

2011 Annual Report: CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS)

A. Key messages

Synthesis of progress and challenges in implementing the CRP

CAAFS got off to a strong start, releasing high-profile scientific results and helping achieve, in collaboration with multiple partners, a significant outcome in the global climate change negotiations. The full set of reports from Centers, Themes and Regions on which this CRP synthesis report is based are available at the following links:

Reports from CCAFS Themes and Regions:

http://ccaafs.cgiar.org/sites/default/files/assets/docs/merged_tl_rpl_activity_plan_report.pdf

Reports from CGIAR centers:

http://ccaafs.cgiar.org/sites/default/files/assets/docs/center_technical_report_2011_merged.pdf

Full list of 2011 publications:

http://ccaafs.cgiar.org/sites/default/files/assets/docs/appendix_1_list_of_ccaafs_publications_in_2011.pdf

Link to CCAFS workplan for 2011:

http://ccaafs.cgiar.org/sites/default/files/assets/docs/ccaafs_2011_workplan_budget.pdf

The CCAFS Independent Science Panel (ISP) focused attention on strategic coherence, research areas that had insufficient investment, and target regions. One of the three Objectives of Theme 1 of CCAFS was changed to increase the social science and policy content of Theme 1. Research areas earmarked for additional investment included: gender and social differentiation; participatory action research; climate information services; finance for climate change mitigation, and national decision-support tools. Two new target regions will be added to the CCAFS portfolio in late 2012: Latin America and South-East Asia.

The major challenge for implementation was the uncertainty of funding (in combination with late signing of contracts), which resulted in some Centers unwilling to pre-fund activities, reporting a slow start and having significant under-spending. Many procedures and tools for cross-Center collaboration were not available at the start of the year (intranet sites, reporting formats, common definitions of Outputs, Milestones etc) but these have since been resolved.

Synthesis of two significant achievements/success stories

1. Agriculture gets a foothold in the UNFCCC: For two years agriculture has been stalled at the United Nations Framework Convention for Climate Change (UNFCCC), with agricultural negotiating text being sidelined in the emerging agreements from COP15 and COP16. At COP17 in Durban this changed, with agriculture being referred to the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) for detailed discussion. CCAFS together with many other agencies played a major part in facilitating this outcome. (i) The Meridian Institute conducted a series of consultations with UNFCCC country negotiators. The negotiators identified problematic issues related to agriculture and food security and the Meridian team prepared background material and facilitated discussions. Two CCAFS staff participated as part of the Meridian team. (ii) The CCAFS-facilitated Commission on Sustainable Agriculture and Climate Change released its summary recommendations prior to Durban, with one focussing on what was needed at COP17, and the Commission Chair participated in the agricultural Ministerial meeting that led up to Durban. (iii) CCAFS prepared background materials on the UNFCCC and agriculture both for this Ministerial event and for the meetings of African regional farmers' organisations in their preparations for Durban. (iv) CCAFS co-organised the Wageningen science meeting on climate-smart agriculture from which a statement emerged relevant to Durban. (v) CCAFS co-convened Agriculture and Rural Development

Day (ARDD 2011) in Durban, with high profile speakers – Professor Sir John Beddington, former Premier Mary Robinson, two Ministers, negotiators and practitioners – speaking to the need to incorporate agriculture in the UNFCCC negotiations.¹

2. Baseline survey establishes participatory research with farmers and public database: Several CG Centers (in particular ICRAF, ILRI, IWMI, ICRISAT) worked with many partners to conduct a baseline survey at the 15 CCAFS benchmark sites in three regions and 12 countries (some of these have become the focus of multiple CRPs to ensure field-level collaboration). The baseline survey covers three levels – household, village and organisational. The household survey was completed in 2011, with interviews of more than 6000 households. It allows CCAFS to explore gender and other social differences in target populations (for example, in access to information and to resources). The village and organisational surveys will be completed in the first quarter of 2012. Survey manuals, data sets and site reports are publicly available through the CCAFS website (ccaafs.cgiar.org/resources/baseline-surveys). In what we believe is an unprecedented step for the CGIAR, the household survey data were available to the public within six months of final field data collection. In tandem with the household survey, CCAFS recorded video testimonials with farmers. This qualitative information, available at the CCAFS Adaptation and Mitigation Knowledge Network (AMKN) website (amkn.org) can be linked with the village-specific results of the quantitative survey.² Emissions baselines were established through remote sensing, modelling and use of data from the household surveys for the East and West Africa sites. Participatory research that integrates adaptation, mitigation and climate risk management is being established at a subset of the benchmark sites (“Climate-Smart Villages”), working with self-help groups of female and male farmers.

Financial summary:

CCAFS 2011 budget was US\$62 million including funds from the CGIAR Fund and other bilateral grants. 85% of the CGIAR Funds (including Window 3 funds) were executed by the end of the year while the execution of bilateral funds was in the order of 102%.

B. Baseline

The two sub-goals of CCAFS are (1) to *identify and test pro-poor adaptation and mitigation practices, technologies and policies for food systems, adaptive capacity and rural livelihoods* and (2) to *provide diagnosis and analysis that will ensure the inclusion of agriculture in climate change policies, and the inclusion of climate issues in agricultural policies, from the sub-national to the global level in a way that brings benefits to the rural poor*. The baseline situation on current mitigation and adaptation behaviors and institutions (to address sub-goal 1) is characterized for the CCAFS regions by the three levels of baseline survey (<http://ccaafs.cgiar.org/resources/baseline-surveys>). This establishes indicators (e.g. of food security, wealth/assets, innovation/adaptation, access to climate information) that can be disaggregated by household characteristics including gender. It is important to note, however, that the baseline survey was designed to measure behavioral and institutional change and to make robust comparisons across sites and regions, rather than as a formal ex-post impact assessment tool, and will be supplemented by targeted impact assessment studies to capture attribution, as laid out in the CCAFS Program Plan. National and global policy baselines (to address sub-goal 2) have been addressed through policy analyses in each of the three regions, as well as ongoing tracking of the UNFCCC process by the CCAFS Coordinating Unit. To measure progress towards the achievement of the sub-goals, 3-year and 10-year quantitative indicators have been identified for each Output associated with each of the twelve Objectives of CCAFS (www.ccaafs.cgiar.org/sites/default/files/assets/docs/CGIAR-Climate-Program-Plan-web.pdf; see page 36). Section D below indicates initial progress in the first year against the indicators.

¹ See <http://www.ccaafs.cgiar.org/commission>, http://www.climate-agriculture.org/Scoping_Report.aspx and www.gscsa2011.org/

² See <http://www.ccaafs.cgiar.org/resources/baseline-surveys> and <http://amkn.org/>

C. Progress in Producing Outputs

In its first year, CCAFS has already made substantial progress towards longer-term achievement of its agreed Outputs. Examples of major Outputs included: the Analogue Tool, which identifies and maps sites with statistically similar climates across space and time (as a novel means of supporting climate and crop models with on-the-ground, farmer-led empirical testing); a high-level consultation and case-study analysis with global food security decision-makers on opportunities for more timely food security interventions in response to climatic shocks; two major reviews of policy frameworks, finance and incentives that could be used support smallholder farmers to engage in mitigation; and a tool and report that identifies hotspots of agricultural vulnerability to climate change, which can be used for targeting and prioritization.

Progress in achievement of individual Milestones under Outputs is reported in Section H. Overall achievement of Milestones scheduled for completion in 2011 was 71% (5 out of 7) for Theme 1, 67% (10 out of 15) for Theme 2, 88% (7 out of 8) for Theme 3, and 100% (9 out of 9) for Theme 4. An additional two Milestones were added to Theme 4 to provide for implementation of the gender strategy. Both of these Milestones were achieved in 2011. The explanation for individual Milestones not yet achieved is provided in Section H; these are largely held up due to funding delays rather than any more significant risk factors.

In 2011, CCAFS published 69 peer-reviewed journal papers (not including those published online ahead of print), three books, 25 book chapters, 22 policy briefs, 51 conference papers, nine science-policy bulletins, and over 100 other publications, including working papers, site characterizations and field reports. Other critical outputs in 2011 include the set of technical and administrative tools to enable the CRP: modalities for planning, budgeting, financial management, contracting, internal communications, external communications and reporting.

D. Progress in Producing Outcomes

The CCAFS Program Plan outlines the twelve major Outcomes that together provide the basis of delivery of the two CCAFS Sub-Goals. The table below summarizes how the Milestones achieved by CCAFS in 2011 deliver on the three-year indicators towards the ten-year Outcomes.

CRP outcomes to be achieved by 2020 as agreed in Program Plan	Agreed three-year (2013) performance indicators	2011 major areas of progress towards three-year performance indicators
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.	One to five flagship technical and/or institutional approaches identified and developed with farmers, key development and funding agencies (national and international), civil society organizations and private sector in three regions, which would directly enhance the adaptive capacity of the farming systems to the climate change conditions.	Two major flagship approaches developed and tested: the Analogue Tool, and the multi-trial approach to field-testing and model-calibration for GxE interactions. Platforms established for multi-stakeholder utilisation of flagship approaches (AMKN and AgTrials).
Outcome 1.2: Strategies for addressing abiotic and biotic stresses induced by future climate change, variability and extremes, including novel climates mainstreamed among	Breeding strategies of regional and national crop breeding institutions in three target regions are coordinated, informed by CCAFS-led crop modeling approaches that are developed and evaluated for biotic	Platform and working protocol established among major regional and international breeding organizations and decision-making and priority setting bodies. Modelling and mapping to work

CRP outcomes to be achieved by 2020 as agreed in Program Plan	Agreed three-year (2013) performance indicators	2011 major areas of progress towards three-year performance indicators
the majority of the international research agencies who engage with CCAFS, and by national agencies in at least 12 countries.	and abiotic constraints for the period 2020 to 2050.	conducted to identify key future abiotic constraints by region for five major food crops under climate change.
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. (Note that this outcome was changed in 2011).	Integrated adaptation strategies for agricultural and food systems inserted into policy and institutional frameworks at regional, national or sub-national level in 2 target regions. Policy makers and key stakeholders use CCAFS research outputs – guidelines, tools and methods – to support the development of NAPAS, sector specific adaptation plans, or germplasm benefit sharing policies.	Methods and networks established for participatory cost-benefit analysis of adaptation options and testing of integrated adaptation strategies. Additionally, cross-Center work on institutional approaches initiated.
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.	One to five flagship risk management interventions evaluated and demonstrated by farmers and agencies at benchmark locations in three regions.	Priority knowledge gaps identified for the flagship intervention index-based risk-transfer products; documentation of current household-level and community-level risk-management approaches based on baseline survey and secondary sources.
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.	Three food crisis response, post-crisis recovery, and food trade and delivery strategies tested and evaluated with partner crisis response organizations at benchmark locations in three regions.	Stakeholder engagement identified priority research, information and evidence needs for proactive food security interventions.
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.	National meteorological services and regional climate centers trained and equipped to produce downscaled seasonal forecast products for rural communities in two countries in each of three regions.	Downscaled seasonal forecast products developed and piloted with rural communities in two countries, and national meteorological services trained in two countries.
Outcome 3.1: Enhanced knowledge 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.	Findings and evaluation tools on mitigation and livelihoods benefits of alternative agricultural development pathways used by global agencies and decision-makers in two countries in each of the three regions.	Completed assessments for three regions of agricultural development policies, mitigation policies and mitigation projects and their implications for mitigation, poverty alleviation and food security, and of technical options compatible with maintaining food supply under alternative intensification scenarios. Framework developed to compare footprint of different agricultural systems.

CRP outcomes to be achieved by 2020 as agreed in Program Plan	Agreed three-year (2013) performance indicators	2011 major areas of progress towards three-year performance indicators
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.	Decision-makers in three regions better informed re options and policy choices for incentivizing and rewarding smallholders for GHG emission reductions.	Completed workshop and two major reviews of incentives, institutions, monitoring systems, market-based mechanisms and policies.
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.	Project design and monitoring guidelines for smallholder agriculture in developing countries produced and contributing to global standards.	Expert processes to identify most promising mitigation options for smallholders conducted in three regions. PhD network on smallholder GHG emissions set up. Factors for livestock emissions calculated and in use by IPCC. Publication of major book on the topic: <i>Climate Change Mitigation and Agriculture</i> .
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.	Agriculture mainstreamed into the global climate change policies, and major international food security initiatives fully incorporate climate change concerns.	Agriculture tabled for discussion in the SBSTA of the UFCCC, with input from CCAFS and partners. Prototype stakeholder-led future scenarios developed for three regions. Methodology for gender-sensitive approaches developed and published. To enhance gender strategy, two further Milestones on capacity enhancement on gender added and completed.
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.	Global database and set of tools for climate-smart agriculture established and used by key international and regional agencies.	Global and regional climate model performance evaluated for three regions. Behavioral baseline survey completed for more than 4000 households in 30 sites in 12 countries. Analyses shared with key national, regional and global agencies.
Outcome 4.3: New knowledge on how alternative 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.	New knowledge on how alternative policy and program options impact agriculture and food security under climate change incorporated into strategy development by at least 3 national agencies, and 3 key international and regional agencies.	Delivery of series of major events, including Agriculture & Rural Development Day at COP17 by more than 15 key international and regional agencies, sharing new knowledge on among more than 600 participants, and International Conference on Climate Change and Food Security in Beijing.

E. Risk Management

The Program Management Committee (PMC) conducted a risk analysis in November 2012, and has subsequently developed a risk catalogue and initiated actions to mitigate risk, with CIAT management and ISP discussion reflection on these actions planned for March/April 2012.

1. Funding uncertainty: While a specified budget was allocated to CCAFS in 2011, there was no confirmation of the total amount until late in the year. Of W1+W2 funds, 30% were received in August and 58% in December. While some Centers and Partners were willing and able to pre-finance based on constant requests from the CCAFS PMC to implement, other Centers and Partners were not willing to take the financial risk. This resulted in significant under-spending and a rush of activities late in the year. We have initiated processes with all Centers that reported under-spending to see how we can reduce uncertainty and increase implementation rate, and have had discussions on this with the Consortium Office. We are hopeful that this risk will be much reduced in 2012.

2. Lack of capacity to attract donors to build up bilateral funding and/or Centers not allocating bilateral funds to CCAFS: CCAFS has a relatively low percentage of its total budget covered by bilateral funding (35 % in 2011; projected 30% in 2012). We have received informal feedback that we should increase the bilateral percentage, and other CRPs or Centers have queried why we have low bilateral support. As CCAFS is a highly dispersed program (with less than 10% of the research budget going to the lead Center), we expect participating Centers to use their resource mobilization offices to raise bilateral funds. While this is happening in some Centers, others focus their attention on the CRP they lead. In addition, because of our strong focus on strategic coherence and integration, some Centers prefer to classify bilateral projects under the CRP they control. To mitigate this problem we plan to: (a) discuss the issue with all Centers; (b) financially reward Centers that raise their bilateral percentage; (c) link Centers to possible sources of bilateral funding.

3. Research actually carried out not aligned to the Program Plan: CCAFS inherited on-going work from 15 Centers. Some of that was non-strategic. In addition, different Centers have different priorities and ways of working that are not in line with the CCAFS strategy (e.g. does not sufficiently incorporate gender and social differentiation; is too focussed on climate impact and vulnerability assessment as opposed to options for adaptation). The PMC and ISP have set a target of three years to phase out non-strategic work and get greater strategic coherence. All proposed Center activities in 2012 were rated for relevance and Centers received feedback on the degree to which their portfolio was strategic. Budgets to Centers in 2012 were reduced by up to 24% on the basis of two criteria, the more important of which was “strategic fit”. Furthermore, strategic priorities for additional investment have been identified and communicated with Centers – and those Centers taking them up have been appropriately resourced.

4. Low productivity, loss of creativity and lack of engagement by Centers: Change processes are usually difficult for staff. This could be related to unclear responsibilities and accountabilities; organizational design constraints that reduce staff effectiveness and creativity; unfair or inconsistent practices arising from inadequate procedures; increased transaction costs and reduced time for science. This can lead to poor staff morale. The PMC is making an extra effort to inspire excitement, build social capital, communicate regularly, and build transparent and effective procedures. In 2012 the priorities are: (a) one face-to-face cross-Center science meeting and four online science seminars to stimulate engagement of scientists; (b) a detailed Center engagement plan to discuss successes and failures individually with all Centers and to build social capital; (c) going out of our way to find exciting opportunities for Center scientists.

5. *Inadequate planning and integration of research and financing across Themes/Regions/Centers:* Working across 15 Centers, four Themes and five Regions on complex topics is not going to be simple. CCAFS had to start from zero in terms of tools to work across Centers. Scientists tend to be individualistic. There is the risk that there is insufficient integration, resulting in duplication; and failing to make the most of possible synergies. In 2012 the CCAFS PMC will: (a) make a special effort to nurture partnerships across Centers under 3-5 Outputs where more integration is needed; (b) enhance the planning and reporting formats and tools; (c) host an inter-Center workshop for financial managers of CCAFS; (d) showcase successes arising from cross-Center collaboration.

F. Lessons Learnt

Analysis of variance from what was planned: In the first year of operation, one major change was made in Theme 1, approved by the ISP. Objective 1.3 was changed from “Identify and enhance deployment and conservation of species and genetic diversity for increased resilience and productivity under conditions resulting from climate change” to “Integrate adaptation strategies for agricultural and food systems into policy and institutional frameworks”. The change is designed to facilitate outcomes and impacts through greater integration with the theme’s planned impact pathways, and to increase the focus on social science and policy. Work on species and genetic diversity is already within Objectives 1.1 and 1.2 and the content of the former 1.3 has been moved under these Objectives. A new intermediate (3-year) Outcome is proposed: *“Integrated adaptation strategies for agricultural and food systems inserted into policy and institutional frameworks at regional, national or sub-national level in 2 target regions. Policy makers and key stakeholders use CCAFS research outputs – guidelines, tools and methods – to support the development of NAPAS, sector specific adaptation plans, or germplasm benefit sharing policies”*. The 10-year Outcome for Objective 1.3 is *“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.”* In moving towards “one common system” (OCS) the Milestones in the original Program Plan have been consolidated into larger units in line with the definitions of “Outputs”, “Milestones” etc proposed in the OCS. The new milestones will be operative in 2012 – no change in content resulted from this revision. As a result of the preparation of the gender strategy two additional milestones were added in 2011.

The PMC is initiating or strengthening activities in the following areas, as recommended by the ISP:

- Strengthen participatory action research (PAR) in Objective 1.3 on institutions and policy for progressive adaptation
- Provide incentives to ensure Centers develop inter-Center programs of work
- Strengthen partnership and coordinated action across Centers and key international partners and networks under Objectives 2.2 and 2.3 (managing the food system; climate information systems), given the low budget allocation to these strategically important areas of work
- Support an international scientist in a CGIAR Center to work on climate finance and market mechanisms for mitigation (Objective 3.2)
- Strengthen Center efforts in gender analysis
- Add the equivalent of one Activity³ per region to enhance the level of participatory action research (PAR) in the baseline sites
- Add one Activity per region that focuses on the process and tools needed to improve national level decisions regarding investments in alternative climate smart options

³ “Activity” equates to a budgetary allocation of about USD250,000 per annum.

Budget implications of the variance from the planned CRP: In order to strengthen CCAFS in specified work areas (as indicated above), 2012 budgets will be reallocated among Themes, Regions and Centers (as indicated under Risk 3 above).

Implications for impact pathways: The impact pathways for Themes were considered at a reflection meeting in late 2011. The original impact pathways still stand, with minor modifications.

Implications of these amendments for the partnerships of the CRP and for research activities: The major implication of the strategic budgetary allocation is that, as is to be expected, there are winners and losers, and the PMC and ISP need to be transparent and thorough in defining the allocation choices. There are no major shifts in partnerships. The scale of work in the two new regions will be kept within the limits imposed by the budget allocation for 2012 (to be confirmed), which is lower than approved in the original Program Plan.

Analysis of changes in effectiveness and efficiency: Climate Change Contact Points in Centers complain of increased transaction costs under the new CRP system. In some cases this is because Centers have not changed their own procedures – the result being that scientists are dealing with Center and CRP planning and reporting procedures. In addition, planning procedures across CRPs are often different, resulting in scientists who work in more than one CRP having to deal with different procedures (and tools).

On the other hand, working as a system has a number of advantages. (a) *Coherence across the CGIAR on thematic topics.* For example, many Centers work on greenhouse gas emissions. In the past outside stakeholders had to deal with each of the Centers, but now they deal with a single Theme Leader. (b) *Capturing synergies to achieve more high-level research results.* For example, a book on mitigation in agriculture was published in 2011, drawing on contributions from eight Centers. The CGIAR can collectively claim to be the leading agency on mitigation in developing country agriculture. (c) *Capturing synergies to achieve greater outreach and knowledge exchange.* For example, a report on climate change hotspots produced by two Centers, was promoted by multiple Centers in different regions. It achieved major media success. (d) *Sharing data and research sites.* CCAFS has initiated a number of data sharing platforms (e.g. www.agtrials.org, which collates trial data from across the CGIAR) and work in the CCAFS research sites involves multiple Centers that can share information and hardware (e.g. baseline survey data, weather stations).

Qualitative description of the effectiveness of the partnership strategy of the CRP: In 2011 the CCAFS ISP approved the CCAFS global strategy for engagement, partnerships and communications⁴ and the regional strategies will be under discussion in May 2012. To date, strong working relationships have been built with a strategic, selective set of non-research and research partnerships (given the many approaches made to CCAFS by potential outside partners).

Qualitative description of interactions with relevant CRPs: The modalities of working with other CRPs were clearly laid out in the CCAFS Program Plan⁵. In 2011 CCAFS had considerable success in working with other CRPs effectively and efficiently. Highlights included: (a) joint staff position between CCAFS and GRiSP on breeding for a changing climate; (b) joint implementation plans, including activities conducted in 2011, between CRP1.2 and CCAFS in the set of benchmark sites in Bangladesh; (c) joint modeling work between CCAFS and CRP2.

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http://ccafs.cgiar.org/sites/default/files/assets/docs/ccafs_engagement_and_communications_strategy_oct_2011.pdf

⁵ <http://www.ccafs.cgiar.org/sites/default/files/assets/docs/CGIAR-Climate-Program-Plan-web.pdf> see page 21

List of all Exclusive Agreements, Restricted Use Agreements, and IP Applications: None; CCAFS is promoting use of the Creative Commons License on all data and reports.

G. Financial Reporting

CCAFS implemented many activities in its first year, released high profile scientific results and helped achieve, in collaboration with multiple partners, a significant outcome in the global climate change negotiations. The major challenge for implementation was the uncertainty of funding which resulted in a slow start and some centers reluctant to initiate activities until clarity had been received. This resulted in significant under-spending in some of the participating Centres. CCAFS 2011 budget was US\$62 million including funds from the CGIAR Fund (\$41 million) and other bilateral grants (\$21 million). Only towards the end of the year CCAFS received firm confirmation of the proposed budget. The first tranche of funds from the Fund Council (30%) was received early in August and the second tranche (58%) was received in December. By the end of the year 85% of the CGIAR Funds (including Window 3 funds) were executed while the execution of bilateral funds was in the order of 102%.

Note: All Financial reports can be found separately in Excel.

H. Standardized table of state of achievement of Milestones towards Outputs and Outcomes

This table summarizes achievement of Milestones scheduled for completion in 2011 according to the approved Program Plan for CRP7. Note that only 2011 milestones are listed. In addition to the progress shown below, some activities towards later milestones were also completed. One of these (4.1.2.1) is fully completed and reported in 2011; those partially completed will be reported in future years.

MILESTONES (OUTPUT TARGETS)	Status	Explanation and evidence
Theme 1. Adaptation to Progressive Climate Change		
Objective 1.1 Analyze and design processes to support adaptation of farming systems in the face of future uncertainties of climate in space and time		
Output 1.1.1 Development of farming systems and production technologies adapted to climate change conditions in time and space through design of tools for improving crops, livestock, and agronomic and natural resource management practices		
Milestone 1.1.1.1 Platform established for multi-location trials of technologies and genotypes for GxE interaction analysis and the calibration and evaluation of crop models. (2011)	Completed	Platform established and available online at www.agtrials.org with > 3,000 trials available spanning 16 crops.
Milestone 1.1.1.2 Robust methods developed for calculating spatial and temporal analogues of climate. Partner co-authored peer-reviewable method(s) developed and tested codes using pattern-scaled HadCM3 climate output. (2011)	Completed	Method developed and published in CCAFS working paper 12, and models made available online in R software, and through user friendly web-based interface at http://gismap.ciat.cgiar.org/analogues/
Output 1.1.3 New knowledge-synthesizing institutional arrangements, policies and mechanisms for improving the adaptive capacity of agricultural sector actors and those involved in managing the food system		
Milestone 1.1.3.1 Document produced that synthesizes institutional arrangements, policies and mechanisms for improving the adaptive capacity of agricultural sector actors (addresses what is working where, how and why, with disaggregation by gender and other social strata) (2011)	Partially completed	Completed for selected farming systems (maize and wheat systems). General framework for institutional arrangements and their role in adaptation was finalised in early 2012.
Milestone 1.1.3.2 Web-based platform established (Adaptation and Mitigation Knowledge Network) to share and exchange knowledge, linking farmers' realities and experiences on the ground with multiple and combined research outputs (2011)	Completed	Knowledge portal established and launched, with diverse content including farmer testimonials, CCAFS benchmark site information, climate outputs, crop suitability maps and many other knowledge products < http://www.amkn.org >
Milestone 1.1.3.3 Adaptation option portfolio (tool box) for aquaculture systems, options identified and disseminated in Vietnam, tool box disseminated in Bangladesh. Building capacity by creating information and working in partnerships. (2011)	Completed	Impact studies completed on aquaculture systems, and adaptation options (toolbox) identified through cost/benefit analysis. Through partnerships, results have been discussed and disseminated with national policy makers.
Objective 1.2 Develop breeding strategies for addressing abiotic and biotic stresses induced by future climatic conditions, variability and extremes, including novel climates		
Output 1.2.1 Understanding and evaluating the response of different varieties/crops to climate change in time and space, and generating comprehensive strategies for crop improvement through a combination of modelling, expert consultation and stakeholder dialogue		
Milestone 1.2.1.1 Research and policy organizations actively engaged in setting research priorities; one regional breeding strategy workshop involving regional decision-making and priority setting bodies delivered in each of 3 initial target regions (2011)	Completed	Engagement with breeding institutions for four crops (banana, beans, rice and sorghum) completed through a workshop in Ethiopia, including researchers from all target regions.

Objective 1.3 Identify and enhance deployment and conservation of species and genetic diversity for increased resilience and productivity under conditions resulting from climate change		
Output 1.3.1 New knowledge, guidelines and access to germplasm are provided for using genetic and species diversity to enhance adaptation, productivity and resilience to changing climate		
Milestone 1.3.1.2 Approaches, methods and tools for participatory assessment of where and when biodiversity rich practices facilitate adaptation to climate change reviewed ; findings summarized in report (2011)	Partially completed	Workshops held with experts and proceedings published. Generation of a framework underway and to be completed during 2012.
Theme 2. Adaptation through Managing Climate Risk		
Objective 2.1 Identify and test innovations that enable rural communities to better manage climate-related risk and build more resilient livelihoods		
Output 2.1.1 Synthesized knowledge and evidence on innovative risk management strategies that foster resilient rural livelihoods and sustain a food secure environment		
Milestone 2.1.1.1 Report of priority knowledge and methodology gaps produced for index-based risk transfer products; and Program value-addition and partnership strategy (2011)	Completed	Expert workshop and report on "Index Insurance for Managing Climate-Related Agricultural Risk: Toward a Strategic Research Agenda."
Output 2.1.2 Analytical framework and tools to target and evaluate risk management innovations for resilient rural livelihoods and improved food security		
Milestone 2.1.2.1 Framework report produced and prototype farm household modelling tools developed for evaluating impacts of climate risk and risk management interventions on livelihood resilience (2011)	Partially completed	T2 collaborated with 4.1 on a review of farm household models, which incorporated requirements for modelling climate risk and livelihood resilience. The review will inform collaborative analytical framework and tool development in 2012.
Output 2.1.3 Development; and demonstration of the feasibility, acceptability and impacts; of innovative risk management strategies and actions for rural communities		
Milestone 2.1.3.1 Participatory pilot demonstrations initiated to develop and evaluate current and improved risk management strategies and actions with rural communities at benchmark locations in 2 countries each in EA, WA and IGP (2011)	Completed	Participatory pilot demonstrations initiated in Kenya and Senegal focused on use of climate information; and in IGP under the "Climate-Smart Village" model. Participatory diagnosis and preparatory activities initiated in Ghana, Ethiopia and Bangladesh.
Milestone 2.1.3.2 Current strategies and actions for managing climate-related risk documented for rural communities at benchmark locations in EA, WA and IGP (2011)	Partially completed	Initiated synthesis of risk management strategies at benchmark sites based on baseline data and literature. The on-going study was delayed due to failed initial contracting effort, and need to find another partner. Separate studies detail risk management strategies at Kuhlina and Borana.
Output 2.1.5 Identify and evaluate differential impact of agricultural risk management strategies on different social groups, particularly women and men, and communicate findings through technical and policy support activities		
Milestone 2.1.5.1 Guidelines developed for ensuring equitable participation of women and other socially disadvantaged groups in participatory action research on climate-related risk management. (2011)	Completed	Completed through efforts by Theme 4: "Gender and Climate Change Research in Agriculture and Food Security for Rural Development Training Manual" (CCAFS AND FAO); and two competitive research grants to women scientists, dealing with Theme 2-focused gender challenges in WA and IGP.
Objective 2.2 Identify and test tools and strategies to use advance information to better manage climate risk through food delivery, trade and crisis response		

Output 2.2.1 Enhanced knowledge of impacts of climate fluctuations on food security, and how to use advance information to best manage climate-related risk through food delivery, trade, crisis response and post-crisis recovery		
Milestone 2.2.1.1 Report and journal article on impacts of climate variability on components (e.g., production, prices, rural incomes, consumption, trade, humanitarian assistance) of food security; and review of policies to mediate impacts in EA, WA and IGP (2011)	Partially completed	A three-country study produced a report for Nepal. Senegal and Ethiopia components were delayed as partnership and data-sharing agreements were negotiated.
Output 2.2.2 Synthesized knowledge and evidence of the impacts of alternative risk management interventions within the food system on food security and rural livelihoods, to inform policy and practice		
Milestone 2.2.2.1 Report and policy brief on the costs associated with timing and targeting of alternative food crisis interventions (2011)	Completed	A consultation with international food security stakeholders (Output 2.2.3) led to a slight shift in focus – from a food security intervention costing study, to a demand-driven process focused on government food security decision-making in Ethiopia. A preparatory study, designed to guide policy analyses and pilot activities in 2012, reviewed policies and decision processes, and consulted with key decision makers.
Output 2.2.3 Platform and tools for sharing knowledge and fostering improved coordination among food crisis response, the market-based food delivery system, and agricultural research and development		
Milestone 2.2.3.1 Report and policy brief of an international food system stakeholder consultation to develop a collaborative strategy for improving intervention, coordination, capacity to respond to improved climate-related information (2011)	Completed	Workshop with global leaders in food security information and response identified priority issues, gaps and opportunities, to inform CCAFS strategy. Outcomes are captured in a workshop report, and a report on promising Objective 2.2 activities and partnerships.
Milestone 2.2.3.2 Study and stakeholder consultation on regional agricultural and food security contingency planning processes, current and potential use of climate-related information, and strategy for improving planning and coordination in EA, WA and IGP (2011)	Completed	Consultations with relevant stakeholders through workshops in EA and WA, and individual visits of regional offices of key stakeholders in the IGP. In EA, it is incorporated into the report, “Managing Climate Risks through CCAFS Programmes: A Stakeholder Institutional Capacity Analysis in Eastern Africa Region,” reported under 2.2.1.1.
Objective 2.3 Support risk management through enhanced prediction of climate impacts on agriculture, and enhanced climate information and services		
Output 2.3.1 Improved climate information tools and products to support management of agricultural and food security risk		
Milestone 2.3.1.1 Historic gridded daily rainfall dataset, combining observations and satellite images, developed and evaluated for 1 country each in EA and WA (2011)	Partially completed	A set of partners developed methods to reconstruct historic daily weather data for agricultural modelling and adaptation interventions; produced 2 reports, software tools and training events. Participating countries have not yet given permission to develop full data sets for public release.
Milestone 2.3.1.2 Prototype seasonal forecast information products tailored and evaluated for local agricultural decision-making in 2 countries each in EA, WA (2011)	Completed	Locally-downscaled probabilistic seasonal forecasts developed and presented in farmer workshops in Senegal and Kenya. Instead of 2 countries each in EA and WA, seasonal forecast development was expanded into IGP. Deliverables for the IGP are spatial analysis tools to visualize and analyse rainfall statistics and their seasonal predictability, and report of preliminary predictability results.
Output 2.3.2 Synthesized knowledge and evidence on institutional arrangements and processes for enhancing climate services for agriculture and food security		

Milestone 2.3.2.1 Report and journal article produced on synthesis and program strategy for needs, constraints and opportunities for enhancing climate services, and institutional and ICT-based information delivery mechanisms for agricultural risk management (2011)	Partially completed	Study was commissioned to synthesize information about current climate services and inform strategy in the three focus regions, building on five regional reports commissioned in 2010. Contracting delays with ILRI delayed completion of the synthesis report and journal articles.
Output 2.3.3 Improved knowledge, tools, data sets and platforms for monitoring and predicting agricultural production and biological threats, and informing management, in response to climate fluctuations		
Milestone 2.3.3.1 Proof-of-concept on remote sensing data assimilation for crop and rangeland production forecasting reported (2011)	Completed	Technical report, and prototype tools developed and demonstrated
Milestone 2.3.3.2 Predictability of crop production and prices from climate information in the IGP reported (2011)	Completed	Incorporated into the Nepal report and draft manuscript on impacts of climate variability on components of food security, reported under Milestone 2.2.1.1.
Milestone 2.3.3.3 Synthesis report on climate-sensitive pest and disease modelling and early warning systems for agricultural and food security risk management (2011)	Completed	Journal article submitted to Agricultural and Forest Meteorology, and report with strategy recommendations.
Theme 3. Pro-Poor Climate Change Mitigation		
Objective 3.1 Inform decision makers about the impacts of alternative agricultural development pathways		
Output 3.1.1 Analysis of agricultural development pathways and the trade-offs among mitigation, poverty alleviation, food security and environmental health		
Milestone 3.1.1.1 Report on potential emissions reductions from technical options compatible with maintaining food supply (2011)	Completed	Potential emissions reductions identified for conditions consistent with maintaining food supply for nine countries in E Africa (Brown et al. CCAFS Working Paper 14). Intensification scenario examined for W. Africa cocoa (see below).
Milestone 3.1.1.2 Report on potential emissions reductions from technical options compatible with maintaining food supply under alternative intensification scenarios. (2011)	Completed	Report completed for cocoa intensification in WA (Gockowski et al. CCAFS working paper in progress)
Milestone 3.1.1.5. Assessment report on regional and national agricultural development policies, mitigation policies and mitigation projects and their implications for mitigation, poverty alleviation and food security (2011)	Partially completed	Mitigation policies and projects reviewed with national agencies in three regions and reports produced. Global review of low C development strategies not produced due to lack of country activity in this area to date.
Output 3.1.2 Enhanced tools, data and analytic capacity in regional and national policy and research organizations to analyze the implications of different development scenarios and mitigation strategies		
Milestone 3.1.2.1 Framework for comparison of environmental footprint of agricultural systems (2011)	Completed	(1) Tool for land-use planning for low-emissions development strategies, LUWE, developed and tested in 1 district of Indonesia (ICRAF); (2) Terra-i tool < http://dapa.ciat.cgiar.org/terra-i-an-eye-on-habitat-change/ > and online tool for evaluating biomass and carbon in the context of deforestation, land use, population and natural resources for the Amazon region produced (CIAT); (3) Integrated Modeling Platform for Mixed Animal-Crop Systems (IMPACT) modified to enable GHG analysis; pilot test conducted in Kenya < http://ccafs.cgiar.org/our-work/research-themes/integration-decision-making/data-and-tools/characterising-agricultural > (ILRI)
Objective 3.2 Identify institutional arrangements and incentives that enable smallholder farmers and common-pool resource users to reduce GHGs and improve livelihoods		
Output 3.2.1 Evidence, analysis and trials to support institutional designs, policy and finance that will deliver benefits to poor farmers and women, and reduce GHG emissions		

Milestone 3.2.1.1 Reviews of promising incentives, institutions, market-based mechanisms and policies at project and national scales, in three initial target regions, including (i) carbon as co-benefit to more productive agricultural practices, (ii) carbon markets, (iii) corporate social responsibility technical assistance, (iv) carbon labelling, summarized in four articles, policy briefs and posted on webpage (2011)	Completed	Book published by Routledge-Earthscan, Ecoagriculture engaged 4 partners in PAR for East Africa, national workshops held in 4 countries although options not fully identified, landscape special issue papers and policy brief prepared with synthesis article in preparation
Milestone 3.2.1.2 Experts workshop to identify the design and monitoring requirements of finance and institutional arrangements to better benefit poor farmers and women (2011)	Completed	Expert workshop completed with identification of requirements for financial and institutional arrangements available at < www.fao.org/climatechange/micca/72530/en/ >
Objective 3.3 Test and identify desirable on-farm practices and their landscape-level implications		
Output 3.3.2 Methods developed and validated for GHG monitoring and accounting at farm and landscape level to contribute to compliance and voluntary market standards		
Milestone 3.3.2.1 Expert and stakeholder consultations on methods appropriate for smallholder farmers through one global workshop and workshops in each of the 3 initial target regions (2011)	Completed	Workshop completed and scoping studies initiated on emissions methods/models and identification of cost effective methods appropriate whole farm and AFOLU/landscape GHG accounting options. See http://www.fao.org/climatechange/micca/72532/en/
Milestone 3.3.2.4 Network of PhD students launched for studying GHGs in developing country agriculture to test methods and develop further innovations, linked to Milestone 3.3.2.2 and 3.3.2.3 (2011)	Completed	Climate Food and Farming Network (CLIFF) formed, eight PhD fellow grants given and workshop held; < http://www.cliff.life.ku.dk/ >
Theme 4. Integration for Decision Making		
Objective 4.1 Explore and jointly apply approaches and methods that enhance knowledge to action linkages with a wide range of partners at local, regional and global levels		
Output 4.1.1 For each region, coherent and plausible futures scenarios to 2030 and looking out to 2050 that examine potential development outcomes under a changing climate and assumptions of differing pathways of economic development; developed for the first time in a participative manner with a diverse team of regional stakeholders		
Milestone 4.1.1.1 Capacity built among three regional teams of diverse stakeholders trained in scenarios approaches and engaging with policymakers in their countries/regions and in global CC processes and with the ESSP community; Methodological briefs, papers (2011)	Completed	EA and WA multi-stakeholder scenarios teams trained and storylines produced. 100K Proposal for EA high level policy workshop accepted by USAID; brief disseminated at COP17; posters and other communication products under development with regional scenarios teams and PANOS
Milestone 4.1.1.2 Three sets of prototype regional scenarios produced (main regional uncertainties identified, initial regional storylines developed, reports and initial scoping for model analysis). Article on effectiveness of scenarios as a 'boundary object' (2011)	Completed	EA and WA storylines produced, analyzed and refined; modeling teams engaged and quantification work underway. Scenarios approach for S Asia under exploration. Chaudhury M, Vervoort V, Kristjansson P, Ericksen P, Ainslie A. Multi-Stakeholder Scenarios as a Boundary Process: Improving Food Security, Environments and Livelihoods in East Africa under Conditions of Climate Change. Submitted to Regional Environmental Change, Dec. 2011.
Output 4.1.2 Global and regional maps, tables and associated syntheses, showing current vulnerable agricultural and fishing populations in relation to food security to 2040 and 2050		
Milestone 4.1.2.1 Vulnerability assessment and maps from the three CCAFS regions published and widely disseminated in a paper, policy briefs, conference presentations, workshops, web materials, media stories, inputs to the ag work program/ UNFCCC negotiations, global and regional CC conferences (e.g. COP), contributing to strengthening regional climate and agricultural knowledge platforms/networks and improved CCAFS-related science-user information flows (2012-2013)	Completed	Vulnerability mapping and analysis with multiple partners undertaken; CCAFS report, launch and media stories in BBC, Time and Nature – see: < http://ccaafs.cgiar.org/news/category/press-releases > Ericksen et al. 2011. Mapping hotspots of climate change and food security < http://ccaafs.cgiar.org/resources/climate_hotspots >. Paper submitted to the journal Food Security.

Output 4.1.3 Evidence on, testing and communication of, successful strategies, approaches, policies, and investments contributing to improved science-informed CC-ag development-food security policies and decision making		
NEW Regional capacity strengthened in participatory, gender- and vulnerability-sensitive research on CCAFS issues; research reports from each region (2011)	Completed	Gender and climate change research in agriculture and food security for rural development. FAO/CCAFS/CGIAR brief. < http://ccafs.cgiar.org/blog/gender-climate-change-and-food-security > and < www.fao.org/gender > FAO and CCAFS. Gender and Climate Change Research in Agriculture and Food Security for Rural Development Training Manual. CGIAR Program on Climate Change, Agriculture and Food Security (CCAFS) and The Food and Agriculture Organization of the United Nations (FAO). < www.fao.org/gender > and < www.ccafs.cgiar.org > Three draft gender-CC reports (available on CCAFS intranet site)
Output 4.1.4 Analyses providing evidence of the benefits of, strategies for, and enhanced regional capacity in, gender and pro-poor climate change research approaches that will increase the likelihood that CCAFS-related research will benefit women and other vulnerable as well as socially differentiated groups		
Milestone 4.1.4.1 Drawing on Theme 3, CARE-CCAFS report on potential impacts on women and vulnerable groups of new carbon payment schemes; FAO/CCAFS report on gender & climate change issues across CCAFS regions, informing new CCAFS gender strategy (2011)	Completed	CCAFS-CARE-EcoAg report: Shames et al. 'Institutional innovations in African smallholder carbon projects'. ICRAF Policy Brief 11. 'Improving carbon initiatives aimed at smallholders' (www.worldagroforestry.org) CCAFS gender strategy submitted to Consortium
NEW Two research grants to women scientists in each of 3 CCAFS regions, based at Universities or NARS, granted (2011)	Completed	Issued competitive call for proposals and grants given to 5 female scientists now implementing gender-CC research in 3 CCAFS regions.
Objective 4.2 Assemble data and tools for analysis and planning		
Output 4.2.1 Integrated assessment framework, toolkits and databases to assess climate change impacts on agricultural systems and their supporting natural resources		
Milestone 4.2.1.4 Regional climate characterization and evaluation of global and regional climate model performance for the three initial target regions (2011)	Completed	Reports completed: Climate change in CCAFS Regions: Recent Trends, Current Projections, Crop-climate Suitability, and Prospects for Improved Climate Model Information. Part 1, West Africa (Washington & Hawcroft). Part 2, East Africa (Washington & Pearce). Part 3, The Indo-Gangetic Plain (New, Rahiz & Karmacharya). Part 4, Progress in Climate Science Modelling: a look forward (Washington). On web in early 2012.
Objective 4.3 Refine frameworks for policy analysis		
Output 4.3.1 Tools developed and climate change impacts assessed at global and regional levels on agricultural systems (producers, consumers, natural resources), national/regional economies, and international transactions		
Milestone 4.3.1.1 Broad-scale modeling tools developed to assess climate change impacts on yields, production, trade, prices, and various human well-being measures developed or enhanced; models structure design vetted by experts. (2011)	Completed	The model improvement process is ongoing with participation from 7 CGIAR centers. Web version of the IMPACT model prepared for release in the 1st quarter 2012. The model improvements have been used with the East Africa scenarios exercise.
Output 4.3.4 Likely effects of specific adaptation and mitigation options and national policies (including for socially differential groups) communicated to key local, national and regional agencies and stakeholders		
Milestone 4.3.4.4 Major report targeted to COP17, that lays out climate change impacts, adaptation and mitigation options and national policies; Research monographs and policy briefs on climate change adaptation and mitigation developed; Materials disseminated at Ag & Rural Development Day 2011 (2011). Input in the MP7 high level report on the agricultural work program; Platform to ensure coastal communities concern are included in UNFCCC negotiations (WorldFish) (2011)	Completed	This activity was restructured to be a series of reports on climate change effects on agriculture prepared by the BRICS countries plus the US and Indonesia. These reports were based on a common outline and set of results from the IMPACT model. They were originally presented at the CAAS-IFPRI conference on food security and climate change in Beijing in November 2011. The report authors agreed on a set of recommendations to the climate change negotiators in Durban. The report results and the recommendations were presented at an official side event in Durban.