

Log frame– Year 2012 – 2015

Theme 1. Adaptation to Progressive Climate Change

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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				
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.	Number of unique geographic locations, where individual and multi site trials are carried out; assessment of related information and metadata collected; and exchange of derived information.	Task report; website/ AMKN platform	Willingness of partners to carry out the trials and share the trial data	CIAT and other CGIAR centers, CIRAD, JIRCAS, NARES (e.g. EIAR, KARI, NARO, IARI, CRIDA, BARC, BARI NARC, CILSS, etc) and other ARI institutions involved in agricultural trials
Milestone 1.1.1 2013. Tools and guidelines developed to support the selection (and / or maintenance) of the most appropriate water storage options and/ or their combinations for river basin development planning under conditions of increasing climate variability; options most likely to benefit or adversely affect marginal social groups including women assessed. Reviews of tools and guidelines, including links to individual guidelines and access to tools, with explicit recognition of gender and social differentiation.	Tools and guidelines developed, reviewed and made publicly available. Hydro-economic and socio-economic methodologies to quantify climate change impacts at water shed and sub-basin level (IWMI). Brief on their use to promote gender and social inclusion.	CCAFS website; review documents	Willing uptake of tools and guidelines; sufficiently accurate predictions of future water storage deficits and needs	IWMI,WRI-Ghana,PIK,ZEF, MRC
Milestone 1.1.1 2014. Analogue based evaluation and conservation of germplasm of at least 2 crops supported in a minimum of 6 analogue sites.	Field evaluation of germplasm for specific traits; collection efforts for land races in analogue sites.	Final report and peer reviewed article		Biodiversity
Milestone 1.1.1 2015 (1). One to five flagship technologies that are gender-and socially-responsive identified, developed and demonstrated in each of the 3 initial target regions which would directly enhance the adaptive capacity of the farming systems to the climate change conditions. Launch through high level engagement with key stakeholders at a key international meeting.	Technologies developed and made publicly available. Positive feedback and increased demand of new technologies by the clientele. Field validation and assessment including criteria for assessing their social and gender implications during field visits	website; documentation for annual reporting	Willingness and interest of local partners in nominating candidate technologies and managing the trials at pilot sites	CGIAR centers in collaboration with other themes in the MP, NARES, ARIs, CIRAD, NGOs, national governments, Farmers' organizations

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	by different stakeholders made as a part of 2015 visits.			
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	Methods developed and made publicly available through developed communication platforms; , , Application to G x E analysis; farmer experimental networks initiated in 2011 for variety/germplasm evaluation strengthened	CCAFSwebsite/ AMKN platform ; documentation for annual reporting	Robustness of testable methods using only climate model output (i.e. pattern-scaled HadCM3)	CIAT, University of Leeds,
Milestone 1.1.1 2015 (2). Analogue Research results synthesized, documented, published and communicated at all levels	Methods developed and made publically available online and through downloadable scripts. Full documentation available. Regional reorts on analogues results published in CCAFS reports. Dissemination of results in targeted workshop at national level.	CCAFS website, documentation for annual reporting.	Analogue method successfully developed and deemed a useful approach by stakeholders.	University of Oxford, University of Greenwich, ICRISAT, CIAT, ICRAF, NARES, Intl NGOs.
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.	Practices developed and made publicly available to different types of beneficiary groups	CCAFS website; documentation for annual reporting	Existence of aquaculture farms and terrestrial agriculture in close proximity; Recyclable use of water between aquaculture and field agriculture, including tree crops	CCAFS, NARES, ARIs, IWMI, ICRAF
Milestone 1.1.1 2012 (4). Assessment of the potential for exploitation of ground water for crop production in at least three basins	Maps demonstrating the potential for groundwater exploitation, which take adequate account of uncertainty	Report, and potentially peer-reviewed paper	Sufficient groundwater available for exploitation at least some sites	IWMI, WRI-Ghana, PIK, ZEF, MRC, OSS.

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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 .	Capacity building workshops; Two trainings delivered engaging 25 participants; min 2 videos produced; understanding social, gender-differentiated and cultural barriers to adapting through farmer exchanges; exchanges convened engaging men and women farmers in 2 regions	CCAFS website; documentation for annual reporting; participant lists for film showings, trainings and exchanges		National universities, ICAR, BARC, NARC, NGOs. University of Greenwich (NRI), University of Oxford, and local partners from IGP, EA and WA involved in the implementation phase of the farmer exchanges
Milestone 1.1.2 2013 (1). New knowledge developed on (1) the potential application domains for agricultural and water management practices, technologies and policies (including maps), prioritized on the basis of their potential benefits for marginal social groups, especially women and (2) best means of transferring these technologies and ensuring their adoption to gender and socially-differentiated beneficiary groups; findings synthesized and presented in report and journal articles	Synthesis report and journal articles completed and disseminated	CCAFS website; Journal publishers' websites	Availability of sound climate projections to 2030 and beyond	CGIAR Centers, ESSP (e.g. Leeds University), NARES and ARIs
Milestone 1.1.2 2014 (1). Researchers and development agents trained on socially and gender-sensitive strategies for the conservation and use of local biodiversity within the climate change context.	Trainings held engaging at least 20 male and female R&D agents representing at least 5 organizations from 3 countries (Nepal, Bolivia and India)	Training participant lists; documentation for annual reporting		MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; PROINPA, Bolivia; Semongok Agriculture Research Centre (ARC), Sarawak Malaysia

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Milestone 1.1.2 2013 (2). Research and development partners (especially female and young scientists) in at least 11 countries trained in using new monitoring and modelling tools for climate change adaptation for different crops including underutilized species; outcomes summarized in report	Reports completed and disseminated; training materials developed and delivered; young and female scientists actively using new tools	CCAFS website		Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), Uganda; International Foundation for Science (IFS), Sweden; African Network for Agriculture, Agroforestry and Natural Resources Education (ANAPE), Kenya; Institut de Recherché et de Développement sur la Biodiversité des Plantes Cultivées, Aromatiques et Médicinales (IRDCAM), Benin; Plant Genetic Resources Research Institute (PGRRI), Ghana; University of Nairobi, Kenya; LI-BIRD, Nepal; MS Swaminathan Research Foundation, India; PROINPA, Bolivia
Milestone 1.1.2 2014 (2). Gender-sensitive and socially differentiated strategies developed for conservation and use of local biodiversity within the climate change context; findings presented in strategy document, journal article.	Strategy document completed and disseminated; journal article published	CCAFS website; Journal publisher's website		MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; Semongok Agriculture Research Centre (ARC), Sarawak Malaysia; PROINPA, Bolivia
Milestone 1.1.2 2013 (3). Capacities raised in at least 6 countries to assess the impacts of climate change on crops and identifying pro-poor and gender-responsive adaptation strategies at the subnational scale using crop models and gender-differentiated local knowledge (links with T4.2). Additional case studies on climate analogues initiated in at least 12 more analogue sites.	Capacity building workshops on crop modeling, climate change scenarios; case studies commissioned on simulation of impacts; case studies on climate analogues extended to more sites	National workshops, CCAFS reports.	Suitable data available for assessing socially-differentiated impacts	University of Oxford, ICRISAT, CIAT, ICRAF, NARES, Intl NGOs.
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.				

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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	Consultation workshops; report completed and disseminated. Number of gender and socially differentiated communities and individuals surveyed, number of methods and tools tested	CCAFS website; documentation for annual reporting; workshop agendas and participant lists		International Union for Conservation of Nature (IUCN), Switzerland; PROINPA, Bolivia; LI-BIRD, Nepal; MS Swaminathan Research Foundation, India; German experts (incl. Prof. K. Hammer); FAO, the International Treaty on Plant Genetic resources for Food and Agriculture (ITPGRFA), Italy; University of Perugia, Italy; University of Basilicata, Italy; Regione Abruzzo and Regione Basilicata, Italy)
Milestone 1.1.3 2013 (1). Germplasm (wild and domesticated) with traits important for adapting to climate change and traits with potential benefits for different user groups conserved in local, national and regional ex situ collections and made available to target users; findings presented in peer-reviewed journal articles and genebank reports; databases augmented	Collections and databases expanded and made publicly available; reports completed and disseminated; journal articles published	Germplasm collection records; CCAFS website; Journal publishers' websites; documentation for annual reporting	Partners willing to share germplasm and knowledge; Farmers are willing participate in household surveys; local seed suppliers are willing to adopt locally adapted varieties; Rural radio partners are a credible source of information. Farmers have access to radios	Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India; Millennium seed bank; BGCI; Members of the Musa Taxonomy Advisory Group
Milestone 1.1.3 2014 (1). Accessions identified with potential adaptive traits for climate change adaptation for at least 5 crops using innovative methods and prioritized on the basis of traits with potential benefits for the poor and women users. Methodology to select genebank material adapted to local current climate conditions and future climate shifts developed and tested and crop suitability atlases for priority crops (as defined by fraction of total production accounted for) produced; findings presented in reports and journal articles	Reports completed and disseminated. Journal articles published. Lists produced (e.g., adapted local varieties conserved in genebanks; newly and already collected domesticated and wild germplasm adapted to climate change noting their potential for pro-poor and gender-responsive benefits). Methodology developed and made publicly available	CCAFS website; journal publishers' websites	Adaptation traits easily identifiable and availability of sufficient data. Good Georeferenced data for accessions are available. Exchange of germplasm supported by participating countries. Local seed providers ready to participate and collaborate with the project. Policy framework in place for sharing of information. Sufficient cross-site similarity for transfer of	CIAT; Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, Papua new Guinea (PNG); Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India; Millennium Seed Bank, UK; Botanic Garden Conservation International (BGCI), UK; members of the Musa Taxonomy Advisory Group; University of Philippines Los Banos (UPLB), Philippines; KULeuven, Belgium; CIALCA partners; Semongok Agriculture Research Centre (ARC), Sarawak

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			lessons, germplasm and tools.	Malaysia; PROINPA, Bolivia
Milestone 1.1.3 2015 (1). Assessment of the contribution of crop, livestock, fish diversity to climate change adaptation carried out; findings summarized in reports, case study narratives, including assessment of their importance to marginalized farmers and women.	Reports and case study narratives completed and disseminated	CCAFS website		Institute of Biodiversity and Conservation, Ethiopia; International Livestock Research Institute (ILRI) Ethiopia (TBC)
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.	Reports completed and disseminated. Survey documents developed, Data collected	CCAFS website		CGIAR Centers; Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India
Milestone 1.1.3 2013 (2). Guidelines for enhanced seed systems to accelerate adaptation and for building up community-based, gender-responsive participatory monitoring of conservation and use of agricultural biodiversity at community level in the IGP region and East Africa produced and disseminated	Guidelines including approaches that promote gender-responsive social Inclusion in seed systems developed and disseminated	CCAFS website		LI-BIRD, Nepal; MS Swaminathan Research Foundation, India; PROINPA, Bolivia
Milestone 1.1.3 2014 (2). Methods and tools for participatory, gender-responsive monitoring of deployment of biodiversity and knowledge by communities for climate change adaptation tested out in at least 5 countries (including gender-disaggregated community surveys); findings synthesized in report	Surveys conducted. Report completed and disseminated. Methods and tools developed and made publicly available	CCAFS website		Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India; LI-BIRD, Nepal; MS Swaminathan Research Foundation, India; PROINPA, Bolivia

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Milestone 1.1.3 2015 (2). Germplasm information on potential for climate change adaptation integrated in global information systems and accessible online. (1) Databases of priority collections augmented with georeferenced passport data and trait information useful to the diversity analysis for climate change impacts and adaptation effectively linked to global systems, (2) important trait information accessible in global systems, including GENEYSYS, and Crop Trait ontology augmented with traits of interest to Climate Change, (3) complementary data sources on wild species identified through GBIF, (4) training materials, (5) list of and information on newly and already collected germplasm (domesticated and wild) adapted to climate change; Materials of interest safely duplicated in Global Collection and made available.	(1) Databases, accession information, data, training materials, lists developed and made publicly available. (2) Accession level information with quality geo references; (3) Data on duplication to global collection and important trait information published in GENESYS;(4) Complementary data sources on wild species identified through GBIF; (5) training materials. List of and information on newly and already collected germplasm (domesticated and wild) adapted to climate change noting any potential for use in pro-poor and gender-responsive adaptation strategies	CCAFS/other websites; technical reports, Genebank catalogues; databases		Global Crop Diversity Trust; priority national/ regional Collections; CGIAR genebanks; EURISCO partners; PGR networks; the International Treaty on Plant Genetic resources for Food and Agriculture (ITPGRFA), Italy; United States Department of Agriculture (USDA), USA; Global Diversity Information Facility (GBIF), Denmark; BioGeomancer Research consortium; Sud Experts Plantes members (IRD/AIRD), France; Botanic Garden Conservation International (BGCI), UK; Generation Challenge Programme, Mexico; International Musa Testing Programme partners
Milestone 1.1.3 2013 (3). Farmers' traditional, gender-differentiated knowledge on use of diversity and climate change adaptation documented and made available in at least 3 countries; findings presented in databases, reports and peer-reviewed article	Databases produced and made publicly available; reports completed and disseminated; journal articles published	CCAFS website; Journal publishers' websites; documentation for annual reporting		Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India
Milestone 1.1.3 2015 (3). Case studies documented of potential role of informal seed systems for pro-poor and gender-responsive diffusion of adapted germplasm	Case studies;			
Milestone 1.1.3 2013 (4). Data gathered on how communities enhance conservation and use of local biodiversity within the climate change context, disaggregated by gender and other social strata; findings summarized in technical reports, factsheets and journal articles	Technical reports, fact sheets including implications for pro-poor and gender-responsive conservation and use completed and disseminated; journal articles published	CCAFS website; Journal publisher's website		MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; PROINPA, Bolivia

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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.	Plan document completed and disseminated	CCAFS website	Willingness of crop breeding institutions to adjust priorities based on priority setting results, and donor coordination in funding of future breeding programs	Crop-breeding institutes (CG Centers, ARIs, NARES), regional decision-making and priority-setting bodies (ASARECA, FARA, WECARD, SAARC), donors, national governments/National Biosecurity Agencies
Milestone 1.2.1 2013 (1). Methodological framework developed for assessing the impact of new technologies which are adapted to climate change conditions including their potential for positive social and gender-responsive impact; suitable framework selected by partners / an international panel.	Framework developed, reviewed and made publicly available	CCAFS website. Framework and review documents. Panel evaluation reports	Availability of frameworks and selection / composition of a generic one for the purpose allowing the flexibility in the implementation procedures	CGIAR Centers which are involved in the above activities and their NARES partners
Milestone 1.2.1 2014. Set of “virtual crops” designed and assessed for their efficacy in addressing the likely future conditions in terms of the economic, social, and cultural benefits expected; findings presented in summary report and journal article. Engagement of ARI modelling groups (e.g. Leeds University), NARES scientists.	Report completed and disseminated; journal article published	CCAFS website; Journal publishers' websites	Robust climate projections (i.e. uncertainty does not dominate) and sufficient data on abiotic and biotic interactions with climate	CG Centers, ARI modelling groups (e.g. Leeds University), NARES scientists
Milestone 1.2.1 2015 (1). Detailed crop-by-crop strategies and plans of action for crop improvement developed, incorporating portfolio of national, regional and global priorities including those priorities relevant for pro-poor and gender –responsive targeting; findings presented in summary report.	Report completed and disseminated Including advice on targeting crop improvement strategies to benefit women and the poor	CCAFS website	Robust climate projections (i.e. uncertainty does not dominate) and sufficient data on abiotic and biotic interactions with climate	CG Centers, ARI modelling groups (e.g. Leeds University), NARES scientists

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<p>Milestone 1.2.1 2013 (2). Range of crop modeling approaches (to inform breeding) developed and evaluated for biotic and abiotic constraints for the period 2020 to 2050; findings presented in summary report and at key stakeholders' meetings ; *including modelling approaches to evaluate the impacts of climate change and the effects of adaptation technologies such as supplemental irrigation and water harvesting on water availability for crops and their productivity under decadal futures from 2020 to 2050.</p>	<p>Report completed and disseminated</p>	<p>CCAFS website</p>	<p>Robust climate projections (i.e. uncertainty does not dominate) and sufficient data on abiotic and biotic interactions with climate. Current crop models are capable of adequately simulating G*E*M interactions</p>	<p>Crop-based components of MP3, GCP, molecular and breeding platforms, ICARDA and other CG Centers, NARES, ARI breeding institutes, private sector breeding companies, Leeds University</p>
<p>Milestone 1.2.1 2015 (2). Set of breeding strategies identified and widely shared with partners including funding bodies, national and international organizations, universities and other actors; findings presented in summary report and policy briefs (including percentage of total food crop production (in recent history) accounted for by set of breeding strategies).</p>	<p>Report and policy briefs completed and disseminated and downloaded 200 times from web portal</p>	<p>CCAFS website</p>	<p>Willingness of crop breeding institutions to adjust priorities based on priority setting results, and donor coordination in funding of future breeding programs.</p>	<p>Crop-breeding institutes (CG Centers, ARIs, ANRES), regional decision-making and priority-setting bodies (ASARECA, FARA, WECARD, SAARC), donors, national governments</p>

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Milestone 1.2.1 2015 (3). Climate change impact on key global commodities (major Musa groups,) and selected pest and diseases modeled and reviewed by commodity network country partners and possible response strategies identified.	Base model available and adapted to specific commodities; findings verified by stakeholders	web site, scientific articles, electronic tools with dynamic user interface		MUSALAC, BARNESA, BAPNET (including participating countries by region: LAC -Costa Rica, Brazil, Colombia, Panama; ESA - Uganda, Rwanda, Kenya; WCA Ghana, Nigeria, Cote d'Ivoire, Cameroon; APO - India, China, Taiwan, Australia, Indonesia); CIRAD; IITA; CIAT; University of Western Australia; Queensland Department of Primary Industries, Australia; CacaoNet, COGENT (including participating countries by region: LAC - Costa Rica, Brazil, Trinidad, Mexico; SSA - Cote d'Ivoire, Ghana, Nigeria, Cameroon, Tanzania; APO - India, Sri Lanka, Indonesia, Philippines, Malaysia), CATIE; South Pacific Commission (SPC), Fiji, United States Department of Agriculture (USDA), USA; University of Queensland, Australia; Reading University, UK; World Cocoa Foundation; APCC
Output 1.2.2 Breeding strategies disseminated to key national agencies and research partners				
Milestone 1.2.2 2015 (1). High-level meetings held with key stakeholders resulting in mainstreaming of new breeding strategies that include attention to men's and women's crops in work plans and existing breeding programs	Meetings held engaging minimum 30 individuals representing breeding institutions, key regional decision-making and priority setting bodies; breeding strategies adopted by existing breeding programs	CCAFS website; documentation for annual reporting; Publications and reports of existing breeding programs	Willingness of crop breeding institutions to participate in the program; inclusion of women's and men's crops in the program	Crop-breeding institutes (CG Centers, ARIs, NARES), GCP, regional decision-making and priority setting bodies (ASARECA, FARA, WECARD, SAARC), donors, national governments
Milestone 1.2.2 2015 (2). Global, regional and national policy briefs produced to guide best-value investments in climate-proofed crop breeding initiatives with promise for pro-poor and gender-responsive impact and policy briefing meeting organized in 3 target regions	Policy briefs completed and disseminated across global, regional and national levels	CCAFS website	Willingness of crop breeding institutions to adjust priorities based on priority setting results; ex-ante socially and gender-disaggregated impact studies available	Crop-breeding institutes (CG Centers, ARIs, NARES), regional decision-making and priority-setting bodies (ASARECA, FARA, WECARD, SAARC), donors, national governments

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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 adaptation				
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).	Document completed and disseminated	CCAFS website	Partners have sufficient incentives to engage and people trained remain in local institutions	African & South Asian University networks; development NGOs (e.g. CARE, Oxfam, ICCCAD), government, regional bodies
Milestone 1.3.1 2013. Socially and gender-differentiated knowledge developed on distribution of local seed material (seed systems) and its effectiveness in climate change adaptation strategies; findings summarized in reports, case study narratives and seed system maps.	Reports and case study narratives completed and disseminated; seed system maps developed and made publicly available	CCAFS website		REMERFI Partner (Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama); Laboratory of Applied Ecology, Faculty of Agronomic Sciences, University of Abomey-Calavi, Benin
Milestone 1.3.1 2014 (1). Socially and gender-disaggregated participatory methods tested for grounding climate change model results to community-level decision making processes that address food security issues	Methods tested and disseminated	CCAFS website	Cross-site and cross-continent applicability.	CIAT, Oxfam, CRS, Learning Alliance, Sustainable Food Lab, SAI
Milestone 1.3.1 2015. Roles of gender and different social groups in adaptation strategies for climate change analyzed in target countries and highlighted through fact sheets, project briefs and technical articles. Approaches, methods and outcomes of supportive interventions promoted through collaborative projects and shared with the broader stakeholder community through relevant meetings, conferences and journal articles	Summary report completed and disseminated; journal articles published	CCAFS website; Journal publisher's website		MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; PROINPA, Bolivia; Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India
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.	Video testimonials produced and disseminated through the website	CCAFS website		

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Milestone 1.3.1 2014 (2). Community-based holistic adaptation options trialed in at least three sites, in order to understand the social (including gender), cultural, economic and institutional barriers to effective adaptation; outcomes presented in summary report.	3 trials implemented; summary report completed and disseminated	CCAFS website; documentation for annual reporting	Ability to generalize from local-level participatory analyses	CGIAR centers, local NGOs, local government
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.				
Milestone 1.3.2 2013. Regional training workshop on approaches and methods for evaluating cost/benefit of adaptation strategies on a national scale.	Two trainings delivered engaging 25 participants total	CCAFS website; documentation for annual reporting; participant lists for trainings		Ministries of Agriculture and Environment, national NGOs, local government
Milestone 1.3.2 2014. Sector specific adaptation strategies and plans produced based on socially and gender-differentiated adaptation options using cost/benefit analysis in at least 5 countries, results shared with key policy makers in target countries.			Socially and gender-differentiated data available for cost/benefit analysis	
Milestone 1.3.2 2015 (1). Synthesized lessons learned published in policy briefs and synthesis reports and papers on methods and approaches for prioritizing pro-poor and gender-responsive adaptation options within national adaptation plans.				
Milestone 1.3.2 2015 (2). Policy recommendations provided to national agencies, policy makers and key actors in the agricultural sector on how to target strategies to enable equitable access to breeding materials and strategies by different social groups (e.g. pastoralists, fishers, urban farmers) and by women and men.	Report completed and disseminated at 3 major international meetings; Report and policy briefs downloaded 200 times from web portal	CCAFS website; indigenous knowledge survey		
Output 1.3.3 Policies to enable access to and use of genetic resources for climate change adaptation research, and diffusion of adapted germplasm				

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Milestone 1.3.3 2013. Policy guidelines produced for centers and partners to address challenges associated with obtaining, using and distributing germplasm as part of climate change related research (with particular focus on addressing challenges associated with access and benefit sharing, IPR, biosafety policies and laws).	Guidelines finalized and distributed to centers and partners	CCAFS website; documentation for annual reporting	Local seed providers ready to participate and collaborate with the project. Supportive government policies. Willingness of international bodies to revise policies related to germplasm access	CGIAR Centers; Semongok Agriculture Research Centre (ARC), Sarawak Malaysia; PROINPA, Bolivia
Milestone 1.3.3 2014. Technical contributions to international processes support the development of international policies enabling access to and use of genetic resources in climate change research and adaptation strategies;	Background Papers, policy briefs, Journal article and book published Policy paper developed on strategies for creating an enabling policy environment in support of self-sustainable monitoring of diversity and use of agricultural biodiversity (including impact on role of participatory, gender-responsive monitoring of livelihood and conservation strategies in target countries) : Policy paper completed and disseminated	CCAFS website; Journal and book publishers' websites		CGIAR Centers; representatives of regional groups attending intergovernmental fora, secretariats of relevant international agreements. MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; PROINPA, Bolivia; Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
<p>Milestone 1.3.3 2015. Analysis of institutions and policies that impact on the flow of adapted materials through seed systems; National strategies developed to implement the International Treaty's Multilateral system on Access and Benefit-Sharing in 4 countries; Policy options produced at national, provincial and community levels and evaluated for their potential positive or adverse effects on socially marginal groups, especially women to improve existing policies, local management and seed systems to facilitate diffusion and uptake of adapted germplasm.</p>	<p>Case studies, analysis, national strategies and policy options developed and disseminated</p>	<p>CCAFS website</p>		<p>EMBRAPA, Brazil; Kenyan Agricultural Research Institute (KARI), Kenya; University of Malaya, Malaysia; Instituto Nacional de Investigaciones Agricola (INIA), Peru; MS Swaminathan Research Foundation, India; Local Initiative for Biodiversity, Research and Development (LI-BIRD), Nepal; PROINPA, Bolivia; Institute of Biodiversity and Conservation, Ethiopia; National Agricultural Research Institute, PNG; Institut d'Economie Rurale, Mali; Indian Council of Agricultural Research, India</p>

Theme 2. Adaptation through Managing Climate Risk

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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				
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.	Synthesis reports on three risk management innovations completed and disseminated Reports assessing prospective gender-wise receptivity to risk management innovations	CCAFS Website	Access to relevant work across CG Centers and targeted NARES. Partners willing to share findings. Value addition to other research groups and practitioners recognized. Suitable socially and gender-disaggregated data available	WorldFish, ICRISAT, ILRI, CIP, Bioversity, IRRI, ICARDA, IFPRI, ILRI, ICRAF, Other organizations (e.g., WFP, WB, BASIS CRSP) working on insurance for agriculture, regional (e.g. ECOWAS, IGAD in WA, AIC, ICAR in IGP) and national policy decision makers (CNEDD-Mali, CONEDD-BF, CSE-Senegal, ANE-Mali in WA)
Milestone 2.1.1 2013. Knowledge synthesis deepened, and best practice guidance reported and communicated for gender- and socially-differentiated climate risk management interventions; Climate-related risks and vulnerabilities to four key agricultural commodities and systems reported.	Synthesis reports and journal articles completed and disseminated	CCAFS Website		WorldFish, ICRISAT, ILRI, CIP, Bioversity, IRRI, ICARDA, IFPRI, ILRI, ICRAF, regional (e.g. ECOWAS, IGAD in WA, AIC, ICAR in IGP) and national policy decision makers (CNEDD-Mali, CONEDD-BF, CSE-Senegal, ANE-Mali in WA)
Milestone 2.1.1 2014. Knowledge synthesis products incorporated into best practice guidelines and research strategy that addresses social and gender equity; and communicated to development and policy stakeholders.	Best practice guidelines and policy brief published, and strategy incorporated into CGIAR and ESSP research initiatives and used to address social and gender equity issues.	CCAFS Website and degree of co-branding of CCAFS initiatives broadly across CRPs and external partners.		WorldFish, ICRISAT, ILRI, CIP, Bioversity, IRRI, ICARDA, IFPRI, ILRI, ICRAF, regional (e.g. ECOWAS, IGAD in WA, AIC, ICAR in IGP) and national policy decision makers (CNEDD-Mali, CONEDD-BF, CSE-Senegal, ANE-Mali in WA)
Milestone 2.1.1 2015. Lessons from CCAFS research on risk management innovations (livelihood diversification, index-based insurance, local traditional risk management strategies); and impacts across socially-differentiated groups and gender; synthesized, communicated widely, and incorporated into strategic planning and policy dialog.	Lessons embodied in tools and policy briefs, outlined in report and disseminated	CCAFS Website		WorldFish, ICRISAT, ILRI, CIP, Bioversity, IRRI, ICARDA, IFPRI, ILRI, ICRAF, regional (e.g. ECOWAS, IGAD in WA, AIC, ICAR in IGP) and national policy decision makers (CNEDD-Mali, CONEDD-BF, CSE-Senegal, ANE-Mali in WA)

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Analytical framework, modeling approaches, and tool design specifications reported.	CCAFS Website	Same as Output 2.1.1	Resilience Alliance, ILRI, CIP, CIMMYT, IFPRI, AfricaRice, WorldFish, NARES. Joint with Theme 4.2.
Milestone 2.1.2 2013. Prototype household and intra-household modeling tools tested and adapted for evaluating impacts of climate risk and risk management interventions on rural livelihood resilience; Multi-scale structural model developed and tested; Models for crop and water management applied to climate risk and its management in 4 countries.	Modeling tools refined, developed, and applied in 4 countries	CCAFS Website		Resilience Alliance, ILRI, CIP, CIMMYT, IFPRI, AfricaRice, WorldFish, NARES, and local NGO partners.
Milestone 2.1.2 2014. Methodology for designing and targeting comprehensive and equitable agricultural risk management strategies implemented, documented and applied at 6 locations; Multi-scale structural model applied in 3 countries; Assessment framework to understand gender differences in climate risk perception and its influence on management.	Model applied in 3 countries, Methodology published, and assessment framework completed.	CCAFS Website		Resilience Alliance, ILRI, CIP, CIMMYT, IFPRI, AfricaRice, WorldFish, NARES, and local NGO partners.
Milestone 2.1.2 2015. Capacity to apply household, intra-household and multi-scale modeling to target and evaluate risk management innovations, enhanced through curriculum and training.	Curriculum, and two training events in each CCAFS region.	CCAFS Website and Training Event Reports		ILRI, CIP, CIMMYT, IFPRI, AfricaRice, WorldFish, NARES, and local NGO partners.
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.	Pilot demonstration sites and partners in 5 countries that demonstrate inclusion of representative, socially and gender-differentiated participants Reports on social and gender-wise acceptability of portfolios of innovations	CCAFS website, M&E reports from demonstration sites & progress reviewed in annual reporting	Effective, equitable and representative participation of different social groups in rural communities, support of intermediaries. Stakeholders identify context-relevant risk management strategies, and participate in their	ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 2.1.3 2013 (1). Gender- and socially equitable participatory evaluation of risk management interventions, and report on gender and social equity of traditional risk management strategies and access to services at 2 locations in each of EA, WA and IGP; Information and video testimonials about farmers' traditional risk management strategies exchanged via a web platform; Methodology and lessons from initial sites applied to 4 additional locations.	Report completed and journal paper published and disseminated; Web-based material on traditional risk management; New pilot demonstration sites and partners in 4 countries.	CCAS Website	improvement and testing. Capable NGOs partner. Access to relevant work across CG Centers and targeted NARES. Uptake of results by key agencies. Relevant information products, services, and uses can be engaged in each region. Partners willing to share findings through platform. Appropriate capacity for social and gender analysis deployed	ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations) developed for each benchmark location
Milestone 2.1.3 2014 (1). Quantitative evaluation of impact of risk management interventions on household and intra-household livelihood resilience initiated within pilot demonstrations in EA, WA and IGP; Potential up-scaling mechanisms identified and engaged; Global conference for cross-regional comparisons and lessons.	Report completed and journal paper published and disseminated	CCAFS Website		
Milestone 2.1.3 2015 (1). Quantitative evaluation of impact of risk management interventions on household and intra-household livelihood resilience in EA, WA and IGP reported; Lessons and evidence on climate risk management interventions and traditional, gender-differentiated local knowledge synthesized across participatory pilot demonstrations, reported, and shared through a web-based knowledge management platform; Development and policy stakeholders engaged to explore opportunities to scale up successful interventions.	Report and evaluation completed with published examples of successful implementation in 20 countries	CCAFS Website and Web-based knowledge platform		
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.	Pilot demonstration sites and partners in 5 countries that demonstrate inclusion of representative, socially and gender-differentiated participants	CCAFS website, M&E reports from demonstration sites & progress reviewed in annual reporting		

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 2.1.3 2013 (2). 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, deepened in 5 countries; Cross-site knowledge exchange activities conducted.	5 country reports completed and journal paper published and disseminated	CCAS Website		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)
Milestone 2.1.3 2014 (2). Results, evidence and lessons, from participatory, gender-sensitive evaluation of impacts of promising production and NRM technologies, and production systems, synthesized across locations, and shared through a web-based knowledge management platform.	Synthesis published and disseminated through web-based knowledge platform	CAAFS Website and Web-based knowledge platform		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)
Milestone 2.1.3 2015 (2). Development and policy stakeholders engaged to apply lessons from participatory, gender-sensitive action research, target appropriate technologies and production systems, and explore opportunities to scale up technologies and systems with the greatest potential to enhance resilience to climate variability and change, equitably across socially-differentiated groups and gender.	Findings verified by stakeholders and published examples of successful scale-up in 20 countries	CAAFS Website and Web-based knowledge platform		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)
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.	Pilot demonstration sites and partners in 5 countries that demonstrate inclusion of representative, socially and gender-differentated participants	M&E reports from demonstration sites & progress reviewed in annual reporting		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)
Milestone 2.1.3 2013 (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, deepened in 5 countries; Cross-site knowledge-exchange activities conducted.	Report completed and journal paper published and disseminated	CCAS Website		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)
Milestone 2.1.3 2014 (3). Results, evidence and lessons, from participatory, gender-sensitive evaluation of impacts of social capital, institutional and financial services, and policy interventions, synthesized across locations, and shared through a web-based knowledge management platform.	Synthesis published and disseminated through web-based knowledge platform	CAAFS Website and Web-based knowledge platform		ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
<p>Milestone 2.1.3 2015 (3). Development and policy stakeholders engaged to apply lessons from participatory, gender-sensitive action research, target appropriate interventions, and explore opportunities to scale up institutional and policy interventions with the greatest potential to enhance resilience to climate variability and change, equitably across socially-differentiated groups and gender.</p>	<p>Findings verified by stakeholders and published examples of successful scale-up in 20 countries</p>	<p>CCAFS Website and Web-based knowledge platform</p>		<p>ILRI, ICRAF, CIMMYT, ICARDA, and Pilot demonstration project teams (NMS, NARS, other research partners, development NGOs, farmer associations)</p>

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Joint report with key stakeholders indentifying target areas of intervention in three CCAFS regions	CCAFS Website	Capable food security and trade organizations available to participate. Adequate market, climate and livelihood data are available. Appropriate capacity for assessing social and gender impacts deployed	ILRI, CIMMYT, WFP, FAO, FEWSNET, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IRI, relevant line ministries (e.g. MoA, MoE), other relevant regional and national food system and food security response organizations
Milestone 2.2.1 2013. Pilot testing of food system response strategies in the face of climate fluctuations; Policy-oriented analysis of climate impacts on food security components, and gender- and socially-differentiated costs and benefits of alternative food security interventions, communicated with key food system stakeholders.	Pilot demonstration of interventions active in 6 countries that demonstrates inclusion of representative, socially and gender-differentated participants	CCAFS Website		ILRI, CIMMYT, WFP, FAO, FEWSNET, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IRI, relevant line ministries (e.g. MoA, MoE), other relevant regional and national food system and food security response organizations
Milestone 2.2.1 2014. Evaluation of national to global food system interventions in the face of climate fluctuations, and policy implications; Synthesis of knowledge and policy guidance on gender- and socially-differentiated impacts of food system climate risk management interventions and policies.	Report evaluating intervention results and potential for up-scaling in cooperation with strategic partners in 12 countries	CCAFS Website		ILRI, CIMMYT, WFP, FAO, FEWSNET, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IRI, relevant line ministries (e.g. MoA, MoE), other relevant regional and national food system and food security response organizations
Milestone 2.2.1 2015. Up-scaling and mainstreaming results of research and evaluation related to constraints and opportunities posed by climate variability on food systems at national, regional, and global scales, including food delivery, trade, crisis response, post-crisis recovery, and social protection and their implications for different population segments including women and the poor.	Improved food security information, response strategies or policies in 12 countries reported.	CCAFS Website		ILRI, CIMMYT, WFP, FAO, FEWSNET, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IRI, relevant line ministries (e.g. MoA, MoE), other relevant regional and national food system and food security response organizations
Objective 2.3 Support risk management through enhanced prediction of climate impacts on agriculture, and enhanced climate information and services				

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Review of methodology and platform design reported; Feasibility study completed in two countries or regional institutions; Capacity building activities in 3 regions	CCAFS Website	Review will identify suitable opportunities to enhance early warning and management of strategic climate-sensitive biological threats. Institutional and technological capacity is sufficient to support widespread delivery of climate services. NMS and regional climate centers participate and share data. Full set of METEOSAT images processed and available.	ICRISAT, CIP, CIMMYT, AGRHYMET, ACMAD, CEREGE, Ethiopia NMA, ANAMS (Senegal), U. Reading, IRI, NASA-JPL, IER (Mali), BARC, NARC, ICAR, FAO, JRC, EMBRAPA, MP3-RTB, IITA, ICIPE
Milestone 2.3.1 2013. Historic gridded daily meteorological data sets developed and evaluated, and institutional capacity enhanced, in 2 countries or regional institutions; Prototype crop/rangeland forecasting tools developed; Accuracy of improved crop forecasting methods assessed and reported; Institutions in 2 regions engaged to implement crop forecasting tools tailored to priority crops and local needs.	Gridded historic dataset for 2 countries or regions; capacity building activities in 2 regions; crop/rangeland forecasting tools available	CCAFS Website	Availability of data. Participatory evaluation (under Objectives 1 and 2) will identify socially and gender-differentiated demand, relevant uses for climate-related information.	ICRISAT, CIP, CIMMYT, AGRHYMET, ACMAD, CEREGE, Ethiopia NMA, ANAMS (Senegal), U. Reading, IRI, NASA-JPL, IER (Mali), BARC, NARC, ICAR, FAO, JRC, EMBRAPA, MP3-RTB, IITA, ICIPE
Milestone 2.3.1 2014. Crop and rangeland production forecasting platform, documentation and training materials developed; Early warning systems developed for 2 major biological threats; Tools developed and institutional capacity enhanced to downscale seasonal forecasts for local agricultural decision-making in 2 countries or regional institutions.	Early warning systems made available for 2 biological threats; Training of decision makers on the use of downscaled seasonal forecast products in 2 regions	CCAFS Website	Effective collaboration with food security early warning organizations. Uptake by key food security, trade and index insurance users. Demonstrated feasibility of forecasting strategically important biological threats	ICRISAT, CIP, CIMMYT, AGRHYMET, ACMAD, CEREGE, Ethiopia NMA, ANAMS (Senegal), U. Reading, IRI, NASA-JPL, IER (Mali), BARC, NARC, ICAR, FAO, JRC, EMBRAPA, MP3-RTB, IITA, ICIPE
Milestone 2.3.1 2015. Improved, downscaled seasonal forecast products, tailored to agricultural and food security decision-making, operational in 2 countries or regional institutions; Improved crop forecasting methodology operational in 2 countries or regional institutions.	Systems operational in 2 regions	CCAFS Website and co-branded systems housed at national or regional bodies		ICRISAT, CIP, CIMMYT, AGRHYMET, ACMAD, CEREGE, Ethiopia NMA, ANAMS (Senegal), U. Reading, IRI, NASA-JPL, IER (Mali), BARC, NARC, ICAR, FAO, JRC, EMBRAPA, MP3-RTB, IITA, ICIPE
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	Prototype climate information delivery mechanisms demonstrated and evaluation report published for 6	CCAFS Website	Same as Output 2.3.1	ICRISAT, CIMMYT, ACMAD, AGRHYMET, ICT partners, Emory U., USAID, pilot demonstration

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	countries			project teams (NMS, NARS, NGOs, farmer association, research partners) to be developed for each benchmark location
Milestone 2.3.2 2013. Tested protocols for communicating climate information with representative socially and gender-differentiated user groups in rural communities, and capacity of communication intermediaries enhanced, at 2 locations each in EA, WA and IGP; Summary report on gender and social equity of climate information sources and delivery mechanisms and policy advice to enable equitable access.	Capacity training for communication intermediaries in 6 countries and protocols for communication published	CCAFS Website		ICRISAT, CIMMYT, ACMAD, AGRHYMET, IRI, ICT partners, Emory U., USAID, pilot demonstration project teams (NMS, NARS, NGOs, farmer association, research partners) to be developed for each benchmark location
Milestone 2.3.2 2014. Demonstration and evaluation of gender- and socially-equitable climate service delivery at 2 locations each in EA, WA, IGP, and new CCAFS regions; Up-scaling of improved climate information services demonstrated in one country or region.	Demonstration and evaluation completed and reported in 10 countries	CCAFS Website		ICRISAT, CIMMYT, ACMAD, AGRHYMET, ICT partners, NMS, NARES, USAID, WMO
Milestone 2.3.2 2015. Curriculum developed for intermediaries on overcoming gender and social inequities in communicating climate information; Roadmap for improving climate information services for agriculture and food security in three regions.	Curriculum publish and training held in at least 12 countries	CCAFS Website		ICRISAT, CIMMYT, ACMAD, AGRHYMET, ICT partners, NMS, NARES, USAID, WMO

Theme 3. Pro-Poor Climate Change Mitigation

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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				
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).	Article on bioenergy and food security implications (PIK). Review of methods for ensembles of IA models (ILRI). Synthesis report and paper on mitigation costs, best-bet options and trade-offs along value chain comparing 3-8 mitigation options in Columbia (CIAT). paper on social returns to investment for mitigation options in Uganda (T3). Framework and indicators developed, and community of practice initiated for assessing the impacts of 'low-climate-impact' agricultural development options on women and marginalized farmers (T3)	CCAFS website, Journal website	Low climate impact agricultural development options exist and can be identified (all 3.11). Partners see low climate impact agriculture as a priority. Appropriate capacity for social and gender analysis deployed, suitable socially and gender-dsiaggregated data can be obtained	PIK, IIASA, NARS in Kenya, Bangladesh, ENR Associates, WOCAN
Milestone 3.1.1 2013. Research established on mitigation implications and trade-offs of agricultural development strategies in 3 countries including assessment of their likely implications for socially and gender-differentiated target beneficiary populations (T3).	Planning workshops held. Partners, conceptual framework and methods established.	CCAFS website, partner interviews	See 3.1.1 2012	Columbia University, NARS in Kenya, Ethiopia, Ghana, Mali, Bangladesh, India, ASARECA, CORAF, Centre de Suivi Ecologique (CSE))
Milestone 3.1.1 2014. Research implemented on mitigation implications and trade-offs of agricultural development strategies in three countries (T3).	Scenarios produced. Report completed and disseminated, Joint learning workshop.	CCAFS website, workshop agenda and participant list	See 3.1.1 2012	Columbia University, Terrestrial Carbon Group, Winrock, Applied Geosolutions, BIDS, BCAS, , National agricultural research institutes
Milestone 3.1.1 2015. Research findings shared on mitigation implications and trade-offs of alternative development strategies in three countries (T3).	Country reports and synthesis article completed and disseminated. Dissemination workshop for policy makers.	CCAFS website		Columbia University, Terrestrial Carbon Group, Winrock, Applied Geosolutions, BIDS, BCAS, NARS in Kenya, Ethiopia and Ghana.
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				

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Paper on global terrestrial mitigation strategies in agriculture, livestock and forestry systems; working paper on meta-data for ensemble IA models collected (ILRI). Background paper characterizing mitigation potentials of livestock, crops, agroforestry and aquaculture systems of importance to livelihoods of women and the poor. Life cycle analysis tool and data for aquatic systems (WorldFish). Synthesis reports completed and disseminated, database available. For capacity building: training workshops on GHG inventories in agriculture in each of the CCAFS regions (ILRI). Policy briefs. 300 decision makers trained and using tools (ICRAF). Three planning workshops held (T3).	CCAFS website, database on CCAFS or partner website	Variation in sector can be adequately captured. Sector data is generalizable. Sectoral potentials relevant to management interventions and reporting. Decision-maker interest in mitigation tools	IFPRI (Global Futures Project), SIMLESA Project (Africa) CSISA project (IGP-Asia), IITA, ICARDA, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IIAA, FAO, START
Milestone 3.1.2 2013 (1). Synthesis of sectoral mitigation potentials for IPCC and national and regional bodies covering 3 additional production systems, with a focus on intensification. Includes assessment of the implications of intensification for different segments of the population economically engaged in these production systems, including women and the poor. Includes analysis of agriculture vs. other sectors. Includes case study of reducing agricultural emissions at the national level for Colombia (CIAT).	Synthesis reports completed and disseminated, database available. Reports, policy brief, presentations, training workshop with partners (CIAT).	CCAFS website	Variation in sector can be adequately captured. Sector data is generalizable. Sectoral potentials relevant to management interventions and reporting.	IFPRI (Global Futures Project), SIMLESA Project (Africa) CSISA project (IGP-Asia), IITA, ICARDA, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IIAA, FAO
Milestone 3.1.2 2013 (2). Capacity building of decision makers and national stakeholders in use of appropriate tools, data and knowledge including gender analysis in two additional regions, Includes training on data and methods for carbon measurement and monitoring for integrated agricultural systems, i.e. landscapes, integrated agriculture, forestry, rangeland and livestock (ILRI, ICRAF, EA, WA, IGP)	Training workshops on GHG inventories in agriculture in each of the CCAFS regions (ILRI). 300 decision makers trained and using tools	Monitoring and evaluation reports		START, WOCAN, FAO
Milestone 3.1.2 2014 (1). Options for mitigation differentiating their potential benefits for different target beneficiary groups including women and the poor in each sector identified and shared with policy makers, researchers	Case study completed on country-level development plan for Colombia (CIAT). 3 workshops engage 100 participants to provide input to country development	CCAFS website; workshop agendas and participant lists; documentation for annual reporting		TBC, CARE, OXFAM

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
and actors in the sector through consultations, workshop, analysis and syntheses, including development of low carbon development plans (CIAT). Links to 3.3.1 2014 (2)	plans.			

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Survey and two review papers on existing and best bet practices, institutional arrangements and role of social differentiation (gender, caste, assets, etc) for farmer adoption of (1) conservation agriculture in S. Asia and (2) farmer adoption of Sustainable Land Management (SLM) in EA (CIMMYT). Survey and paper on incentives for adoption of agroforestry in carbon projects (T3).	CCAFS website; Journal publisher's website	Incentives for adoption of practices that reduce climate impacts is a key bottleneck.	SIMLESA Project (Africa) CSISA project (IGP-Asia), IITA, ICARDA, ICAR, EIAR, KARI, UMB-USA, UMB-Norway, IFRI and University of Michigan, Makerere University, Local research partners in benchmark site countries.
Milestone 3.2.1 2013. Analytical framework and field data collection on incentives and factors affecting socially and gender-disaggregated adoption of integrated practices in two regions, including potential for conservation agriculture in maize-legume systems in EA (CIMMYT). Linked to Milestones 3.2.1 2012 (1) and 3.3.1 2012-2015.	Analytical framework. Baseline assessment for adoption of sustainable land management (SLM) Economic evaluation of incentives from integration of SLM and heat/drought tolerant or N-efficient varieties for mitigation. Field testing of socially optimal options. Monitoring of and data on farm-level investments in conservation agriculture and extent of farmer adoption and its contributions for adaptation to and mitigation of climate change (CIMMYT). Gender-disaggregated Data on adoption of SLM and potential of conservation agriculture for reducing carbon emissions or soil carbon sequestration in maize-legume systems in EA (CIMMYT).	Project M&E reports. CCAFS website	Significant potential for increased adoption of conservation agriculture and sustainable land management exists.	SIMLESA and DTMA projects (Africa) CSISA project (IGP-Asia), IITA, ICARDA, ICAR, EIAR, KARI, UMB-USA, UMB-Norway

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 3.2.1 2014. Synthesis reports, policy briefs, dissemination on increased adoption, economic incentives and benefits to men and women farmers for integrated mitigation practices (CIMMYT).	Regional and national policy workshops and briefs. Publication on SLM and CA adoption in maize-legume systems and benefits of low carbon agriculture in EA. Identification of incentive systems and policies for adoption of CA to reduce carbon footprints in wheat-rice systems in IGP. Evidence-based decision making guidelines for low-carbon rice-wheat systems in IGP (CIMMYT).	Workshop agenda and participant lists. CCAFS website.		TBC
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).	Review paper on the potential for payments for ecosystems services in livestock systems delivered (ILRI). Monograph or book on climate change mitigation & adaptation practices in agriculture and bundled environmental services (IFPRI). Publication and government outreach (WF). Report and policy briefs on carbon project design (T3). Webpage.	CCAFS website	Carbon market projects continue to be relevant, albeit as a niche market	Vi, CARE, TIST, Mali NARS
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 (ICRAF- EA, WA, SEA)	Publication, story and films completed with Vi, CARE, and TIST. Training of communities on PES and resource management.	Publication, story and films on website with Vi, CARE, TIST	Same as Output 3.2.1	Vi, CARE, TIST, CarbonBenefits, FAO, Vi Agroforestry, CARE, Ecotrust, EcoAgriculture, World Bank, IIED, CLUA, NARS
Milestone 3.2.2 2013. Decision-makers in target regions better informed re policy options and gender implications for incentivizing and rewarding smallholders for GHG emission reductions	3 workshops for policy makers and practitioners. Consultations with 30 decision-makers across target regions.	Workshop participation lists	Same as Output 3.2.1	Gov't agencies, University networks (RUFORUM, ANAFE, SCARDA)
Milestone 3.2.2 2014. Learning mechanisms and outreach to smallholder men and women farmers on high potential schemes for large- scale impact (CIAT).	Report on promising learning mechanisms. Farmers representative of socially and gender-differentiated intended beneficiary groups engaged in ongoing schemes (CIAT).	Project M&E reports	Same as Output 3.2.1	NARES and NGOs in Colombia.
Objective 3.3 Test and identify desirable on-farm practices and their landscape-level implications				

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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				
<p>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.</p>	<p>Multi-year farm trials, datasets, 7 scientific articles, 7 policy briefs and dissemination. Analysis of economic and food security benefits to different social groups stratified by poverty levels, gender, ethnicity, caste etc., tradeoffs involved and the social gains through adoption of CA system. Methodology, data, and analytical tools identified. Range of current and improved practices and their implications for C sequestration and N and CO2 emissions (CIMMYT). Cost-benefits of potential CDM projects determined in different rice growing regions analysed (IRRI). Carbon footprint of coffee and cocoa systems for at least 4 sites in WA and EA and recommendations (IITA). Report on changes in soil carbon stocks in potato and sweet potato systems due to rotation, soil amendments, mulching, etc. and climate (CIP). Satellite and in-situ measurements of landscape SOC stocks and incremental cereal biomass in 2 BM sites; journal paper (ICRISAT). Nitrification inhibition and C sequestration potential of pasture systems (natural grassland, degraded pasture, improved pastures) identified; book chapter published (CIAT). Report on GHG mitigation potential of farm practices in Colombia (CIAT). Spatial analysis of carbon stocks of coffee systems in Central America (CIAT). 2</p>	<p>CCAFS and partners websites; journal website</p>	<p>Testing mitigation across diverse agroecosystems including the different types of social groups within these is necessary to establish feasibility and impacts. Suitable socially and gender disaggregated data is available for ex ante assessment of impacts. Practices that increase mitigation, livelihood benefits and environmental benefits are possible. Uptake of guidelines.</p>	<p>NARES in India, Indonesia, Vietnam, and Philippines, ARI in Japan, Germany, USA, Australia; WWF; UNEP; MSU; CSU; CORNELL, VI Agroforestry; RF; CCAFS; CARE, IIASA, FAO, Ethiopian Institute of Agricultural Research (EIAR); Kenyan Agricultural Research Institute (KARI); Sustainable Intensification on Maize-Legume Systems in Eastern and Southern Africa (SIMLESA) project; Rutgers University, Indian Council of Agricultural Research (ICAR), India; Bangladesh Agricultural Research Institute (BARI); Nepal Agricultural Research Council; IRRI; Cereal Systems Initiative for South Asia (CSISA); Instituto Nacional de Investigación Forestal, Agrícola y Pecuaria, INERA, CG Centers, Kyrgyz Research Institute of Agriculture, SOFESCA, IER (Mali), PAC, NFDQ, GRADE, NARO, JKUA; DENR; UPLB; COMART, IFPRI (Global Futures Project), SIMLESA Project (Africa) CSISA project (IGP-Asia), IITA, ICARDA, ICAR, EIAR, UMB-USA, UMB-Norway, African Conservation Tillage Network (ACT), Global Research Alliance</p>

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
	<p>papers on land use change and soil GHG emissions in Kenya, dataset using photoacoustic measurements; dataset on carbon stocks and land quality improvement from farmer-assisted regeneration trials; experiments begun on all GHG analysis of intensive poplar agroforestry systems on IGP (CIFOR). Paper on fertilizer trials for and dataset on CO2 emissions for oil palm.</p>			
<p>Milestone 3.3.1 2013 (1). Assessment of feasibility and impacts for mitigation practices on farms (i) soil carbon dynamics under different management practices (CIMMYT), (ii) biochar (IFPRI and ICRAF), (iii) agro- silvi- horti- pastoral farming systems in India (ICRAF), (iv) conducive settings for CDM in rice production through improved irrigation and fertilizer management (IRRI), (v) sweet potato and potato systems (CIP), (vi) coffee and cocoa agroforestry (IITA), (viii) pasture and low-input fruit systems (CIAT); (ix) coffee and cocoa systems at landscape level (CIAT); (x) land use change, land rehabilitation and poplar agroforestry (CIFOR), (xi) smallholder biofuel production (ICRAF). Ex-ante assessment conducted of socio-economic impacts of selected mitigation practices and the potential distribution of benefits across different social groups, including women and the poor.</p>	<p>Multiyear farm trials, framework and tools posted on website, 5 journal articles. Secondary and primary data; adaptation and validation of field, farm and landscape-scale models (CIMMYT) Background paper assessing the potential of social and gender relations to affect the way trade-offs are made in selected farming systems. Trade-offs and mitigation potential of biochar vs. viable alternative CC mitigation practices in agriculture; four case studies, dissemination of research results at two international meetings (IFPRI). 2 journal articles and report (ICRAF). Trials in different rice growing regions (IRRI). Validated model, report, workshops on extreme events and management on soil carbon dynamics in potato and sweet potato systems for EA and Andes (CIP). Policy recommendations for coffee and cocoa sector (IITA). Potentials for N2O and C sequestration in pasture, and reduced methane from improved forage, assessed, including gender and social differentiation (CIAT). Synthesis report and scientific article on impacts of fruit systems (CIAT). Report on pressure on</p>	<p>CCAFS website, framework downloaded 200 times.</p>	<p>Same as 3.3.1 2012 (1)</p>	<p>NARES in each region</p>

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
	<p>forest and conservation areas due to perennial system shifts (CIAT), farm trials, additional datasets and second generation experiments (CIFOR). Report and journal articles on biofuel potential (ICRAF).</p>			
<p>Milestone 3.3.1 2014 (1). Impact and trade-off analysis of farm management strategies and adoption at the regional scale, including C sequestration and N management in CA-based intensification in rice-wheat and maize-legume systems (CIMMYT); analysis of biomass for efficient pyrolysis liquid fuel production (ICRAF), low-input fruit production (CIAT); coffee and cocoa systems at landscape level (CIAT); land use change, land rehabilitation and poplar agroforestry (CIFOR).</p>	<p>2 publications on impacts and trade-off analysis (CIMMYT); Reports and journal articles on best practices (ICRAF). Report on impacts in marginalized environments (coastal and tropical savannahs) (CIAT). Reports, papers, strategy and policy paper on predicted shift of perennial cropping systems and implications for forests (CIAT). 4 papers and thesis submitted (CIFOR).</p>	<p>Project reports. CCAFS website</p>	<p>Same as 3.3.1 2012 (1)</p>	<p>TBC</p>
<p>Milestone 3.3.1 2015. Synthesis of results from applying framework and tools for assessing feasibility and impacts,</p>	<p>Data set, guidebook and journal article.</p>	<p>Data and publications available</p>	<p>Same as 3.3.1 2012 (1)</p>	<p>TBC</p>

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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 (EA, WA, IGP). Linked to T1.	Farm trials established; training conducted; 6 reports and synthesis. Informal policy discussions (EA, WA, IGP).	Data and publications available	Same as 3.3.1 2012 (1). Activities can be quickly mobilized to implement trials on farms.	NARES in each region
Milestone 3.3.1 2013 (2). Analysis of the impacts of on-farm and landscape level mitigation practices in EA and one other region, including impacts on women and other marginalized farmers (CIMMYT).	Impact and trade-offs analysis at the regional scale of (1) C sequestration and (2) N management in different crop management practices, especially CA-based intensification in rice-wheat and maize-legume systems (CIMMYT). Report completed and disseminated.	CCAFS website	Same as 3.3.1 2012 (1)	TBC
Milestone 3.3.1 2014 (2). Learning and exchange among national agencies to review farm-level mitigation options and their socially and gender-differentiated impacts. Links to 3.1.2 2014 (2).	Synthesis reports. 50 national agency personnel engaged in 1 learning event per CCAFS region; Country-specific action plans (India, Indonesia, Philippines, Vietnam) for CDM projects in different rice growing regions developed; advising NARES on potential and possible means of implementation of CDM projects in rice production through improved irrigation and fertilizer management (IRRI); Evaluation report on current practices and incentives for low carbon agriculture across scales - presented to stakeholders to adapt technologies and policies (IITA). N ₂ O and C sequestration potential of forage systems, including trees and shrubs, quantified; potentials for reduced methane emissions through improved forages defined; a journal article published on application of forage based mitigation options in systems. Impact (including gender analysis) of mitigation option through improved forages (CIAT)	Learning event participant lists. Published action plans. CCAFS website.	Same as 3.3.1 2012 (1)	TBC
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				

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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).	Workshop, reports and special journal. Protocol and standard operating procedures for soil carbon measurement (T3). Online project developer tool for C-accounting including tools for assessment and modeling of C stocks and GHG emissions from NRM projects; measurement protocol for AGB inventory in shade coffee systems; allometries for robusta coffee shrubs (ICRAF).	Website, publications, workshop agenda	Simple methods can be devised for widespread application. Sufficient data exists to validate simulation models. Cost effective measures and MRV are possible. Uptake of guidelines.	FAO, Global Research Alliance, T-AGG, Duke, Colorado State University, CarboSur, ILRI, regional representatives from NARS.
Milestone 3.3.2 2013. Methods for GHG emissions and carbon measurement and monitoring for integrated agricultural systems and resulting data (complex landscapes, irrigated IGP agroecosystems, integrated agriculture, agroforestry, forestry and aquaculture, rangeland and livestock) (CIMMYT, ICRAF, WorldFish, ICARDA, ILRI); includes assessing feasibility of an all-GHG analysis. Linked to 3.3.1 2012-15.	Protocols, methodology, regional trials, analytical tools, data, and improved practices. Results shared through websites, policy briefs and scientific articles.	CCAFS website, journal publisher's website		UNEP; MSU; CSU, Embrapa, Centre of Excellence on Environmental strategy for GREEN business (VGREEN-KU) Kasetsart University, Thailand; ARIs, NARS and universities in the CWANA region, Global Research Alliance
Milestone 3.3.2 2014. Monitoring guidelines for smallholder agriculture in developing countries produced and contributing to global standards (CIFOR).	Guidelines completed and disseminated.	CCAFS website		IPCC, VCS, ACR, CAR
Milestone 3.3.2 2015. Workshop with standard setting bodies (VCS, ACR, etc) to share methods synthesis guidelines for smallholder agriculture in developing countries.	Workshop engages representatives of 5 major offset markets	workshop participant lists		Duke University and X-AGG, VCS, CCBA, Rainforest Alliance, Unilever
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.	3 Reports (T3). Workshops on methodology and data sharing on carbon sequestration in rangeland systems (ILRI).	CCAFS website	Same as Output 3.3.2	FAO, Global Research Alliance, T-AGG, Duke, Colorado State University, CarboSur, ILRI, regional representatives from NARS.
Milestone 3.3.3 2013. Working groups established in three regions to develop methods for national and project management and MRV of greenhouse gas emissions and their landscape-level implications, while strengthening the capacity of national institutions (EA, WA, IGP)	Three regional workshops; 3 working papers; web platform and clearinghouse developed and made publicly available	CCAFS website		FAO, University of Kansas, Global Research Alliance, NARS in Mali, Ghana, Kenya, Ethiopia, Bangladesh and Nepal
Milestone 3.3.3 2014. Regional working groups test and refine monitoring and measurement methods)	Field-testing of methods completed. Regional reports on methods	Workshop participant lists		FAO, Global Research Alliance, NARS in Mali, Ghana, Kenya, Ethiopia,

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
	development and testing. Global workshop.			Bangladesh and Nepal
Milestone 3.3.3 2015. Regional working groups build capacity in national entities	35 national agency personnel engaged in 1 training workshop per CCAFS region	Workshop participant lists	Same as Output 3.3.2	FAO, Global Research Alliance, NARS in Mali, Ghana, Kenya, Ethiopia, Bangladesh and Nepal

Theme 4. Integration for Decision Making

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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	Workshop reports and policy briefs for EA, WA and IGP available on CCAFS and partners websites; Local media reports from each region Report completed and disseminated; journal article published; proposal submitted and new GEC partnerships and funds committed; Policy workshops held; Report and policy briefs widely disseminated; journal article published; Presentations made at regional (e.g. EAC, ECOWAS) and global conferences (e.g. PUP), media stories, inputs to the ag work program/UNFCCC negotiations, global and regional CC conferences (e.g. COP)	CCAFS, AMKN, various partner websites; Newspaper and other media reports Oxford, GEC/ESSP, journal publisher websites FAO website; ASARECA, CORAF, EAFF, ROPPA websites; newspaper and other media articles; UNFCCC reports; presentations and media coverage at COP	Capable partners remain engaged and help communicate scenario research results widely and to inform key decision makers Partners have sufficient incentives to engage and people trained remain in local institutions. Uptake of results by key agencies. Relevant information products, services, and users are engaged in each region. Partners willing to share findings through platforms.	Oxford; GEC scenarios community; Panos; Regional Ag Research Orgs (incl. NARS): ASARECA (EA); CORAF, AMCEN (WA); RWC (IGP); Regional policy orgs: NEPAD, CAADP; Int'l NGOs: CARE Int'l; Oxfam; Regional NGOs: Ecotrust (EA); SahelEco, AMEDD (WA); CEAPRED & FPRO (IGP); Private Sector: Katoomba Grp (EA); Technico Pty Limited (IGP); Farmers Orgs: EAFF (EA); ROPPA (WA), IFAP (Int'l); Regional Meteo Orgs: ACMAD, AGRHYMET, ICPAC; USAID, ILRI, PANOS, FAO, ASARECA, EAC, ECOWAS, CORAF, EAFF, ROPPA
Milestone 4.1.1 2013. Regional scenarios finalized in a process that includes developing capacity in regional agencies and other key stakeholders.	EAC, ECOWAS reports/strategy documents; UNFCCC document citing CCAFS /scenarios research; Report completed and disseminated; journal article published; new networks linking scenarios experts with policymakers established; Journal article submitted; workshop reports; films, blogs, briefs produced; publications citing CCAFS	EAC, ECOWAS, CCAFS websites, UNFCCC website; Oxford, GEC partner, USAID websites; national policy documents; AMKN, FAO websites; ASARECA, CORAF, EAFF, ROPPA websites; newspaper and other media articles; UNFCCC reports; presentations and media coverage at COP	Same as 4.1.1 2012	GEC, USAID, ILRI, PANOS, FAO, ASARECA, EAC, ECOWAS, CORAF, EAFF, ROPPA
Output 4.1.2 Evidence on, testing and communication of, successful strategies, approaches, policies, and investments contributing to improved science-informed climate change-agricultural				

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Number of activities and partners in CCAFS sites; PAR teams in each site trained, working papers, journal article published; brief; blogs; films	CCAFS and partners websites; CIMMYT website; Journal publisher's website;	Partners and knowledge users have sufficient incentives to engage and people trained remain in local institutions in each region. Relevant information products, services, and users are engaged in each region. Partners willing to share findings through platforms.	CIMMYT, ICRAF, CRP1.1, CRP1.2, CRP3.2, Local and regional partners, IWMI, ICRISAT, ILRI, Harvard Sustainability Science group.
Milestone 4.1.2 2013. First results from PAR, including gender analyses, are published and fed into national and regional policy processes.	Journal articles; briefs; policy and strategy documents	CCAFS website; CIMMYT , CRP3 websites, national policy documents; regional strategy documents	Relevant information products, services, and users are engaged in each region. Partners willing to share findings through platforms.	Local and regional partners, IWMI, ICRISAT, ILRI, CIMMYT, ICRAF, CRP3, EAFF, ASARECA, CEAPRED (Nepal), FPRO (India), BCAS (Bangladesh), Univ of Dar & Salian Center (Tanz), Makerere Univ & NARO (Uganda); KARI (Kenya); EARO (Ethiopia)
Milestone 4.1.2 2014. Cross-site visits and scaling up of PAR approaches and synthesis of insights widely disseminated into regional and national policy processes; with explicit recognition of social differentiation and gender.	Workshop reports, farmer organization documents; Special issue on socioeconomics of climate change, agriculture and food security; Resource book	CCAFS and farmer organizations' websites	PAR approaches developed are appropriate and transferable to other sites, regions; Partners and knowledge users have sufficient incentives to engage and people trained remain in local institutions in each region. Sponsors and funds for global conference found	Local and regional partners, IWMI, ICRISAT, ILRI and other CG centers, IDS, IIED, FAO, USAID,EAFF, ROPPA, IFAP, ASARECA, CORAF, CEAPRED (Nepal), FPRO (India), BCAS (Bangladesh), CARE Int'l, NARS from Mali, Senegal, Burkina, Niger and Ghana; Univ of Dar & Salian Center (Tanz), Makerere Univ & NARO (Uganda); KARI (Kenya); Managing Risk for Improved Livelihoods (MARIL, Ethiopia)
Milestone 4.1.2 2015. Synthesis of knowledge on men and women farmers' adaptation strategies disseminated and fed into adaptation and mitigation strategies and national policies and economic development plans in at least 3 regions.	Workshop and synthesis reports, journal article submitted, policy brief disseminated; publications citing CCAFS	CCAFS and partners' websites	Strategy formulators and key national policy makers have been sufficiently involved through engagement and communication efforts, and access and use CCAFS-generated knowledge	All CG centres, EAFF, ROPPA, ASARECA, CORAF, CEAPRED (Nepal), FPRO (India), BCAS (Bangladesh), CARE Int'l, NARS from Mali, Senegal, Burkina, Niger and Ghana; Univ of Dar & Salian Center (Tanz), Makerere Univ & NARO (Uganda); KARI (Kenya); Managing Risk for Improved Livelihoods (MARIL,

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
				Ethiopia)
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.	CCAFS/Workshop reports; Joint CAPRI-CCAFS working paper; Special issue; Number of downloads of CCAFS gender-related reports, briefs, blogs; CCAFS gender work cited in partners' reports/strategies and gender highlighted in national/regional climate, ag and food security strategies; Number of downloads of joint CCAFS-FAO training documents, films, number of people trained (and new regional trainers in methods developed) in each region	CCAFS, CRP2, FAO websites; links on partner websites	Partners able to inform and implement appropriate CC/gender analyses across sites in all CCAFS regions; people trained remain in local institutions; partners fully engaging in learning events and sharing information on K platforms	FAO, CRP2, IWMI, ICRISAT, ILRI, ICRAF, CGIAR gender program, national partner institutions (universities, NARES, government)
Milestone 4.1.3 2013. Syntheses and other joint partner communication products based on findings from CCAFS work with women and marginalized groupss	Synthesis report; briefs, blogs, training materials; Number of downloads of joint CCAFS-FAO training documents, films, number of people trained in each region	CCAFS, FAO, CRP2 websites; links on partner websites	Same as 4.1.3 2012	CRP2, FAO, IWMI, ICRISAT, ILRI, ICRAF, CGIAR Gender Program, national partner institutions (universities, NARS, gov't)
Milestone 4.1.3 2014. Regional capacity in gender and climate change action research developed in at least 3 regions, and partner institutions implementing more gender and pro-poor targeted activities.	Number of trained partners and organizations undertaking gender analysis and targeted R4D activities	CCAFS and partner websites	Same as 4.1.3 2012	FAO, IWMI, ICRISAT, ILRI, ICRAF, CGIAR Gender Program, national partner institutions (universities, NARS, gov't)
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.	Civil society partners (e.g. farmers' organizations) and regional economic fora inviting CCAFS to their strategy and policy workshops, cites of CCAFS work on partner websites and in their strategies; policy briefs, presentations, papers; Number of CCAFS-supported documents, methods and training	CCAFS and partner websites; AMKN, CKKN, policy and strategy documents	Relevant information products, services, and users are engaged and evidence used by policymakers to inform strategies and policies aimed at enhancing sustainable agricultural development and food	IFPRI, IWMI, ICRISAT, ILRI, ICRAF, WorldFish, EAFF, ROPPA, IFFKO (regional farmers' organizations), EAC, ECOWAS, ASARECA, CORAF, INSAH, government agencies in target regions/countries

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
	materials downloaded, number of local partners attending key regional and global CC and food security events and citing CCAFS documents/evidence		security	
Milestone 4.1.4 2013 (1). Support to negotiators, civil society and government agencies to fully contribute to the UNFCCC work program on agriculture, with explicit support to marginalized groups to build their capacity to participate in policy development to improve food security; Assessment of effectiveness of CCAFS learning approach and utilization by a diverse range of partners of CCAFS-generated knowledge.	Farmers' organizations' (including representatives of women's interests) participation in CCAFS-supported learning platforms and events, private sector partners' inviting CCAFS to their strategy and policy workshops, cites of CCAFS work on partner websites and in their strategies; policy briefs, presentations, papers; Number of CCAFS-supported documents, methods and training materials downloaded, number of local partners playing leadership roles in key regional and global CC and food security events and citing CCAFS documents/evidence	CCAFS and partner websites; AMKN, policy and strategy documents	Relevant information products, services, and users are engaged and evidence used by policymakers to inform strategies and policies aimed at enhancing sustainable agricultural development and food security	CRP6, CDKN, EAFF, ROPPA, IFFKO (regional farmers' organizations), EAC, ECOWAS, ASARECA, CORAF, INSAH, government agencies in target regions/countries; key private sector partners in each region
Milestone 4.1.4 2014 (1). Support to regional and global processes to clarify the ecological footprint of agriculture and the ways it can be reduced, without compromising poverty and equity objectives; and building the links to the post Rio+20 process	Regional and global workshop reports citing CCAFS	CCAFS website, AMKN, CDKN, and partner websites; policy documents and media articles	Regional and global CC processes include agriculture	CDKN, EAFF, ROPPA, IFFKO (regional farmers' organizations), EAC, ECOWAS, ASARECA, CORAF, INSAH, government agencies in target regions/countries
Milestone 4.1.4 2015. Network further expanded to help inform national, regional and global players of the opportunities for a UNFCCC Agreement on Agriculture and Climate Change, options developed for national policy processes	Regional and global workshop reports citing CCAFS; CCAFS engagement, communication and learning approaches synthesized and documented	CCAFS website, AMKN, CDKN, and partner websites; policy documents and media articles	Regional and global CC processes include agriculture	Global Adaptation FUND, UNREDD, the World Bank, IPCC, UNFCCC/SBSTA, key bilateral donors developing adaptation and mitigation strategies, large international NGOs, key regional and national actors, research for development agencies, national, regional, and international planning agencies, researchers on climate change impacts on agriculture and natural resource management

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
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.	Number of local scientists trained and implementing latest land health surveillance approaches; Joint CCAFS-ICRAF working paper available on both websites	CCAFS, ICRAF, CIAT, AMKN, and local partner institution websites and documents	Partners able to inform and implement appropriate analyses in all CCAFS regions; people trained remain in local institutions; partners willing and able to share data quickly	CRP5, ICRAF, AFSIS, CIAT, local research organizations/scientists
Milestone 4.1.4 2013 (2). Synthesis and research reports developed on lessons from linking land health and soil carbon measures with socioeconomic information from CCAFS sites; Local institutional capacity strengthened in land health surveillance methods including soil carbon measurement in additional regions	Number of local scientists trained and implementing latest land health surveillance approaches; Article published	CCAFS, ICRAF, CIAT, AMKN, and local partner institution websites and documents	Partners able to inform and implement appropriate analyses in all CCAFS regions; people trained remain in local institutions; partners willing and able to share data quickly	ICRAF, AFSIS, CIAT, local research organizations/scientists
Milestone 4.1.4 2014 (2). Land health and soil carbon measurement being used by partners to inform national and regional land, agriculture and climate change policies	Policy documents	CCAFS and partner websites	Partners able to inform and implement appropriate analyses in all CCAFS regions; people trained remain in local institutions; partners willing and able to share data quickly	ICRAF, AFSIS, CIAT, local research organizations/scientists, government agencies in target regions/countries
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	Baseline survey reports finalized and made. Synthesis CCAFS report and journal article submitted. Baseline surveys initiated at three levels in 2 new regions. Regional characterization databases collated and documented	Databases, reports on CCAFS and partner websites, journal publisher's website, stakeholder meeting reports	Trained local partners are not hampered by insecurity or other crises/unforeseen events and implement the survey. Regional and site selection progresses as planned, regional program leaders are hired	Univ. of Reading Statistical Group, CGIAR centers, CO, ASARECA, CORAF, INSAH, CEAPRED (Nepal), BCAS (Bangladesh), CARE Int'l, NARS from Mali, Senegal, Burkina, Niger and Ghana; Univ of Dar & Salian Center (Tanz), Makerere Univ & NARO (Uganda); KARI (Kenya); Managing Risk for Improved Livelihoods (MARIL, Ethiopia); CSI, HarvestChoice, Met Services; AFSIS; IHDN

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 4.2.1 2013 (1). Regional site characterizations and baseline data synthesized in cross-regional comparisons	Synthesis baseline reports finalized across three regions, and baseline survey data for two new regions finalized and made available. Regional characterization carried out for two new regions, and M&E implementation coordinated	Data and reports available on CCAFS/partner websites, journal articles	Trained local partners are not hampered by insecurity or other crises/unforeseen events and implement the survey, regional partners engaged. Appropriate theme/regional input on characterization needs. CO M&E plan available	University of Reading Statistical Group, CGIAR centers, regional partners (as last year); CSI, HarvestChoice, Met Services; AFSIS;IHDN
Milestone 4.2.1 2014 (1). Regional site characterizations and baseline data initiated and initial analyses in two additional target regions at three levels: household, village, and institution	Baseline survey reports for two new regions finalized, and all reports made available. Synthesis CCAFS report and journal article submitted, and M&E implementation coordinated	Reports on CCAFS and partner websites, journal publisher's website		Univ. of Reading Statistical Group, regional partners TBD, CGIAR centers, CO
Milestone 4.2.1 2015. Second round of baseline surveys implemented in three initial target regions, revisiting the same sites as the first round and initial analyses across time	Second round of baseline surveys in three initial target regions implemented, data and reports available, and M&E implementation coordinated	Reports on CCAFS website	Second round of baseline work is feasible in CCAFS regions	Univ. of Reading, CGIAR centers, CO
DOWNSCALED CLIMATE DATA				
Milestone 4.2.1 2012 (2). Downscaled climate data and methods tested and harmonized	Downscaling "proof of concepts" and new methods evaluated. Downscaled climate data for the 2030s to 2090s from CMIP5 and CORDEX available for harmonized applications	Reports, journal article, software, datasets documented and available for download via CCAFS website and climate data portal	Downscaling methods can be meaningfully evaluated and compared. Access to CMIP5 and CORDEX data	CIP, CIAT, University of Cape Town, University of Oxford, Waen Associates; University of Reading, University of Leeds; CIAT; CIP
Milestone 4.2.1 2013 (2). Downscaled climate data and methods available for application; and regional climate characterization and evaluation of global and regional climate model performance for two additional target regions.	Downscaling method comparison analysis completed and written up. Downscaled data resources updating and refining, including AR5 data with new emissions scenarios, and evaluation reports of different state of the art global & regional climate models from the perspective of agricultural impacts modeling	Reports, papers; software/model, datasets, documentation on CCAFS website and climate data portal	Climate models can be evaluated appropriately on a regional basis	CIP, CIAT, University of Cape Town, University of Oxford, Waen Associates; University of Reading, University of Leeds,

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 4.2.1 2014 (2). Downscaled climate data and methods are being applied in CCAFS regions	Downscaled data resources updating and refining further, including spatial weather generators for regional applications developed and applied. Detailed quality assessment of different AR5 GCMs and RCMs for CCAFS regions	Reports, journal articles, software, documentation; revised datasets available on CCAFS climate data portal		Wael Associates; University of Reading, University of Leeds, University of Oxford, University of Cape Town, CIAT
DATABASES AND DATABASE TOOLS				
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)	Database, database tools, and crop model wiki site available to users	Reports, journal articles, software, metadata documents available on CCAFS website/DataVerse, Geo-wiki	Primary data are being made available for analysis and/or can be collected. Appropriate methods of evaluation can be determined. Weather data can be accessed. Attractive wiki can be designed, and a community of practice can be institutionalized	WSU, IFPRI, AfsIS; FAO, ILRI, IIASA, IFPRI, University of Wisconsin, IWMI, ICRAF, ICRISAT, regional partners TBD; University of Reading, Met Services, WMO, UK Met Office, Harvard, CIAT, CIMMYT; Hutton Institute, AgMIP
Milestone 4.2.1 2013 (3). Databases and tools further elaborated and managed to enable stakeholders to assess impacts and evaluate options, with additional data layers added for pastureland; weather data; household level agricultural systems data	Database, database tools, and crop model wiki site available to users with new features added	Report, meta-data documents and databases on web/DataVerse, Geo-wiki	Community of practice continues to be strengthened	FAO, ILRI, IIASA, IFPRI, University of Wisconsin, University of Reading, Met Services, WMO, UK Met Office, Harvard, CIAT, ICRAF, CIMMYT, ICRISAT; Hutton Institute, AgMIP
Milestone 4.2.1 2014 (3). Based on interaction with and feedback from users, the second generation of databases and tools designed, managed and applied to enable stakeholders to assess impacts and evaluate options	Second generation databases and database tools available to users	Meta-data documents, DataVerse CCAFS system, reports documenting the value of databases for assessing impacts and evaluating options	Community of practice continues to be strengthened	University of Reading, Met Services, WMO, UK Met Office, Harvard, CIAT, ICRAF, ILRI, CIMMYT, Hutton Institute, AgMIP
DECADEAL/NEAR-TERM CLIMATE PRODUCTS				
Milestone 4.2.1 2012 (4). Scoping of innovative decadal/near-term climate products to improve near-term climate prediction	Evaluation of needs of potential users of decadal/near term climate information production and analysis opportunities for scientific input. Initial work undertaken on the development of "seamless" climate forecasts and scenarios for 1 to 10 to 20 year timescales, with a focus on extreme events	Reports	Climate science makes progress to provide useful information of value for decision making contexts and to allow for meaningful analysis for use	IRI, University of Cape Town, University of Leeds, EQUIP

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 4.2.1 2014 (4). Innovative decadal/near-term climate products developed to improve near-term climate prediction	Near-term climate forecasts and scenarios development	Reports, papers	Climate science makes progress to provide useful information of value for decision making contexts	University of Cape Town, University of Leeds, EQUIP
ASSESSMENT TOOLKITS				
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	Global rangeland model and certain plot-level impact models developed and tested, and vulnerability assessments carried out at sub-national level for selected countries in at least 2 CCAFS regions	Reports, journal articles, models and metadata available via CCAFS Model wiki	Model developers agree to share information about their models. Buy-in of regional stakeholders remains high. Data are available at sub-national level	CSU, ILRI, IIASA, IFPRI, CSIRO, Wageningen University, PIK, AGMIP, PBL, University of Oxford, Global Futures, regional stakeholders, Food Economy Group, University of Natal, FAO, AfricaRice, IRRI, CIP, ICRISAT, AGMIP, Montana State University
Milestone 4.2.1 2013 (5). Assessment toolkit components further evaluated, refined and used to analyze likely effects of specific adaptation and mitigation options in target regions, with a focus on household and intra-household model data and testing and intercomparison of global and regional integrated assessment models	Household and intra-household model testing in selected CCAFS sites, and global integrated model intercomparisons, and initial evaluation of regional-scale models in selected CCAFS regions to assess different adaptation, risk management and mitigation options	Reports, journal articles; regional modeling framework developed	Integrated assessment models can be meaningfully compared. Buy-in of regional stakeholders remains high	ILRI, IIASA, IFPRI, CSIRO, Wageningen University IIASA, PIK, AGMIP, PBL, University of Oxford, Global Futures, regional stakeholders, Food Economy Group, University of Natal, FAO, AfricaRice, IRRI, CIP, ICRISAT, IWMI
Milestone 4.2.1 2014 (5). Assessment toolkit components utilized in target regions; high-level engagement with key users initiated to build capacity in use of tools and data	Dynamic vulnerability assessment methods developed, linked with the regional scenario integrated assessment models, and applied for ex-ante impact assessment of adaptation, risk-management and mitigation options, using an ensemble approach	Reports, journal articles; training workshops	Buy-in of regional stakeholders remains high	IFPRI, ILRI, IIASA, PIK, AGMIP, PBL, IWMI, ICRISAT, regional partners, Food Economy Group, University of Natal, FAO, AfricaRice, IRRI, CIP, ICRISAT
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	Strategy for CCAFS toolkit / metadatabase on decision support tools at the local level	Global partners identified, workshop held, report on strategy	Global partners can be engaged in long-term partnerships	TBD
Milestone 4.2.2 2013. Decision aids developed in selected sites in 3 initial target regions that build on the information needs of socially- and gender differentiated target groups	Development of decision tools for representative socially and gender differentiated groups in pilot communities in selected sites; Engagement with partners to implement strategy for decision support tools at the local level	CCAFS and partner websites report, workshop	Decision tools can be developed that speak to the needs and perceptions of different target groups	National and regional partners, CG centers, and partners to be identified

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 4.2.2 2014. Decision aids tested in selected sites in target regions that build on the information needs of socially- and gender differentiated target groups	Coordinating and implementing strategy at selected sites; Development and testing of decision packs for representative socially and gender differentiated groups in pilot communities in selected sites	Reports; Decision aids & tools plus documentation, dissemination	Decision tools can be developed that speak to the needs and perceptions of different target groups	National and regional partners, CG centers, and partners to be identified
Milestone 4.2.2 2015. Collation of decision aids and tools for prioritizing adaptation and mitigation actions at national/sub-national scales, with pilot testing in IGP region	Decision aids and tools released and results of pilot testing shared among policy makers	CCAFS and partner websites	Continued strong demand for these decision aids among national and sub-national decision-makers	National and sub-national governmental partners, NARS, CG and ESSP scientists
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 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	Land use and aquaculture outputs available from IMPACT model runs. Global agricultural modelers understand and report sources of differences in outcomes. Differences are reduced.	Land use and aquaculture outputs from IMPACT model runs used in scenario analyses and strategic planning exercises	Appropriate data can be assembled and tools and methods created	CGIAR centers (especially IFPRI and WorldFish), IARCs, Integrated Assessment Modeling community (Note: capacity building for use of these tools is in Output 4.3.3.)
Milestone 4.3.1 2013 (1). Soft linkages between IMPACT and CGE models completed. Intercomparisons of livestock-related components of global modeling completed (ILRI)	CGE soft linkages with the IMPACT model are available as part of model runs. Global modelers incorporate livestock components into their models understand sources of differences in outcomes. Differences are reduced.	Outputs from IMPACT model runs with the CGE linkages used in scenario analyses and strategic planning exercise		CGIAR centers (especially IFPRI and ILRI), IARCs, Integrated Assessment Modeling community (Note: capacity building for use of these tools is in Output 4.3.3.)
Milestone 4.3.1 2014 (1). Land use, hydrology and CGE model linkages developed	Use of output from this integration in scenario analyses and strategic planning exercises	Outputs from land use, hydrology and CGE linkages available to end users		CGIAR centers, general equilibrium modeling community
Milestone 4.3.1 2012 (2). Analysis and report for the United Nations Committee on Food Security (CFS) on Food Security and Climate Change	Report completed	Publication of the CFS report and citations in national and international planning/strategy	Team can be assembled and needs of CFS HLPE met by deadline of July 1	HLPE of CFS, report coauthors

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
		documents		
Milestone 4.3.1 2013 (2). National and regional studies complementary to the global mitigation study. Review national policies relevant to agroforestry in 3 West African countries, with goal of identifying policy changes that could enhance adaptation and mitigation (ICRAF). Identification of the role of aquaculture and fisheries in climate change adaptation and support for inclusion in revision of NAPAS in 3 countries in the CCAFS regions (WorldFish)	Publication of the report and citations in national and international planning/strategy documents	Report available on CCAFS and other websites.	Reviewers accept reports; authors can be identified. Tool development in Milestones 4.3.1(1)2012 and parts of theme 4.2 are successfully completed.	UN, UNFCCC, CGIAR centers, NARES, key bilateral donors developing adaptation and mitigation strategies, large international NGOs, key regional and national actors, research for develop agencies, national, regional, and international planning agencies, researchers on climate change impacts on agriculture and natural resource management etc.
Milestone 4.3.1 2014 (2). Report on new technologies and international policies to support their development for socially inclusive and gender-responsive adaptation and mitigation	Publication of the report and citations in national and international planning/strategy documents	Reports available on CCAFS and other websites.	Authors can be identified for study; Reviewers accept reports tool development in Output 4.3.1 and parts of theme 4.2 are successfully completed.	UN, UNFCCC, CGIAR centers, NARES, key bilateral donors developing adaptation and mitigation strategies, large international NGOs, key regional and national actors, research for develop agencies, national, regional, and international planning agencies, researchers on climate change impacts on agriculture and natural resource management etc.
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	Reports completed and disseminated	Reports available on CCAFS and other websites such as UN CFS.	Authors can be identified for selected national studies.	Regional organizations such as FANRPAN, ASARECA, and CORAF. National country authors.

MILESTONES (OUTPUT TARGETS)	PERFORMANCE INDICATOR	MEANS OF VERIFICATION	ASSUMPTIONS	PARTNERS
Milestone 4.3.2 2013. National and regional studies complementary to the global mitigation study. Review completed of national policies relevant to agroforestry in 3 West African countries, with goal of identifying policy changes that could enhance adaptation and mitigation highlighting potential for positive benefits for socially marginal groups and women (ICRAF). Identification of the role of aquaculture and fisheries in climate change adaptation and support for. inclusion in revision of NAPAS in 3 countries in the CCAFS regions (WorldFish)	Reports completed and disseminated Policy Brief highlighting needed policy changes relevant to more gender-equitable and and social ly inclusive adaptation and mitigation is disseminated and cited by influential policy actors	Reports available on CCAFS and other websites.	Authors can be identified for selected national studies. Reviewers accept reports; Tool development in Output 4.3.1 and parts of theme 4.2 are successfully completed.	Regional organizations such as FANRPAN, ASARECA, and CORAF. National country authors.
Milestone 4.3.2 2014. National and regional studies complementary to the global technology policy study	Reports completed and disseminated	CCAFS and partner websites	Reviewers accept reports; authors can be identified for studies in later years; tool development in Output 4.3.1.	Regional organizations such as FANRPAN, ASARECA, CORAF, National country authors
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	CGIAR partners in target countries capacity to analyze effects of policy change using modeling tools	Regional and national policies developed by local partners, national agencies that utilize the modeling tools	Physical and human resources are available in CGIAR, to build capacity for modeling	CGIAR centers
Milestone 4.3.3 2014. Activities held at NARS, and international organizations to build capacity to utilize the modeling tools developed under milestone 4.3.1 2013.	NARS partners in target countries capacity to analyze effects of policy change using modeling tools	Regional and national policies developed by local partners, national agencies that utilize the modeling tools	Physical and human resources are available in CGIAR, NARS to build local capacity for modeling	NARS and international organizations.