

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) (2016-2024): Concept Note

Second order draft, September 2013

- This document has been updated based on partner feedback from Montpellier meeting (July 2013) and Centre Contact Meeting (August 2013)
- Further partner feedback is expected at global, regional and national levels; and the document has to eventually be 10 pages maximum
- Only update post September is new theory of change document (December 2013)
- **Note that dates have to be updated in this proposal as there is now a refresh period (2015-2016) and then the phase 2 (2017 onwards) .**

Background

Achieving sustainable food security in a world of growing population and changing diets is a major challenge under climate change. Climate change will have far-reaching consequences for agriculture that will disproportionately affect poor and marginalized groups who depend on agriculture for their livelihoods and have a lower capacity to adapt (Vermeulen et al., 2012). Climate-related crop failures, fishery collapses and livestock deaths already cause economic losses and undermine food security, and these are likely to become more severe as global warming continues. For crops, potential yield loss is about 5% for each degree Celsius of global warming (Lobell et al., 2011). By 2050, climate-related increases in water stress are expected to impact land areas twice the size of those areas that will experience decreased water stress (Bates et al., 2011). Agriculture and related activities also contribute to global warming, by generating greenhouse gas (GHG) emissions. Food systems are estimated to account for 19-29% of global GHG emissions (Vermeulen et al., 2012), the bulk of these in developing countries. Although estimates of food insecurity vary (Barrett, 2010), the number of undernourished people already exceeds 1 billion and feeding this many people will require more than incremental changes (Federoff et al., 2010). This proposal tackles three of the greatest challenges facing humankind in the 21st century: food security, adaptation to climate change and mitigation of climate change.

Successful adaptation and mitigation actions that maintain food security will entail changes in technology, practices, behaviour, institutions and production systems. A key focus in CCAFS will be climate-smart agriculture (CSA), defined as agriculture that “sustainably increases productivity, enhances adaptive capacity, reduces/removes greenhouse gas emissions, and enhances achievement of national food security and development goals” (FAO, 2010). Considerable work in CCAFS will focus on the synergies and trade-offs amongst these objectives of CSA. The over-arching objectivesⁱ of CCAFS are: (1) To develop and test pro-poor adaptation and mitigation technologies, practices and systems; and (2) To provide diagnosis and analysis that will ensure cost effective investments, the inclusion of agriculture in climate change policies, and the inclusion of climate issues in agricultural policies, from the sub-national to the global level in a way that brings benefits to the rural poor. CCAFS’ vision is to be the foremost global source of collaborative research that leads to strategies for tackling food insecurity in the face of climate change.

Theory of Change

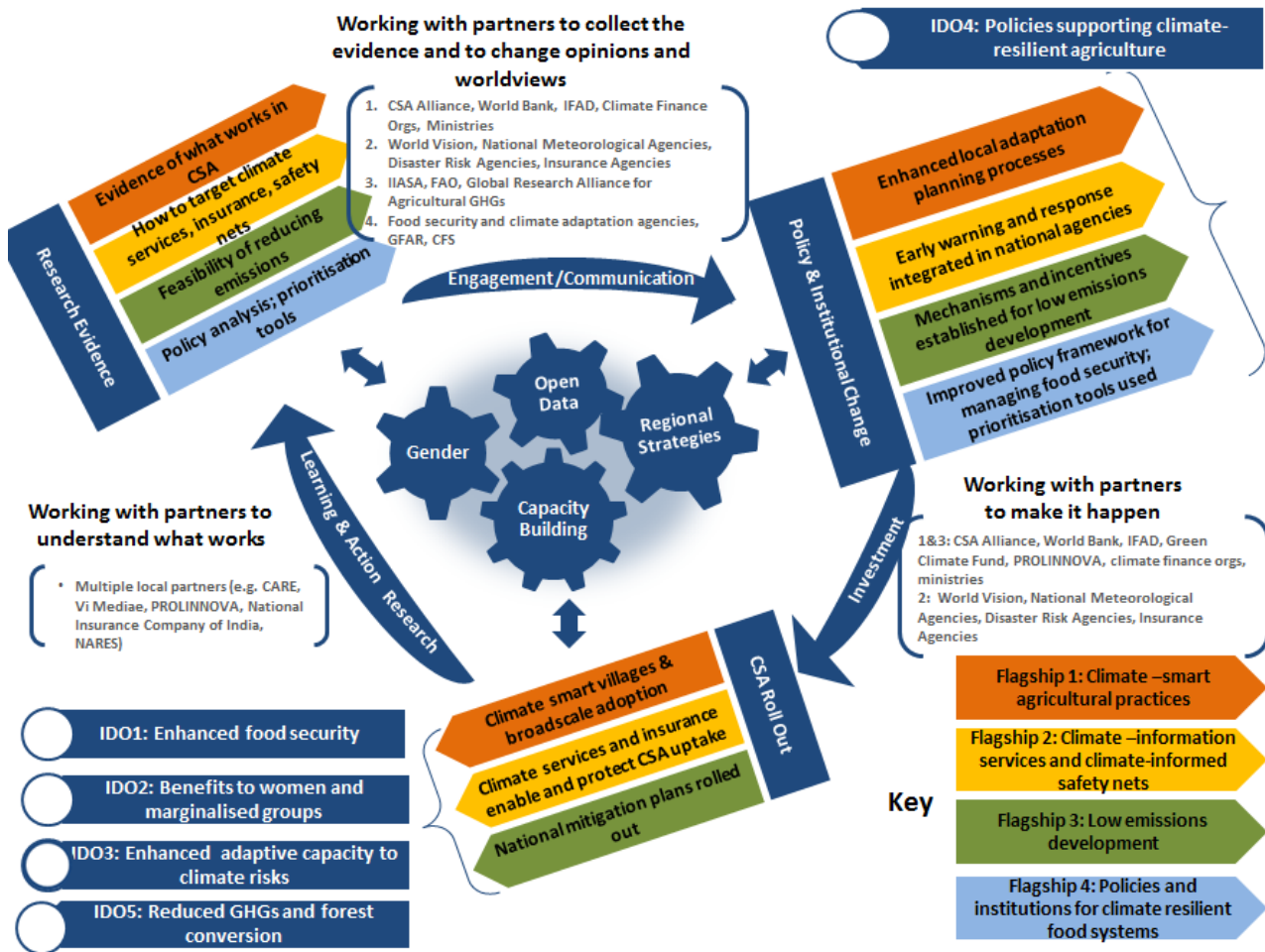
The complex, dynamic relationships among climate change, agriculture and the food security of poor households necessitate urgent transformation of food systems – major changes in farming practices and localities, landscape management, food storage and distribution, and consumption choices (Beddington et al., 2012). CCAFS seeks to catalyse positive change towards climate-smart agriculture, food systems and landscapes by focussing on five Intermediate Development Outcomes (IDOs):

1. Increased and stable access to food commodities by rural and urban poor (“**Food security**”).
2. Increased control by women and other marginalized groups of assets, inputs, decision-making and benefits (“**Gender and social differentiation**”).
3. Increased capacity in low income communities to adapt to climate variability, shocks and longer term changes (“**Adaptive capacity**”).
4. Additional policies and institutions supporting sustainable, resilient and equitable agricultural and natural resources management developed and adopted by agricultural, conservation and development organizations, national governments and international bodies (“**Policies and institutions**”).
5. Increased carbon sequestration and reduction of greenhouse gases through improved agriculture and natural resources management (“**Mitigation**”).

A cornerstone of CCAFS’ theory of change (Figure 1) is partnerships. CCAFS will closely collaborate with development partners, including the major organisations that set the agenda for rural development globally and nationally, and also including small-scale farmers¹, and their representative organisations. Such partners will help set the research agenda, leading to more demand-driven research. CCAFS will work simultaneously on farm-level practices and on policy, so that practice produces the evidence to drive policy, and, in turn, major investments and widespread adoption of new practices are fostered by policy. Through partnership, researchers, practitioners and policy-makers from public, private and civil society spheres will identify through first-hand experience what works and, perhaps as importantly, how to navigate trade-offs amongst food security, climate adaptation, and reduction of greenhouse gas emissions. Partners will include implementation agencies, advisory services and communicators to ensure that outputs are used in fostering impact. Where necessary, capacity of key partners along the impact pathways will be strengthened. The field-level work will, where possible, be coordinated with the system level CGIAR Research Programs (CRPs).

¹ We use the term “farmers” to cover small-scale croppers, pastoralists and fishers. For some, farming may not be their primary source of income (e.g. those with diverse livelihood strategies).

Figure 1. CCAFS Theory of Change



CCAFS will embrace social learning from field to policy level (e.g. action research with farmers, science-policy learning platforms). Monitoring and evaluation will be implemented to enhance learning and sharpen efficacy. Given the importance of fostering outcomes, CCAFS will do research on knowledge-action in all its Flagships. Innovative tools and approaches for creating knowledge-action linkages will be documented and feed into subsequent research cycles.

CCAFS will generate equitable and gender-sensitive technologies, practices, and institutional and policy options related to four Flagships:

1. **Climate-smart agricultural practices.** This Flagship will test and scale up technologies and practices that are needed to build adaptive capacity and food security; mitigation co-benefits of these technologies and practices will also be documented. CCAFS will collaborate with the major agencies facilitating climate-smart agriculture (e.g. World Bank, national agricultural ministries) to identify and develop the tools needed to prioritise technologies and practices. Through collaboration with the commodity CRPs, CCAFS will help set the agenda for the next generation of breeding for climate-smart crops.
2. **Climate information services and climate-informed safety nets.** This Flagship will work closely with climate scientists and meteorological services, to deliver improved farmer advisories, better management of safety nets and enhanced design of the weather-indexed insurance. Major humanitarian agencies (international, national and civil society) will be engaged to foster impact around climate-informed safety nets. CCAFS will partner with the insurance industry on weather-indexed insurance. A major point of collaboration will be the CRP on Policies, Institutions and Markets (PIM).

- 3. Low-emissions agricultural development.** This Flagship will focus on the considerable GHG measurement challenges in small-scale farming systems, the trade-offs and synergies amongst adaptation, food security and mitigation, the necessary incentives for mitigation actions, and policy options in agriculture for climate change mitigation and low-emissions development. Given the politically-charged nature of climate policies in many jurisdictions, CCAFS will need to be politically astute in its engagement strategy. The Global Alliance for Research of Agricultural Greenhouse Gases (GRA) will be a key partner. Countries which have shown interest in developing agricultural NAMAs² or low emission development policies or are members of the GRA will be targeted as key partners in the initial work (e.g. Colombia, Vietnam, Kenya). The CRP on Forests, Trees and Agroforestry (FTA) will be a close partner.
- 4. Policies and institutions for climate-resilient food systems.** This Flagship will address adaptation and food security policies, largely at the national level but also up to the global level. Modelling, scenario assessment and policy analysis will provide the information and tools for decision-makers to target support for agriculture and food security under climate change. This Flagship will work closely with the agricultural negotiators at the UNFCCC, and regional (e.g. ASEAN, COMESA) and national agencies involved in food security policy processes. Science-policy dialogues will be facilitated or supported from national to global levels. PIM will be actively engaged in the global modelling work.

Each Flagship will contribute to the achievement of the five IDOs (Table 1).

Food security IDO: Solutions to hunger and nutrition in a warmer world have to go far beyond production, and may involve transformative as opposed to incremental adaptation (Beddington et al., 2012). For this reason, CCAFS takes a food system perspective in parts of its work (e.g. see Table 2: row 4). Flagship 2 will investigate options for climate-informed safety-nets, and in so doing will examine the management of regional food systems (distribution, trade, storage, emergency response). Flagship 4 will help build supportive climate-resilient food policies. Flagship 1 and 2 will both have a focus on building farmer adaptive capacity, with impacts on food security.

Gender and social differentiation IDO: CCAFS will address gender and social differentiation in all its Flagships. Gender and other inequalities undermine innovation and food security in many agricultural communities, and women and marginalised individuals and households are often more vulnerable to climate change. CCAFS will embrace strategies to reach woman farmers in male-headed households and asset-poor female-headed households. Specific strategies will be developed to support young women and young men in agriculture, and social groups marginalised on the basis of their livelihood activities, age, ethnicity or other factors. Mitigation actions that do not disadvantage women and marginalised groups will be identified.

Table 1. How CCAFS Flagships contribute to Intermediate Development Outcomes

CCAFS Flagships	Intermediate Development Outcomes (IDOs)				
	Food security	Gender & social differentiation	Adaptive capacity	Policies & institutions	Mitigation
1. Climate-smart practices	X	X	X		X
2. Climate information services and climate-informed safety nets	X	X	X	X	
3. Low-emissions agricultural development		X		X	X
4. Policies and institutions for climate-resilient food systems	X	X	X	X	

² Nationally Appropriate Mitigation Actions (NAMAs), as defined under the UNFCCC

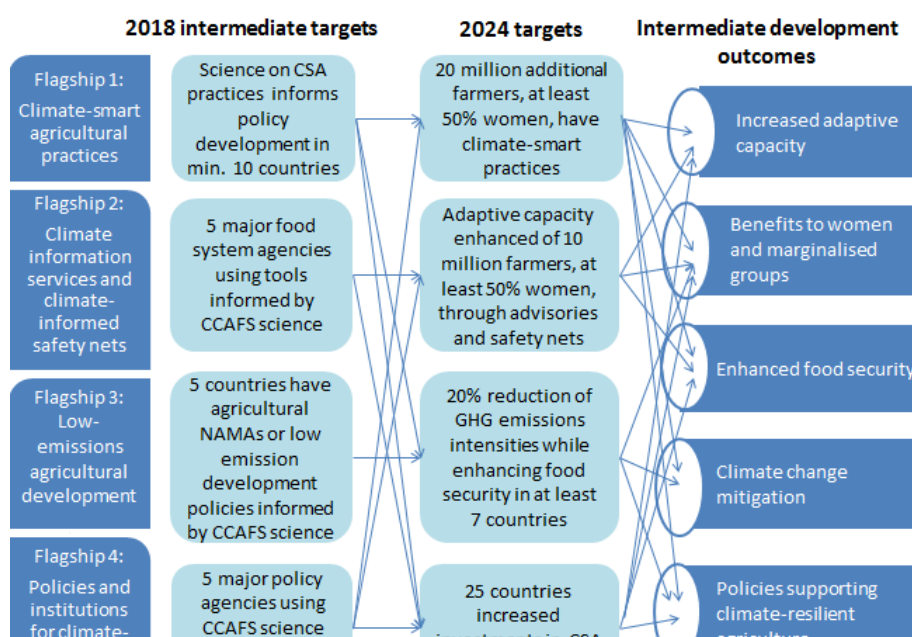
Adaptive capacity IDO: A key component of Flagship 1 will be the assessment of local knowledge for adaptation, the development of improved choices, and integration of crop, livestock, fish, agroforestry and natural resources management approaches. Flagship 2 will address gaps and support improvements to climate-related information products and services that enable a range of risk management interventions, as well as focus on improving climate-related safety nets. Research will examine the processes required for promising adaptation options to be scaled up and out. Policies and institutions that stimulate adaptive capacity will be identified and evaluated in Flagship 4.

Policies and institutions IDO: The policy environment has profound impacts on the opportunities and constraints affecting local and national-scale actions that can be taken in response to a changing climate. Thus boundary-spanning strategies for linking the science to policy at various levels will be critical, with particular attention to the national level. CCAFS will focus effort both on formal government policies covering climate change adaptation and mitigation, agriculture and food security, and on the much wider set of formal and informal strategies, norms and procedures, including the strategies of producer organizations, non-governmental organizations, local governance structures, and businesses. National and regional work, such as scenario development, will link directly to global policy processes. Flagship 2 focusses its work on the implementation strategies around safety net policy, while Flagship 3 focusses on policies dealing with low emissions development. Flagship 4 focusses on adaptation and food security policies.

Mitigation IDO: Flagship 3 will contribute the tools and methods to measure GHG emissions in small-scale farming systems, and identify the technical, policy and institutional options to incentivize low emissions development. Flagship 1 aims to scale up the adoption of technologies and practices that have high emissions efficiency (as identified by Flagship 3).

Each Flagship has an intermediate (2018) and final (2024) target (Figure 2). These targets were derived from targets proposed by the Regional Program Leaders (based on preliminary partner engagement) and analysis of targets by international agencies with which CCAFS has established or will establish partnerships. Achievement of final targets in one Flagship is often contingent on other Flagships achieving their targets, given the interrelationships amongst Flagships. The 2024 targets established for Flagships will contribute towards achieving the targets for IDOs. Metrics for IDOs still need to be established by the Consortium Office, so the intermediate and final Flagship targets are preliminary.

Figure 2. Intermediate targets and final program targets for the different Flagships, showing the inter-relationships amongst targets and IDOs



Flagship 1: Climate-smart agricultural practicesⁱⁱ

Vision

All farmers, including women and marginalised groups, in Asia, Africa and Latin America are resilient to a variable and changing climate.

Targets

By 2024 20 million farmers, at least 50% of whom are women, transform their agricultural practices to be climate-smart. By 2018, CCAFS science on climate-smart technologies and practices will be used to inform policy development in at least 10 countries.

Theory of Change

The adaptive capacity of small-scale farmers can be enhanced, and their GHG emissions reduced, by adoption of climate-smart agricultural (CSA) technologies and practices (this could involve entirely new systems, crops, and value chains, but also support networks, information exchange, etc.). New agricultural technologies, practices and information systems that enhance adaptive capacity need to be jointly developed with local partners, building on local knowledge where appropriate. We need to provide evidence regarding the benefits of what works where to farmers and their supporting organisations (public, private and non-governmental actors). Adaptive capacity will be achieved when support networks provide the necessary information, skills, inputs, markets, investments and institutions that allow farmers to adopt and adapt their agricultural practices in ways that diversify choices, improve livelihoods and create a healthy natural resource base for future generations. As women farmers often have the least say in household decision-making processes regarding agriculture, yet are typically responsible for household food security, we will focus on improving their access to information and resources, including by enhancing their support networks (e.g. women's groups, civil society organisations). We will work to develop innovative means to support two-way information flows by encouraging creative use of new technologies. The work will include a focus on "climate-smart villages" where integrated approaches to climate variability and change are tested in a participatory manner (also drawing on work in Flagship 2 and 3 – see Table 2: row 1). Two dozen were established in CCAFS phase 1, but additional sites are envisaged, especially where connected to major development initiatives. All learning sites are linked to strategies for scaling up and out.

Research will focus on three products: (1) Improved technologies, practices and portfolios for climate-smart agriculture that meet the needs of farmers, including women and marginalised groups; (2) Methods and approaches for equitable local adaptation planning and governance, including transformative options; (3) Innovative incentives and mechanisms for scaling up and out that address the needs of farmers, including women and marginalised groups.

Regional Prioritiesⁱⁱⁱ

The particular focus for climate-smart practices will be regionally and nationally specific, depending on predominant farming systems and climate challenges (e.g. rice-based systems and sea-level rise will receive a major focus in the deltas of South East Asia, while maize-based, pastoralist and highland mixed farming systems will be earmarked in East Africa). The scaling up mechanisms will also be context-specific. For example use of advisories through television will be explored in western Kenya. In Latin America a partnership hub system will be assessed as an innovative approach to develop and scale-out locally adapted technology and build local capacity. Special attention will be placed on the development of knowledge platforms through mobile and ICT technologies to support innovation in the hub system. In South Asia, the concept of climate-smart villages will be rigorously tested and scaling up through a national program will be explored in India.

Flagship 2: Climate information services and climate-informed safety nets

Vision

The livelihoods of farmers across Asia, Africa and Latin America are supported by effective climate information services, and protected by timely and well-targeted food security safety nets.

Targets

By 2024, more salient information services, more effective, climate-informed advisory services, and timely, well-targeted safety net interventions will enhance the adaptive capacity of 10 million farmers, at least 50% of whom are women, to climate-related risk. By 2018, five major food system organisations will be using tools informed by CCAFS science to manage the impacts of climatic extremes on food security.

Theory of Change

Climate-smart agriculture must be underpinned by effective climate information services and climate-informed safety nets as agriculture becomes increasingly information-dependent, traditional knowledge struggles to keep up with the pace of change, and greater climatic extremes challenge the capacity of small-scale farmers. Climate information services that are credible, accessible, equitable, and aligned with agricultural advisory services will support small-scale farmers and the institutions that serve them. Shared knowledge about the changing risks due to a variable and changing climate will inform selection of appropriate climate-smart technologies and practices. CCAFS will identify mechanisms to integrate climate information and services into decision support tools and processes used by governments and development actors for targeting investments in agriculture. Advance information about the upcoming growing season will contribute to enabling small-scale farmers to intensify production, adopt improved technology and practice, invest in their soils in climatically favourable seasons, and to protect scarce assets in unfavourable seasons. Improved climate-related information will also support public, private and civil society actors in the food system – whose decisions impact rural food and livelihood security – to manage the impacts of climate shocks. Whenever the impact of a climate shock, such as drought or flooding, exceeds the capacity of small-scale farmers to cope, climate-informed, timely, well-targeted safety net interventions will build adaptive capacity by protecting food security, productive assets and infrastructure. The security that results will foster investment in climate-smart technologies and practices. The safety net aspect of the research involves the participation of public and private sectors, and actors involved in the management of the whole food chain and those involved in emergency relief. It will thus also have outcomes for food security and crisis management beyond the farm.

Research therefore will focus on four products: (1) climate-based methods and tools for seasonal agricultural prediction and early warning; (2) knowledge and methods for designing and implementing equitable climate information and advisory services for smallholder communities; (3) food security safety nets and policy interventions for dealing with impacts of climate-related shocks; (4) knowledge and methods to design and target equitable weather-related insurance programs that benefit smallholder communities (in collaboration with PIM).

Table 2. Overview of some of the content of each Flagship to show similarities and differences

	Flagship 1: Climate-smart agricultural practices	Flagship 2: Climate information services and climate-informed safety nets	Flagship 3: Low emissions development	Flagship 4: Policies and institutions for climate-resilient food systems
1	Action research at farmer to district level and scaling up/out (including in climate-smart villages) Climate-smart agricultural practices and incentives	Climate information services; Weather-indexed insurance	Incentives to deliver mitigation outcomes	
2		<u>Downscaling</u> : seasonal forecasting and early warning		<u>Downscaling</u> : agricultural development planning

3	<u>Modelling</u>		
	Assessment, inc. through modelling & economic analyses, opportunities for investments in CSA	Modelling adaptation and mitigation trade-offs at landscape to global levels	Modelling climate change impacts on agriculture globally
4	<u>Food system initiatives</u>		
	Local CSA options targeting post production	Climate-informed options to manage entire food systems in the face of variability and extremes, including climate-informed safety nets	Commodity sustainability initiatives (oil palm, beef....) to reduce agriculture's impact on land cover change
5	<u>Policy analysis and science-policy dialogue</u>		
		Low emissions development & NAMAs	NAPs, agricultural development, food security
6	<u>Assessment, monitoring and evaluation</u>		
	Tracking of adaptive capacity and food security at household to district levels, disaggregated by gender and other variables	Field & landscape methods and measurements of GHG fluxes; National to global assessments of GHG fluxes and mitigation potential	National to global assessments of adaptive capacity and food security in the face of climate change
7	<u>Priority setting</u>		
	Developing priority setting tools for village and project level planning and investment	Developing priority setting tools for identifying mitigation options	Developing priority setting tools for national agricultural planning and investment

Regional Priorities

Focus areas and strategies will be tailored to regional and national contexts. For example, in India mobile phone based dissemination of information is well advanced and CCAFS will work with service providers on co-identified priorities, such as enhancing precise short-term and seasonal weather forecasts linked to value-added advisories. In West Africa CCAFS will work with AGRHYMET and National Meteorological Offices to downscale seasonal climate forecasts and communicate these widely and regularly to farmers in the form of agro-advisories, via working groups that include local stakeholders, using radio, cell phones and television. In Latin America CCAFS will demonstrate the value of integrating information on weather variability and extremes into agro-meteorological packages, including a methodology for communicating climate information at scale to farmer communities. In East Africa one focus topic will be the management of the whole food system in relation to extreme weather events. In Southeast Asia, risks of droughts and floods will be targeted through developing systems of water harvesting and banking, in association with the CRP on Land, Water and Ecosystems (WLE).

Flagship 3: Low-emissions agricultural development

Vision

Agricultural development produces mitigation co-benefits without compromising development targets.

Targets

Policy-makers invest in low emissions agricultural development that results in, by 2024, a 20% reduction of GHG emissions intensities while enhancing food security in at least seven countries in Southeast Asia, East Africa and Latin America. By 2018 five countries will have agricultural NAMAs or low emission development policies that were informed by CCAFS science.

Theory of Change

Agriculture's 10-12% direct and 17% indirect contributions to global anthropogenic GHG emissions are an opportunity for a transition to more efficient economic growth and agricultural production and improved conservation of natural resources. Some national governments in the CCAFS regions presently have an incentive to reduce GHGs in agriculture to meet their national emissions targets and commitments, access climate finance, and become more globally competitive in production, e.g., through more efficient energy use.

Yet to manage direct emissions from agriculture, countries need information for making decisions, as well as the policies and practical systems for implementing low emissions strategies. Decision support will require scenarios about future food and energy demand, adaptation to climate change, and land use; robust, consistent measurement techniques and data on GHG emissions from small-scale farms and landscapes to target priorities for mitigation, and tools for integrated assessment of trade-offs and synergies with other objectives such as food security, income generation or energy efficiency. Implementation of mitigation will require adaptive innovation systems that involve farmers, technical advisors, finance providers and national policy makers. Smallholders will need to access the finance, information and resources they need to develop new practices that contribute to household food security, income generation and natural resource sustainability, while also reliably reducing GHG emission intensities relative to a baseline. Linking finance and investment to emissions reductions and strengthening support for innovation will be critical. Carbon markets and private sector actors may provide incentives for certain niche contexts, but investing in low emissions agricultural development will likely have the broadest impacts.

For indirect emissions related to deforestation, sustainability initiatives among major agricultural commodities producers of palm oil, cattle, soy, rubber and cocoa provide an opening for working with these industries and consumer groups to support systems for improved accountability in performance. Sharing knowledge about innovative public-private institutional arrangements that overcome incentives for deforestation should also inform the development of new initiatives.

Research therefore will focus on three product categories: (1) decision support for assessing mitigation priorities, baselines and trade-offs, (2) methods and data for quantifying small-scale farming emissions and mitigation options (e.g., the SAMPLES project), (3) analysis for improved mitigation implementation mechanisms, with a focus on NAMAs and climate finance, accountability for sustainable commodities, and innovation systems for the scaling up of mitigation, with attention to gender. In these research efforts, collaboration with CRP6 will be fostered, given the large role of agriculture in driving deforestation and consequently GHG emissions. Policy analysis will be closely integrated with Flagship 4, while work at farm level will coordinate closely with Flagship 1.

Regional Priorities

In Southeast Asia a focus country will be Vietnam where CCAFS will work with national agencies to meet GHG emissions targets and support Vietnam to become the cutting-edge regional and world example for reducing emissions from rice-based production systems. Promising new agronomic options, including cycles of alternate wetting and drying, for managing rice paddies will be critically assessed for GHG emissions at the same time as testing more robust and cheaper methods of GHG measurement. In other parts of Southeast Asia CCAFS will stimulate the participation of oil palm companies and consumer groups in evaluations of sustainability initiatives to identify innovations. In South Asia CCAFS will help provide the evidence for a more informed analysis of the region's emissions patterns for deciding priorities. In Africa guidelines for quantification and monitoring of GHG fluxes will help governments support policies that provide climate finance for farmers to access technologies that enable adaptation to climate change and

mitigation co-benefits. In Latin America decision-support tools for NARES and policy makers will help inform agricultural development policy, with a focus on commodity agriculture and avoided conversion of forest lands.

Flagship 4: Policies and institutions for climate-resilient food systems

Vision

National, regional and global institutions enable food systems that are resilient to a variable and changing climate.

Targets

By 2024, 25 countries increase their investments in climate-smart agricultural institutions, technologies and practices by 50% compared with 2016. By 2018, five major regional and global organisations will be using knowledge, tools and approaches derived from CCAFS science to inform their investments in climate-smart technologies and practices and in broader food system actions.

Theory of Change

Millions of farmers practising climate-smart technologies and practices can only be achieved through an enabling institutional environment. Agricultural policies must address climate change impacts and adaptation options, and climate change policies must address the agricultural sector and the implications of climate change for food security. Policies must reduce inequity related to gender and social differentiation. Given that adaptation requires widespread behavioural changes, this Flagship will consider a wide set of formal and informal strategies, norms and procedures, including those of producer organizations, non-governmental organizations, local governance structures, and businesses. International climate finance and global investment in climate-smart agriculture could overcome some of the existing constraints that limit the adoption of climate-smart agriculture, if channelled appropriately.

With our partners we need to achieve policies and innovations at national, regional and international levels, and the mechanisms required for their successful implementation. The main focus will be at the national level, given that this level sets the context for the incentives that govern most food system participants. Innovative tools and mechanisms for supporting the decision-making processes of food system participants must be identified, tested and scaled up (e.g. decision support systems, science-policy learning platforms). Efforts to meaningfully engage farmer and community-level organisations in this process need to be redoubled. CCAFS will analyse the strengths and weaknesses of current national policies on food commodities for climate adaptive capacity (e.g. those related to input subsidies, trade, strategic stocks, safety nets, land rights etc.).

Work in this area will be enriched by research on networks of actors involved in relevant policy-making at local and national levels and their links to international policy decision-making fora. This research can assist in framing and supporting policy interventions; it is also useful to verify the impact of policy interventions post facto. Decision-makers need evidence, but they also need soft skills to use evidence for the purpose of influencing policy and advocating for change. Therefore, we emphasize partnerships for change, building skills at all levels to use evidence and advocate for a climate-resilient future. Working with Flagship 1, this Flagship will also examine how local perspectives and those of marginalised groups can be taken into account to foster inclusiveness in decision-making.

Globally, we will focus on the integration of climate change, agriculture and food security issues into international processes coordinated under the aegis of agreements, processes and organisations such as the UNFCCC, IPCC, CFS, AU/NEPAD and ITPGRFA.

Research will focus on four products: (1) data, models and scenarios to understand the impact of climate change on agriculture; (2) decision support tools for targeting policy development and making investment choices in climate-resilient agriculture from national to global level; (3) analysis of strengths and weaknesses of current and emerging policy with pilot policy intervention case studies conducted with national partners, with particular attention to social differentiation and gender issues; (4) analysis and experimentation concerning novel decision-making processes, up-scaling and cross-scale methodologies, policy making networks, platforms, visioning, capacity strengthening, to bridge the science-policy-user divides.

Regional Priorities

At the regional and national level our strategies and approaches will be specific to each of the target regions and countries in terms of partners, approaches and tools. In East Africa one pathway for engagement is through the Regional Learning Partnership to foster joint learning among the regional economic commission COMESA, national policy agencies, farmers' organisations and research organisations. In West Africa the national platforms for science-policy dialogues will be capacitated to identify adaptation priority needs and gaps. The particular policy focus will also be dependent on the region and country. For example, in India an identified priority is improved crop yield forecasting for evidence-based food security planning and prioritisation of national policy actions. It is important to address policy contradictions. For example in Southeast Asia, policies for developing self-sufficiency and export capability for rice are often at odds with other policies for diversification of cropping options.

Partnerships

CCAFS is a partnership of the CGIAR and Future Earth. Future Earth is the umbrella organisation that leads global science initiatives on global change (climate modelling, land cover change, greenhouse gas emissions etc.). In this regard we envisage that the CCAFS management team will continue to include individuals from outside the CGIAR.

In the context of the impact pathways for the global components of Flagships 3 and 4, CCAFS has prepared a global engagement strategy, where key partners along the impact pathway have been identified and partnerships formed to deliver on the global outcomes. Similar processes have been followed at regional level, and, once countries are confirmed, a similar process will be conducted at country level. At regional level, CCAFS has forged partnerships with the major regional organisations, including regional economic bodies (e.g. ECOWAS for West Africa), and research (e.g. CORAF), meteorological (e.g. AGRHYMET) and farmer organisations (e.g. ROPPA).

To deliver on ambitious outcome targets, it is crucial to have effective partnerships with the major actors on impact pathways. At this level of detail, it is impossible to have a generic impact pathway. Rather, a small set of very strategic alliances need to be developed and maintained. One example is that of IFAD which has a major program on climate change adaptation (ASAP) with targets of building the adaptive capacity of 10 million farmers. CCAFS and IFAD are in discussion on building a research for development partnership. A senior CCAFS scientist is spending four months at IFAD during 2014 to develop the science-practice linkages and CCAFS scientists participate in multiple country missions to define the future IFAD programs. These activities will lead to identifying crucial research products to help guide the development program, and much greater collaboration on the ground. Another example is that of the World Bank, where the President will announce climate-smart agriculture as one of four policy thrusts for the Bank. CCAFS is in discussion with the Bank to be the CGIAR representative on the major global alliance on climate-smart agriculture that will be announced later in 2013. This alliance will have ambitious targets related to climate-

smart agriculture. Similar partnerships will need to be built, or have been built, in each of the CCAFS target countries.

CCAFS aims to spend 25-30% of its budget on partners.

Phased workplan

The table below illustrates the Flagship work streams and decision points. Given the complexity of identifying and scaling up climate-smart agriculture, and the methodological challenges in measuring small-scale farming emissions, Flagships 1 and 3 are programmed for six years. Flagship 2 is a new area for the CGIAR, so it is programmed for an initial three years, after which a major readjustment may be needed. The policy environment could change rapidly if there is a breakthrough in global climate change negotiations and thus Flagship 4 is programmed for three years in the first instance.

Flagships	2016-2018	Decision Point	2019-2021	2022-2024
1. Climate-smart agricultural practices		Assess whether targets are reached and make minor readjustments	→	Redefine based on previous successes and failures →
2. Climate information services and climate-informed safety nets	→	Assess whether the focus of this Flagship, new areas for the CGIAR, are resulting in outcomes and readjust strategy		Redefine based on previous successes and failures →
3. Low-emissions agricultural development		Assess whether targets are reached, whether global policy positions are changing and make minor readjustments	→	Redefine based on previous successes and failures →
4. Policies and institutions for climate-resilient food systems	→	Assess relative success at different levels (sub-national to global) and readjust strategy		Redefine based on previous successes and failures →

Indicative budget (US\$ million)

Flagship	2016-2018 3-year budget	2019-2021 3-year budget	2022-2024 3-year budget	Total 9-year budget
1. Climate-smart practices	60	63	45	168
2. Climate information services and climate-informed safety nets	33	36	40	109
3. Low-emissions agricultural development	30	40	60	130
4. Policies and institutions for climate-resilient food systems	39	27	27	93
Totals	162	166	172	500

Assumptions

- Much of the work on Flagship 1 is achieved in the first six years; thereafter the thrust is largely scaling up and out.
- The scope of Flagship 2 is expanded over the nine year period as CGIAR increasingly recognises its importance and draws on its results.
- The scope of Flagship 3 is increased considerably over the nine year period as the global community recognises the urgency of action.

- After considerable investment in the first three years, Flagship 4 is scaled back, on the assumption that major progress is made in the first three years.
- Small growth in total budget over the nine years is envisaged.
- A portion of the budget of each Flagship goes towards: monitoring and evaluation; data management; gender and social differentiation coordination and research; coordination and research on best practice for knowledge-to-action linkages; management of global-level policy partnerships and events; communications; capacity enhancement coordination; program management and governance.

NOTES FOR NEXT VERSION OF THE PROPOSAL

ⁱ Do we really need over-arching goals? Would it not be simpler to have a single goal, not two?

ⁱⁱ What are the game-changing technologies, practices and policies?

ⁱⁱⁱ Comment from Consortium that still needs to be addressed: On geographically explicit targets there is a need for a specific solution in a certain region. The general framework is there but how it is translated to a specific region is not yet clear