CCAFS Annual Plan of Work and Budget (POWB) for 2017

Name of the CRP: CCAFS – Climate Change, Agriculture and Food Security

Name of the Lead Center: CIAT – Centro Internacional de Agricultura Tropical

List of participating Centers and other key partners:

Participating CGIAR Centers

AfricaRice - Africa Rice Center	BIOVERSITY - Bioversity International	IWMI - International Water Management Institute
CIFOR - Center for International Forestry Research	CIAT - Centro Internacional de Agricultura Tropical	CIMMYT - Centro Internacional de Mejoramiento de Maíz y Trigo
CIP - Centro Internacional de la Papa	WorldFish	ICARDA - International Center for Agricultural Research in the Dry Areas
ICRISAT - International Crops Research Institute for the Semi-Arid Tropics	IFPRI - International Food Policy Research Institute	IIRR -International Rice Research Institute
IITA - International Institute of Tropical Agriculture	ILRI - International Livestock Research Institute	ICRAF - World Agroforestry Centre

Other key partners

Columbia University	KU - Københavns Universitet	University of Leeds
UVM - University of Vermont	CARE	Utrecht University
WUR - Wageningen University and Research Centre	IIRR - International Institute of Rural Reconstruction	WISAT – Women in Global Science and Technology

A. CRP LEVEL

A1. Delivery

A1.1 Adjustments/ changes to your Theories of Change (ToC)

The ToC remains the same as was presented in the proposal. Efforts in FP2 will be made to set up robust monitoring methods in all Climate-Smart Villages (CSVs) to ensure evidence creation and learning. FP3 will place greater emphasis on supporting the processes of the Nationally Determined Contributions (NDCs) to the 2015 UNFCCC Paris Agreement, as these have become important as policy drivers. Minor adjustments are planned in FP4 to the types of next users, as donor climate screening processes have emerged as a promising area driving investments.

A1.2 Highlight expected Outcomes and Outputs

In FP1, multi-level scenario methods will be developed in all target regions, building on Phase I work but now with a more explicit focus on food and nutrition security, and gender and social inclusion. FP1 projects will contribute evidence to the targeting, priority setting, policy and investment decision making in all regions. Current CCAFS experience to date with science-policy linkages will be synthesised, partly to begin testing the ToC. A set of comparative analyses of enabling policy environments (especially food and nutrition security policies) with respect to gender equity considerations will be undertaken.

In FP2, emerging results from action-research in CSVs will continue to be produced, and fed into development programs, generating wide-scale promotion and adoption of CSA. Strategic support will be provided to major development and private sector investments in CSA, including on metrics, prioritization tools, business models, gender and CSA approaches and synthesised knowledge products for national and sub-national scales. Significant effort will be made to identify and synthesise opportunities for aligning agricultural and climate finance to CSA, and will culminate in a high level event to bring major finance and agriculture actors together. Sex-disaggregated data in relation to CSA will be collected and synthesised in CSVs.

In FP3, major outcomes include the Government of Kenya's use of data on LED dairy intensification value chains for a proposal to the Green Climate Fund (GCF) and the use by 15-20 countries of a global review of MRV methods for livestock emissions (with the GRA, FAO, WB). New outputs will include national assessments of mitigation options in four countries, data on finance needs to inform national investment plans in three countries, summary of synergies between adaptation and mitigation, and a scoping of priorities for reducing emissions through decreased food loss and waste, including analysis of women and youth dimensions.

In FP4, expanded tools for meteorological data quality control and reconstruction, and a suite of agriculture-focused “Maproom” products, will enhance capacity of national and regional (ICPAC, AGRHYMET) climate information providers. Univ. of Reading’s PICSA approach for communicating climate information with rural communities will be expanded, and scaled up (Rwanda, Ghana) and out (Senegal, Colombia, Central America). Work on evidence and guidance will support women's access to resources through gender-sensitive climate services, advisories and safety nets.

A.1.3 Use of different Funding Sources

W1-2 funds are used to fund the core elements of the CCAFS strategy, as described in this POWB. W3-bilateral funds are only accepted if aligned with the strategy; and usually contribute to specific cases studies in particular countries (see Flagships for further details).

A1.4 Planned Revisions to your Program of Work

No substantial changes are planned for FP1, FP2 and FP3. Loss of a project on agricultural disease early warning systems due to a budget cut to FP4 will reduce attention to government and humanitarian users of climate-related early warning systems. FP4 consolidated two strongly overlapping 2017 milestones, and adjusted 2017 milestone wording to align better with activities and deliverables.

Table 1: CRP planned budget by flagship for 2017

Figures in thousands of US dollars

Flagship Name	Planned Budget 2017		
	W1/W2	W3/bilateral	Total
FP1 - Priorities and Policies for CSA	3,643	4,631	8,274
FP2 - Climate-Smart Technologies and Practices	6,907	15,817	22,724
FP3 - Low emissions development	3,985	8,027	12,012
FP4 - Climate services and safety nets	3,635	8,244	11,879
CRP Management & Support Cost	2,630	146	2,776
Total	**20,800**	**36,865**	**57,665**

A2. Collaboration and Integration

A2.1 Contribution to and from Platforms

CCAFS will interact closely with the Big Data platform: (a) CCAFS will continue to support CGIAR efforts to reach compliance of the open access/open data policy, and through the Organise Module of Big Data will collaborate around AgTrials. (b) Under the Big Data module Inspire, CCAFS will prioritise 1-2 topics for consideration for challenge grants, and collaborate with proponents to successfully embed projects into CCAFS. CCAFS will initiate a Learning Platform on gender and CSA. Discussion has already begun as to how this will interface with the broader gender platform to be hosted by KIT under PIM.

A2.2 Cross-CRP interactions

CCAFS will initiate six Learning Platforms (LPs), closely aligned inside FPs, but designed to foster collaboration across CRPs. The FP1 LP on "Ex-ante evaluation and decision support for climate-smart options" will include the development of a comprehensive framework for ex-ante evaluation of CSA interventions. FP1 will continue working with PIM on global modelling and foresight (bringing climate into the models), and is initiating collaboration with A4NH to help achieve food and nutrition policy and investment outcomes under climate change.

The FP2 LP on "Participatory evaluation of CSA technologies and practices in CSVs will engage actively with each AFS-CRP to identify emerging CGIAR practices and technologies for testing in action research sites, using a CSA evaluation lens.

The LP for FP3 "Identifying priorities and options for LED" will facilitate joint research on LED options and UNFCCC processes. In 2017 this work will focus on (1) a joint paper and event at the UNFCCC COP on mitigation co-benefits from adaptation and (2) monitoring, reporting and verification (MRV) for livestock emissions, collaborating with five CRPs. FP3 will continue working with FTA on one of the CoAs (3.2) and with WLE and FTA on assessing the potential for soil carbon sequestration.

The FP4 LP on "Weather-Related Agricultural Insurance" will work with other CRPs to foster a Community of Practice, and synthesise learning and evidence on weather-related agricultural insurance

across the CGIAR. In 2017, FP4 will organize a conference on “Scaling Up Agricultural Adaptation through Insurance: Bringing together Insurance, Big Data and Agricultural Innovation” (linked to UNFCCC SBSTA).

The cross-cutting LP on “CSA, gender and social inclusion” will support CSA gender specialists on climate-specific topics, helping them contribute to gender-related outcomes within the UNFCCC processes. In 2017, LP5 will identify gender specialists across all CRPs, coordinate with the CGIAR Gender Platform, and highlight gender research inputs to COP23.

The cross-cutting LP on “Partnerships and capacity for scaling CSA” will raise CGIAR-wide capacity to partner on climate change issues and position the CGIAR as the leading global research organization for developing country food systems and climate change. In 2017, the focus will be on providing common pathways for impact, (a) linking CGIAR science into UNFCCC processes (including SBSTA, NDCs, GCF), and (b) informing investments and decisions of GACSA members (including IFAD, WBCSD, World Bank), and (c) facilitating South-South cooperation as a route to scaling up. Targeted outputs and activities will secure inputs from multiple flagships and CRPs into these processes.

A2.3 Expected Efforts on Country Coordination

CCAFS is committed to country coordination, with plans already made in Vietnam (where CSVs will form a key part of the strategy) and in Nicaragua (where CIAT has hired someone to facilitate coordination). The to-be-hired East Africa Regional Program Leader will be placed in Ethiopia to work closely with the Country Coordinator. We will promote the use of our CSVs as platforms for testing CSA technologies drawn from AFS-CRPs, as they already include diverse Center contributions.

A3. Management, Governance and Monitoring, Evaluation, Learning

A3.1 Relevant Changes in Management and Governance

No changes have been made from the Phase II proposal in relation to management, governance or MEL. The online ICT platform (MARLO, Managing Agricultural Research for Learning and Outcomes) has been adopted not only by the four ICRPs but also by three AFS-CRPs (Wheat, Maize, Livestock; and three others are showing interest) and the EIB Platform.

A3.2 Monitoring, Evaluation, Impact Assessment and Learning Plans

One monitoring initiative for 2017 is the addition of baseline indicator information to project planning and reporting in MARLO. This will make it feasible for project leaders to set baselines and track progress through time on outcome target indicators that are relevant to each project. A second initiative is planning the mid-line surveys at the core CCAFS sites in the five target regions in the most efficient way possible, as a follow-up to the multi-level baseline surveys carried out in 2011-2013. As noted in the Phase II proposal, it is planned that these mid-lines are carried out in 2018. One ex-post Impact Assessment is planned for 2017, based on a competitive call amongst Centers. All will disaggregate by sex and age. A number of learning products are planned, including analyses of CCAFS science-policy processes in Phase I and an analysis of the 2011-2016 outcomes in order to derive lessons for future outcome positioning.

B. FLAGSHIP LEVEL

NOTE: In CCAFS, **FP Outcomes** deliver to **Sub-IDOs** directly (i.e. the CCAFS FP outcome indicators were designed as indicators of the sub-IDO; thus FP1 Outcome 1.1 (Table 3) delivers to Sub-IDO 1.1 (Table 2).

Flagship 1 Priorities and Policies for CSA

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022 (Table 3)

Progress towards **Outcome 1.1** (plans and investments in relation to diverse nutrient-rich foods) will be made through research on multi-level scenarios methods (IFPRI, A4NH, Utrecht, WUR) with a more explicit focus on food and nutrition security as well as gender and social inclusion (Milestone 1.1.1). Multi-level scenario processes in several regions will contribute to the development of strategy documents, building on widespread past successes in the collaborative guiding of national plans (1.1.2). Progress toward **Outcome 1.2** (priority setting to target and implement interventions to improve food and nutrition security under a changing climate) will be made via contributions in modelling at different scales (global and regional) to evaluate trade-offs and synergies – in collaboration with IFPRI, Utrecht University and WUR, and regional programs in SEA, SA, WA and LAM (1.2.1). [1] These activities are providing information to prioritize investments and estimate the potential for scaling-up different climate-smart technologies in each region. Considerable effort will be made to making this a cross-CGIAR effort (1.2.2). Progress towards **Outcome 1.3** (new investments informed by CCAFS science and engagement) will be made by several activities, including working with the World Bank CSA team in helping to mainstream CSA across the entire WB portfolio by, e.g., the development of resilience indicators and monitoring and evaluation frameworks (1.3.1). Work on science-policy exchange processes, stakeholder fora and learning alliances will contribute to creating conditions for open policy dialogue concerning prioritisation and investment decisions (1.3.2).

A set of comparative analyses (1.4.1) of enabling policy environments (especially food and nutrition security policies) with respect to gender equity will contribute towards **Outcome 1.4** (plans and investments to increase women's access to, and control over, productive assets and resources) (CIAT, IITA, IRRI, IFPRI, and national partners in Peru, Colombia, Costa Rica, Honduras, Uganda, Tanzania, Vietnam, Myanmar, India). Workshops and training materials to strengthen partner capacity (1.5.1) in applying decision support tools in targeting, priority setting, policy and investment decision making will be produced in all regions, contributing to **Outcome 1.5** (policy decisions taken based on information dissemination and engagement). This will involve partners at local, national and regional scales, including ASEAN and the African Union (AU).

B.1.2 Output towards Outcomes 2022 (Table 4)

For **Outcome 1.1**, WUR and Utrecht University will develop new scenario methods and use the MAGNET model to quantify them from a nutrition perspective across the CCAFS regions. Outputs will include policy briefs and articles on innovations in scenario-guided policy formulation and capacity development processes. These outputs will be used in the regions to inform food system planning and investment under a changing climate. Outputs for **1.2** will include continued contributions to the CCAFS climate data portal (CIAT, ILRI), and IFPRI will develop an improved suite of features (land use, livestock, GHG emissions) for the IMPACT model. A journal special issue will be produced, documenting nine CSA priority setting tools and applications developed in different CCAFS projects in LAM, WA, EA and SA

[1] The bulk of CCAFS work is conducted in c. 20 countries in 5 regions: West Africa (WA), East Africa (EA), South Asia (SA), South East Asia (SEA) and Latin America (LAM)

(Bioversity, CIAT, CIFOR, CIMMYT, ICRAF, IFPRI, IITA, ILRI), along with an implementation plan for the Learning Platform and a new, robust framework for ex-ante evaluation of CSA interventions, developed as a collaboration between AFS-CRPs and CCAFS. Outputs for **1.3** include reviews and updates on climate change and adaptation policies in several regions, with a gender lens (EA, SEA, WA); syntheses of "best practice" in learning alliances and science-policy dialogue platforms; and engagement with UNFCCC processes in Uganda, Tanzania and Kenya on local CSA implementation, gender, and integration into NDCs.

Outputs for **1.4** include comparative analyses and dissemination materials concerning gender integration investments and opportunities in climate change policies and institutions in countries of EA, LAM and SEA, to better inform improved gender mainstreaming in countries in these regions (IITA, CIAT, IRRI); and studies of agricultural policy coherence in Ethiopia and Bangladesh disseminated (with PIM, A4NH, WLE, and national partners). Capacity development activities for **1.5** include comparisons of different communication approaches and products for communicating research findings to policy makers (CIAT, IITA, ILRI), training materials and webinars on applying decision tools in different regional contexts (LAM, EA, SA), inputs to the development of AU Guidelines on genetic resource conservation for adaptation (Bioversity), and South-South exchange as a mechanism to scale up CSA (Wageningen).

B.1.3 Contribution of W1-2 Funds

W1-2 funds are used to drive the core activities of the FP1 strategy, as described above. W3-Bilateral funds are only accepted if aligned with the strategy; and usually contribute to specific cases studies in particular countries. One use of W1-2 funds is for the initiation and seeding of new work towards Outcome 1.2 (priority setting) with new partners (Utrecht, WUR, A4NH).

Flagship 2

B.2 Delivery

B.2.1 Expected Annual Milestones towards Outcomes 2022 (Table 3)

To contribute towards **Outcome 2.1** (farm households receiving incentives for adopting CSA-related practices and technologies), FP2 will extend its research efforts on building the evidence base on CSA across time-scales and geographies, including drawing out key lessons emerging from ongoing action research in CSV (CSV) AR4D sites together with NARS, and further developing monitoring plans (including sex-disaggregated indicators) to deliver robust evidence on what CSA options work where, when and how. Lessons learned will be distilled, and knowledge products developed on enabling conditions and incentives (Milestone 2.1.1) and on ways to overcome barriers to investment and adoption constraints (2.1.2). A new research area for CCAFS will focus on contributing to **Outcome 2.2** (sub-national public/private initiatives providing access to novel financial services and supporting innovative CSA business models). In SA and SEA, CSA options with good potential for business case development (including gender-responsive options) will be identified (CIMMYT, CIAT) and validated, while in WA, business models for water storage options, including alternative investment options will be tested (ICRAF) (2.2.1). Results of this research will create capacity within financial institutions to offer products/services to enable farmers/SMEs to invest in CSA. Testing of innovative financial mechanisms will be implemented in coffee and cocoa value chains (2.2.2). A high-level event will be supported, together with the World Bank, to align agricultural finance with climate finance to support CSA scale-out. Progress towards **Outcome 2.3** (site-specific targeted CSA options tested and examined for gender and youth implications) will advance through prioritizing, testing and adapting at least 10 promising climate-smart water, crop-livestock-agroforestry practices and 5 value chains across the CSVs (2.3.1). A framework for testing and monitoring CSA options will be developed, including their gender disaggregated impacts (2.3.2).

Progress towards **Outcome 2.4** (plans and investments to increase women's access to, and control over, productive assets and resources) will focus on identifying gender-tailored CSA portfolios and business cases for testing with local partners in CSVs (2.4.1). This will be implemented across a range of agro-ecologies and social contexts. Case studies will be developed for evaluating gender- and socially-disaggregated impacts of CSA options (CIAT) (2.4.2). Progress towards **Outcome 2.5** (policy decisions taken based on information dissemination and engagement) will be made through diagnosis and capacity development on subnational policy and institutional frameworks, focused on options that can support CSA adoption (2.5.1). In SEA, the CSA prioritization process will be co-developed with national ministries and programs, supported by capacity building in at least 2 countries, while in Colombia CIAT will use this process to prioritize investments for CSA in the Orinoquia Region together with Corpoica and Ministry of Agriculture (2.5.2).

B.2.2 Output towards Outcomes 2022 (Table 4)

Key research outputs for **Outcome 2.1** will be derived from the site-based work in CSVs. Some specific outputs include: assessments of the conditions for success and failure of CSA interventions, including lessons learnt on developing business cases and LAPAs in Nepal, India (Haryana, Bihar, Punjab) and Bangladesh; empirical and big data analysis of climate-specific management options (India, Colombia, Nicaragua); a farmer citizen science approach for adapting CSA options to the local context and scaling up (India, Nicaragua, Honduras); prioritization and decision support tools for guiding CSA investments, including spatial models to understand application domains of promising CSA options in diverse farming systems (India, Bangladesh, Vietnam and Colombia) and participatory modelling workshops involving decision makers in Africa to create investment portfolios. For **2.2** key outputs include those derived from

piloting technical and financial packages that support climate-smart practices and business involving female headed households and women and youth-led SMEs; research on the reach and efficacy of impact investment and other novel financial instruments; the establishment of public-private-partnerships with cocoa value chain actors in Ghana and Peru to develop evidence based certification schemes that facilitate entry points for CSA investment; and awareness raising on and preparation for innovative climate funds at multiple levels. The key outputs for **2.3** will focus on site-based research and publications outlining the synergies and trade-offs of at least 10 crop-livestock-fish based CSA options. Robust monitoring plans will be produced to ensure cross-site comparability, and novel ICT-based solutions developed to evaluate CSA options. Initial results will be produced and published on simulation of CSA options under different climate and socio-economic scenarios to derive gender sensitive and specific options, and models of integrated crop-livestock-tree systems. Information on the costs, benefits and adoption constraints of CSA practices and technologies will be compiled.

The key outputs for **2.4** will focus on evaluations of the gender-related benefits of a range of CSA options. Business cases from 2.2 will be evaluated with an explicit gender focus to understand how business models and innovative finance affect gender and youth differentially. A gender focussed evaluation mechanism for understanding the gendered impacts of different CSA options will be developed, and applied in at least 3 CSV sites. Outputs contributing to **2.5** include: the use of decision support tools for guiding CSA investments and for understanding application domains of promising CSA options; information on the associated costs, gender related benefits and adoption constraints of CSA options (Africa, LAM); promoting women and youth's participation in household decision making around CSA; and country and county climate-smart profiles to help identify priority CSA options in Africa and SA. Contributions to policy decisions taken based on capacity strengthening and engagement and information dissemination will be based around country and county climate-smart profiles for Africa; and awareness raising on and preparation for innovative climate funds at multiple levels.

B.2.3 Contribution of W1-2 Funds

W1-2 funds are used to drive the core activities of the FP2 strategy, as described above. W3-Bilateral funds are only accepted if aligned with the strategy; and usually contribute to specific cases studies in particular countries. W1-2 funds will focus on maintaining and enhancing the gender-responsive and participatory action research in CSVs, and develop science products, tools and learning materials (including gender and youth dimensions) related to understanding adaptation domains for promising CSA practices and technologies. Particular attention in 2017 with W1-2 will develop the scientific basis for the new CoA on incentives for CSA scaling (including novel finance and business models).

Flagship 3

B.3 Delivery

B.3.1 Expected Annual Milestones towards Outcomes 2022 (Table 3)

Progress towards **Outcome 3.1** (agricultural development initiatives where CCAFS science is used to target and implement interventions to increase input efficiency) will be made via multi-year agronomic trials with national research institutes and ministries of agriculture in partnership with development initiatives in six countries (Milestone 3.1.1): initiatives for nitrogen use efficiency in Mexico and India; improved feed in Kenya, Colombia and Indonesia; and water saving in paddy rice in Vietnam. With WUR and the private sector we will identify critical value chains where reducing food loss and waste can reduce emissions (3.1.2). Progress on **Outcome 3.2** (research-informed initiatives for restoring degraded land or preventing deforestation) will be made in Brazil, via testing municipal-scale monitoring for sustainable beef with CIRAD, EMBRAPA and the private sector (3.2.1).

With countries seeking to refine and implement their NDCs, progress on **Outcome 3.3** (low emissions plans developed that have significant mitigation potential) will be made in EA, SEA and LAM via science-informed NDCs, investment proposals to the GCF and private sector, and government implementation plans. This includes determining the mitigation contributions of countries to the 2°C target (3.3.1), improving country-level emissions factors and MRV (3.3.2), analysing the feasibility of mitigation options spatially (3.3.3), and identifying finance requirements for investment.

Gender-inclusive development initiatives for scaling up LED and assessment of adoption incentives will be the main means for achieving progress on **Outcome 3.4** (organisations adapting their plans or directing investment to increase women's participation in decision-making about LED). Gender disaggregated data on social factors affecting uptake will be collected for rice in Vietnam and livestock in EA and LAM to inform development initiatives (3.4.1). In Kenya, UNIQUE will pilot gender-inclusive dairy practices with processors in support of a national dairy NAMA. Progress on **Outcome 3.5** (policy decisions taken based on information dissemination and engagement) will occur via a review and workshop for national officials on “good enough” livestock MRV with the GRA, FAO and WB (3.5.2); a data platform of emissions factors from smallholder farming; version 3 of the Mitigation Options Tool (U. Aberdeen); and a web-based resource guide to LED (3.5.1). Activities should drive Improved MRV and NDCs in at least 5 countries.

B.3.2 Output towards Outcomes 2022 (Table 4)

Research outputs on agronomic efficiencies that also reduce emissions contribute to both Outcomes 3.1 and 3.3. (Table 4). Outputs include an emissions database and 3 to 5 journal articles on new emissions factors for smallholder farming; an updated Mitigation Options calculator; a review of country experiences with MRV of livestock and workshop involving 17 countries; and an analysis of the lessons learned from NAMA development in LAM. Outputs will be shared on FP3’s Learning Platform to ensure cross CRP learning. Outputs relevant to Outcome 3.3 also include country mitigation targets and scoping of food loss and waste opportunities for mitigation.

Outputs for Outcome 3.2 will be generated with WLE, FTA, Livestock and France's 4‰ Initiative and include a global review of integrated soil fertility management and soil carbon sequestration, comparison of mitigation potentials from avoided degradation of soil versus enhancing soil carbon; assessment of the sustainability status of cattle supply chains in the Brazilian Amazon; and a road map for innovations to enhance sustainability.

Outputs for Outcome 3.4 include 2 journal articles on the possibilities for increasing women's and youth's participation in mitigation in rice and livestock production; analysis of gender inclusive practices

in LED dairy and informal milk production; metrics for monitoring and evaluation of impacts of LED on livelihoods and gender equity; training of 4 young female scientists in GHG quantification; and a workshop on increasing women's leadership in climate finance.

Outputs for Outcome 3.5 include a workshop for country MRV specialists on monitoring livestock emissions; and training of World Bank project leaders on livestock emissions MRV.

B.3.3 Contribution of W1-2 Funds

In FP3, W1-2 funds will be used to support synthesis products, and trials and national-level research and engagement in the CCAFS' regions on high mitigation potential value chains (e.g. dairy, beef, rice). W1-2 funds will also be used to support a Learning Platform in collaboration with the AFS-CRPs (Identifying priorities and options for low-emissions development) and new partnerships with WUR and the private sector. W3-Bilateral funds will be the major source of support for research on scaling up.

Flagship 4

B.4 Delivery

B.4.1 Expected Annual Milestones towards Outcomes 2022 (Table 3)

Improved access to capital (**Outcome 4.1**) will be advanced through insurance research, capacity strengthening and Learning Platform development. An index-based flood insurance scheme (IWMI), and improved crop insurance indexes and triggers (CIMMYT) will be tested with decision-makers in India and Bangladesh (Milestone 4.1.1). Engagement around evidence-based scaling strategy, participatory design tools and guidance materials will advance insurance linked to credit and inputs in WA, SA and EA (CIMMYT, ICRISAT, IRI) (4.1.2).

Progress toward **Outcome 4.2** (science uptake by institutions and major initiatives), targeting climate information providers, will be made through high-resolution online climate information tailored to agricultural user needs in Rwanda, Senegal, Mali and Ghana, and regionally through ICPAC, AGRHYMET (building on IRI's ENACTS approach); a climate risk observatory by governments in Colombia and Guatemala; and capacity strengthening of AGRHYMET to adapt CRAFT for regional food security early warning (ICRISAT, ICRAF, CIAT, IRI) (4.2.1). Progress on the communication and use of climate services with NARES and other intermediary organizations will be made through extending, implementing and evaluating Univ. of Reading's PICSA approach in Africa (Rwanda, WA) and LAM; and developing gender-targeted agro-advisory systems with provincial government and farmer networks in SEA (CIAT, ICRAF, CARE, U. Reading) (4.2.1).

Progress towards **Outcome 4.3** (climate services investment and policy) will be made through review of methods (4.3.1), and preparations for cost-benefit analysis to support Africa-focused investors (4.3.2) in consultation with key climate services programs (GFCS, ClimDev-Africa) and donors (USAID, DfID, AfDB) (ILRI, IRI, ACPC).

Progress toward **Outcome 4.4** (gender capacity strengthening) will be made through knowledge synthesis on gender and climate services (IRI, WISAT), gender-targeted climate service needs assessment in SEA (ICRAF, CARE), gender-sensitive climate communication training materials developed and piloted in Rwanda and select CSVs (IRI, WISAT, CIAT), and gender-targeted participatory insurance design in WA (Ghana, Senegal) (4.4.1)).

Progress toward **Outcome 4.5** (CCAFS-informed policy) will be made through engagement and capacity building at the global, regional and national levels. Learning materials will be developed to support governments to incorporate climate services into policy in Colombia, Honduras, Rwanda (CIAT) and SEA (IRRI) (4.5.1). A capacity development workshop on the role of agricultural insurance in scaling up adaptation measures will be held alongside UNFCCC SBSTA.

B.4.2 Output towards Outcomes 2022 (Table 4)

Outputs contributing to access to capital (**4.1**) are index-based flood insurance tools and pilot schemes (India, Bangladesh); tools and indexes developed and tested for crop index insurance in India, and for piloting and expansion in Nigeria; partnerships and business models analysed for flood index insurance in SA and crop index insurance in Honduras; and country and global level examination of the benefits of insurance.

Several outputs contribute to the use of CCAFS research by institutions and major initiatives (**4.2**), including the insurance-related outputs listed above for Outcome 4.1. Key climate information and early warning outputs include methods and tools to support agricultural monitoring and early warning for crop yield in WA and disease in SEA, guidance materials on the appropriate use of climate change projections guidance; and methods to tailor information to farmers' needs through data quality control

and reconstruction tools, and online Maprooms (EA, WA, LAM). Outputs focused on the development of climate services for farmers include evidence from climate service projects (Rwanda, WA CSVs) and synthesized across the FP4 portfolio; tools and guidance materials on delivering climate services to women and men (including youth) farmers through PICSA (EA, WA, LAM) and gendered agro-advisories (SEA). Outputs that advance climate services for government and international organizations include design of an improved food security monitoring system in Guatemala, and recommendations from a donor climate screening review.

Two key outputs contribute to climate services investment (**4.3**). A critical review of existing methods and piloting of new methods will lay a foundation for cost-benefit analysis of investments in climate services in Africa. Synthesized evidence to support continuing investment in climate services will include a review focused on Africa and a thesis focused on SEA.

The gender Outcome (**4.4**) is supported by a global review of gender dimensions of climate services, gendered needs assessment in SEA, pilot training materials for climate service communication intermediaries, and evidence of gender-differentiated impacts from climate service pilots and national initiatives and synthesis across the FP4 portfolio. Insurance-related contributions to **4.4** come from gendered evidence of benefits in India and Ghana, gender-targeted tools and indexes for flood insurance in SA.

Outputs that contribute to policy (**4.5**) are design of improvements to Guatemala's food security monitoring system, and partnerships and business models that contribute to support value chain development and revive the Agriculture Insurance Committee in Honduras.

B.4.3 Contribution of W1-2 Funds

W1-2 funds are used to drive the core activities of the FP4 strategy, as described above. They will support the preparation and consolidation of tools, methods and lessons from prior years' project work, including gender aspects, for uptake by Outcome Partners and other Next Users; and the establishment of the LP on weather-related agricultural insurance. W3-Bilateral funds are only accepted if aligned with the research agenda and ToC. W3-Bilateral funds support integration of FP4 tools, methods and learning into implementation of climate services and insurance initiatives that benefit smallholder farmers.

Flagship level tables consolidated

Table 2

Flagship No.	Mapped and contributing to Sub-IDO	Relevant CRP sub-IDO indicators*	2017 Target**
FP1	**1.1** Optimized consumption of diverse nutrient-rich foods	# of organisations and institutions in selected countries/states adapting plans and directing investment to optimise consumption of diverse nutrient-rich foods, with all plans and investments examined for their gender implications	2
	1.2 Improved forecasting of impacts of climate change and targeted technology development	# of countries/states where CCAFS priority setting used to target and implement interventions to improve food and nutrition security under a changing climate	3
	1.3 Enabled environment for climate resilience	$ USD new investments by state, national, regional and global agencies, informed by CCAFS science and engagement	USD 75 million
	1.4 Gender-equitable control of productive assets and resources	# of national/state organisations and institutions adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources	7
	1.5 Increased capacity for innovation in partner development organizations and in poor and vulnerable communities	# of policy decisions taken (in part) based on engagement and information dissemination by CCAFS	8
FP2	**2.1** Reduced smallholders production risk	# of farm households receiving incentives (training, financial, programmatic, policy-related) for adopting CSA related practices and technologies that potentially reduce production risks with increased benefits for women	0.5 million
	2.2 Improved access to financial and other services	# of sub-national public/private initiatives providing access to novel financial services and supporting innovative CSA business models	2
	2.3 Improved forecasting of impacts of climate change and targeted technology development	# of site-specific targeted CSA options (technologies, practices and services) tested and examined for their gender implications	10

	2.4 Gender-equitable control of productive assets and resources	# of development organisations, with the focus on investments for CSA activities, adapting their plans or directing investment to increase women's access to, and control over, productive assets and resources.	2
	2.5 Increased capacity for innovation in partner development organizations and in poor and vulnerable communities	# of policy decisions taken (in part) based on engagement and information dissemination by CCAFS.	8
FP3	**3.1** More efficient use of inputs	# of agricultural development initiatives where CCAFS science is used to target and implement interventions to increase input efficiency	3
	3.2. Land, water and forest degradation (Including deforestation) minimized and reversed	# of million hectares targeted by research-informed initiatives for restoring degraded land or preventing deforestation	0.1 million
	3.3 Reduced net greenhouse gas emissions from agriculture, forests and other forms of land-use	# of low emissions plans developed that have significant mitigation potential for 2030, i.e. will contribute to at least 5% GHG emissions reduction or reach at least 10,000 farmers, with all plans examined for their gender implications	1
	3.4 Improved capacity of women and young people to participate in decision-making	# of organisations adapting their plans or directing investment to increase women's participation in decision-making about LED in agriculture	4
	3.5 Increased capacity for innovation in partner development organizations and in poor and vulnerable communities	# of policy decisions taken (in part) based on engagement and information dissemination by CCAFS	8
FP4	**4.1** Improved access to financial and other services	# of million farm households with improved access to capital, with increased benefits for women (millions)	1.3 million
	4.2 Enhanced capacity to deal with climactic risks and extremes	# of institutions or major initiatives that use CCAFS research outputs for services that support farm households' management of climatic risks	8

	4.3 Enabled environment for climate resilience	$ USD million new investments by state, national, regional and global agencies, informed by CCAFS science and engagement	USD 75 million
	4.4 Gender-equitable control of productive assets and resources	# of development organizations adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources through gender-sensitive climate-based advisories and safety nets	7
	4.5 Increased capacity for innovation in partner development organizations and in poor and vulnerable communities	# of policy decisions taken (in part) based on engagement and information dissemination by CCAFS	8

Table 3: Expected Annual Milestones (progress markers) towards Outcomes 2022

Figures in thousands of US dollars

FP No.	FP Outcome 2022	Milestone 2017	Mapped budget request for 2017	
			W1/ W2 USD	W3/ bilateral USD
FP1	**1.1** 14 organisations and institutions in selected countries/states adapting plans and directing investment to optimise consumption of diverse nutrient-rich foods, with all plans and investments examined for their gender implications	**1.1.1** New generation of multi-level CCAFS scenarios methodology developed and tested, including combined climate and socio-economic scenarios with a focus on food and nutrition security and gender and social inclusion gaming approaches for youth are explored **1.1.2** CCAFS regional scenarios are used for multilevel policy development and implementation in selected countries/states, focusing on climate and food and nutrition security policies aimed at dietary diversity	163	W3: 149 Bilateral: 83 Center Funds: 0 Total W3/Bilateral/Center Funds: 233
	1.2 20 countries/states where CCAFS priority setting used to target and implement interventions to improve food and nutrition security under a changing climate	**1.2.1** 2 modified versions of global and regional models to evaluate climate-smart practices and technologies and the related trade-offs and synergies for CSA are developed and tested **1.2.2** Cross-CRP modes of operation are defined, including joint ex ante analyses and data sharing and the CoA 1.1 Learning Platform established	1,214	W3: 471 Bilateral: 1,034 Center Funds: 39 Total W3/Bilateral/Center Funds: 1,544

	1.3 $450 USD mio. new investments by state, national, regional and global agencies, informed by CCAFS science and engagement	**1.3.1** Novel analytical frameworks, indicators and metrics for evaluating cross-level dynamics and the effectiveness of enabling policy environments to support adaptation options and the scaling of CSA are developed and tested, considering 'good enough' governance **1.3.2** Science-policy exchange processes, stakeholder fora and learning alliances are maintained and create conditions for open policy dialogue draft guidelines for mainstreaming climate change adaptation and climate-smart practices in agriculture and other sectors and at different administrative levels are disseminated	1,214	W3: 471 Bilateral: 1,034 Center Funds: 39 Total W3/Bilateral/Center Funds: 1,544
	1.4 20 national/state organisations and institutions adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources	**1.4.1** Comparative analysis completed of enabling policy environments (especially food and nutrition security policies) with respect to gender equity considerations and recommendations for strengthened gender and social inclusion in enhanced enabling policy environments	259	W3: 274 Bilateral: 24 Center Funds: 0 Total W3/Bilateral/Center Funds: 299
	1.5 11 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**1.5.1** Training materials developed and workshops held to strengthen partner capacity in applying decision support tools in targeting, priority setting, policy/investment decision making capacities and articulating national priorities in global fora; national planners are supported in utilising CCAFS information in policy decisions and investment plans through science-policy platforms and processes	793	W3: 47 Bilateral: 926 Center Funds: 39 Total W3/Bilateral/Center Funds: 1,013

FP2	**2.1** 6 million farm households receiving incentives (training, financial, programmatic, policy-related) for adopting CSA related practices and technologies that potentially reduce production risks with increased benefits for women	**2.1.1** Synthesis reports on local-level enabling environment, incentives and subnational policies and plans (LAPAS) supporting CSA investment and enhanced adoption **2.1.2** Lessons learned and knowledge products to overcome barriers to investment and further adoption constraints at local scales	1,442	W3: 547 Bilateral: 2,331 Center Funds: 1 Total W3/Bilateral/Center Funds: 2,879
	2.2 15 sub-national public/private initiatives providing access to novel financial services and supporting innovative CSA business models	**2.2.1** A short list of CSA technologies, practices/services with good potentials for business case (incl. Business model for small ruminant value chain) in SA and EA Business plan developed and validated in three SA CSVs business model for water storage options, including alternative investments options tested in WA. **2.2.2** 2 pilots of widespread use of CSA practices in voluntary certification schemes (cocoa or coffee value chains) and testing of innovative financial mechanisms.	1,744	W3: 646 Bilateral: 2,723 Center Funds: 1 Total W3/Bilateral/Center Funds: 3,371
	2.3 50 site-specific targeted CSA options (technologies, practices and services) tested and examined for their gender implications	**2.3.1** 10 promising climate-smart water, crop-livestock-agroforestry practices and 5 value chains prioritized, tested and adapted in CSVs in 12 countries. **2.3.2** Framework developed and validated to-design, test and monitor transformative CSA crop-livestock-tree gender sensitive practices. Standardized data capture (climate, soil and management information) and Cost-effectiveness assessed at site-specific level. Common analytical protocols and case studies developed for evaluating socially disaggregated CSA options benefits on productivity, adaptation and mitigation (with FP3).	1,638	W3: 862 Bilateral: 4,655 Center Funds: 6 Total W3/Bilateral/Center Funds: 5,522

	2.4 15 development organisations, with the focus on investments for CSA activities, adapting their plans or directing investment to increase women's access to, and control over, productive assets and resources.	**2.4.1** Gender tailored CSA portfolios and business cases identified for testing with local partners in CSVs. **2.4.2** Gender disaggregated impact of CSA technologies and practices evaluated in CSVs Framework, methods and approaches developed to co-design, test and monitor transformative gender focused options.	559	W3: 165 Bilateral: 1,436 Center Funds: 1 Total W3/Bilateral/Center Funds: 1,603
	2.5 10 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**2.5.1** Diagnosis on subnational policy and institutional frameworks analysis focusing on different options that can support the adoption of preferred CSA practices **2.5.2** CSA knowledge products made available for partners including at least 10 new CSA country profiles, new national CSA prioritization processes, and Climate Wizard updated.	1,523	W3: 50 Bilateral: 2,392 Center Funds: 0 Total W3/Bilateral/Center Funds: 2,442
FP3	**3.1** 20 agricultural development initiatives where CCAFS science is used to target and implement interventions to increase input efficiency	**3.1.1** Network of trial sites for more efficient management options for fertilizer, feed, water, and land use in 5-8 countries **3.1.2** Identification of food loss and waste (FLW) opportunities for LED and commercially viable interventions in priority product value chains	917	W3: 334 Bilateral: 1,576 Center Funds: 0 Total W3/Bilateral/Center Funds: 1,911
	3.2 0.8 million hectares targeted by research-informed initiatives for restoring degraded land or preventing deforestation	**3.2.1** Framework for institutional innovation and monitoring to enhance performance of cattle farming in Brazil	917	W3: 334 Bilateral: 1,576 Center Funds: 0 Total W3/Bilateral/Center Funds: 1,911

	3.3 10 low emissions plans developed that have significant mitigation potential for 2030, i.e. will contribute to at least 5% GHG emissions reduction or reach at least 10,000 farmers, with all plans examined for their gender implications	**3.3.1** Analysis supporting more ambitious INDC targets and resource guide to LED available to investors, donors and country partners with analysis including gender implications **3.3.2** Improved emission factors and estimation methods for smallholder emissions, for incorporation into LED planning and prioritization tools **3.3.3** Mitigation hotspots and priorities by sector and country in 5-8 countries	1,006	W3: 347 Bilateral: 1,804 Center Funds: 0 Total W3/Bilateral/Center Funds: 2,151
	3.4 15 organisations adapting their plans or directing investment to increase women's participation in decision-making about LED in agriculture	**3.4.1** Gender-disaggregated data on social factors influencing uptake of LED practices for rice and livestock	568	W3: 253 Bilateral: 800 Center Funds: 0 Total W3/Bilateral/Center Funds: 1,053
	3.5 15 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**3.5.1** Flagship knowledge products made available for partners including Mitigation Option Tool, online mitigation compendium, primer on LED in agriculture, smallholder emissions estimation platform with training materials and emission factors (SAMPLES) **3.5.2** Agricultural LED readiness indicators available	578	W3: 287 Bilateral: 715 Center Funds: 0 Total W3/Bilateral/Center Funds: 1,002

FP4	**4.1** 8 million farm households with improved access to capital, with increased benefits for women (millions)	**4.1.1** Flood insurance theoretical and institutional framework, tools, community of practice, public-private partnership model and analysis of scaling potential in SA. **4.1.2** Evidence from existing insurance initiatives, capacity development, piloting, and analysis of scaling potential for insurance linked to credit and inputs in EA and WA.	1,542	W3: 1,144 Bilateral: 2,335 Center Funds: 17 Total W3/Bilateral/Center Funds: 3,496
	4.2 40 institutions or major initiatives that use CCAFS research outputs for services that support farm households' management of climatic risks	**4.2.1** NMS and regional climate institutions implement new climate information or climate-related early warning products/platforms targeting agricultural decision-makers; NARES and other farmer intermediary organizations implement new participatory and ICT-based communication channels scaled up for rural climate services	273	W3: 127 Bilateral: 360 Center Funds: 2 Total W3/Bilateral/Center Funds: 489
	4.3 $150 USD mio. new investments by state, national, regional and global agencies, informed by CCAFS science and engagement	**4.3.1** Methodology for economic valuation of climate services reviewed, targeting Africa-focused climate services investors (e.g., AfDB, USAID, DfID) **4.3.2** Preliminary cost-benefit analyses of agricultural climate services provided to climate services investors.	1,079	W3: 1,294 Bilateral: 2,070 Center Funds: 14 Total W3/Bilateral/Center Funds: 3,378
	4.4 20 development organizations adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources through gender-sensitive climate-based advisories and safety nets	**4.4.1** Four organizations adapt climate services communication strategy and training to support participation of women farmers. One organization in WA adopts insurance outreach and engagement strategy to support participation of women.	494	W3: 20 Bilateral: 596 Center Funds: 0 Total W3/Bilateral/Center Funds: 616

	4.5 15 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**4.5.1** Climate services and weather-related insurance are incorporated into training materials and processes (with FP1) to strengthen the capacity of at least one national partner in targeting, priority setting, policy and investment decision making capacities and articulating national priorities in global fora.	246	W3: 32 Bilateral: 233 Center Funds: 0 Total W3/Bilateral/Center Funds: 264

Table 4: Expected Key Output 2017 towards Outcomes 2022

			Tagging of expected outputs 2017		
FP No.	**FP Outcome 2022**	**CoA Output /** Key Output	**G**	**Y**	**CD**
FP1	**1.1** 14 organisations and institutions in selected countries/states adapting plans and directing investment to optimise consumption of diverse nutrient-rich foods, with all plans and investments examined for their gender implications	**1.1.1** Cutting-edge scenario development methodology for incorporating many drivers of change and exploring multi-dimensional scenario possibility spaces in a structured process, beyond the limits of current methods.	0	0	1
		1.1.2 Innovative methodology developed for the analysis of composite scenario results, which supports the investigation of key trade-offs in mainstreaming climate adaptation in broader policy contexts and across food systems.	0	0	0
		1.1.3 Strategy documents, with a focus on implementation plans, informed by inclusive, multi-level scenario processes in several countries.	1	0	0
	1.2 20 countries/states where CCAFS priority setting used to target and implement interventions to improve food and nutrition security under a changing climate	**1.2.1** Data maintained on CCAFS and partner websites, including up-to-date downscaled climate information that builds on current data portals (e.g. ccafs-climate.org)	1	1	1
		1.2.2. Decision support tools developed and curated by CCAFS and partners for helping to set priorities and target policy development for CSA, particularly analysing trade-offs to inform investment choices.	1	1	1
		1.2.3 Tools for cross-level analyses of policy alternatives in different contexts.	1	1	1
		1.2.4 Modelling of impacts on specific crop/fish/livestock species and quantification of uncertainties, fuelled partly by next generation G×E×M analyses and empirical/big data approaches to understand relevant abiotic constraints across climate gradients.	0	0	1
	1.3 $450 USD mio new investments by state, national, regional and global agencies, informed	**1.3.1** Case study syntheses of selected regional and global bodies and comparative analyses of current and emerging climate-related food security policies and “good practice” guidelines on engagement with national/international institutions	1	0	1

	by CCAFS science and engagement	**1.3.2** Capacity strengthening for formulating local and national priorities in regional and global fora	1	1	2
	1.4 20 national/state organisations and institutions adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources	**1.4.1** Training materials developed and archived in the public domain, to strengthen the capacity of partners in applying decision tools to targeting, policy, and investment decision-making	1	1	2
		1.4.2 Strategy documents, with a focus on implementation plans, informed by inclusive, multi-level scenario processes in several countries.	1	0	0
		1.4.3 Capacity strengthening for formulating local and national gender and youth priorities in regional and global fora	2	1	2
	1.5 11 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**1.5.1** Training materials developed and archived in the public domain, to strengthen the capacity of partners in applying decision tools in targeting, policy, and investment decision-making.	1	1	2
		1.5.2 Tools for cross-level analyses of policy alternatives in different contexts.	1	1	1
		1.5.3 Case study syntheses of selected regional and global bodies and comparative analyses of current and emerging climate-related food security policies and “good practice” guidelines on engagement with national/international institutions	1	0	2
FP2	**2.1** 6 million farm households receiving incentives (training, financial, programmatic, policy-related) for adopting CSA related practices and technologies that potentially reduce production risks with increased benefits for women	**2.1.1** Improved understanding of farmer's and stakeholders perceptions along the value chain of CSA options, and assessments of the conditions for success and failure of interventions.	1	1	1
		2.1.2 Empirical and big data analysis of climate-specific management options, generating climate sensitive extension schemes and climate-site-specific advisory systems (including precision agriculture) for farmers.	0	1	1
		2.1.3 A farmer citizen science approach for adapting CSA options to the local context and scaling up.	1	0	1
		2.1.4 Understanding farming systems diversity and prioritization and decision support tools for guiding CSA investments, including spatial models to understand application domains in space and time of promising CSA options.	1	0	1

	2.2 15 sub-national public/private initiatives providing access to novel financial services and supporting innovative CSA business models	**2.2.1** Synthesis of research on business models and approaches to business modelling across different biophysical and socio-economic contexts to assess usefulness, for whom and under which conditions.	1	0	1
		2.2.2 Establishment of public-private-partnerships with value chain actors to develop evidence based certification schemes that facilitate entry points for CSA investment through commodity chains	0	0	1
		2.2.3 Awareness raising on and preparation for innovative climate funds at multiple levels	1	0	1
		2.2.4 Evaluation of scaling up strategies and their efficacy across a range of contexts and regions	1	1	1
	2.3 50 site-specific targeted CSA options (technologies, practices and services) tested and examined for their gender implications	**2.3.1** On-farm tested, and evaluated and up-scalable gender sensitive and specific CSA options, including transformative options, and models of integrated crop-livestock-tree systems for increasing resilience.	1	1	1
		2.3.2 A farmer citizen science approach for adapting CSA options to the local context and scaling up.	1	0	1
	2.4 15 development organisations, with the focus on investments for CSA activities, adapting their plans or directing investment to increase women's access to, and control over, productive assets and resources.	**2.4.1** Simulation of CSA options under different climate and socio-economic scenarios for informed decision-making (together with FP1)	0	0	1
		2.4.2 Understanding of farming systems diversity and prioritization and decision support tools for guiding CSA investments, including spatial models to understand application domains in space and time of promising CSA options.	1	1	1
		2.4.3 Information notes on the benefits of a particular CSA practice or technology, with associated information on trade-offs, application domains and evidence of gender related impacts	1	0	1
		2.4.4 Research on institutional arrangements for CSA promotion in and around CSVs.	1	0	1
		2.4.5 Country and county climate-smart profiles that help identify priority CSA practices and technologies within a given country/region	1	0	1

	2.5 10 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**2.5.1** Country and county climate-smart profiles that help identify CSA practices and technologies within a given country/region	1	0	1
		2.5.2 Awareness raising on and preparation for innovative climate funds at multiple levels.	1	0	1
FP3	**3.1** 20 agricultural development initiatives where CCAFS science is used to target and implement interventions to increase input efficiency	**3.1.1** Data and methods for quantifying emissions and mitigation in smallholder systems to support LED plans and agricultural development initiatives. Appropriate & affordable for developing countries, increases confidence, includes uncertainties analysis.	1	0	1
		3.1.2 Global and country mitigation targets/potentials and NDC analyses to improve countries' capacities to meet UNFCCC, SDG and other commitments. Includes policy impacts on mitigation, ex-ante assessment of LED pathways.	0	0	0
		3.1.3 Identification of viable LED technical practices, and evaluation and comparison of their impacts/trade-offs for livelihoods, gender equity, food security and mitigation. Includes analysis, maps, tools and synthesis of evidence.	1	1	1
		3.1.4 Evidence for policy, economic, financial, social and other feasibility measures that enable scaling up LED among different farmers, production systems/value chains and countries. Includes commercially viable interventions, private sector initiatives.	1	1	1
		3.1.5 Technical and policy guidance/standards for supply chain and landscape-scale performance that support scaling up LED. Includes good practice guidelines, methods for assessing compliance, information platforms for green investment.	1	0	1
	3.2 0.8 million hectares targeted by research-informed initiatives for restoring degraded land or preventing deforestation	**3.2.1** Global and country mitigation targets/potentials and NDC analyses to improve countries' capacities to meet UNFCCC, SDG and other commitments. Includes policy impacts on mitigation, ex-ante assessment of LED pathways.	0	0	0
		3.2.2 Identification of viable LED technical practices, and evaluation and comparison of their impacts/trade-offs for livelihoods, gender equity, food security and mitigation. Includes analysis, maps, tools and synthesis of evidence.	1	1	1

		3.2.3 Evidence for policy, economic, financial, social and other feasibility measures that enable scaling up LED among different farmers, production systems/value chains and countries. Includes commercially viable interventions, private sector initiatives.	1	1	1
		3.2.4 Technical and policy guidance/standards for supply chain and landscape-scale performance that support scaling up LED. Includes good practice guidelines, methods for assessing compliance, information platforms for green investment.	1	0	1
	3.3 10 low emissions plans developed that have significant mitigation potential for 2030, i.e. will contribute to at least 5% GHG emissions reduction or reach at least 10,000 farmers, with all plans examined for their gender implications	**3.3.1** Data and methods for quantifying emissions and mitigation in smallholder systems to support LED plans and agricultural development initiatives. Appropriate & affordable for developing countries, increases confidence, includes uncertainties analysis.	1	0	1
		3.3.2 Global and country mitigation targets/potentials and NDC analyses to improve countries' capacities to meet UNFCCC, SDG and other commitments. Includes policy impacts on mitigation, ex-ante assessment of LED pathways.	0	0	0
		3.3.3 Identification of viable LED technical practices, and evaluation and comparison of their impacts/trade-offs for livelihoods, gender equity, food security and mitigation. Includes analysis, maps, tools and synthesis of evidence.	1	1	1
		3.3.4 Evidence for policy, economic, financial, social and other feasibility measures that enable scaling up LED among different farmers, production systems/value chains and countries. Includes commercially viable interventions, private sector initiatives.	1	1	1
		3.3.5 Technical and policy guidance/standards for supply chain and landscape-scale performance that support scaling up LED. Includes good practice guidelines, methods for assessing compliance, information platforms for green investment.	1	0	1
		3.4.1 Strengthened capacity of national research organizations, young scientists, and decision-makers to quantify LED emissions and identify and prioritize technical LED options. 50% of individuals will be women	0	0	2

	3.4 15 organisations adapting their plans or directing investment to increase women's participation in decision-making about LED in agriculture	**3.4.2** Identification of viable LED technical practices, and evaluation and comparison of their impacts/trade-offs for livelihoods, gender equity, food security and mitigation. Includes analysis, maps, tools and synthesis of evidence.	1	1	1
		3.4.3 Evidence for policy, economic, financial, social and other feasibility measures that enable scaling up LED among farmers, production systems/value chains and countries. Includes commercially viable interventions, private sector initiatives.	1	1	1
		3.4.4 Technical and policy guidance/standards for supply chain and landscape-scale performance that support scaling up. Includes good practice guidelines, methods for assessing compliance, information platforms for green investment.	1	0	1
	3.5 15 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**3.5.1** Data and methods for quantifying emissions and mitigation in smallholder systems to support LED plans and agricultural development initiatives. Appropriate & affordable for developing countries, increases confidence, includes uncertainties analysis.	1	0	1
		3.5.2 Strengthened capacity of national research organizations, young scientists, and decision-makers to quantify LED emissions and identify and prioritize technical LED options. 50% of individuals will be women	0	0	2
		3.5.3 Global and country mitigation targets/potentials and NDC analyses to improve countries' capacities to meet UNFCCC, SDG and other commitments. Includes policy impacts on mitigation, ex-ante assessment of LED pathways.	0	0	1
		3.5.4 Identification of viable LED technical practices, and evaluation and comparison of their impacts/trade-offs for livelihoods, gender equity, food security and mitigation. Includes analysis, maps, tools and synthesis of evidence.	1	0	1
		3.5.5 Evidence for policy, economic, financial, social and other feasibility measures that enable scaling up LED among different farmers, production systems/value chains and countries. Includes commercially viable interventions, private sector initiatives.	1	0	1

		3.5.6 Technical and policy guidance/standards for supply chain and landscape-scale performance that support scaling up LED. Includes good practice guidelines, methods for assessing compliance, information platforms for green investment.	1	0	1
FP4	**4.1** 8 million farm households with improved access to capital, with increased benefits for women (millions)	**4.1.1** Evidence of the benefits of agricultural insurance on smallholder livelihoods and adoption of CSA; and the factors that determine benefit	1	1	0
		4.1.2 Tools and indexes that better cover important risks and raise satisfaction of farmers and insurers, including atlases of risks and triggers for weather index insurance in target countries	1	1	0
		4.1.3 Science-based schemes, and sustainable public-private partnership and business models for effective agricultural insurance	1	1	1
		4.1.4 Approaches for sharing knowledge and building capacity to provide effective agricultural insurance at scale, including South-South learning	1	1	2
	4.2 40 institutions or major initiatives that use CCAFS research outputs for services that support farm households' management of climatic risks	**4.2.1** Methods and tools to improve agricultural monitoring; forecast impacts of seasonal climate and extreme events on crops and biological threats; extend lead time and accuracy of food security early warning systems	0	0	1
		4.2.2 Guidance on interpretation and appropriate use of climate change projections	0	0	2
		4.2.3 Methods, tools, and platforms to tailor climate information to agricultural user needs and facilitate access	0	0	1
		4.2.4 Evidence and insights from CSVs (with FP2), climate service pilots and national implementation initiatives	1	1	0
		4.2.5 Methods, tools, and guidance materials to enable scalable participatory, ICT- and radio-based channels for delivering services to rural communities	1	1	2
		4.2.6 Tools and evidence to improve the nature, timing or targeting of climate-informed agricultural planning and food security interventions	1	0	1
		4.2.7 Evidence of the benefits of agricultural insurance on smallholder livelihoods and adoption of CSA; and the factors that determine benefit	1	1	0

		4.2.8 Tools and indexes that better cover important risks and raise satisfaction of farmers and insurers, including atlases of risks and triggers for weather index insurance in target countries	1	1	1
		4.2.9 Science-based schemes, and sustainable public-private partnership and business models for effective agricultural insurance	1	1	1
	4.3 $150 USD mio. new investments by state, national, regional and global agencies, informed by CCAFS science and engagement	**4.3.1** Synthesised ex-post evidence of impacts of climate services on agricultural livelihoods and food security	1	1	0
		4.3.2 Improved methods for ex-ante evaluation of climate services investments	1	0	1
	4.4 20 development organizations adapting their plans and directing investment to increase women's access to, and control over, productive assets and resources through gender-sensitive climate-based advisories and safety nets	**4.4.1** Evidence and insights from CSVs (with FP2), climate service pilots and national implementation initiatives	2	1	0
		4.4.2 Methods, tools, and guidance materials to enable scalable participatory, ICT-and radio-based channels for delivering services to rural communities	2	1	1
		4.4.3 Methods to identify and meet particular climate service needs of women and youth	2	2	1
		4.4.4 Institutional arrangements that foster sustainable co-production of services with relevant agencies and targeted rural communities	2	1	1
		4.4.5 Evidence of the benefits of agricultural insurance on smallholder livelihoods and adoption of CSA; and the factors that determine benefit	2	1	0
		4.4.6 Tools and indexes that better cover important risks and raise satisfaction of farmers and insurers, including atlases of risks and triggers for weather index insurance in target countries	1	1	1
		4.4.7 Synthesised ex-post evidence of impacts of climate services on agricultural livelihoods and food security	2	1	0
		4.5.1 Methods and tools to improve agricultural monitoring; forecast impacts of seasonal climate and extreme events on crops and biological threats; extend lead time and accuracy of food security early warning systems	0	0	1

	4.5 15 policy decisions taken (in part) based on engagement and information dissemination by CCAFS	**4.5.2** Science-based schemes, and sustainable public-private partnership and business models for effective agricultural insurance	1	0	1
		4.5.3 Approaches for sharing knowledge and building capacity to provide effective agricultural insurance at scale, including South-South learning	1	0	2
		4.5.4 Methods, tools, and guidance materials to enable scalable participatory, ICT-and radio-based channels for delivering services to rural communities	1	1	1