort, Madison, WI 53706 USA 2. Herbario Nacl Bolivia, La Paz, Bolivia 3. Missouri Bot Garden, La Paz, Bolivia 4. Int Potato Ctr, Lima 12, Peru	2	1	4	3
Theoretical and applied climatology	1.759					
		Wetting tendency in the Central Mekong Basin consistent with climate change-induced atmospheric disturbances already observed in East Asia / Lacombe, G.; Smakhtin, V.; Hoanh, C. T. JAN 2013. 1. Int Water Management Inst, SE Asia Reg Off, Viangchan, Laos 2. Int Water Management Inst, Colombo, Sri Lanka	0	1	1	2
Trends in plant science	11.808					

		<p>Agricultural biotechnology for crop improvement in a variable climate: hope or hype? / Varshney, Rajeev K.; Bansal, Kailash C.; Aggarwal, Pramod K.; Datta, Swapn K.; Craufurd, Peter Q. JUL 2011.</p> <p>1. Int Crops Res Inst Semi Arid Trop, Patancheru 502324, Andhra Pradesh, India</p> <p>2. CIMMYT, CGIAR Generat Challenge Programme, Mexico City 06600, DF, Mexico</p> <p>3. Univ Western Australia, Fac Nat & Agr Sci, Sch Plant Biol M084, Crawley, WA 6009, Australia</p> <p>4. NRCPB, New Delhi 110012, India</p> <p>5. NBPGR, New Delhi 110012, India</p> <p>6. Indian Agr Res Inst, Div Environm Sci, New Delhi 110012, India</p> <p>7. IWMI, CGIAR Challenge Program Climate Change Agr & Food, New Delhi 110012, India</p> <p>8. ICAR Res Complex, Div Crop Sci, New Delhi 110114, India</p>	23	3	6	5
Tropical plant biology	N/A					
		<p>Cassava production and pest management: present and potential threats in a changing environment / Bellotti, A.; Herrera Campo, B. V.; Hyman, G. 2012</p> <p>1. International Center for Tropical Agriculture, A.A.6713, Cali, Colombia</p>	4	1	1	3
		<p>Is cassava the answer to African climate change adaptation? / Jarvis, A. ; Ramirez-Villegas, J. ; Herrera Campo, B. V. ; Navarro-Racines, C. 2012.</p> <p>1. International Center for Tropical Agriculture (CIAT), Cali, Colombia</p> <p>2. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Cali, Colombia</p> <p>3. Institute for Climatic and Atmospheric Science (ICAS), School of Earth and Environment, University of Leeds, UK</p>	1	1	2	4
Water international	0.705					

		Water productivity responses and adaptation to climate change in the lower Mekong basin / Mainuddin, Mohammed; Mac Kirby; Hoanh, Chu Thai. 2012. 1. CSIRO, Land & Water, Canberra 2. SE Asia Reg Off, Int Water Management Inst, Viangchan, Lao Pdr, Laos	0	1	2	3
		Integrating cost and benefit considerations with supply- and demand-based strategies for basin-scale groundwater management in South-West India / Kumar, S ; Lagudu, S ; Pavelic, P ; Davidson, B. 2012. 1. Int Water Management Inst, Hyderabad, Andhra Pradesh, India 2. Univ Melbourne, Melbourne, Vic, Australia	2	1	2	4
		The nature and impact of climate change in the Challenge Program on Water and Food (CPWF) basins / Mulligan, Mark; Fisher, Myles; Sharma, Bharat; Xu, Z. X.; Ringler, Claudia; Mahe, Gil; Jarvis, Andy; Ramirez, Julian; Clanet, Jean-Charles; Ogilvie, Andrew; Ahmad, Mobin-ud-Din. 2011. 1. Kings Coll London, Environm Monitoring & Modelling Res Grp, London WC2R 2LS, England 2. Int Ctr Trop Agr CIAT, Cali, Colombia 3. Int Water Management Inst, New Delhi, India 4. Beijing Normal Univ, Key Lab Water & Sediment Sci, Beijing 100875, Peoples R China 5. Int Food Policy Res Inst, Washington, DC USA 6. UMR HydroSci, Montpellier, France 7. IRSTEA, Montpellier, France 8. CSIRO Land & Water, Canberra.	5	3	8	10
Water policy	1.603					

		<p>Freshwater, climate change and adaptation in the Ganges River Basin / Hosterman, HR ; McCornick, PG ; Kistin, EJ ; Sharma, B ; Bharati, L. 2012.</p> <p>1. Duke Univ, Nicholas Inst Environm Policy Solut, Durham, NC 27708 USA</p> <p>2. Delhi Off, Int Water Management Inst, New Delhi 110012, India</p> <p>3. Nepal Off, Int Water Management Inst, Dept Irrigat, Kathmandu, Nepal</p>	1	1	2	5
Water practice and technology	N/A					
		<p>Impacts of meso-scale Watershed Development in Andhra Pradesh (India) and their implications for designing and implementing improved WSD policies and programs / Croke, B. ; Herron, N.; Pavelic, P.; Ahmed, S. ; Reddy, V. R.; Ranjan, R. ; Syme, G ; Samad, M. ; Rao, K. V. 2012.</p> <p>1. National Centre for Groundwater Research and Training and Department of Mathematics, Fenner School of Environment and Society, ANU, Canberra</p> <p>2. Bureau of Meteorology, 14 Childers St, Canberra</p> <p>3. International Water Management Institute, ICRISAT, Patancheru 502324, AP, India</p> <p>4. National Geophysical Research Institute, Uppal Road, Hyderabad 500606, Andhra Pradesh, India</p> <p>5. Livelihoods and Natural Resource Management Institute, 12-2-417/18 Sarada Nagar, Mehdipatnam, Hyderabad 500067, Andhra Pradesh, India</p> <p>6. Graduate School of the Environment, Macquarie University, NSW 2109</p> <p>7. Centre for Planning, Edith Cowan University, Joondalup Perth WA 6027</p> <p>8. Central Research Institute for Dryland Agriculture, Santoshnagar, Hyderabad 500059, Andhra Pradesh, India</p>	0	1	8	9
Water SA	0.876					

		Water-balance approach for assessing potential for smallholder groundwater irrigation in Sub-Saharan Africa / Pavelic, P ; Smakhtin, V ; Favreau, G ; Villholth, KG. 2012. 1. Int Water Management Inst, Viangchan, Laos 2. Int Water Management Inst, Colombo, Sri Lanka 3. HydroSci Montpellier, IRD, Montpellier, France 4. Int Water Management Inst, Pretoria, South Africa	3	1	2	4
	Mean Impact factor			Mean No Centers	Mean No Institutions	Mean No Authors
	3.02463			1.1296296	3.41975309	5.5123457

Annex 4

**Management response to the external
evaluation on:**

**“Managing the CCAFS Theme by Region
matrix for international public goods and
development outcomes”**

May 2014

Developed CCAFS Program Management Committee

**Approved by CCAFS Independent Science Panel on 21
May 2014**

Background

A review was undertaken by Andrew Ash (CSIRO) to examine how the CCAFS Theme by Region matrix was being managed to deliver on International Public Goods (IPGs) and development outcomes. As the review notes there is an additional matrix to be managed: that involving the 15 CGIAR Centers delivering activities in the Themes and Regions. Given time limitations, this review focused on the South Asia region so there was little opportunity for cross-region comparison.

The review had many positive remarks (Box 1), but these will not be the focus of this management response. Here the focus is on how the recommendations from the evaluation will be dealt with.

Box 1: A selection of positive remarks from the executive summary

- “CCAFS has embraced this reform process in structure, function and the necessary behaviours and leadership to make it effective”
- “CCAFS has a highly effective leadership team that makes decisions in a transparent way”
- “effective governance, management and reporting systems that make it possible to efficiently monitor the progress to achieving milestones and outcomes”
- “good appreciation that a top-down “one-size fits all” from Themes to regions is not appropriate though some concepts can be applied universally e.g. Climate Smart Villages”
- “good balance of activities at local, national, regional and global scales”
- “Amongst these challenges, successful initiatives are emerging such as climate analogues, which are assisting not just in providing a way of exploring new options, but also as a mechanism for cross-region integration”
- “About two-thirds of the Annual Outcomes have good linkages to Theme level Outcomes and System Level Outcomes”.
- “A new website was launched in July 2013 and it provides a highly effective and open platform for accessing outputs from CCAFS”
- “Journal publications produced by CCAFS are of a high quality and are collaborative”
- “CCAFS has put together an impressive research program that effectively embraces the matrix organization”

Recommendation 1:

Recognise the growing importance and role of Regions in the Theme x Region x Center matrix by:

- (d) Elevating of the role of Regions and regional needs in the framing of both science and outcomes as CCAFS moves into Phase 2 and as the CGIAR moves to Intermediate Development Outcomes¹*
- (e) Continue to strengthen and grow activities such as Climate Smart Villages as a means of achieving full integration of Themes and Centers at a regional scale*
- (f) Develop ways of more explicitly communicating and reporting achievements and outcomes at a Regional scale, such as annual reports.*

Response:

Part (a) of this recommendation is being addressed in the CCAFS Extension Phase. The new Flagships defined in the Extension Phase provide an improved mechanism for ensuring that regional science priorities linked to intended outcomes at the regional level are reflected in allocations to Centers. In Phase 1, Centers were in the driving seat as to where they allocated resources (within the context of global priorities). In the Extension Phase, Centers have had to write concept notes that reflected regional priorities, and their final proposals have to be accepted by Regional Program Leaders. Impact pathway development is now largely driven by regional teams.

Part (b) of this recommendation is addressed by (i) ensuring that Regional Program Leaders have the resources to ensure integration, (ii) ensuring that Regional Program Leaders give attention to cross-Flagship activities, and (iii) by building a portfolio of Center activities that is more integrated. For (i), in the Extension Phase, Regional Program Leaders will be allocated a budget that is near 60% greater than that of Flagship Leaders, a major shift from Phase 1 where the budget allocations were similar (proposed Regional Program Leader budgets are about \$1.9 million per region). For (ii), Regional Program Leaders will institute and/or strengthen two key areas of cross-flagship activity: (1) climate-smart villages; (2) national and regional learning platforms for science-policy outcomes. These two areas both fall within the CCAFS strategy on linking knowledge and action across private, public and NGO sectors. These activities, being largely driven by stakeholder needs, mean that Flagship boundaries become less important and the knowledge that matters is brought together into integrated solutions. For (iii), Centers are building activities that are linked to other activities in the region, irrespective of what Flagship the activities are addressing (in Phase 1 it was a case of constantly urging Centers to link their Center-defined activities with other activities, but the links remained relatively poor, whereas in the Extension Phase all activities are being planned from the outset as linked regional activities, with an overarching regional impact pathway).

¹ At the time the evaluator wrote the review, the current phase of work ("Phase 1") was going to move into Phase 2. Now we know there will be an Extension Phase before Phase 2. The desired actions will be pursued in the Extension Phase.

Part (c) of this recommendation will be addressed by Regional Program Leaders taking a lead in annual reporting, providing Regional Program Reports that will then be synthesized into the global report, and by leading on some elements of the global report, notably those related to integrating knowledge to action activities at regional level.

Recommendation 2:

Increased effort should be invested by the CCAFS management team in developing increased Window 3/Bilateral investment in CCAFS by working closely with Centers and donors. This will require developing a strong value proposition as to the long term benefits of investment in adaptation and mitigation.

Response:

The evaluator notes that the current organizational design model that empowers and encourages Centers to attain Window 3/Bilateral funding may or may not have strong alignment to the strategies of CRPs and may act as a disincentive to much closer alignment of Center activities and CRPs. The reviewer proposes that greater attention be placed by the CCAFS management team working with Centers and (bilateral) donors to ensure alignment. Given the diverse fund-raising efforts by multiple players in Centers it will be exceptionally hard for CCAFS management to work more closely with Centers on fund-raising. It seems more appropriate to work with Centers to ensure that all Contact Points are clear about the CCAFS strategy, to ensure that only aligned bilateral projects are accepted into CCAFS, and to provide incentives to ensure alignment between strategy and fund-raising. To this end, CCAFS management will discuss the issue of Window 3/Bilateral funding with Center Contact Points, focusing on (a) reasons why Bilateral funding to CCAFS remains relatively low, (b) and the need to raise funds that meet the objectives of the strategy. In addition, in allocating performance budgets to Centers, the base budget of a Center is used in the performance calculation. Thus it is in the interest of the Centers to grow the base budgets through bilateral funds, but the PMC will ensure that only bilaterals that fit with the CCAFS strategy can be included in the CRP.

Recommendation 3:

- (c) *Develop a clear process for resourcing and accountability of activities between Centers (and other non-Center partners) and the CCAFS management team but in a way that fosters joint ownership and collaboration rather than it becoming a transactional purchaser/provider model.*
- (d) *Provide adequate resources to Themes and Regional Program Leaders to nurture the collaboration and engagement between Centers and the CCAFS management team.*

Response:

The reviewer points to the need to put in place measures to continue to build the relationships between Regional Program Leaders and Centers and between Themes and Centers, so that the relationship does not become one of purchaser/provider. CCAFS management will do this through:

- Ensuring close linkage between Centers and Flagship/Regions in on-going program development and delivery. In Phase 1 of CCAFS, contact between Centers and Themes/Regions was largely through Contact Points, but in the Extension Phase the Principal Investigators of activities will be in direct contact with Flagship and/or Regional Leaders.²
- Facilitating an exciting annual science meeting, and topic-specific meetings for Regions or Flagships, where discussion around non-administrative issues is fostered.
- Maintaining reasonable budgets for Flagship and Regional Leaders to nurture exciting integrative activities amongst participants.

Recommendation 4:

Put in place a set of targeted incentives and capacity building initiatives to achieve increased cross-Center involvement in CCAFS activities.

Response:

CCAFS Management will continue to monitor the degree to which cross-Center activities are taking place (through, for example, monitoring cross-Center products as one of its performance management indicators). Funds will be set aside each year for a high-profile cross-center activity or product. Greater cross-Center activity is likely to be fostered through the changes made for the Extension Phase, whereby activities being put in place by Centers involve a high degree of collaborative planning amongst different program participants.

Recommendation 5:

Establish a monitoring and evaluation activity to capture longitudinally the depth and breadth of external partnerships, how they evolve through time, and the influence on decision-making in CCAFS and the external partners.

Response:

CGIAR has instituted a survey to assess the depth and breadth of partnerships for all of the CRPs on a longitudinal basis. Therefore, CCAFS will not implement an additional tool. However, CCAFS recognises the importance of evaluating its impact on key policy processes at global levels (e.g. UNFCCC and its subsidiaries such as IPCC and SBSTA; Committee on Food Security deliberations on climate-related issues; NEPAD/CAADP programs on climate and agriculture) and at national levels (e.g. National Adaptation

² Current thinking at the Consortium Office is that Themes will become Flagships and thus Theme Leaders will become Flagship Leaders. The new terminology is used in the response to the evaluator.

Plans; Nationally Appropriate Mitigation Actions). CCAFS will assess its influence on decision-making in these processes via commissioned impact studies as outlined in the CCAFS reporting structure for Flagships, Regions and Centers.

Recommendation 6:

- (c) *Provide opportunities at PMC meetings, or if required dedicated meetings, to engage in more strategic discussions on cross-Theme synergies and for these to be reflected in cross-Theme activities.*
- (d) *Include overt reporting of cross-Theme synergies, outputs and incipient outcomes in Annual Reports and Milestones.*

Response:

CCAFS will task the secretary to the PMC to ensure that there is at least one agenda item on each PMC meeting that examines a cross-Flagship issue (proposed agenda items for the year will be developed at the start of each year). These would be expected to lead to concrete activities and outputs. Cross-Flagship synergies should especially be taking place within the Regional Programs. The annual reporting form for Regional Program Leaders will be altered to capture cross-Flagship synergies within each region.

Recommendation 7:

Develop clear plans with associated implementation strategies for undertaking participatory research at local scales in the future that offer the rigour associated with focused effort at a manageable number of sites but builds in approaches for scale out to achieve wider impact.

Response:

The evaluator points to a number of challenges and questions within Regional Programs, most notably: how to achieve increasing investment in Climate-Smart Villages (CSVs) from Centers; how to scale out CSVs to achieve wider impact that is measurable at sub-national and national scales, yet maintain the rigour and effort in existing CSVs; how to exploit new opportunities at local scale that don't lend themselves to operating within the concept of CSVs. CCAFS will, in the Extension Phase, develop stronger local to regional impact pathways and associated implementation strategies. These will be a core guiding tool in resourcing activities at the regional level. Thus CSVs will be resourced as appropriate but with the recognition that to achieve specific outcomes other opportunities at local scale that don't lend themselves to the CSV concept will also be resourced.

Recommendation 8:

Clearly articulate the role, if any, for working with vulnerable commercial scale farmers and have this strategy visible in business plans.

Response:

The CGIAR's mandate and Strategy and Results Framework (SRF) focus on reducing rural poverty and hunger, hence poor farmers are the starting point for CCAFS' work. However, CCAFS is set up to explore alternative development pathways through its modeling of future scenarios that consider more industrialized food production and through its research on transformational adaptation, which in extreme cases involves smallholders moving out of agriculture. CCAFS also works with larger producers for certain research questions, such as those related to mitigation and commodity crop drivers of deforestation. At its meeting in Rome in October 2013, the CCAFS Independent Science Panel directed CCAFS to emphasize 'farmers vulnerable to climate change' as CCAFS beneficiaries, recognizing that these will predominantly be smallholders but will also include the wider farming community. CCAFS will make this strategy visible in business plans.

Recommendation 9:

Develop approaches to more explicitly link outcomes from local scale research activities to national scale policies.

Response:

Regional Program Leaders will be tasked with making a more explicit link between local site work and national level policy processes. This will be captured in the next version of impact pathways being developed for the Extension Phase.

Recommendation 10:

For effective application of global models at local scales, increased effort should be placed on activities that connect the down-scaled climate models, crop models and their application to local scale farming systems and their social and economic dynamics.

Response:

The scenario building activity in the five CCAFS regions, which involves the development of quantitative scenarios, includes an explicit effort to link local household and farming systems models with the socio-economic drivers as played out in the different regional scenarios. In this way, the regional scenarios are providing a set of different contexts at the broad scale, allowing local adaptation, mitigation and risk management options to be evaluated under a range of plausible futures that are relevant for each region. This work is making use of the considerable quantity of household-level data collected at all the CCAFS core sites. We envisage iterations between the different scales (regional to local, and local to regional) so that different options can be evaluated for their private as well as social costs and benefits, in the search for adaptation, mitigation and risk management options that provide robust benefits across a range of scenarios. We accept the recommendation, but note that increased effort is already being made: 2014 is seeing considerable work in this area, involving as it does eight CGIAR Centers and several universities, as well as the CSIRO.

Recommendation 11:

Increased effort should be invested in developing a coherent structure that links Milestones, Annual Outcomes and higher level, longer term outcomes (IDOs). A key aspect of this should be development of an approach to Impact Pathways that is consistent across Themes and Regions. This Impact Pathways approach should be developed in a way that facilitates close integration between Annual and Intermediate Development Outcomes.

Response:

A process has been put in place to develop consistent impact pathways across the whole program, for implementation in the Extension Phase.

Recommendation 12:

Increased effort should be directed to the Theme Outcome areas that are currently progressing slowly and at risk of not achieving their planned outcomes by 2015-16. In particular, areas relevant to the System Level Outcome on food security, with an emphasis on wider system aspects of food security, should receive some focus.

Response:

During the remainder of Phase 1, additional effort will be placed on achieving outcomes, especially in those areas where progress has been slow. In the Extension Phase, alignment on achieving outcomes will be much greater, given the new process whereby project participants jointly define regional impact pathways and work towards a common objective.

Recommendation 13:

Invest more effort in producing cross-cutting, synthesis reports and policy briefs given the strong external interest in these products. This will require identifying research activities that lend themselves to these synthesis publications and may provide additional benefit as a stimulant for cross-Theme interactions.

Response:

The evaluator notes that the most downloaded publications are strongly dominated by those that synthesise CCAFS work across Themes and across Regions. To step up efforts in addition to the current products of the Coordinating Unit, once a year the CCAFS Program Management Committee will identify key cross-cutting products for production and dissemination that year, and assign production responsibilities among the staff of the Coordinating Unit, Flagships and Regions.

Recommendation 14:

CCAFS should develop a plan to lift publication rates in ISI journals. This will require a mix of measures ranging from performance indicators to short term incentives to longer term capacity building in Centers and done in a way that doesn't compromise a focus on achieving outcomes.

Response:

The evaluator demonstrates that CCAFS compares poorly in relation to other CRPs in the production of journal articles. The CCAFS management team suggests three possible, not mutually-exclusive reasons: poor reporting by Centers; long lead times in publication by a relatively new area of research for CGIAR; much effort placed on partnership engagement and outcome fostering relative to producing peer-reviewed publications. CCAFS will urge Centers to do a better job of reporting and will reassess the situation after the 2014 annual report. In addition a detailed bibliometric analysis will be conducted in the first half of 2014. It is noted that in the 2013 annual report (i.e. the year after the evaluator's study), publication was up 25% for ISI journals.

Recommendation 15:

CCAFS should maintain its investment in a diversity of IPGs as a means of influencing decision-making and achieving desired outcomes and impacts.

Response:

The evaluator notes that CCAFS produces a wide variety of IPGs (Reports, Working Papers, Models, Data, Journal articles). CCAFS will maintain its current strategy of having a diverse portfolio of IPGs, backed up by a website and dissemination strategy.

Annex 5



CCAFS Independent Science Panel – Guidelines for Governance

May 2014

1. BACKGROUND AND PURPOSE

The CCAFS Guidelines for Governance were endorsed by the ISP at its meeting in May 2014, and was tabled for approval by the CIAT BoT also in May 2014.

The Independent Science Panel (ISP) of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) was established on 1 July 2011, replacing the Steering Committee of the CCAFS Challenge Program.

The Rules of Governance of CCAFS, including the ISP, are set out in the CCAFS Program Plan <http://ccafs.cgiar.org/publications/ccafs-program-plan#.Upvxv9JDt5k>. The full set of management mechanisms of CCAFS are defined on pp. 25-29 in the Program Plan. The Guidelines for Governance for ISP members in this document do not replace the Program Plan. They are a supplement that aim to consolidate governance and operational provisions specifically relevant for members of the ISP to conduct their service. In addition to the provisions for ISP members in the Program Plan, these Guidelines also include provisions that have been adopted by the ISP and/or the CIAT Board of Trustees to ensure the concrete implementation of ISP operations.

2. TERMS OF REFERENCE OF THE ISP

The Independent Science Panel (ISP) of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is established to ensure independence of the programmatic directions of CCAFS. The ISP is accountable to, and appointed by, the CIAT Board of Trustees as the CGIAR Lead Center of CCAFS. The Lead Center has the right to review all decisions made in CCAFS with respect to the potential legal, financial or reputational risks that such decisions may pose, and communicate its concerns through the appropriate channels.

The ISP has a Chair appointed by the CIAT Board, six members, and three *ex officio* members (one from the CIAT Board, representing CIAT on behalf of CGIAR, one representing Future Earth, and the Program Director). *Ex officio* members do not have voting rights. The ISP appoints one of its members as Vice-Chair.

The membership consists of internationally recognised scientists in the field of climate change and food security, as well as technical experts drawn from civil society, development agencies and/or the private sector with a strong record of ensuring outcomes and impacts. Membership should be balanced in terms of disciplinary mix, gender and geographic diversity. The nomination process for ISP members will seek

input from the ISP Chair and the *ex officio* members representing CGIAR and Future Earth, who will consult their constituencies.

Members are appointed for 3 years with possible reappointment for an additional period of up to 3 years to ensure a staggered rotation of members.

The ISP generally meets twice a year.

In order to ensure the independence of the programmatic directions, the responsibilities of the ISP are:

PROGRAMMATIC DIRECTION AND SCIENTIFIC ADVICE

1. To set overall programmatic priorities.
2. To consider annual business plans as submitted by the Program Director and provide advice to the CIAT Board of Trustees.
3. To consider the evidence base for strategic priorities (including *ex ante* analyses) in order to ensure strategic allocation of resources.
4. To review proposed annual budget allocation and provide advice to the CIAT Board of Trustees (BoT).
5. To establish a plan for programmatic CRP-Commissioned External Evaluations (CCEEs) and to participate in CCEEs as follows:
 - a. To be part of the reference group for CCEEs
 - b. To approve the final report and management response for CCEEs that cover programmatic issues and subsequently send report and response to CIAT BoT for information.
 - c. To note the final report and endorse the management response for CCEEs that cover administrative, fiduciary and reputational issues, or other evaluations requested by the CIAT BoT. Report and response will subsequently be tabled for approval by the CIAT BoT.

ADVICE ON FINANCE AND GOVERNANCE ISSUES

6. To recommend to CIAT, if required, a modification of a Program Participant Grant as defined in the Program Participant Agreement (PPA).
7. To recommend termination of a Program Participant Agreement (PPA) if the Program Participant is in breach of its responsibilities.
8. To consider annual reports as submitted by the Program Director.
9. The ISP Chair will report annually to the CIAT Board of Trustees and liaise with the Director General as needed.

GUIDANCE ON PARTNERSHIP AND OUTREACH

10. CGIAR and Future Earth *ex officio* members will regularly update their constituencies on CCAFS' progress, and alert them to any emerging opportunities or threats that are of significance.

3. MEETINGS

Preparations

Meeting agenda and material is prepared by the Program Director and ISP Secretary in coordination with the Chair, and approved by the Chair before circulation of final meeting material to members. Input for agenda and material is requested from members of the ISP and Program Management Committee (PMC). Meeting material is forwarded to members approximately ten working days in advance of the meetings by the ISP Secretary. In case of non-attendance, members can send comments to the Chair and Secretary in advance of the meeting.

Attendance

Date and location of meetings are agreed upon by ISP members one year ahead of the meeting based on a Doodle poll. Meeting attendance is mandatory unless special circumstances prevent participation. Non-attendance must be reported to the Chair and Coordinating Unit. In case a member misses more than one meeting the Chair will discuss future membership with the member.

On behalf of the ISP, the Chair may invite observers, individuals or representatives of pertinent or interested organizations to participate, fully or partially in ISP meetings, without the right to vote.

The Chair determines which sessions of ISP meetings are held in closed session or when attendance should be otherwise restricted. Participation in closed sessions is normally restricted to members of the ISP. As may be necessary, however, the Chair can invite other persons to attend closed sessions.

Minutes of meetings

The ISP Secretary prepares draft minutes of each meeting. The draft minutes are reviewed by the Chair and then submitted as soon as possible to all members. Only participating members may submit suggestions for additions and amendments. After

the first round of consultation with members the Chair determines if final minutes can be approved or require further consultation. The Secretary distributes the full set of minutes to all ISP members and the Secretary of the CIAT Board of Trustees.

With the exclusion of confidential material as decided by the Chair, the Secretary places the approved minutes on the CCAFS website.

The Secretary shall ensure the safe keeping of minutes signed by the Chair and Program Director and a complete set of the background documents associated with each meeting.

Self-assessment

At the ISP meeting in May, members conduct a self-assessment. Results are collected and synthesized by the Vice-Chair, and are presented and discussed at the meeting in October.

4. MISCELLANEOUS

Travel, accommodation and honorarium

Travel and accommodation

As per agreement with CIAT, all ISP members are authorized to travel business class when flight time in the air on one flight is more than nine hours. All travel costs of ISP members are fully reimbursed by CCAFS.

ISP members are encouraged to buy their tickets in their countries of origin and CCAFS will reimburse them.

Receipts, including boarding cards, must be provided for airfare and other travel reimbursements. Prepaid tickets may also be provided by CIAT's travel agency via the CCAFS Coordinating Unit if so required by ISP members.

All other costs associated with the ISP meeting, such as phone calls, visas, vaccinations, and airport taxes are also fully reimbursable. Receipts should be attached to the Travel Expense Claim. The Travel Expense Claim will be provided by the CCAFS Coordinating Unit.

The expense claims of the ISP Chair and each ISP member shall be approved by the Program Director.

Hotel accommodations will be arranged and paid for by the CCAFS Coordinating Unit for all ISP Members.

Honorarium

All ISP members will receive an honorarium of USD 350 per day of official CCAFS meetings as well as other activities which ISP members agree to attend in connection with the official meetings, including field trips and meetings with partners and stakeholders; or participation in events representing CCAFS as agreed to with the Program Director.

Conflict of interest policy

The Conflict of Interest Policy, which is in line with that of the CIAT Board of Trustees, guides the ISP on how to avoid a conflict of interest and how to act should a situation occur. The issue of conflict of interest is on the agenda of each ISP meetings, and each member signs a conflict of interest disclosure form annually. The Conflict of Interest Policy is enclosed in Annex 1.

ANNEX 1

CGIAR RESEARCH PROGRAM ON CLIMATE CHANGE, AGRICULTURE AND FOOD SECURITY (CCAFS) INDEPENDENT SCIENCE PANEL CONFLICT OF INTEREST POLICY

The CCAFS Independent Science Panel (ISP) is established to ensure independence of the programmatic directions of CCAFS. The ISP is accountable to, and appointed by, the CIAT Board of Trustees (BoT) as the CGIAR Lead Center of CCAFS.

CCAFS ISP members act in their best capacity and are expected to manage their relationships with other ISP members, CIAT BoT, CCAFS staff, donors, and partners with objectivity and integrity. It is clear that if a CCAFS ISP member has affiliation(s) with any of the above it is not considered in and of itself a conflict of interest, as it is in the best interest of CCAFS that such CCAFS ISP members, through their relations and affiliations, have a comprehensive world view as well as networks of connections to further the goals and objectives of CCAFS.

This policy guides members in identifying and handling potential conflicts of interest that may arise in a given case, enabling them to provide the relevant information required for each situation to be addressed appropriately. A potential conflict of interest refers to any interests or activities (be they professional, financial, personal, and/or others) that may influence or impair objectivity in the sense of preventing the ISP members from performing their duties and responsibilities as CCAFS ISP members in the best interest of CCAFS and in an unbiased manner.

All CCAFS ISP members maintain the highest degree of integrity in their work and avoid potential conflicts of interests and the appearance of conflict. CCAFS ISP members are alert to situations that might cause a conflict of interest and will take appropriate action to prevent conflict or disclose it. CCAFS ISP members are trusted to perform act with sound judgment to prevent and disclose any potential conflict of interest. Members must adhere to this policy and declare/sign annually a Conflict of Interest Disclosure Form (Appendix A) which will be kept in the ISP file by the Coordinating Unit. Declaration of Conflict of Interest shall be a standard item of ISP meeting agendas and an appropriate record of this declaration shall be kept in all ISP meeting minutes.

If a conflict of interest arises, CCAFS ISP members must inform the ISP Chair who will decide on his/her participation and voting rights in the specific discussion and decision

making process. If the ISP Chair is impaired to resolve the case or has a conflict of interest, the case shall be evaluated by the Vice Chair.

APPENDIX A: CONFLICT OF INTEREST DISCLOSURE FORM

Name:

Current Employer:

Role in the CCAFS ISP:

1. Please list all significant and ***relevant professional activities*** that might be considered a conflict of interest if it applies to you. These may include employment and/or consulting relationships.

2. Please list current, significant, and ***relevant financial interests*** that may be viewed as impairing objectivity in carrying out ISP duties and responsibilities, or may create an unfair advantage for you or any person or organization. These may include financial investments, intellectual property and commercial interests, and sources of private sector research support.

3. Please provide any ***other relevant information*** that may affect objectivity or independence to perform in your role as a member of the ISP if it applies to you.

I hereby declare to the best of my knowledge that the information provided is complete and accurate. I understand that this form will be considered confidential and will be reviewed annually or before if my situation changes as stated in the Conflict of Interest Policy.

I hereby declare that I will comply with the CCAFS ISP Conflict of Interest Policy.

ISP member

Date