State of 2012 milestones

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		
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		
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, agronomic and natural resource management practices		
Output target	**Status**	**Explanation and evidence**
Milestone 1.1.1 2012 (1) Platform established for multi-location trials of technologies and genotypes for GxE interaction analysis and the calibration and evaluation of crop models	Accomplished	TL: The platform is established fully and we have a number of cases of good GxE analyses from T1 and from specific centers (e.g. CIMMYT, CIAT). WA: Scope for more GxE analysis in WA in 2013. SA: CCAFS in partnership with Bioversity and national partners evaluated rice and wheat germplasm in India, hotspots of climate risks were identified using climate analogues of current and future climate, ICRISAT identified and characterized analogue locations for evaluation, testing and germplasm sampling in S Asia, IWMI produced vulnerability map of mid hill watersheds of Nepal incorporating a number of bio-physical, climatic and socio-economic indicators, CIMMYT has collected data from various long-term trials (from completed as well as on-going farmers' field and on-station trials) in different parts of Nepal, India and Bangladesh. Based on the activities of different centres, substantial works have been happened but there needs to be cross-centre collaboration to build a platform for multi-location trials and calibrate crop models.
Milestone 1.1.1 2012 (2) Robust method developed for calculating spatial and temporal analogue of climate. Partner co-authored peer-reviewable method developed and tested codes using pattern scaled HadCM3 climate output. Case studies conducted in at least 2 analogue sites in each region	Partially Accomplished	TL: Robust analogue method developed and case studies conducted in three regions (EA,WA, SA). The method is througha platform, and we have a working document which fully reports on the methods and approaches. One peer-reviewed paper has already reported on the analaogue approach, but a dedicated peer-reviewed paper on the analogue method contnues to be developed and is available only in draft form.
Milestone 1.1.1 2012 (3) Practices developed that enhance the efficiency of water use in aquaculture and small scale irrigation (eg, increased productivity per unit use of water; increased irrigable area with same amount of water); Time series differential productivity and irrigated area analysis. The social and gender implications of applying these practices assessed	Accomplished	TL: This milestone is the responsibility of IWMI. They report as partically completed as they have ongoing activities in this area of work, but I consider that the milestone as stated in the logframe has been delivered on. For more information, see IWMI annual report.
Milestone 1.1.1 2012 (4) Assessment of the potential for exploitation of ground water for crop production in at least three basins.	Accomplished	TL: IWMI responsible for these milestones, and they have been fully delivered as per IWMI Annual Report 2012.
Output 1.1.2 Building of regional and national capacities to produce and communicate socially inclusive adaptation and mitigation strategies for progressive climate change at the national level (e.g. through NAPAs)		
Milestone 1.1.2 2012 At least 10 countries capacitated to spatial and temporal analogues in EA, WA and IGP. Training workshop(s) organized and videos produced on the use of the Analogue methodology (for examining both spatial and temporal analogues based on multiple climate projections, see milestone 1.1.1 2012 (2)). Engagement of key IGP stakeholders such as national universities, NARC, ICAR (DWR), BARC, NGOs; Farmer exchanges including at least 40% women convened among analogue sites integrating analysis of social, cultural and gender–disaggregated barriers to adaptation	Accomplished	TL: Three regional training workshops and several national training workshops on the Use of the Analogue tools were carried out reaching ca. 70 reserachers and key stakeholders from 15 countries. Three farmer to farmer exchanges among analogue sites were succesfully carried out in Nepal, Tanzania and Ghana, involving at least 40% women and adopting a socially differenciated focus for the analysis of barriers to adaptation. WA: Echange completed (ghana: 18 farmers + 6 ASI agric extension); EA: (regional training; 20 participants trained + national training- ethiopia: 17 participants) SA: CCAFS in partnership with CIAT and Oxford university successfully organized the farmers exchange on climate analogue sites in Nepal which was a great success providing ideal learning opportunity for the farmers from their analogue locations. This was one of the successful activities with the farmers in 2012.
Output 1.1.3 New knowledge, guidelines and access to germplasm are provided for using genetic and species diversity to enhance adaptation, productivity and resilience to changing climate with benefits for socially marginal groups.		
Milestone 1.1.3 2012 (1) Approaches, methods and tools for gender and socially-sensitive participatory assessment of where and when biodiversity rich practices facilitate adaptation to climate change reviewed; findings summarized in report	Partially Accomplished	TL: This milestone corresponds to Bioversity and is only partially completed. Surveys were finalised behind schedule, and hence the final technical report is to be delivered in June 2013. SAs: Bioversity International partially completed the development of methodologies for surveys of communities in Nepal to assess the relative tolerance of traditional crops to climate change, has analysed gender disaggregate data on perception, crop/varieties use and management and their relation to climate change adaption in Nepal and India, CIMMYT identified key phenotyping sites for maize in IGP, including a semi-controlled managed heat stress screening facility/FATE at a suitable location in IGP. Further step is required to come up with specific recommendation on where and when biodiversity rich practices facilitate adaptation in the region. This again requires inter-center collaboration.
Milestone 1.1.3 2012 (2) Baseline survey and analysis of centers' and partners' acquisitions and distributions of adapted germplasm carried out; Comparative survey and analysis conducted; findings summarized in reports	Accomplished	TL: Bioversity conducted surveys of CG scientists in 2011 on the use of plant genetic resources for climate change adaptation. Results were published in 2012 in two papers, accompanied by coverage through social media. As part of the seconf phase of the research Bioversity developed a survey instrument, and identified respondents in 19 countries, focusing on non-CG organizations. The survey using this instrument will be conducted in 2013.
Objective 1.2 Develop breeding strategies for addressing abiotic and biotic stresses induced by future climatic conditions, variability and extremes, including novel climates		
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		
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 modeling, expert consultation and stakeholder dialogue		
Milestone 1.2.1 2012 Crop breeding institutions coordinated in development of climate-proofed crops for a 2030-2050 world; Document written jointly by CCAFS and crop breeding institutions outlining coordinated plans for breeding.	Partially Accomplished	TL: There has been initial discussions and agreements with a number of crop breeding institutions, but a document has not been published. During 2013 the priority setting activities together with commodity CRPs will address this deficiency. I personally do not see the partial completion of this milestone as a particular problem. The milestone itself was a means to an end which is reflected in the milestones at end of 2014. SA: ICRISAT used long-term experiment data to calibrate APSIM for sorghum, maize and chickpea, and simulations of systems run with historical data, ICARDA monitored major changes in population structures of insect pests and diseases of cereals and legumes in Nepal and Bangladesh. Development of climate-proof crops requires concerted efforts from Breeding institutions.
Objective 1.3 Integrate adaptation strategies for agricultural and food systems into policy and institutional frameworks		

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.		
Output 1.3.1 Improved institutional arrangements and socially differentiated adaptation planning approaches at the local level to enable farming system adaptationstrategies for crop improvement through a combination of modeling, expert consultation and stakeholder dialogue		
Milestone 1.3.1 2012 (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).	Accomplished	TL: Document produced that synthetized institutional arrangments, policies and mechanisms for improving the adaptive capacity of agricultural sector actorsâ€¦ Final version delivered, to be published as a CCAFS Report in 2013. SA: CCAFS in partnership with IFPRI completed a documentation of the past and current policies and programs implemented in agriculture, livestock and fisheries sectors in Sri Lanka, India, Nepal and Bangladesh. Prioritization of adaptation/mitigation options in climate smart villages of Bihar and Haryana has been completed at the farmers scale. It will continue in Nepal, Bangladesh and other parts of India. Concrete finding based on these studies has yet to come.
Milestone 1.3.1 2012 (2) Video testimonials produced on gender-specific farmer adaptation and mitigation strategies (including indigenous knowledge, coping mechanisms and current challenges) in 1-3 sites in each of the 3 initial target regions.	Accomplished	TL: Video testimonios on gender specific adapt and mitig strategies in 1-3 sites in each of the initial target regions has been progressively delivered on over the past 2 years. During 2012 there was only a limited number of new testimonials, but I consider the milestone as compelted. EA: Activity delayed due to funding freeze. A consultant has been contracted and has started the documetnation exercice in one of the CCAfs sites (Nyando)
Output 1.3.2 Public and private sector policies and strategies at the national level to enable farming communities and the food system to adapt to predicted future conditions		
Milestone 1.3.2 2012 Baseline national adaptation policy and plans evaluated in at least 5 target countries and published in a synthesis report and policy brief	Partially Accomplished	TL: Meta Synthesis of National Adaptation Plans and Policies across across CCAFS countries in West and East Africa and South Asia ongoing. Delivery expected by April 2013 (including background document for informing national adaptation planning and provide recommendations to CCAFS and Policy brief. For reporting to the Consortium this can be considered as completed. As of February 2013 it is only partially completed. EA:This activity was delayed, however, a lead consultant has been identified to evaluate the current status of the National Adaptation Plans (NAPS) in Ethiopia, Kenya, Tanzanai and Uganda. The consultant will research and collect other relevant national and regional documents including the Climate Change and Green Growth Strategies. In addition, consultations will be made with a small group of stakeholders such as relevant ministries, agricultural practitioners, researchers, development partners, international and local NGOs. SAs: CCAFS in partnership with IFPRI completed a documentation of the past and current policies and programs implemented in agriculture, livestock and fisheries sectors in Sri Lanka, India, Nepal and Bangladesh. Prioritization of adaptation/mitigation options in climate smart villages of Bihar and Haryana has been completed at the farmers scale. It will continue in Nepal, Bangladesh and other parts of India. Concrete finding based on these studies has yet to come.
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		
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		
Output 2.1.1 Synthesized knowledge and evidence on innovative risk management strategies that foster resilient rural livelihoods and sustain a food secure environment		
Output target	**Status**	**Explanation and evidence**
Milestone 2.1.1 2012 Synthesis of knowledge and priority knowledge gaps reported for three risk management innovations (livelihood diversification, index-based insurance, local traditional risk management strategies), with clear analysis of likely impacts across socially differentiated groups and gender.	Accomplished	TL: Knowledge synthesis reports and related research activities in 2012 cover 5 areas of climate risk management innovation: traditional knowledge, gender equity in the context of climate information use, livelihood diversification, index-based insurance and agroforestry. SAs: CCAFS has completed exploratory studies of local knowledge/innovation for climate risk management in IGP, ICRAF characterized two sites, one in each of Uttar Pradesh and Rajasthan of India in terms of key bio-physical and socio-economic parameters for their main farming/livelihood systems, it has also analysed smallholdersâ€™ adaptation strategies to climate change and the role of tree crops in local adaptations to climate variability in mountain regions of Nepal and Pakistan, ICRISAT completed social vulnerability index and produced maps incorporating historic and current climatic risks and livelihood options in dry lands of India, â€˜Smartfarmâ€™ for managing climatic risk has been initiated by Worldfish in CCAFS benchmark sites. Local knowledge and gaps have been identified but there seems some redundancies in different centers. EA: Commissioned case studies have been completed in Ethiopia, Tanzania, and Uganda. In Tanzania and Uganda, case studies focussed on evaluating integration of scientific weather and climate forecasting and indigenous knowledge to provide downscaled accurate, timely and easily accessible forecasts to inform farm-level decision making. The case study in Ethiopia focussed on documenting the status, utilization, benefits, challenges and opportunities of rangeland enclosures and community action groups (CAGs) to understand their implications on improving adaptive capacity of pastoral communities. In Kenya, the activity focused on documenting the climate related opportunities for agricultural adaptation in Semi-Arid Eastern Kenya.
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 2012 Analytical framework reported, and household and intra-household-level modeling requirements specified for targeting and evaluating risk management interventions for climate-resilient rural livelihoods; Multi-scale structural modeling design for aggregate impacts of household and intra-household risk management changes; Evaluation and refinement of models for crop and water management in response to climate fluctuations.	Partially Accomplished	TL: Theme-comissioned work (co-funded by Theme 4) produced an initial prototype of a household modeling tool that is compatible with IMPACT-Lite data and, with further development, will meet needs for ex-ante evaluation of adaptation interventions across CCAFS sites. CIMMYT and IFPRI developed and applied alternative modeling approaches for a similar purpose. Work on a multi-scale structural modeling approach did not progress.
Output 2.1.3 Development; and demonstration of the feasibility, acceptability and impacts; of innovative risk management strategies and actions for socially-differentiated rural communities		
Milestone 2.1.3 2012 (1) Gender- and socially-equitable participatory pilot demonstrations of portfolios of agricultural risk management innovations and traditional local knowledge established, applying consistent methodology for diagnosis, prioritization based on potential benefits for different types of users and evaluation; and traditional local risk management strategies documented, in 5 countries in EA, WA and IGP	Accomplished	TL: Participatory action research on suites of climate risk management strategies, under the “Climate-Smart Village” model, was implemented to some extent in CCAFS sites in at-least 6 countries (Kenya, Uganda, Tanzania, Senegal, Bangladesh, India). Co-locating place-based participatory research by Centers, so portfolios of multiple risk management innovations could be evaluated at CCAFS sites, has progressed more slowly than anticipated. Because of resource limitations and the varying capacity and approaches of partners, expectations of applying fully consistent methodology for participatory diagnosis and evaluation across sites and regions may not have been realistic. SAs: WorldFish has completed an analysis of main adaptation options pursued by people in the past, and adaptation needs analysis based on climate, hydrology, land use policy options, water management policy options in south western coastal Bangladesh, CIMMYT has been engaged household survey in IGP on farmersâ€™ access to agricultural information sources and completed an analysis of the role of mobile phones in reducing information search costs and asymmetries, and increasing market efficiencies, CCAFS has documented local knowledge and innovation emerging under climate change context. Sufficient works have been done in this milestone. EA:Across CCAFS sites in East Africa, researchers from the national and international institutions and development partners are working with communities to test a portfolio of climate risk management strategies. These include diversification of livelihoods through bee-keeping in Nyando, testing the design and communication of downscaled, probabilistic seasonal forecasts and evaluating their impact on farmersâ€™ management and livelihood outcomes in Wote, Eastern Kenya (by ICRISAT)

Milestone 2.1.3 2012 (2) Practices, technologies and production systems selected for demonstration based on assessment of their acceptability to and positive impact on welfare of different user groups. Gender- and socially equitable participatory demonstration and evaluation of impacts of promising production and NRM technologies, and production systems, on livelihood risk and resilience in the face of climate variability, initiated or continued in 5 countries.	Accomplished	TL: CIMMYT and ICRAF reported work (Ethiopia, Kenya, Tanzania, Nigeria, Malawi, China) that focuses in part on transferring specific production technologies. Their reporting notes the role of the new technology within broader livelihood strategies. Note that Milestones 2.1.3 X (2) were added in 2011 to capture ongoing work by Centers focused on assessing or transferring particular production technologies. An apparent decline of Center activity under this milestone series appears to reflect a shift toward work that is increasingly co-located and integrated (i.e., 2.1.3 X (1)), and therefore more strategic; and possibly a shift of work on development of production technologies into more appropriate CRPs (not confirmed).
Milestone 2.1.3 2012 (3) Gender- and socially equitable participatory demonstration and evaluation of impacts of social capital, institutional and financial services, and policy interventions, on livelihood risk and resilience in the face of climate variability, initiated or continued in 5 countries	Accomplished	TL: Index insurance work has been supported by IFPRI and ILRI. In Ethiopia, the first sales period for ILRI's IBLI project was initiated in 2012. In West Africa, work on fostering and evaluating use of seasonal forecasts by farmers was extended to cover Senegal, Burkina Faso and Mali. CIMMYT, ICRISAT, and CIP are using ICT and participatory studies to deliver climate information in Zimbabwe, Peru, and Ethiopia.
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		
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		
Output 2.2.1 Enhanced knowledge, tools and evidence to support improved management of the food system (e.g., food delivery, trade, crisis response, post-crisis recovery) in the face of climate fluctuations		
Milestone 2.2.1 2012 National to global food system stakeholders engaged to identify and explore potential improved response strategies in the face of climate fluctuations; Impacts of climate variability on components (e.g., production, prices, rural incomes, consumption, trade, humanitarian assistance, ,social and gender equity) of food security reported, and policies to mediate impacts reviewed in EA, WA and IGP.	Accomplished	TL: Studies of the impacts of climate fluctuations on food security and its components have been reported for Nepal, Pakistan, India, Senegal and Ethiopia. In South Asia, Michael Sheinkman (hired to strengthen Objective 2.2) has engaged food security response policy through regional food security information networks and process, such as the Integrated Phase Classification (IPC) process. Work in Ethiopia started with sub-national government decision processes; and revealed promising opportunities to connect decision-making with improved climate-related information, and support it with evidence. SAs: An analysis of weather effects on major annual agro-commodities (rice, sorghum, pearl millet, maize, pigeon pea, groundnut and cotton) in India has been completed in collaboration with IFPRI. Earlier, a similar analysis was done for Nepal to quantify the relationship between historic and current climatic variability and food security indicators. This research has huge policy significance.
Objective 2.3 Support risk management through enhanced prediction of climate impacts on agriculture, and enhanced climate information and services		
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		
Output 2.3.1 Improved, value-added climate information products, knowledge, tools, methods; and platforms for monitoring and predicting impacts of climate fluctuations on agricultural production and biological threats; to support management of agricultural and food security risk		
Milestone 2.3.1 2012 Crop and rangeland production forecasting methodology review and platform design; Feasibility of reconstructing historic daily meteorological data required for agricultural modeling demonstrated and evaluated in two countries or regional institutions; Capacity on seasonal forecasting enhanced in 6 countries	Accomplished	TL: Progress was made on analysis to support seasonal climate prediction in SAs, on methods and capacity to use satellite data to fill gaps in meteorological observations, and methods to use remote sensing for model-based crop forecasting. The most significant achievement was the design and initial development of the CCAFS Regional Agricultural Forecasting Toolbox (CRAFT). Workshops contributed to seasonal forecasting capacity development in West Africa, and networking and knowledge exchange on remote sensing data assimilation for crop forecasting. SAs: Capacity development of the NARES on crop production forecasting was done in 2012, toolkit will be ready for use by the mid of 2013 and will be subsequently tested in Nepal, India, Sri Lanka and Bangladesh, sufficient volume of data have been already collected in S Asia to run the toolkit, IFPRI developed farm level hydro-bio-economic modeling of climate risk coping strategies in the IGP and a report on drought characterization, statistical relationships between droughts and agricultural production, and drought mitigation options selected using risk-based decision modelling, CIMMYT produced maps of wheat yield sensitivity to warming in India, with identification of hotspots, including comparison of results between statistical and process-based models. This milestone is covered completely. EA: As part of the Agricultural Model Inter-comparison project (AgMIP), four regional multidisciplinary teams comprising of climate, crop, economic and IT experts were formed in Sub-Saharan Africa (SSA). In Eastern Africa, country teams were formed in Kenya, Ethiopia, Tanzania and Uganda with ICRISAT as the coordinating agency. WA: Capacity on seasonal forecasting enhanced and communication approach evaluated in three sites (Kaffrine in Senegal, Yatenga in Burkina Faso and Segou in Mali). Approaches for up-scaling to be developed during 2013
Output 2.3.2 Synthesized knowledge and evidence on institutional arrangements and communication processes for enhancing climate services for agriculture and food security, including services that reach marginalized farmers and women		
Milestone 2.3.2 2012 Prototype gender- and socially-equitable climate information delivery mechanisms demonstrated and evaluated with representative socially and gender-differentiated user groups in rural communities at 2 locations each in EA, WA and IGP. Social and gender-differentiated demand for and use of different types of climate-information content and its presentation assessed and implications for design of delivery mechanisms identified	Accomplished	TL: Work on climate services for agriculture and food security advanced rapidly, with the hire of Arame Tall (through ICRISAT), and CCAFS participation in the global network of the Climate Services partership. The work in 2012 exploited opportunities to influence several partners at an aggregate scale, for example through evaluations of national agrometeorological advisory programs in India and Kenya, a workshop on scaling up climate services for farmers in Africa and South Asia, and studies of ICT-based information delivery. This led to a shift in emphasis from piloting towards scaling up, although climate information delivery mechanisms were piloted and evaluated in 3 countries each in East and West Africa. SAs: A South-South Exchange was conducted in Dakar, Senegal which drew together 110 experts from both policy and research (met services and NARES) communities of practice along with farmer representatives, for a total of more than 30 countries and 50 institutions represented (including 5 CG centers), ICRISAT successfully developed seasonal forecasts for SW monsoon for Kurnol and Anatapur Districts from IITM GCM-downscaled forecast and delivered to farmers with crop management options. South South Exchange was instrumental to further refine gender and socially equitable information delivery mechanism learning lessons from different regions. WA:Climate information delivery mechanisms demonstrated and evaluated with representatives of different stakeholders groups at Kaffrine in Senegal
Theme 3. Pro-Poor Climate Change Mitigation		
Objective 3.1 Inform decision makers about the impacts of alternative agricultural development pathways		
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		
Output 3.1.1 Analysis of agricultural development pathways and trade-offs		
Output target	**Status**	**Explanation and evidence**
Milestone 3.1.1 2012 . Analysis and frameworks for planning low carbon agricultural development and understanding trade-offs, including ensembles of global integrated assessment models to examine food-energy trade-offs and social returns of investments in mitigation, ex-ante impacts assessed of options with different trade-offs for men, women and the poor (ILRI- linked to T4, CIAT-Colombia, T3).	Partially Accomplished	TL: CIAT work completed. PIK work extended til Aug 2013, as work relied on collaboration with a number of partners and the AgMiP team process.
Output 3.1.2 Enhanced tools, data and analytic capacity in regional and national policy and research organizations to analyze mitigation sectors and agricultural development options		

Milestone 3.1.2 2012 Synthesis reports and data for IPCC and national and regional bodies on sectoral and cross-sectoral mitigation potentials: (i) livestock, agriculture and forestry (ILRI); (ii) aquaculture sector, analyzed through supply chain (WorldFish). Includes differentiation of livestock, crops, agroforestry and aquaculture systems of known importance to women and the poor. Includes capacity building of decision makers in inventories and use of appropriate tools and data in three initial regions (ILRI, ICRAF, T3). See also 3.3.1 2012-15 for sectoral data from on-farm trials	Accomplished	TL: World Fish research completed and ILRI published three articles. EA:Two training workshops were held in January and March at ILRI, Nairobi, focussing on National and Farm Scale Quantification of Agriculture GHG Emissions for the AFOLU sector. Fifteen participants from government, research and academic institutions from Ethiopia, Kenya, Uganda and Tanzania participated
Objective 3.2 Identify institutional arrangements and incentives that enable smallholder farmers and common-pool resource users to reduce GHGs and improve livelihoods		
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		
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 2012 (1) Review of economic incentives and benefits to socially and gender differentiated farmers and other stakeholders for adoption of integrated practices in two regions (conservation agriculture in rice-wheat systems in IGP, sustainable land management in maize-legume systems and agroforestry in EA). (CIMMYT, T3). Development of comparative framework. Linked to Milestone 3.3.1 (2013) and 3.3.1 2012-2015	Partially Accomplished	TL: CIMMYT completed analysis in EA but not SA. Analysis in EA is only weakly related to mitigation. Bernier completed work for T3-4 in Nyando. Asked CIMMYT to lead economic framework, but B. Shiferaw expressed no interest. Session was held April 2013 at CCAFS Science meeting to explore framework possibilities and support interest-but no takers. Framework now being developed under the SAMPLES project theme SAs:CIMMYT has completed an assessment of the determinants of the adoption of conservation agriculture by farmers in the IGP using primary data collected from 972 farm households in Nepal, India and Bangladesh, it has completed an analysis of the economic and environmental benefits of no-till wheat using farm trial data from the north-west region of India, it has also assessed the C-sequestration potentials of different management practices in different cropping systems, soil types and ecologies. However, since this is an on-going activity linked with milestone to 2013 and further.
Milestone 3.2.1 2012 (2) Synthesis and development of novel institutional options for mitigation payments to farmers which have been assessed for the potential distribution of their benefits among different social groups, including women and the poor: PES for livestock (ILRI), bundling of ecosystem services (IFPRI), national carbon offsets (WorldFish), carbon market project design in EA (T3)	Accomplished	TL: ICRAF completed two research papers on the design of carbon projects, one based on a survey of 32 projects globally (see http://dx.doi.org/10.5716/WP13001.PDF) and published in 2013 and the other based on a survey of seven biocarbon projects in East Africa, presented at a CAPRI workshop in Sept 2012 and in progress as a CAPRI working paper (see http://www.capri.cgiar.org/pubs.asp). EcoAgriculture Partners with T3 completed a CCAFS report on institutional arrangements of carbon projects (see http://cgspace.cgiar.org/handle/10568/21222). IFPRI initiated work on (1) readiness No training by ICRAF.
Output 3.2.2 Improved capacity to increase the uptake and improve the design of incentives mechanisms and institutional arrangements to deliver benefits to poor farmers and women		
Milestone 3.2.2 2012 Training for national policy makers, project implementers and communities on designing payments for carbon to benefit poor farmers and women	Accomplished	TL: ICRAF conducted training in LUWES (see 3.1) for decision makers in SE Asia to support land use planning See www.asb.cgiar.org/PDFwebdocs/LUWES%202012%20V1.pdf.
Objective 3.3 Test and identify desirable on-farm practices and their landscape-level implications		
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		
Output 3.3.1 Analysis of mitigation biophysical and socioeconomic feasibility for different agricultural practices and regions, and impacts on emissions, livelihoods and food security		
Milestone 3.3.1 2012 (1) Assessment of feasibility and impacts of mitigation practices on farms and different social groups within the rural population, including women and the poor for (i) conservation agriculture, sustainable land management and irrigated farming systems in rice-wheat and maize-legume systems in 3 target regions (CIMMYT, IFPRI), (ii) improved irrigation and fertilizer management of rice and the viability of region- specific approaches for CDM (IRRI), (iii) dryland cropping systems (ICRISAT), (iv) agroforestry and complex agro-ecosystems (ICRAF), (v) livestock (ILRI), (vi) potatoes and sweet potatoes (CIP), (vii) coffee and cacao agroforestry in EA and WA (IITA, ICRAF, CIAT) at crop system and landscape scales, (viii) biochar (IFPRI and ICRAF), (ix) cereal biomass production and SOC of contour ridge tillage (ICRISAT), (x) pasture (CIAT), (xi) low-input fruit systems (CIAT) and (xii) coffee systems for Central America (CIAT), (xiii) land use change, land rehabilitation and poplar agroforestry, (xiv) oil palm (CIFOR). Linked to 3.3.2 2013	Accomplished	TL: Adequate progress made by Centers. EA:As part of the participatory action research (PAR), sustainable intensification strategies are being tested at CCAFS sites in Nyando (Kenya) and Lushoto (Tanzania). These interventions include Sustainable land management that integrates fodder and fruit trees, sustainable intensification, and agro-forestry to increase on-farm tree cover to 10%. Specific practices include cut off drains, buffer strips, contour farming, terraces and tied ridges for soil and water conservation SAs:Baseline emissions and simulation for Vaishali, Bihar (CCAFS site) has been completed, it will be will be completed for other sites within 2013, IRRI started monitoring emissions from rice-wheat system in Haryana, CIMMYT is also working in measuring emissions from rice-wheat systems in Haryana. WA:Activity on sustainable intensifcation. Implementation in progress with focus in Niger and Senegal.
Milestone 3.3.1 2012 (2) Options for low climate impact sustainable agricultural intensification identified, tested and documented in at least 6 countries and tested on farms in at least 2 sites in each region: conservation agriculture, water management, agroforestry, sustainable land management, fertilizer micro-dosing. Linked to T1	Partially Accomplished	TL: Baselines for SA sites underway.
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 2012 Review of methods for the quantification of agricultural greenhouse gases for smallholders, including needs of men and women users and recommendations for improvement; includes case study of methodology development for carbon analysis in landscapes and coffee farming systems in EA (T3, ICRAF).	Partially Accomplished	TL: Review conducted via ERL synthesis articles, workshop, and SAMPLES protocol workshop. Gender implications not relevant. ICRAF coffee study not reported. EA: The equipment for the project is expected to be delivered in Nairobi by end of January and will be moved to Uganda in February. The project team visited the Rakai site (Uganda) in October 2012 and initiated meetings with stakeholders in Uganda - NARO Kawanda and at Makerere University, and partners from IITA WA: 6 case studies (projects) on the developement of GHG quantification methods implemented in 5 countries (Benin, Burkina Faso, Ghana, Mali and Senegal). A regional network of experts established. A review of GHG measurements undertaken.
Output 3.3.3 Enhanced capacity for the use and development of monitoring and accounting methods and assessing feasibility and impacts in regional and national research institutions		
Milestone 3.3.3 2012 Assessment reports on technical and institutional capacity for national-level measurement and monitoring in 3 target countries (T3). Network of practice established for C sequestration in rangelands for Africa.	Partially Accomplished	TL: ILRI held training with GRA that established network of practice. Country assessments not conducted due to concentration of efforts in developing protocol.
Theme 4. Integration for Decision Making		

Output target	Status	Explanation and evidence
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		
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		
Output 4.1.1 Future economic development scenarios taking climate change into account, and vulnerability maps and analyses incorporating a changing climate and food security issues shared with decision-makers at national, regional and global levels and informing regional economic development and national food security plans and policies		
Milestone 4.1.1 2012 Three regional teams produce prototype scenarios and vulnerability targeting products that are used in visioning and strategy exercises with key policymakers, private sector and NGOs	Accomplished	TL: Scenarios completed for three regions. EA:Activity linked to the participatory action research in Theme 1 (167), Theme 2 (174) and Theme 3 (180). PICO Eastern Africa held informal interviews with partners and communities across three CCAFS sites (Nyando, Lushoto, Borana) in order to improve the implementation of site-specific research with a broad range of partners, develop critical skills for long-term facilitated community engagement, learning and development. Preliminary results were used as input into a regional PAR and outcome mapping workshop in November 2012. SAs:CCAFS together with Oxford University organized a scenario building workshop process in Colombo in 2012 and came up with five qualitative scnearios for South Asia. These scenarios will be further considered for detailed quantification and modeling in 2013.
Output 4.1.2 Evidence on, testing and communication of, successful strategies, approaches, policies, and investments contributing to improved science-informed climate change-agricultural development-food security policies and decision making		
Milestone 4.1.2 2012 Participatory Action Research process established in 13 sites and gender-sensitive activities related to risk management, adaptation and mitigation implemented, with engagement and communication strategies aimed at users of the knowledge generated pursued, and scaling up mechanisms in place	Accomplished	TL: PAR implemented in all 15 sites. SAs: CCAFS has set climate smart agriculture villages in key CCAFS sites in South Asia (Vaishali, Bihar and Karnal, Haryana of India, Rupandehi of Nepal and Bagerhat of Bangladesh). Several activities relating to water, residue, nitrogen management, are being implemented in these sites and participaory vidoes are being employed to upscale these activities in neighbouring region. Various centres are working in the CCAFS sites. However, still inter-centre collaboration is not up to the mark. WA: Relates to PAR activity on developing community based climate smart agriculture. Activity underway and expected to expand to Niger and Senegal sites in 2013
Output 4.1.3 Analyses providing evidence of the benefits of, strategies for, and enhanced regional capacity developed 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 4.1.3 2012 Tools for engagement to ensure gender and pro-poor outcomes, communication approaches and tools for understanding climate change-gender relationships tested and disseminated	Accomplished	TL: FAO/CCAFS particpatory gender tools available in 3 languages. IMPACTlight survey implemented in 15 sites. New intra-household gender tools developed and tested. SAs:CCAFS in partnership with local NGO engaged women leaders and farmers in Bihar of India through several round of training events in several districts of Bihar, IFPRI developed a survey instrument to collect gender-disaggregated data on climate change perceptions, impacts (on assets), and adaptation and coping responses from the gender sentinel site of CCAFS in Bangladesh and actual survey has not started.
Output 4.1.4 Strengthening capacities to effectively engage in global policy processes and mainstreaming risk, adaptation and mitigation strategies into national policies, agricultural development plans, and key regional and global processes related to agriculture and rural development, food security and climate change		
Milestone 4.1.4 2012 (1) Partner-led engagement and communication approaches, knowledge networks, and capacity of farmers' organizations, government and regional organization partners' strengthened for mainstreaming CCAFS-related, gender disaggregated research evidence.	Accomplished	TL: RPLs taking the lead in networking with decision-makers and building capacity for CSA policy. EA: In 2012, the program focussed on strengthening the existing parnerships and developing new partneships at local, national, regional and global scales. As part of the regional learning partnership (RLP), CCAFS in collaboration with COMESA, EAC and SADC organized post-Durban dialogue workshops on Climate Change and Agriculture in Eastern and Southern Africa, to help further articulate the African position on agriculture within the international climate change negotiations (UNFCCC) SAs: High level policy engagement on climate smart agriculture was organized in Bangkok together with APAARI, a rigorous interaction with Members of Parliament in Nepal followed by a workshop on Science-Policy-People Interface on Climate Change, Agriculture and Food Security in Nepal, inaguration of Climate smart Agriculture Learning Platform for South Asia by His Excellency President of Nepal in 2012 was done by CCAFS together with local partners etc affirm that milestone has taken a proper shape in 2012. WA: 5 national platforms established and linked with the regional platform (CORAF/WECARD). National platforms roadmaps developed and implementation to start during 2013.
Milestone 4.1.4 2012 (2) Local institutional capacity strengthened in land health surveillance methods including soil carbon measurement in CCAFS regions; Scoping studies undertaken on linking landscape-level land health and carbon measures with socioeconomic data from CCAFS baselines and other site studies	Accomplished	TL: CIAT and IITA have both been training local partners across the East Africa sites, and with ICRAF working on methods to link socio-economic and biophysical data.
Objective 4.2 Assemble data and tools for analysis and planning		
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		
Output 4.2.1 Integrated assessment framework, toolkits and databases to assess climate change impacts on agricultural systems and their supporting natural resources		
Regional site and baseline characterization		
Milestone 4.2.1 2012 (1) Regional site characterization and gender-disaggregated baseline data collection completed and initial analyses in three target regions at three levels: household, village, and institution	Accomplished	TL: This is essentially complete, pending some final reports at the village and organisational levels. Some delay due to extra sites selected in E Africa and S Asia. EA:Data collection for all the six sites in East Africa completed in 2012. The data are centrally stored at ILRI and a training and data collection manual has been compiled. The data will be analysed in 2013. SAs:All household baseline surveys have been completed in all sites, village and organizational baselines in Karnal, Haryana; and organizational baseline in Vaishali and Bagerhat are on, ICRISAT has developed pixel-wise climate data for use in models but software to process gridded data for rainfall probability, water balance and LGP has not made ready for use, Trade-off Analysis model for Multi-Dimensional impact assessment (TOA-MD) developed and adapted as an integrated assessment framework for regional analysis of climate change and adaptation impacts, IWMI prepared map of flood occurence and its duration for South Asia and regional database on agricultural statistics, historic climate parameters and crop management and updated south asia irrigation map. Substantial works have been completed to justify this milestone. WA:Detailed household characterization (impactlite) completed for the five WA sites. Data analysis on-going.
Milestone 4.2.1 2012 (2) Downscaled climate data and methods tested and harmonized	Partially Accomplished	TL: Methods have been tested, but not really harmonised yet. A workshop is planned for 2013 to work on this and write a comparison paper. CMIP5 climate model data have been worked on and will soon be available.
Milestone 4.2.1 2012 (3) First sets of databases, database tools, and meta-data on agricultural impact models collated and/or developed and made available, to enable stakeholders to assess impacts and evaluate options (including soil profile descriptions; global ag system classification; global cropland extent)	Accomplished	TL: This milestone is essentially complete (although it could be asked, where does one stop with databases?). But soils, agricultrual systems, and cropland data sets are available, along with rangeland extent data. Centres ae providing a wide range of other databases under this activity. More broadly, the three CCAFS portals/platforms are functioning and being continually updated (ccafs-climate, AgTrials and DataVerse) EA: Impact-Lite data collection for all the six sites in East Africa completed in 2012. The data are centrally stored at ILRI and a training and data collection manual has been compiled. The data will be analysed in 2013. SA: ICRISAT has developed pixel-wise climate data for use in models but software to process gridded data for rainfall probability, water balance and LGP has not made ready for use. IWMI prepared maps of flood occurence and its duration for South Asia and regional database on agricultural statistics, historical climate parameters and crop management and updated South Asia irrigation map. Substantial work has been completed to justify this milestone.

Milestone 4.2.1 2012 (4) Scoping of innovative decadal/near-term climate products to improve near-term climate prediction	Accomplished	TL: This scoping is largely complete. Work is in progress, although this is fairly speculative, it should be said. The work could be very important, and probably needs more resources to move the agenda along.
Milestone 4.2.1 2012 (5) Assessment toolkit components developed to analyze likely effects of specific adaptation and mitigation options in target regions, with a focus on rangelands, vulnerability assessment at sub-national levels	Accomplished	TL: A wide range of tools is now available among centres and partners, including tools to allow assessment of rangelands as specificed in the milestone. Some vulnerability assessments have been carried out at sub-national level, but there is more to do specifically for the CCAFS regions. SA: Trade-off Analysis model for Multi-Dimensional impact assessment (TOA-MD) developed and adapted as an integrated assessment framework for regional analysis of climate change and adaptation impacts
Output 4.2.2 Socially-differentiated decision aids and information developed and communicated for different stakeholders		
Milestone 4.2.2 2012 Partnership and strategy development for targeting decision support tools	Accomplished	TL: Strong partnerships have been developed, and a strategy for CCAFS's engagement in the social learning arena is well in place. Several review and scoping report have been produced, and the sandbox provides many functions for development and discussion of SL activities. Work has also started on case studies. Other region-led and centre-led activities under this objective will be pursued in 2013 and beyond.
Objective 4.3 Refine frameworks for policy analysis		
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 agenciesat least 10 key international and regional agencies		
Output 4.3.1 Climate change impacts assessed at global and regional levels on agricultural systems (socially and gender differentiated producers and consumers, and their natural resources), national/regional economies, and international transactions and potential of international and regional policy changes to enhance adaption and support agricultural greenhouse gas emissions mitigation		
Milestone 4.3.1 2012 (1) Land use modeling and aquaculture (WorldFish activity) added to the IMPACT model and model intercomparisons with other major global model undertaken.	Partially Accomplished	TL: 1.Land use modelling and IMPACT: A new land use specification has been incorporated in IMPACT, that extends the existing area equations in IMPACT to allow for efficient allocation of land across crops in each region (food production unit, FPU), separately modeling the supply and demand for land by type (rainfed and irrigated) and crop. This together with other new features were first implemented in a simplified version, designed to provide researchers with a teaching version of the model that facilitates transfer of the IMPACT model to other institutions (e.g., CGIAR centers). Toward the end of 2012, work was started to transfer the new features to a new version of the full IMPACT model, which is scheduled to replace the earlier model in the second quarter of 2013. 2.Aquaculture has not been added to the IMPACT model (WORLDFISH activity did not take place). 3. As part of the Agricultural Model Intercomparison and Improvement Project (AgMIP), a total of 10 global economic models (seven of these are general equilibrium models while four are partial equilibrium models) have been in a global reference scenario comparison. A set of six or more simulations has been developed to expose the models to a wide range of drivers. 5 papers, for a Agricultural Economics Special Issue on Global Model Intercomparison, and one on "Assessing uncertainty along the climate-crop-economy modeling chain" PNAS have been prepared and are in the stage of submissions.
Milestone 4.3.1 2012 (2) Analysis and report for the United Nations Committee on Food Security (CFS) on Food Security and Climate Change.	Accomplished	TL: A "Food security and climate change" report was released at FAO, in June 2012, by the High Level Panel of Experts (HLPE) of the Committee on World Food Security (CFS) . Research results from previous and ongoing work were incorporated in the report.
Output 4.3.2. Analyses of the likely effects of specific adaptation and mitigation options, national policies (natural resource, trade, macroeconomic, international agreements) including gender/livelihood groups, and communicated to key local, national and regional agencies and stakeholders		
Milestone 4.3.2 2012 National and regional studies complementary to the CFS global study.	Partially Accomplished	TL: Three Sub-Saharan African research monographs (East Africa, West Africa, Souther Africa) covering 29 countries, are to be released, and summary policy briefs are already available to policy makers. The monographs discuss the impact of climate change on agriculture, with a focus on finding adaptation options for policy makers.
Output 4.3.3. Capacity built at CGIAR, NARS, and international organizations to perform global and regional analyses of the effects of policy changes using tools developed in output 4.3.1		
Milestone 4.3.3 2012 Activities held at CGIAR, NARS, and international organizations to build capacity to utilize the modeling tools developed under milestone 4.3.1. 2012	Partially Accomplished	TL: Several scientists, and research support staff from the CGIAR centers (Global Furtures for Agriculture Fellows, other research support staff), academic institutions, research centers and international organizations received training on the use of of the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), that has been developed at IFPRI. DSSAT crop model was integrated and utilized in several CGIAR centers. Capacity building among NARES did not take place.