

Climate readiness in smallholder agricultural systems: Lessons learned from REDD+

Working Paper No. 75

CGIAR Research Program on Climate Change,
Agriculture and Food Security (CCAFS)

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RESEARCH PROGRAM ON
**Climate Change,
Agriculture and
Food Security**



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Abstract

The debate around the role that agriculture should play in mitigating climate change and sequestering greenhouse gases is politically complex and technically complicated. In many countries, and particularly in developing countries with a large smallholder population, the agricultural sector faces competing priorities, such as national food security goals, poverty alleviation, addressing natural resource degradation and adapting to the already visible effects of climate change. Many of these goals are closer to the immediate, short-term priorities of national decision-makers, relegating climate change mitigation to a secondary priority. It is therefore essential to implement mitigation strategies in concert with strategies that increase the resilience and increase the productivity of agricultural systems.

Despite differences in the forestry and the agricultural sectors, experiences from the REDD+ process, and particularly its readiness phase, can offer useful lessons for an agricultural readiness process. The REDD+ readiness process created an overall coherent structure, framework and process of guiding countries towards developing the technical and institutional ability to integrate mitigation activities into their forestry sectors. An overview of the lessons learned from REDD+ Readiness, organized by objectives, governance, process, scope and finance, is provided in this working paper.

Keywords

Agriculture; smallholders; greenhouse gases; forestry policies

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Acronyms

CAADP	Comprehensive Africa Agriculture Development Program
CIAT	International Centre for Tropical Agriculture
COP	Conference of Parties
CSA	Climate-Smart Agriculture
ER-PIN	Emissions Reductions Program Idea Note
FAO	The Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility of the World Bank
FINAGRO	Fund for Agricultural and Livestock Financing
GDP	Gross Domestic Product
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
MRV	Measurement, Reporting and Verification
NAMAs	Nationally Appropriate Mitigation Actions
NDP	National Development Programme
NPD	National Programme Document
OECD	Organisation for Economic Co-operation and Development
PIF	Policy and Investment Framework
REDD	Reduced Emissions from Deforestation and Forest Degradation
R-Package	Readiness Package
R-PIN	Readiness Plan Idea Note
R-PP	Readiness Preparation Proposal
SLM	Sustainable Land Management
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

Executive Summary

In many developing countries, agriculture forms the backbone of rural economies.

Smallholder systems in particular, provide major shares of agricultural output, contribute to local employment and ensure food security for poorer populations. These systems, however, are being threatened by climate change, and agricultural systems that are the most vulnerable today will face the most severe effects (Easterling *et al.* 2007, Beddington *et al.* 2012). In addition to its vulnerability, the agricultural sector is also one of the main drivers, directly and indirectly, of climate change. The IPCC attributes about 20 to 25% of all global greenhouse gas (GHG) emissions to the production of food, feed, and biofuels, including emissions from agriculture-driven land use change, such as deforestation, forest and peatland degradation (IPCC 2014, WGIII AR5 p 27). It is therefore important that governments take measures that help the agricultural sector address the challenges posed by climate change.

Implementing climate change policies in the agricultural sector could increase the resilience of agricultural systems and reduce the impacts of climate change by limiting GHG emissions in agricultural production, while maintaining or increasing food production in underproductive systems. However, there is the potential for trade-offs to occur across these objectives. The transformation of the agricultural sector towards addressing climate change will clearly require new incentives and additional support for both smallholders and the wider agricultural sector to overcome a series of financial and institutional barriers. To be able to implement climate change mitigation and adaptation policies in the agricultural sector, policy makers need to be informed, stakeholders consulted, a knowledge base established and costs estimated—in short a country needs to be prepared and ready to develop and implement effective climate change policies.

International negotiations on an incentive framework for *reduced emissions from deforestation and forest degradation* (REDD+) have triggered action at the multilateral, bilateral and national levels to design policies that support activities taken to avoid forest-based emissions. In parallel to the international negotiations under the auspices of the UN Framework Convention on Climate Change (UNFCCC), multilateral institutions have established a REDD+ readiness process that makes resources and funding options available to

support countries to qualify for international incentive payments for reduced emissions in the forestry sector.

Despite differences in the forestry and agricultural sectors, experiences from the REDD+ readiness process offer lessons for an agricultural readiness process.

How to achieve and support agricultural climate readiness is the topic of this study. More specifically, this study assesses the lessons learned from the REDD+ readiness process and analyses how they could apply to the agricultural sector. The objective is to evaluate to which extent the REDD+ experience can serve as a model for agriculture, whether a readiness process would be useful for agriculture, how it could be structured and implemented, and if overlaps and synergies in the REDD+ readiness or other climate readiness processes could be incorporated.

REDD+ Readiness: Lessons Learned

Multilateral processes facilitated by World Bank's Forest Carbon Partnership Facility (FCPF) and the UN-REDD program support REDD+ readiness. Table A lists the components of the REDD+ readiness process as applied by these two institutions.

Table A: R-PP Readiness components (FCPF 2012 R-PP)

R-PP Readiness Components	Related readiness preparation activities
1. Organize and consult	a. National readiness management arrangements b. Information sharing and early dialogue with key stakeholder groups c. Consultation and participation process
2. Prepare REDD+ strategy	a. Assessment of land-use, land-use change drivers, forest law, policy and governance b. REDD+ strategy options c. REDD+ implementation framework d. Social and environmental impacts during readiness and implementation
3. Develop a national forest reference emission level and/or forest reference level	
4. Design systems for national forest monitoring and information on safeguards	a. National forest monitoring system b. Designing an information system for multiple benefits, other impacts, governance, and safeguards
5. Schedule and budget	
6. Design a program monitoring and evaluation framework	

Framing a process of REDD+ readiness has proven more challenging than originally expected and has evolved considerably since being established. First, 'readiness' is a difficult concept to define, as it is not a single measurable condition but rather a continuum of evolving

components. Second, countries engaging in REDD+ readiness found that they often lacked the resources, coordination and support needed to implement change in national land-use policies and practices. Consequently, strengthening governance capacities at national and sub-national levels is essential and should be prioritized in national readiness processes. It is also essential that a readiness process is supported by a high-level commitment within a country, such commitment being a condition for effective coordination, a sustainable process and effective cross-sectoral policymaking.

The REDD+ example also shows that a structured, internationally supported readiness process can positively influence and inform international negotiations and facilitate coordination processes within and across countries. The REDD+ readiness process facilitated the establishment of fora for promoting discussion and the exchange of experiences and guided the formulation of national strategies. The experience of REDD+ also shows that learning and adaptation to country-specific circumstances is essential for success of a readiness process. For governments to implement mitigation and adaptation policies as well as to absorb international finance, country-specific analyses and consultations need to support the strategy developments. Trade-offs need to be analysed and, where risks have been identified, safeguards taken. Despite the challenges, the example of the REDD+ readiness process demonstrates that a coordinated readiness process assists countries in responding to the challenges of climate change and facilitates subsequent investments in mitigation and adaptation programs. Table B provides an overview of the most important lessons learned from the REDD+ Readiness process.

Table B: Overview of lessons learned from the REDD+ Readiness process

<i>Readiness component</i>	<i>Lessons learned</i>
Overall Objectives	<p>Independent evaluations have identified the following achievements of the UN-REDD Programme and the World Bank's Forest Carbon Partnership Facility (FCPF) readiness programs:</p> <ul style="list-style-type: none"> • The development and establishment of a shared, common framework for REDD+ readiness through the development of a planning framework, set of tools, guidelines and support • The creation of opportunities for the exchange of lessons learned and experiences between countries • The creation of increased political momentum within governments to tackle deforestation and address deforestation drivers • The engagement of governments in broad consultative processes with stakeholders who would otherwise not necessarily have been consulted • Facilitating greater donor coordination
Governance	<ul style="list-style-type: none"> • Members and observers see the governance structure of the FCPF and UN-REDD - composed of donor countries, implementing countries, and non-governmental organizations - as effective because it promotes high levels of participation and consensus-based decision making. Attention to stakeholder engagement at the governance level has been central to this success. • Readiness fora, such as the FCPF participants meetings, have proven to be useful platforms for discussing challenges and progress in REDD+ implementation. They also inform UNFCCC negotiations and create informal opportunities to coordinate negotiation positions. • Readiness initiatives need to enhance coordination and harmonize operations - including processes, guidance documents and reporting formats - to reduce country costs and increase effectiveness. Synergies, partnerships and coordination arrangements can be leveraged between different programs (UN-REDD, FCPF and other multilateral and bilateral REDD+ readiness initiatives). • South-South collaboration is an important consideration in the readiness process, both in building technical capacity as well as in addressing drivers of deforestation. • Strengthening governance capacities (systemic, institutional and individual) at sub-national levels was identified as a particular need that should be prioritized in REDD+ countries.
Process	<ul style="list-style-type: none"> • Readiness is difficult to define. While there seems to be a general agreement on the components of REDD+ readiness, there are still some discrepancies in assessing and deciding when a country has crossed the readiness threshold. Rather than establishing a finite point of readiness, the FCPF has opted for a gradual and customized approach guided by evaluation and selection criteria during the Readiness Assessment (preparation of the R-Package) as well as during the Carbon Fund assessment and invitation process. • The structured process of the R-PP has proven helpful in generating a common understanding of the components of REDD+ readiness.
Scope	<ul style="list-style-type: none"> • A majority of countries (80%) have prioritized governance (primarily institutional strengthening, legal frameworks and benefit sharing) for support from the FCPF and UN-REDD - highlighting its importance in the readiness process. However, most concrete support went to support MRV and accounting systems as funds are easier spent and successes more achievable in MRV than governance. Engaging in governance reform is more challenging, requires broad support (within the cabinet and among relevant constituencies), and a long-term political and legal mandate. • REDD+ strategies as a component of the readiness process, was the second highest priority for countries after governance, with countries expressing particular needs with drivers of deforestation, development of safeguards and establishment of pilot projects. Very few countries have a clear understanding of the drivers of deforestation in their territory. Such understanding is essential for the sustainability and success of REDD+.
Finance	<ul style="list-style-type: none"> • Financing REDD+ readiness at the country level has proven to be a more expensive, complex, and protracted process than anticipated at the time of the FCPF and UN-REDD launch. Understanding the costs of readiness and matching grants is important in gauging supply of funds. A consideration would be to move away from "flat rate" grants, to a system that provides differentially sized grants based on universal criteria. • The slow rate of some grant disbursements has delayed country implementation and in some cases, caused political will and interest to wane. Efforts have to be made to curtail delays and deliver on expectations. • Transaction costs tend to be overlooked or underestimated and has been one of the main reasons for country programs running over budget.

Developing Agricultural Readiness

The objective of '*agricultural climate change readiness*' can be defined as building a country's technical, institutional and innovation capacities to develop and implement activities that increase agricultural productivity and food security, while balancing this goal with the need to create a resilient and adaptive agricultural sector and decrease agricultural emissions intensities (GHG emissions per unit product) and absolute emissions.

Considering the dispersed nature of agricultural emissions and the challenges related to measuring and monitoring emissions, it is unlikely that an emissions-based incentive framework similar to REDD+ will emerge for the agricultural sector. Agricultural readiness is therefore unlikely to prepare countries to participate in a particular mechanism; instead agricultural readiness should be put into a broader context of implementing low-emissions and climate resilience frameworks. As an alternative to an international climate policy framework for agriculture, institutions that govern and fund the agriculture sector could coordinate for the purpose of promoting climate readiness. A process could be structured, for example, that allows multiple funders to support aspects of a country's strategic technical and capacity building process.

Table C below shows the components of an agricultural readiness process based on the elements of REDD+ readiness.

Table C. Components of a suggested agricultural readiness process

Agricultural Readiness Components	REDD+ Readiness Components
Governance	Governance
Multiple objectives framework	
Agriculture strategy or equivalent policies	Strategy or equivalent policies
Measurement, reporting and verification (MRV) systems	Reference levels, MRV, and safeguard information systems

- **Governance.** There is a need for strong and effective governance – usually associated with capacity, transparency, accountability, coordination and participation – in agricultural readiness.

- **Multiple objectives framework.** A multiple objectives framework that addresses the productivity, adaptation and mitigation objectives of agriculture and assesses tradeoffs that will need to be mainstreamed in any agricultural readiness mechanism.
- **National agriculture and climate strategy.** The development of a climate-related strategy is a core element of implementing agricultural readiness process.
- **Measurement, reporting and verification (MRV) system.** MRV systems for agricultural emissions, as well as yields (food security) and resilience will need to be established to assess progress against objectives.

Based on these components, Table D provides recommendations on how agricultural readiness criteria and activities may be defined. These criteria are based on the lessons learned from REDD+ applied to agriculture. Based on these criteria, governments are encouraged to develop indicators that reflect the national context and circumstances.

Table D: Possible components of a recommended agricultural readiness process

Agricultural readiness components	Readiness criteria
Governance	<ol style="list-style-type: none"> 1. Political will 2. Accountability of leading actors and operational framework for institutions 3. Transparency in decision making on strategies 4. Coordination mechanisms/process for agriculture, land-use, and development sectors 5. Capacity building at the national and local levels, including extension services 6. Stakeholder participation and consultation 7. Conflict resolution
Multiple objectives framework	<ol style="list-style-type: none"> 8. Database on farming systems 9. Database on potential adaptation and mitigation practices per farming system 10. Assessment tools to identify mitigation opportunities with high co- benefits and low/manageable tradeoffs
Strategy	<ol style="list-style-type: none"> 11. National climate strategy for the agricultural sector or as part of a wider land use climate strategy - with an agreed upon vision for the agricultural sector that balances food security, adaptation and mitigation goals. 12. Sources and drivers of agricultural emissions and agricultural mitigation options consistent with food security and adaptation objectives. Spatial analysis of suitability of practices. Explore linkages with REDD+ 13. Policies and measures for safeguards (assess social and environmental impacts) 14. Benefit sharing mechanism options
National monitoring system and accounting framework for agriculture	<ol style="list-style-type: none"> 15. MRV system that includes GHG emissions from agriculture 16. Baseline scenarios to measure GHG reductions in different agricultural systems (activities) or regions (land). 17. Indicators for assessing agricultural climate vulnerability 18. Link to monitoring of food security indicators 19. Accounting framework

Under the UNFCCC, developing countries are encouraged to develop and may receive support for Nationally Appropriate Mitigation Actions (NAMAs). NAMAs may include actions taken in the agricultural sector. Developing countries are also encouraged to develop agricultural mitigation programs under the incentive framework for REDD+. Other sources of funding for an agricultural readiness process could include funding from donors that have

traditionally funded mitigation activities in the forest sector, REDD+ in particular, and are interested in moving the process towards funding mitigation activities at the landscape level that would then include agricultural mitigation. The other option is that donors funding the traditional agricultural development portfolio could include a new focus on creating and fostering the technologies that create synergies between food security, adaptation and/or mitigation. To date, the mitigation aspects of the many agricultural practices have not been fully explored, as the country studies in the annex to this paper show.

For agricultural readiness to be developed, the following should be considered:

- **There is considerable overlap between agricultural adaptation and mitigation, and between agriculture and REDD+:** There is no other sector where adaptation and mitigation are as closely linked as in agriculture. Climate-smart agriculture (CSA) strategies and activities are essential for the success of REDD+ and vice versa. A landscape approach could be considered that would integrate REDD+ and agriculture to consider carbon emissions, emission reductions and emission removals that occur beyond the forest frontier.
- **Agricultural climate strategies should focus on ‘climate-proofing’ existing agricultural support.** Agriculture readiness cannot be driven by the expectation of large funds for mitigation. The agricultural sector also has access to substantial investment and finance with public expenditure on the order of hundreds of billions (OECD 2012) and agricultural official development assistance is increasing to gross approximately 7 billion USD in 2011 (OECD 2013). This decreases the need to galvanize large amounts of financing to incentivize participation and presents a significant opportunity (and associated challenge) to promote climate considerations within the existing investment frameworks.
- **Coordination among the institutions that govern and fund the agriculture sector to promote an agriculture readiness process may be an alternative to an international policy framework.** A common understanding of agricultural readiness and programs that support countries in building the required capacities would be useful and would promote alignment of objectives along different initiatives.
- **In defining the steps and developing an agricultural readiness process, lessons from the FCPF and UN-REDD governance structure could be applied.** A process could be structured, for example, that allows multiple funders to come in and support particular aspects of a country’s readiness within the context of a coordinated strategic technical and capacity building process. An international Technical Advisory Panel on CSA may also be considered that guides countries on the technicalities of agricultural mitigation and facilitates exchange of experiences and ideas.

1 Introduction

More than two billion people worldwide, most of them poor and vulnerable, depend on small-scale and subsistence agriculture for their livelihoods (IFAD 2011). In many developing countries, agriculture, and in particular smallholder systems, forms the backbone of rural economies, producing major shares of agricultural output, providing local employment and contributing to food security for poorer populations.

These systems, however, are being threatened by climate change, and smallholder agricultural systems being the most vulnerable, will experience the most adverse effects (Easterling *et al.* 2007, Beddington *et al.* 2012). There is, therefore, a pressing need to help these systems to adapt to climate change and increase their overall resilience, while in many cases increasing yields and overall output. At the same time, about a quarter to a third of all global greenhouse gas (GHG) emissions are attributed to the production of food, feed, and biofuels, including emissions from agriculture-driven land conversions (Vermeulen *et al.* 2012). Though these numbers are substantial and comparable in aggregate to the transport sector, agriculture's potential contributions to GHG mitigation have received little attention in international debate on climate change mitigation. Many agricultural systems also have the potential to sequester carbon and therefore contribute to climate mitigation.

Where and how GHG emission reductions and carbon storage can best be achieved though, depends on the characteristics of a particular country or farming system as well as on the source of emissions. While mitigation as an independent objective often does not offer any direct, short term benefit to countries or farmers, many practices that enhance food security and climate change adaptation have mitigation co-benefits. However, there are also a number of potential trade-offs between mitigation and the priorities and goals a country might have for its agricultural sector, which need to be acknowledged, analysed and managed (Neufeldt *et al.* 2013). Practices and technologies that may lead to multiple benefits in one country context may have significant detrimental effects in another due to differing social, political or economic conditions. It is, therefore, challenging to formulate widely applicable, evidence-based, recommendations for mitigation or adaptation.

The transformation needed for the agricultural sector to address the impacts of climate change will require informed and strategic policy making, the building of institutions and adoption of

policies. To be prepared for implementing strategic interventions, governments need to assess the vulnerabilities of the national agricultural sector and identify mitigation potentials. Only if decision-makers have access to all relevant information, stakeholders are consulted, costs and institutional needs identified, will a country be *ready* to implement the transitional policies needed to move to more resilient and low-emitting agricultural systems. How to achieve and support this *readiness* is the topic of this study.

The establishment of a framework for “reduced emissions from deforestation and forest degradation” (REDD+)¹ under the UN Framework Convention on Climate Change (UNFCCC) has triggered action at the multilateral, bilateral and national levels to design policies to reduce the further loss of forest ecosystems. More than 50 countries are now getting ‘REDD+ ready’ to qualify for international incentive payments. REDD+ strategies are often embedded in low-emission and climate-resilient development strategies that take into account the role of forest ecosystems in mitigating and adapting to climate change.

One of the innovations of the REDD+ process has been the establishment of funds and programs that support the coordination, financing and implementation of REDD+ readiness. To date, while there is a range of initiatives that fund climate change-related activities in developing countries, there is no equivalent agricultural readiness program that countries can access to build the necessary capacity to develop GHG mitigation and adaptation strategies. Neither is agricultural readiness clearly identified as a need, nor defined as a concept.

The purpose of this study is to explore what climate readiness might look like in the agricultural sector. The study’s objectives are to:

- Analyse the lessons from the REDD+ readiness process
- Assess whether a similar readiness process could be useful for agriculture
- Explore how readiness in the agricultural sector could be organized and whether overlaps and synergies with the REDD+ readiness process could be incorporated

The report is divided into five major sections. After this introduction, Section 2 highlights the role of climate change in agriculture, both in terms of the impacts of climate change on

¹ REDD+ is an international mechanism developed under the UNFCCC that aims to provide positive incentives to developing countries to reduce their emissions from deforestation and forest degradation.

agriculture and the contribution of agriculture to climate change mitigation. Section 3 provides an overview of the international REDD+ readiness process and lessons learned from the implementation of REDD+ readiness programs in developing countries. Section 4 then outlines how these lessons can be applied to the agricultural sector and incorporates recommendations for developing an agricultural readiness strategy based on the lessons from REDD+, its process, components, governance arrangements and financing options. Section 5 provides an overview of the findings from three country case studies in Vietnam, Colombia and Ethiopia on the feasibility of building an agricultural mitigation and readiness process in the agricultural sector. More details on the country case studies can be found in the Annex to this study.

2 Climate Change and Agriculture

Climate change will positively and negatively impact agricultural production, depending on a wide range of factors including location, various ecological factors, socio-economic settings, policy environment, etc. Smallholder farmers are likely the most vulnerable farmers to the threats of a changing climate, given their limited resources and geographic distribution. This section outlines the role of climate change in agriculture and explores some of the barriers to adopting practices that foster adaptation and/or mitigation goals within smallholder systems.

2.1 Climate Impacts on Agricultural Systems

Agricultural production is highly sensitive to changes not only to average conditions of temperature and precipitation, but also to their distribution and extremes such as droughts, heat waves, floods, storms and frosts. These changes have direct physiological effects on crops and livestock. Moreover, the agricultural sector could be severely affected by reduced freshwater supply (e.g., reduced glacial runoff), rising sea levels (e.g., sea water intrusion), exacerbated land degradation (e.g., erosion due to extreme precipitation and droughts), increasing incidence, distribution, and intensity of pests, diseases and weeds, changes in agrobiodiversity (e.g., reduced pollination), and human health effects. Across a diverse range of crop types, there is growing evidence that warmer temperatures are already reducing yields (Lobell *et al.* 2011). These trends, along with increased incidence of extremes, will have severe impacts on crop productivity, harvest and quality. To this time, less attention has been

given to the incremental effects of climate change on agriculture or small-scale systems, and to complex ecosystem effects, such as changes in pollination, pests, and diseases – all of which will also likely influence productivity (HLPE 2012, Thornton & Cramer 2012, Beddington *et al.* 2012, Meridian Institute 2011).

The most severe effects of climate change are expected to occur in arid and semi-arid regions, where production systems are already fragile, and the adaptive capacity of smallholders is limited by multiple socio-economic and environmental constraints; such effects include (IPCC 2012, Beddington *et al.*, 2012, Easterling *et al.* 2007, Morton 2007):

- Reduced crop yield and quality, crop failure
- Reduced livestock productivity and increased mortality
- Increased input requirements (e.g., irrigation, pesticides), including environmental costs
- Loss of agricultural land
- Negative impacts on livelihoods (e.g., loss of assets, income, means of subsistence)

Farmers are constantly adapting to the changing biophysical, socio-economic, and weather conditions they experience (HLPE 2012). However, given the magnitude of the effects brought about by climate change and the particular exposure and vulnerability of smallholders, their adaptation strategies might be not sufficient to meet their needs and the food requirements of a growing world population. The need for a meaningful form of support of their adaptation efforts is indisputable.

2.2 Addressing climate-related goals in agriculture

In addition to its vulnerability, the agricultural sector is also one of the main drivers, directly and indirectly, of climate change. Most studies attribute about 20 to 25% of all global GHG emissions to the production of food, feed, and biofuels, including emissions from agriculture-driven land use change, such as deforestation, forest and peat land degradation (IPCC 2014, Dickie *et al.* 2014). Transformations in the agricultural sector could therefore considerably contribute to mitigating the causes of climate change. It is essential however, that climate change mitigation in agriculture meets food security and adaptation needs.

In recent years, the term “climate-smart agriculture” (CSA) was introduced to bring together the goals of food security, climate change adaptation and mitigation (Beddington *et al.* 2012). CSA practices should “sustainably increase productivity and resilience (adaptation), reduce/remove GHGs (mitigation), and enhance achievement of national food security and development goals” (FAO 2010). A wide range of sustainable land management (SLM) techniques that are well known and practiced, such as improved soil and water conservation, agroforestry, improved grazing and pasture management, or land restoration are seen as being able to address these goals simultaneously (Scherr *et al.* 2012). In addition to on-farm practices, CSA offers innovative measures and techniques for risk management, such as early warning systems, risk insurance, and focuses on research efforts to identify more resilient crops (World Bank 2011 policy brief). However, the concept has recently been criticized for being too encompassing and not providing clear direction, either for research or agricultural development. It also does not acknowledge the possible conflicts and trade-offs between the three postulated goals for the sector (Neufeldt *et al.* 2013).

Unfortunately, the adoption of sustainable agricultural practices, including those that are postulated as addressing climate-related goals, has been slow. All farmers potentially face barriers (see Table 1), but poor farmers are particularly constrained (McCarthy *et al.* 2011, Streck *et al.* 2012). Benefits often materialize in the medium- to long-term, while the adoption of practices involves trade-offs in resource allocation. In the short term, some practices can even lead to negative effects on yields and increased variability. Effects and timing are site-specific and depend on agro-ecological conditions, current and historical land-use patterns, and the combination of different SLM practices, among other factors. Risk-averse farmers and farmers living in already risk-prone areas are less likely to invest in new practices with uncertain and delayed returns (McCarthy *et al.* 2011, Streck *et al.* 2012, Branca *et al.* 2011).

Table 1: Barriers to the adoption of CSA practices (Streck *et al.* 2012)

Investment barriers	Social/institutional barriers	Technological barriers
Lack of assets and savings.	Poorly functioning markets.	Lack of technical expertise.
No or little access to credit or extension services.	No or limited access to markets.	Existing resource degradation (for example soil or water).
No or little access to insurance.	Limited market information and understanding.	Lack of baseline data (for example on forest or soil carbon content).
Lack of infrastructure and equipment.	Weak land tenure security.	

If one considers entire landscapes and the potential for up-scaling the adoption of climate-compatible agricultural practices, additional challenges arise. Slow establishment of relevant institutional mechanisms, lack of political support, and limited knowledge of the relevant mechanisms of socio-economic and ecological processes hinder the contribution of smallholder farmers to mitigation and their capacity to adapt to climate change (Scherr *et al.* 2012). Many practices require collective action, such as the negotiation of grazing restrictions. McCarthy *et al.* (2012) provide a comprehensive discussion of costs for specific categories of agricultural practices.

A process that facilitates practices that address both food security and climate-related goals would help address barriers and prepare government institutions and operational partners for the transition to sustainable agricultural practices. Thus far, no process exists in the agricultural sector that enhances countries' preparedness for addressing yields, resilience and mitigation in harmony. In the forestry sector, a readiness process has been developed in the context of addressing the problem of deforestation and reducing related GHG emissions. The REDD+ process, and especially its readiness component, can provide a set of useful lessons for the agricultural sector.

3 Lessons Learned from REDD+ Readiness

The REDD+ process was established in the forestry sector in the last decade to address the high GHG emissions resulting from deforestation. The international process, fuelled by the prospect of comparatively cheap mitigation opportunities, has raised high expectations for this sector and its capacity to address various institutional and other constraints.

This section provides an overview of REDD+ readiness, related programs, processes, criteria and lessons learned from this process at the global programmatic and country levels. Research on experiences and case studies in this chapter are drawn from program evaluation reports, independent literature and interviews with program and country representatives (Koiwang & Ulloa 2012, FPCF 2011).

3.1 REDD+ Readiness: Overview and Objectives

Under the 2010 Cancun Agreements negotiated under the UNFCCC, REDD+ was officially adopted as an incentive framework to mitigate climate change through five identified activities: reducing deforestation, reducing degradation, conservation, sustainable management of forests, and enhancement of carbon stocks.² In addition, policy-makers established a step-wise approach to REDD+ implementation.³ Countries engaging in REDD+ would begin by building technical and institutional capacity (Phase 1), followed by policy reform and demonstration activities (Phase 2), finally ramping up to fully measured, reported and verified (MRV) implementation (Phase 3). These phases could be partly or fully overlapping. Phase 1 in the REDD+ process is also referred to as the readiness phase.

The term *readiness* has entered the jargon of climate negotiators to describe the status and the process that enables a country to benefit from payments or other support under an international mechanism that rewards climate action under the UNFCCC (Streck 2009). The World Bank coined the term in 2006 while designing the FCPF to define the level when governments are able and prepared to achieve emission reductions and account for them (Streck 2009).

² UNFCCC Decision 1.CP/16, Art. 70.

³ UNFCCC Decision 1.CP/16, Art. 73.

While the term is relatively new, the concept within the UNFCCC has existed since the Kyoto Protocol. Parties have long agreed that GHG emissions reductions and matching allowances requires accurate carbon accounting dependent upon technical and institutional expertise, and infrastructure. The participation of developed⁴ countries in international emission trading depended on meeting requirements including a national system for emissions estimation, national registry, and annual submission of inventory.⁵ Countries with weaker institutions and governance, must go beyond the technical issue of establishing an accounting framework and consider other issues including policy development, establishment of operational frameworks, capacity building and governance strengthening in their readiness process.

The Cancun Agreements request countries aiming to undertake REDD+ activities to develop the following elements: a national strategy or action plan, a national forest reference (emissions) level, a robust and transparent national forest monitoring system, and a system for providing information on how the safeguards are being addressed and respected.⁶ REDD+ readiness in this context refers to a process for establishing the preconditions necessary to enable countries to implement REDD+ measures and to measure the associated climate benefits.

3.2 Readiness Programs

Multiple multilateral and bilateral donor programs assist developing countries in the process of achieving REDD+ readiness; the most prominent are the World Bank's FCPF Readiness Fund and the UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD). Since their inception in 2008, the FCPF Readiness Fund and UN-REDD Programme have collectively supported 52 developing countries with funds totalling approximately USD 240 million and USD 169 million respectively (Climate Funds Update 2013). Each program has its own criteria and procedures to support the readiness of a country, but both aim to ensure that a country is able to achieve measurable emission reductions.

⁴ Annex B of the Kyoto Protocol contains the emission reduction and limitation targets of industrialized countries. Annex I of the UNFCCC and the Kyoto Protocol lists industrialized countries not eligible for funding and obliged to certain reporting under the UNFCCC and the Kyoto Protocol. With very few exceptions, Annex B and Annex I list the same countries.

⁵ Joint Implementation, the project-based carbon trading mechanism for developed countries, defines separate procedures for 'ready' countries that have in place the relevant accounting systems ("Track I") and those that are still in the readiness process ("Track II").

⁶ UNFCCC Decision 1.CP/16, Art. 71.

In the following, we describe the REDD+ readiness programs of both the FCPF and UN-REDD.

FCPF Readiness Fund

The World Bank established the FCPF Readiness Fund in partnership with developing countries and donors to support a Readiness Mechanism that provides grants to developing countries to build and strengthen their capacities to participate in REDD+. The FCPF has created a framework for REDD+ readiness, which helps countries prepare for future systems of financial incentives for REDD+. The components of *REDD+ readiness* in the FCPF is outlined in the most recent Readiness Preparation Proposal (R-PP) template and are elaborated in the table below (FPCF 2012 R-PP).

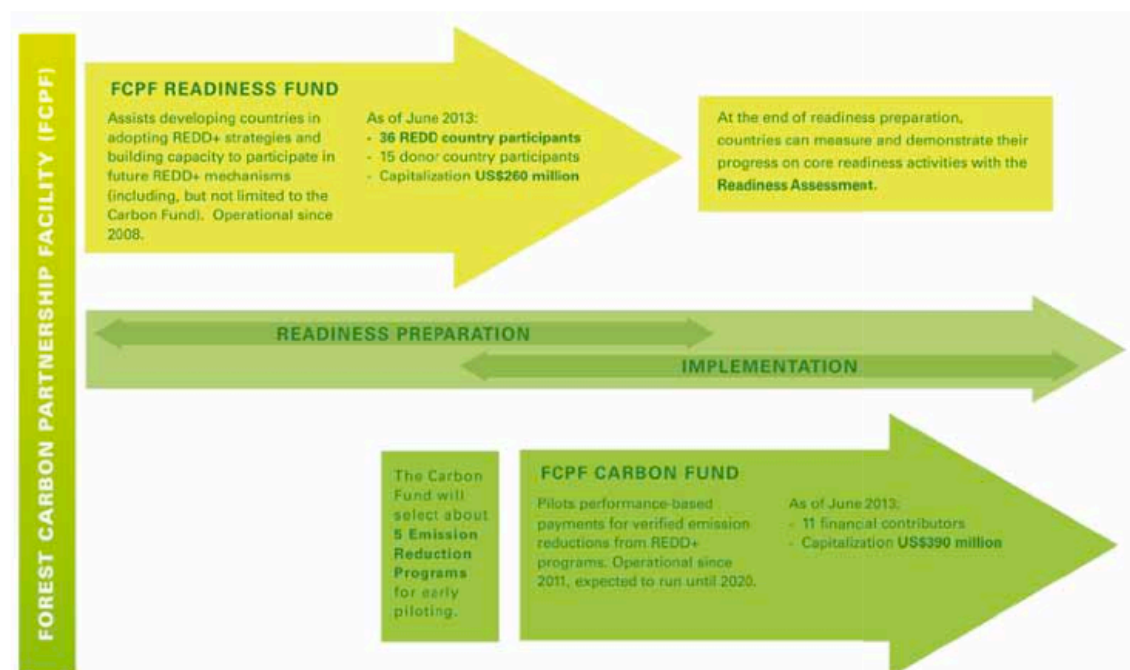
Table 2: R-PP Readiness components (FPCF 2012 R-PP)

R-PP Readiness Components	Related readiness preparation activities
1. Organize and consult	National readiness management arrangements Information sharing and early dialogue with key stakeholder groups Consultation and participation process
2. Prepare REDD+ strategy	Assessment of land-use, land-use change drivers, forest law, policy and governance REDD+ strategy options REDD+ implementation framework Social and environmental impacts during readiness and implementation
3. Develop a national forest reference emission level and/or forest reference level	
4. Design systems for national forest monitoring and information on safeguards	National forest monitoring system Designing an information system for multiple benefits, other impacts, governance, and safeguards
5. Schedule and budget	
6. Design a program monitoring and evaluation framework	

Countries are eligible to participate in the FCPF if they meet the following conditions: (1) a borrowing member of the World Bank; (2) and located in the tropics or sub-tropics. Priority should be given to countries with the following characteristics: (1) significant forest area and carbon stock; (2) high current or projected deforestation or forest degradation rates; and (3) those that have submitted a high quality Readiness Plan Idea Note (R-PIN). The evaluation of R-PIN includes the extent of program ownership by the government and relevant stakeholders, coherence with national or sectoral strategies and feasibility to reduce deforestation and forest degradation.

Once accepted as an FCPF member, a country can access the FCPF Readiness Mechanism (Figure 1).

Figure 1: FCPF Processes (FCPF 2013 Carbon Fund)



This mechanism contains two phases: (1) the Proposal Formulation Phase and (2) the Preparation Phase. Countries are able to engage in these phases at their own pace. In the Proposal Formulation Phase, countries develop an R-PP in consultation with relevant domestic stakeholders. The R-PP outlines a roadmap of preparation activities necessary for REDD+, including addressing drivers, policies, institutions, and technical elements. The R-PP is reviewed by an independent Technical Advisory Panel and the FCPF Participants Committee, which is composed of members selected by REDD+ Country Participants and by donor participants. If the R-PP is approved and the grant agreement is issued, countries will enter the Preparation Phase and use the funds to carry out the readiness activities laid out in the R-PP. Based on the timeframe and requirements specified in the grant agreement, governments will submit a midterm report to provide information on progress and lessons learned. At the end of the readiness grant, they can prepare a Readiness Package (R-Package), a document that compiles the results of the Readiness Assessment, which documents the country's progress, captures lessons learned, assesses remaining gaps, and identifies activities

for the way forward to transitioning to the implementation of performance-based activities. The Readiness Assessment provides a common framework with evaluation criteria to measure countries' relative progress on core readiness activities, based on the four readiness components outlined in the R-PP (FCPF 2013 Guide).

In the next step, countries deemed sufficiently prepared to implement REDD+ and receive performance-based payments are invited to participate in the FCPF Carbon Finance Mechanism. The Carbon Fund has established draft selection criteria to guide the Participants Committee in considering a country's Emissions Reductions Program Idea Note (ER-PIN), which includes: (1) adequacy and capacity, (2) link to readiness, (3) ambition and scale, (4) diversity and learning value, and (5) consistency with UNFCCC (FCPF 2012 ER-PINs). Costa Rica was the first country to be invited and approved to receive funding from the Carbon Fund, with a USD 63 million fund established to pay for emission reductions (IISD 2013).

As of April 2014, 43 of the 45 FCPF participant countries have submitted R-PPs for formal review, and three others have drafted R-PPs for informal consideration and feedback. Of these participant countries, 19 have been awarded grants and are currently implementing R-PP activities. USD 163 million in grants has been allocated (IISD 2013).

UN-REDD Programme

UN-REDD was launched to assist countries in developing and implementing strategies to facilitate REDD+ readiness. It combines the expertise and leverages the in-country experience of three U.N. agencies, the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the United Nations Food and Agriculture Organization (FAO). UN-REDD supports REDD+ readiness efforts in two ways: (1) direct support via National UN-REDD Programs; and (2) complementary support including analyses, methodologies, tools, data and best practices developed through the UN-REDD Global Programme.

Similar to the FCPF, UN-REDD developed a framework for readiness through its National Programme Document (NPD), a similar document to the R-PP. Efforts to harmonize UN-REDD and FCPF processes have resulted in a common proposal template, or the FCPF and UN-REDD R-PP template version 6 (see Table 2 above). To qualify for National REDD+

Programme funding, countries together with UN agencies must develop and submit an R-PP or NPD to the Secretariat for review.

The level and type of support given to any country depends on the demand, national circumstances and the availability of funding, according to the UN-REDD Programme Strategy 2011-2015. The current criteria for prioritizing funding allocations for new 'National Development Programmes' (NDPs) are as follows: (1) being a partner country of the UN-REDD Programme; (2) achieving regional balance; (3) enhanced coordination with other initiatives; (4) ability of UN agencies to assist the country; (5) ability to demonstrate progress results in a short term based on REDD+ early action; (6) REDD+ potential; and (7) commitment to applying the principles of the UN-REDD Programme (UN-REDD 2011).

Countries can request funding for full national programs, which span multiple years of implementation, or for initial Quick Start programs that help countries build initial capacity and make progress toward developing a national REDD+ strategy. The Secretariat leads the review process of the NPDs and submits approved NPDs to the Programme Policy Board for a final decision and budget allocation. Once the NDP and budget is approved, funds are disbursed to the participating UN agencies for program implementation (UN-REDD 2008).

After the application process is complete, the UN-REDD National Program is established in country, and projects are identified to meet readiness goals. The timeline given is 18 months, though extensions are common. At the end of the program, a formal evaluation is conducted and published online. While UN-REDD and the FCPF have the same readiness components outlined in the R-PP and NPD, UN-REDD's evaluation of readiness differs from the FCPF Readiness Assessment. UN-REDD defines six work areas in its National UN-REDD programs, and evaluation is linked to these six work areas with associated readiness outcomes (Table 3). These work areas represent identified country priorities, reflect lessons learned, build on UNFCCC negotiations, and also reflect the core technical, implementation and capacity-building competencies within the three UN-REDD Programme.

Table 3: UN-REDD Strategy: Work areas for national readiness and intended outcomes (UN-REDD 2010)

Work Area	Outcomes
1. MRV and monitoring systems	REDD+ countries have systems and capacities to develop and implement MRV and monitoring
2. National REDD+ governance	Transparency, inclusiveness and effectiveness in national REDD+ governance increased
3. Stakeholder engagement	Indigenous Peoples, civil society and other stakeholders participate effectively in national and international REDD+ decision-making, strategy development and implementation
4. Multiple Benefits	Multiple benefits of forests are realized and ensured in REDD+ strategies and actions
5. Transparent, equitable and accountable management	National fund management and equitable benefit sharing systems are operational for REDD+ performance based payments
6. Sector transformation	Strengthened national and sub-national capacities to develop sustainable REDD+ investment strategies and portfolios

Under its present arrangements, UN-REDD supports 18 countries through National REDD+ Programmes and an additional 33 countries through the UN-REDD Global Programme. Approximately USD172.4 million has been committed to UN-REDD to date, of which over USD 67 million has been allocated to implement National Programmes (UN-REDD 2010).

3.3 Readiness Framework

As highlighted above, the FCPF and UN-REDD have developed criteria and procedures to support the readiness of a country, and both aim to ensure that a country is able to achieve measurable emission reductions by identifying and addressing readiness components of the joint R-PP document (Table 2 above). These components add to other enabling conditions for REDD+, including land tenure, natural resource rights, and greater public participation. To better understand the readiness components and related criteria and processes in REDD+ as well as inform readiness in agriculture, we assess and synthesize information from the FCPF and UN-REDD, as well as other sources, including:

- UNFCCC decisions on REDD+
- FCPF and UN-REDD R-PP Readiness components
- “Guide to the FCPF Readiness Assessment Framework” which outlines 34 criteria to gauge readiness (FCPF 2013 Guide)

- A report commissioned by the FCPF and UN-REDD to determine REDD+ readiness needs among FCPF and UN-REDD countries that outlines readiness components and 54 “capacities to fulfil readiness requirements” (Kojwang & Ulloa 2012)
- “Governance of Forests Principles and Indicators” which details five principles and 122 indicators for successful forest governance (Davis *et al.* 2013)
- An analysis by the World Resources Institute that assesses country preparedness proposals and identifies eight factors for “What it takes to be ready for REDD+” (Williams 2013)
- Country strategies, additional literature and expert knowledge

We grouped the numerous elements, criteria and indicators from these sources into three readiness components and 15 assessment criteria (as shown in Table 4 below). The selected criteria are not meant to be exhaustive, but to summarize the most important elements for assessing the level of REDD+ readiness of a country.

Table 4: Readiness framework⁷

Readiness Components	Readiness Criteria	FCPF and UN-REDD R-PP	FCPF Readiness Assessment Framework	UN-REDD FCPF Country Assessment	WRI Readiness Needs	Governance of Forests Principles and Indicators
GOVERNANCE	1. Political will			□		
	2. Accountability	□	□			□
	3. Transparency		□	□		□
	4. Coordination and collaboration	□	□	□	□	□
	5. Capacity ⁸	□	□	□	□	□
	6. Participation and consultation	□	□	□	□	□
	7. Feedback and grievance redress mechanism	□	□	□	□	□
STRATEGY or EQUIVALENT	8. REDD+ strategy, or equivalent policies	□	□	□		
	9. Policies and measures on drivers of deforestation	□	□	□	□	□
	10. Carbon, natural resource rights and land	□	□	□	□	□
	11. Social and environmental safeguards	□	□	□		
	12. Benefit sharing mechanism	□	□	□	□	□
MONITORING and EVALUATION SYSTEMS	13. Reference Level and MRV system	□	□	□		
	14. Registry and accounting system	□	□	□		□
	15. System for monitoring non-carbon aspects	□	□	□	□	

3.4 Lessons Learned from REDD+ Readiness process

This section identifies lessons learned in the design and implementation of REDD+ readiness that could inform a readiness program for the agricultural sector. The first section highlights the main lessons from governance, process, scope and finance at the global program and country implementation levels. This information is based on the independent evaluations of the FCPF and the UN-REDD Programme, interviews and a desk review (IEG 2011). The second section provides a summary of the key lessons for an agricultural readiness process.

⁷ This framework is adopted from a study conducted by Climate Focus for the Forest Investment Program on linking REDD+ readiness and implementation.

⁸ Including a) Administrative / planning, b) Funds management, c) Technical and d) Legal and enforcement

3.4.1 At the Global Level

Governance

The governance structure of the FCPF and UN-REDD—composed of donor countries, implementing countries, and non-governmental organizations—promotes high levels of participation and consensus-based decision-making (IEG 2011). Attention to stakeholder engagement at the governance level has been central to this success, yet more effort should be placed in strengthening the participation of private sector actors directly involved in forestry (e.g., timber operators and palm oil producers).

On the other hand, there have been major challenges related to institutional coordination. The FCPF and UN-REDD have overlapping operations in 14 countries (UN-REDD 2013). Differences regarding operational guidance provided by FCPF and the UN-REDD, in particular on the engagement of indigenous peoples as stakeholders, have created confusion in those countries where both programs operate (Baastel & NORDECO 2011). Coordination is also challenging within UN-REDD, which brings together three agencies with different operational procedures, organizational cultures and visions. This issue is particularly salient in the management of national REDD+ programs. There is a need for readiness initiatives to better coordinate and harmonize operations, including processes, guidance documents and reporting formats to reduce country costs and increase transparency.

Evolving Process

Framing a process of REDD+ readiness has proven more challenging than originally expected and has evolved considerably since being established in 2008. First, readiness is a difficult concept to define, as it is not a single measurable condition but rather a continuum of evolving components. For example, improved forest governance and capacity is often cited as a readiness condition, however, it cannot be easily measured. Instead, other proxies are used to document progress, such as the establishment of a strategy or the creation of an institution. In the systems established, therefore, finalizing readiness components and criteria and developing an assessment process have not been straightforward tasks, and so adaptive management has been used to refine the readiness framework, incorporating lessons learned in participating countries. The FCPF and UN-REDD R-PP template has evolved to better reflect the realities and needs of REDD+ countries. The R-PP template is now in its sixth version since its inception in 2008. The UN-REDD and the FCPF have also commissioned a

Country Needs Assessment, which has identified key readiness components and capacity needs for completing Phases 1 and 2 of REDD+ by combining elements from the decisions of the UNFCCC 16th and 17th session of the Conference of the Parties (COP16 and COP17), the R-PP common template, the UN-REDD Strategy, and expert knowledge (Koiwang and Ulloa 2012). This expands the scope of readiness supported by both UN-REDD and the FCPF by detailing specific capacities and actions necessary to fulfil readiness requirements.

Increase in Scope

While there seems to be general agreement on the components of REDD+ readiness, there are still some discrepancies in assessing and deciding when a country has crossed the readiness threshold (i.e., when it is considered ready for implementing REDD+ policies at the national level) and can begin receiving performance-based payments. Increasingly, in-country experience points to a more gradual and evolving approach shaped by pilots and demonstration activities where readiness is progressing alongside the different funding systems. Ultimately, initiatives like the FCPF Carbon Fund, which will soon issue performance-based payments, will decide on whether a country is sufficiently ready to deliver measurable, verifiable and reportable emissions. Rather than establishing a threshold after which funds are accessible, a gradual, more flexible approach guided by qualitative evaluation and selection criteria has been used by the FCPF during the Readiness Assessment (preparation of the R-Package) and invitation into the Carbon Fund (FCPF 2013 Guide, FCPF 2012 ER-PINs).

In addition to the task of understanding what it means to be ready for REDD+, the FCPF and UN-REDD have had to manage the unpredictability of reaching an agreement in the UNFCCC and for additional REDD+ guidelines to be incorporated. Since the launch of the FCPF and UN-REDD, guidelines on scope, safeguards, phases of REDD+, Reference Levels, and MRV have been adopted in the UNFCCC text. Given the wide involvement of participants from donor and implementing countries, which are also UNFCCC negotiators, FCPF and UN-REDD's governance has allowed for an iterative learning process with concerns and realities reflected in the UNFCCC negotiations as well as the readiness initiatives. The main challenge for UNFCCC uncertainties lies in the conversation of finance, elaborated in the section below.

Delivering Readiness Finance

Progress in international UNFCCC negotiations, especially with regard to a financing instrument for REDD+ has been slower than expected. In addition, the cap-and-trade schemes initially proposed in several countries, which would have increased demand for carbon credits, have not materialized, and therefore the anticipated level of available funding was not achieved. As a consequence, galvanizing financial support at the international level has been challenging. Both the FCPF Readiness Fund and UN-REDD have been successful, however, in raising finance with over USD 240 and USD 169 million in funds respectively (Climate Funds Update 2013).

Financing REDD+ readiness at the country level turned out to be a more expensive, complex, and protracted process than anticipated. In the case of the FCPF, grants of up to USD 3.6 million were initially expected to cover the development of readiness strategies (Phase 1), however, countries have budgeted an average of almost four times this amount (IEG 2011). Similarly, some programs financed by UN REDD are requiring two-to-three times the amount of time and resources initially allocated (Stewart & Swan 2013). Understanding the costs of readiness and matching grants is essential for a sufficient appropriation of required funds.

Recommendations from an FCPF review included moving away from the current uniform commitment to Preparation and Readiness Grants to a system that provides differentially sized grants based on agreed, transparent and universal criteria. This would provide opportunities for tailoring grants to the needs and circumstances of individual countries and improve fund management.

The FCPF and UN-REDD have generated expectations regarding the degree and timing of funding. The rate of grant disbursements from the FCPF has generally been slow, delaying country implementation and, in some cases, causing the political will and interest to wane and even sparking tensions between Ministries (Lowlang & Ulloa 2012, Baastel & NORDECO 2011). To date, only 30% of the FCPF Readiness Fund has been committed, and only 16% has been disbursed—with administrative costs making up a large proportion of disbursed funds (IEG 2011). While grant disbursements in 2012 increased significantly compared to the previous year (from USD 1 million in 2011 to USD 2.8 million in 2012), the FCPF has only delivered USD 4.9 million in grants since its inception, and has yet to disburse approximately USD 22 million (IEG 2011). The delays in disbursement may partially be a result of the

World Bank's initial decision to assume the role as sole implementing agency to the FCPF. Since then, a decision has been made to expand the number of implementing agencies through the new Multiple Delivery Partner arrangement. This new arrangement may shorten some of the Facility's disbursement delays. Bilateral agreements have generally provided more expeditious access to funds, allowing countries to set up their readiness activities and gain political support and forward momentum (e.g., Norway and Indonesia, Germany and Brazil). However, this is not always the case (e.g., complaints of delayed disbursements in the Norway and Guyana agreement). UN-REDD has also generally been quicker to approve and disburse funds, but this is likely due to the fact that funds are released to implementing UN agencies rather than governments. This is also not indicative of the rate of disbursement at the country level (e.g., to implementing organizations), where delays also pose a challenge. Greater efforts should be made to curtail delays and align disbursement times and expectations.

3.4.2 At the Country Level

National Governance

Strengthening national governance structures for more effective regulatory frameworks and institutions is a main component of readiness for all REDD+ and other climate mitigation programs. Good governance depends on a country's capacity to coordinate and collaborate with different governmental and civil society interests, find compromises between different priorities and preferences, channel funds, address corruption and report data transparently. Eighty percent of Needs Assessments conducted by candidate countries for the FCPF and UN REDD prioritized governance (primarily institutional strengthening, legal frameworks and benefit sharing) for international support (FCPR 2012 Country Needs Assessments). Strengthening governance capacities (systemic, institutional and individual) at sub-national levels (provincial, district) has also been identified as a need that should be prioritized given that REDD+ implementation for many countries starts at the sub-national level. The Democratic Republic of the Congo, Papua New Guinea, Indonesia and Cambodia, among many others, have identified this as a priority in governance (Kolwang & Ulloa 2012).

Both the FCPF and UN-REDD identify effective forest and REDD+ governance as important elements of the readiness process. The R-PP template includes guidance on promoting transparency, participation, and coordination in the design and implementation of REDD+

programs, as well as on monitoring key governance factors relevant to REDD+ implementation. UN-REDD has also created several tools for improving national governance systems for REDD+, including supporting Participatory Governance Assessments in four pilot countries to help identify governance gaps and needs through a multi-stakeholder process (Williams 2013).

Coordination among different government institutions, non-governmental organizations, private sector and community groups also needs improvement in many countries, especially regarding stakeholder engagement and participation, benefit sharing and the development of measures to address the drivers of deforestation. Improper and/or incomplete stakeholder engagement and consultation has often posed implementation and equity challenges, and in some cases conflict and withdrawal from the REDD+ readiness program, as was the case with UN-REDD in Panama.

The importance of legal frameworks to support and resolve issues on land tenure and carbon rights in the REDD+ context has been identified in all existing and future REDD+ country strategies (Williams 2013). These issues are particularly relevant as they enable and often provide the basis for equitable and effective incentive-based models and benefit-sharing mechanisms. Clear government guidelines on REDD+ pilots and future projects should also be established to promote effective implementation and mitigate potential abuses.

Developing a REDD+ Strategy

The process of developing a REDD+ strategy (or equivalent policy) is an important step in building REDD+ readiness. According to the Country Needs Assessment report, after governance, “REDD+ strategies” was the highest priority for countries. Countries expressed particular needs with drivers of deforestation, development of safeguards and establishment of pilot projects (Kolwang & Ulloa 2012). The strategy should identify the drivers, but also outline how they will be incorporated into various policies, ministry strategies, and economic plans at national and sub-national levels. In addition, it is helpful for national REDD+ strategies to draw a clear link to how implementation will take place at the sub-national level and vice versa. Some provinces/states and even municipalities are beginning to develop their own REDD+ strategies, oftentimes independently of national strategies, which can confuse and dilute implementation and policy efforts, for example in the case of Indonesia’s national STRANAS, Central Kalimantan provincial STRADA and Katingan’s municipal STRADA

Successful national REDD+ strategies need to be embedded within broader national development strategies as well as sectoral and cross-sectoral policies including forestry, agriculture, infrastructure and economic policies. Some countries are integrating REDD+ with other agriculture and land-use sectors and developing a national land-use strategy instead of a REDD+ strategy.

Building Technical Capacity

A wide range of technical issues must be considered and undertaken during the REDD+ readiness phase. Technical components of REDD+ include the establishment of accurate and effective reference levels, MRV systems, and safeguard information systems. These elements are central to the UNFCCC and COP decisions, and are—together with the establishment of a registry that tracks emissions—the most important components for REDD+ readiness in terms of making performance-based payments. These components are required as part of the readiness process by the FCPF and UN-REDD.

Given that substantial capacities (skills, structures and systems) are needed to establish these technical components of REDD+, it is not surprising that all countries surveyed expressed a need for more technical support (Kolwang & Ulloa 2012). Progress in countries varies significantly, with some countries such as Brazil, Mexico and Costa Rica having more advanced MRV systems than others. Countries approaching, or already in, Phase 2 of REDD+ implementation can provide a good base for South-South cooperation, through which the sharing of experiences and the dissemination of expertise can be promoted. Brazil and the Democratic Republic of the Congo are currently collaborating on forest resource monitoring, an initiative that has proven vital to both countries (Kolwang & Ulloa 2012). Facilitating and promoting South-South collaboration should therefore be considered and promoted in any readiness process.

Managing Financial Resources

REDD+ requires a significant amount of funding in the readiness phase. Access to finance allows countries to set up their readiness activities, establish a REDD+ strategy and governance infrastructure, and generate political support. Studies and past experience have shown a large variance of in-country costs associated with readiness for REDD+, ranging from USD 1-2 million to over USD 90 million, based on country-specific circumstances (Stewart & Swan 2013, Kolwang & Ulloa 2012). As mentioned in the previous section, the

FCPF has a flat-rate grant. However, it is considering a more customized system that provides differentially sized grants based on agreed-upon, transparent and universal criteria to better adapt to country circumstances and improve the program effectiveness.

The R-PP and NPD, and most readiness proposals, require an elaboration of schedule and budget. Each country, and in the case of UN-REDD each UN agency, allocates and spends the funding according to the needs and activities outlined in the strategy. Transaction costs tend to be overlooked or underestimated, and this has been one of the main reasons for country programs to go over budget.

In addition to budgeting, countries should consider measures to mitigate waning political will and conflicts resulting from the slow disbursement of funds. Some countries have suggested performing economic studies to evaluate REDD+ with respect to other competing land policies, or to assess REDD+ potential benefits to generate political interest and capital for its implementation (Stewart & Swan 2013, Kolwang & Ulloa 2012).

3.4.3 Summary of Lessons from REDD+

The REDD+ process phase to date, particularly its readiness phase, has yielded a number of lessons for implementing readiness in the agricultural sector:

- Engaging in a readiness process requires not only large amounts of resources and coordination but also support of the presidential office and/or high-level ministries. It needs to include multiple sectors and ministries. The REDD+ readiness process is based on the assumption that countries will ultimately adopt policies that neutralize drivers of deforestation—which means that they follow a different land-use paradigm. The objectives of a readiness process have to be streamlined into national policies and activities, and potentially be supported by funds from various sources beyond climate finance (e.g., official development assistance, national budgets, private investment).
- If driven only by the expectation of funding from a particular mechanism (i.e., equivalent to the FCPF), it will be prone to frustration. Countries joined the REDD+ readiness process with the expectation of a significant amount of funding to become available for their forestry sectors. Whether these amounts will materialize is uncertain. The promise of payment is even less certain when it comes to agricultural mitigation, which is more

dispersed and more difficult to measure. It is therefore essential that any readiness process be backed by political commitment that goes beyond the expectation of climate funds.

- A readiness process requires political commitment from the start. If driven by a small group of public officials who are unwilling or unable to involve all the relevant ministries, the process will be very slow and eventually fail. With full commitment, the readiness process can improve the formulation of policies and allow for informed, strategic decisions.
- Experiences from the readiness process show that there is a strong need for capacity and institution building. Setting up the right MRV systems to document results, having the right institutions and governance processes in place to implement the REDD+ process, devising benefit sharing protocols and managing financial resources require complex technical knowledge and management skills, which might not exist in most countries from the onset. Evaluations showed both capacities need to be put in place and are critical for successfully implementing a REDD+ process.
- Readiness is difficult to define and even harder to measure. While there seems to be general agreement on the components of REDD+ readiness, there are no indicators and still some discrepancies in assessing and deciding when a country has crossed the readiness threshold. Rather than establishing a finite point of readiness, the FCPF has opted for a gradual and customized approach guided by evaluation and selection criteria during the readiness review as well as during the Carbon Fund assessment and invitation process.
- The readiness process produces data and feedback from stakeholders that allows governments to formulate well targeted, participatory, and more widely accepted policies.
- An internationally coordinated readiness process allows for South-South cooperation and can facilitate a strategic dialogue with donors. In addition, it can inform international negotiations.
- Capacity building and technical support for actors at different scales have proven to be key for the successful implementation of a process that aims at making the agricultural sector ready to deal with climate change and its impacts.

The REDD+ readiness process benefits from the support of programs managed by international institutions. Such programs help to organize the readiness processes; they also create a platform for coordination and exchange of experience. Relevant lessons include:

- The REDD+ readiness process facilitated by the World Bank and the U.N. has created an important forum for promoting discussion and exchange of experiences. Country representatives in the FCPF, in particular, have cited the value in being able to discuss challenges and solutions in implementing the steps leading to REDD+ readiness.
- The readiness process has positively influenced and informed the REDD+ negotiations and facilitated coordination processes in countries. For U.N. negotiators, the readiness process has served as a reality-check on what countries can realistically achieve in a certain timeline. Within countries, the formalization of the readiness process has strengthened those within the government that seek to make REDD+ a reality.
- Having a structured process that guides the formulation of a national strategy has been very useful. It informs policy making, identifies capacity, technical and financial needs, and facilitates informed policy making (e.g. through drivers' assessment, cost-benefit analysis, and benefit sharing). At the same time it proved to be important that this process could be adapted to country circumstances and needs.

4 Developing Agricultural Climate Change Readiness

The experience of REDD+ shows that a structured process that prepares a sector to respond to the challenges of climate change is useful and facilitates later investments in mitigation and adaptation programs. While there are critical challenges, the UN-REDD and FCPF programs have proven their ability to respond to these challenges and learn. Learning from the REDD+ experience, an agricultural readiness process could leapfrog some of these problems and be more effective since its inception. Additionally, countries may be able to identify synergies and leverage REDD+ readiness programs for agricultural readiness.

This section is divided into four parts:

- Objective: What does agricultural climate change readiness mean? What are the differences between the forestry and agriculture sectors and their implications for a readiness process?
- Governance: How could an agricultural readiness process be managed?
- Scope and Process: What steps do participants need to fulfil to achieve agricultural readiness?
- Finance: How should agricultural readiness be financed?

4.1 Objective

Agriculture is at the heart of many agendas. From a public policy perspective, agriculture is essential to global food security, economic development and poverty alleviation, and has an impact on biodiversity protection, water availability and resource use, as well as climate change adaptation and mitigation. The role of agriculture and the sectoral objectives are country-specific. There are often synergies as well as trade-offs among goals that need to be managed. While adaptation is more in line with the self-interest of a country for protecting agricultural outputs, this is not necessarily the case with mitigation activities, especially if they require substantial resources and change of practices. There is the need to develop a sound argument about if, where and when agriculture should address mitigation goals. The objective of an *“agricultural climate change readiness”* process would be building a country’s technical, institutional and innovative capacity to develop and implement activities that increase agricultural productivity and food security, while creating a resilient and adaptive agricultural sector that decreases emissions intensities together with agricultural emissions.

While experiences from the REDD+ readiness process offer useful lessons for building agriculture readiness, it is also important to note the differences between the two sectors. The process within REDD+ has largely been driven by the recognition that forest-based emissions are a significant contributor to climate change and identified among a range of alternatives as the lowest cost intervention that could provide high short-term mitigation gains. Without a mechanism to address tropical deforestation, it would be almost impossible to meet international targets for climate change mitigation. Consequently, adaptation is a subordinate consideration in REDD+. In the agricultural sector in turn—in particular when working with

smallholders—increasing resilience, adaptive capacity and food security are priority concerns, with mitigation a lesser concern.

The REDD+ readiness process has been stimulated by the expectation of large-scale funding for forests through an international mechanism to finance emission reductions from the forest sector. Particularly as the forest sectors in many developing countries are quite underfunded, the hope for gaining access to new resources has been a driver for engagement in many countries.

Given the structure of the agricultural sector and its emissions profile, it is unlikely that there will ever be the expectation of swift emission reductions and large funds for mitigation alone. Emissions from agriculture occur through multiple sources across many and very different agricultural systems. Emissions are often costly to measure and monitor. Data are burdened with uncertainties. Therefore, an emissions-based incentive framework similar to REDD+ is unlikely to emerge for the agricultural sector in the near future.

Table 5 summarizes the main differences between agriculture and REDD+ in terms of international support frameworks. However, there are many good reasons to build climate readiness for the agricultural sector, even without a dedicated finance mechanism. In contrast to forestry, there is significant funding to agriculture through private investment, national support paid to farmers, and/or development assistance. Thus, the question is how to channel existing finance towards more climate-friendly and sustainable practices rather than how to pay for emission reductions at scale.

Table 5: Comparison of REDD+ and agricultural mitigation support frameworks (Meridian Institute 2011)

Category	REDD+	Agriculture
Establishment	National incentive framework covering the forest sector established in Cancun Agreements.	No dedicated decision, no discussion of particular incentive mechanism.
Purpose	REDD+ is negotiated primarily as a mitigation instrument, however safeguards were created to mitigate harm and maximize multiple benefits.	Multiple-objective focus (adaptation, food security, mitigation) is more appropriate.
Mitigation potential	Perception of cost-efficient mitigation potential.	Mitigation potential limited by growing demands for food driven by population increase and change in diets.
Measurement	Measurement of emission reductions against national and, as appropriate, sub-national reference (emissions) levels.	Establishment of national reference levels would be extremely difficult due to data limitations, capacity constraints, and heterogeneity in farming systems and practices.
Incentives	Incentive system expected to compensate for opportunity costs.	Long-term resilience (adaptation) and possible yield benefits constitute powerful incentives. Incentives would be needed to cover transition costs and risk.
Permanence risk	Permanence risk is significant, but measurable.	Permanence risk smaller, but actual reversal is often difficult to detect and measure.
Coverage	Incentive mechanism limited to developing countries.	Negotiations on agriculture cover both developed and developing countries.
Data collection	Growing comfort about the ability to measure forest carbon with existing MRV techniques and technologies.	Lagging behind in collecting, analysing and publishing emissions data.
Safeguards	Strong emphasis on safeguards.	Safeguards would also be essential to ensure food security and prevent adverse effects on the environment and local communities (smallholders).
Implementation	Phased approach in implementing REDD+ starting with capacity building and institutional strengthening (Phase 1); policy reform and demonstration activities (Phase 2); and full scale national implementation (Phase 3).	Even before an incentive framework is defined, readiness is important to increase data and knowledge base, and inform negotiators at the national and international level.

The absence of a dedicated agricultural incentive mechanism does not mean that there is a complete lack of supplemental incentives for mitigation actions. Instead of a single mechanism, a broader set of incentives may apply to agricultural mitigation. For example, the Clean Development Mechanism (CDM) or voluntary carbon markets may provide opportunities for some mitigation strategies, in particular in the management of agricultural

waste for biogas; NAMAs may provide finance for sectoral mitigation policies; and REDD+ may provide support at the forest frontier where agriculture acts as driver of deforestation.

No matter how mitigation incentives for the agricultural sector are structured, some of the lessons from the REDD+ process—such as developing a structured planning process that brings various stakeholders together or building technical and institutional capacity for implementation—can help in achieving the balancing act of meeting various agriculture-related goals and developing climate change readiness in agriculture. The following sections outline needed elements based on the REDD+ readiness process that will provide guidance to national policy makers as well as donors interested in agriculture meeting its food security and climate targets.

4.2 Governance

International Level

In REDD+, a negotiated mechanism within the UNFCCC prompted multilateral (FCPF and UN-REDD) and bilateral support. This allowed the implementation of an international readiness process. While the UNFCCC recognizes the importance of agriculture (Articles 2 and 4.1) and calls for mitigation and adaptation in the sector, the climate policy regime has thus far lacked a coherent vision and a set of incentives or financial mechanisms for the achievement of such goals.

Two key disagreements underlie the lack of progress in agriculture negotiations under the UNFCCC. The first is the extent to which any work program should be framed within the principle of common but differentiated responsibilities. This principle determines the different contributions to mitigation efforts and the differential provision of financial support across countries.⁹ Secondly, parties differ over the scope of an agricultural work program, in particular, whether it should only include adaptation or also include mitigation and co-benefits. Several parties are concerned that the inclusion of mitigation may lead to mitigation commitments in agriculture, thereby threatening country sovereignty, food security and adaptation strategies, and leading to climate-motivated trade measures.

⁹ While differentiation is generally accepted, the criteria for differentiation are one of the most controversial aspects of the negotiations under the UNFCCC.

As an alternative to an international climate policy framework for agriculture, coordination among the institutions that govern and fund the agriculture sector with the purpose of promoting agricultural readiness may be an option. Developing a common understanding of agricultural readiness with programs that support countries in building required capacities would be useful and would promote the alignment of objectives across different initiatives. In the absence of an international policy framework, it is quite possible that the agriculture readiness process will be driven by multilateral, bilateral and/or private initiatives between progressive countries and interested donors or investors willing to invest in a new set of promising mitigation activities.

Country Level

Effective governance at the national level has been identified as a major factor for successful mitigation or adaptation programs, and the REDD+ process has shown that capacities, coordination, accountability, transparency, and consultation are key governance components to establishing REDD+ readiness. Agriculture has to answer to multiple objectives that cut across separate institutions at national and international levels. Increasing the capacity of policy-makers to better align policies across multiple policy areas and coordinate policy formulation horizontally across national government entities, and vertically from local to national levels, is essential to produce solutions that deliver across objectives. Improved consultation and coordination could lead to more coherent institutional support within and across government as well as improved land-use policies, which is of particular relevance for smallholders.

It is important to create a governance structure that defines national and sub-national institutional roles and responsibilities, and designates a lead ministry or governing body to manage and coordinate activities. New institutional arrangements, making full use of existing structures to the greatest extent possible, can contribute towards improved coordination and integration of capacity across institutions, for example through facilitated inter-ministerial dialogue, creation of inter-disciplinary communities of practice across relevant ministries, research institutes, planning units, farmer unions, joint planning exercises, and multi-stakeholder consultation (Meridian Institute 2011).

Given the synergies and overlap between REDD+ and agricultural readiness, existing REDD+ activities and infrastructure could be harnessed. REDD+ readiness activities may already

include components needed for agricultural readiness, such as improved governance structures, legal reform (land tenure, land rights, etc.), land-use strategies, and enhanced technical capacity and infrastructure (MRV, national accounting). These existing capacities and infrastructure could be used as a foundation for agriculture readiness to manage transaction costs and enhance institutional effectiveness.

Agricultural and REDD+ readiness processes could also be merged into a terrestrial, land-use or landscape-level readiness process. This would help ensure that MRV and data systems are integrated, that policies are complementary, that perverse incentives and leakages are avoided, and resources are used efficiently. In practice, this would most likely result in expanding existing REDD+ readiness processes to include agriculture. While this seems reasonable, such expansion of the REDD+ process may face practical challenges, in particular as the balance of power may tip towards the agricultural sector as soon as the much more powerful agricultural ministries with their agendas join the REDD+ process. In the absence of a fully integrated landscape-level readiness process, agricultural and REDD+ readiness may be developed in a parallel, yet coordinated, process.

4.3 Components and Process

4.3.1 Components

A national agricultural readiness process could be structured in four components: governance, multiple objectives framework, strategy, and MRV systems (Meridian Institute 2011). Table 5 shows how all three REDD+ readiness components from the framework in Table 6 could be reflected in an agricultural readiness process. The “multiple objectives framework” has been added to reflect the competing objectives in agriculture.

Table 6. Components of a suggested agricultural readiness process

Agricultural Readiness Components	REDD+ Readiness Components
Governance	Governance
Multiple objectives framework	
Agriculture strategy or equivalent policies	Strategy or equivalent policies
MRV systems	Reference levels, MRV, safeguard information systems

- **Governance.** This component delineates the need for strong and effective governance – usually associated with capacity, transparency, accountability, coordination and participation – in agricultural readiness. It will require designating which institution or agency would lead the agricultural readiness process and how it would be related to REDD+ readiness processes, if such process is under implementation.
- **Multiple objectives framework.** The knowledge base for strategic climate change related choices in agriculture is often weak or sometime non-existent. Decisions are largely geared towards higher yields, increased resilience to lesser extent, and climate mitigation to an even lesser extent. A multiple objectives framework that addresses all three objectives and assesses tradeoffs will need to be mainstreamed in any agricultural readiness mechanism. This would require, among others, improved understanding and use of climate science data and modelling tools as well as agricultural planning on vulnerabilities and risks.
- **National agriculture and climate strategy.** The development of a climate-related strategy is a core element of implementing agricultural readiness process. The strategy needs to be built on an agreed upon vision or development pathway for the sector. This should include an integrated approach that accounts for food security, climate change adaptation and mitigation, and the blueprint for implementation. Other policies, strategies and measures will also need to be considered including those related to social and environmental safeguards.
- **MRV system.** MRV systems for agricultural emissions, as well as yields (food security) and resilience will need to be established to assess progress against objectives. Estimation of agricultural emissions requires activity data as well as data on emission factors, yields and other impacts. Improved measurement of agricultural emissions requires increased availability of data, improved capacities for research, and increased investment in basic research on agricultural emissions. Countries also have to undertake efforts to improve the collection of agricultural statistics, which can provide a better basis for estimating activity data (World Bank 2011 Global Strategy; Wilkes *et al.* 2011). Assessing

adaptation progress is also essential to identify, prioritize, and select the most effective adaptation actions.¹⁰

Based on these components and the components identified in Table 5 and lessons learned about criteria from REDD+ applied to agriculture, Table 7 offers recommendations for agricultural readiness criteria. Governments are encouraged to develop indicators for criteria that reflect national context and circumstances.

Table 7: Possible components of a recommended agricultural readiness process

Agricultural readiness components	Readiness criteria
Governance	<ul style="list-style-type: none"> ▪ Political will ▪ Accountability of leading actors and operational framework for institutions ▪ Transparency in decision making on strategies ▪ Coordination mechanisms/ process for agriculture, land-use, and development sectors ▪ Capacity building at the national and local levels, including extension services ▪ Establish stakeholder participation and consultation process ▪ Conflict resolution process
Multiple objectives framework	<ul style="list-style-type: none"> ▪ Database on farming systems ▪ Database on potential adaptation and mitigation practices per farming system ▪ Develop assessment tools to identify mitigation opportunities with high co-benefits and low/manageable tradeoffs
Strategy	<ul style="list-style-type: none"> ▪ National climate strategy for the agricultural sector or as part of a wider land use climate strategy - with agreed upon vision for the agricultural sector that balances food security, adaptation and mitigation goals. ▪ Sources and drivers of agricultural emissions and agricultural mitigation options consistent with food security and adaptation objectives. Explore linkages with REDD+ ▪ Policies and measures safeguards (assess social and environmental impacts) ▪ Benefit sharing mechanism options
National Monitoring System and Accounting Framework for Agriculture	<ul style="list-style-type: none"> ▪ MRV system for GHG emissions from agriculture ▪ Develop baseline scenarios to measure GHG reductions in different agricultural systems (activities) or regions (land). ▪ Indicators for assessing agricultural climate vulnerability ▪ Link to monitoring of food security indicators ▪ Accounting framework

While considerable work has gone into understanding enabling conditions for readiness, it is an evolving topic that merits further exploration and improvement. This framework is meant to generate better understanding of the needs in mitigating climate change in agriculture, and may also complement existing analyses in understanding the most relevant enabling conditions for agriculture readiness.

¹⁰ However, since this report focuses on MRV of adaptation performance and benefits, ex-ante measurement approaches are not dealt with in this chapter. Various climate vulnerability indices and prioritization and ranking procedures have been used at the national level for planning adaptation actions. See Wheeler 2011 for an example.

4.3.2 Process

A country's ability to access climate finance will depend on the needs for agriculture adaptation to ensure food security and development, its mitigation potential, and its role as a driver of deforestation, as well as the costs and feasibility of implementing actions and measuring results. A structured readiness process could support processes needed for the collection of data, research and consultations.

In REDD+, the FCPF and UN-REDD readiness programs rely on a structured process for applying for funding, designing, implementing and monitoring a national program, and exchanging lessons and experiences in an organized forum. Such process creates the necessary momentum and focus for countries to follow a readiness program. It also allows comparisons of progress among countries and facilitates a structured dialogue with donors.

In defining what steps should be taken towards developing an agricultural readiness process, lessons from the FCPF and UN-REDD governance structure could be applied. A process could be defined by an international organization. It could allow multiple funders to support particular aspects of a country's readiness within the context of a coordinated strategic technical and capacity building process. A national or international technical advisory panel could help guide countries on the technicalities of agricultural mitigation and facilitate the process of an exchange of experiences and ideas.

Funding for agricultural readiness could be coordinated under the auspices of the international community, similar to the FCPF or UN-REDD. If the process is country-driven or results from bi-lateral agreements, the funding proposals would could be submitted for approval to the respective donors. Upon multilateral or bilateral approval, the country would enter a readiness phase, in which the technical, innovative and institutional capacity of the country is developed to plan and implement a national agricultural low-carbon development strategy in harmony with food security and adaptation goals of the sector.

4.4 Financing Options for Agricultural Readiness

Incorporating climate considerations into existing agricultural support could yield tremendous gains in agriculture readiness. While countries can expect some climate finance (by developing agricultural or landscape NAMAs and by combining adaptation and mitigation funding), agriculture readiness should not be driven by the expectation of large funds for

mitigation. However, aside from climate finance, the agricultural sector has access to substantial investment and finance with public expenditure and official development assistance. This lessens the need to galvanize large amounts of financing to incentivize participation and presents a significant opportunity (and associated challenge) to promote climate considerations within the existing investment frameworks.

Climate Finance

The potential for donor finance to initiate a move towards improved, sustainable agricultural practices is real, but agriculture competes with other sectors for limited public funds and market demand. When competing for climate finance, the complexity and diversity of the agricultural sector and its limited experience with carbon finance, and the lack of available data and MRV systems, puts agriculture at a disadvantage compared to the industry and energy sectors. It is, therefore, important that developing countries take advantage of existing financial mechanisms to pilot, demonstrate and scale-up mitigation and adaptation activities in the agricultural sector. In parallel, they may engage in readiness activities, which include improving data sets, building MRV capacities and developing more comprehensive national strategies. In this context, the REDD+ readiness process, into which over 50 developing countries have engaged, may provide a platform for discussing a more integrated land-use strategy (landscape approach) involving both the forest and agricultural sectors.

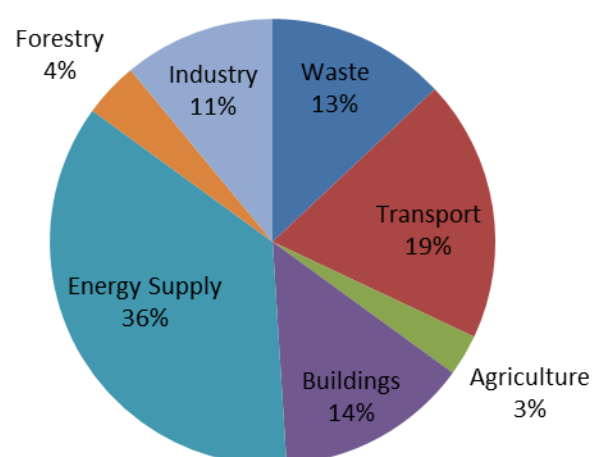
When considering the application of climate finance to the agricultural sector, governments may start by defining policy goals, such as increasing climate resilience in the agricultural systems in a particular region or diversifying income sources among smallholders. The definition of the targeted outcome is followed by the identification of existing or new national policies and financial instruments that support this outcome and can be backed up or co-financed by international climate finance. The prioritized policies and measures should be aligned with the national development agenda and described in the national agriculture and climate strategy, as outlined earlier. Stakeholder consultations would inform the appropriate policy choice. Policy-makers should also evaluate the costs and benefits of suggested activities.

Dedicated finance for agricultural readiness is not available at this point. Agricultural readiness, therefore, has to be understood in a broader sense as the processes that enable countries to implement adaptation and mitigation measures in the agricultural sector.

Financing for this process has to be sought from general climate finance, official development assistance channels and the private sector.

Under the Convention developing countries are encouraged to develop and may receive support for NAMAs, which may include actions taken in the agricultural sector. They are also encouraged to develop agricultural mitigation programs under the incentive framework for REDD+. Of the NAMAs that are currently under development (and have been communicated to the UNFCCC), 3% are planned for agriculture and 4% for forestry, as shown in Figure 2 below.

Figure 2: Sectoral distribution of NAMAs (Ecofys 2013)

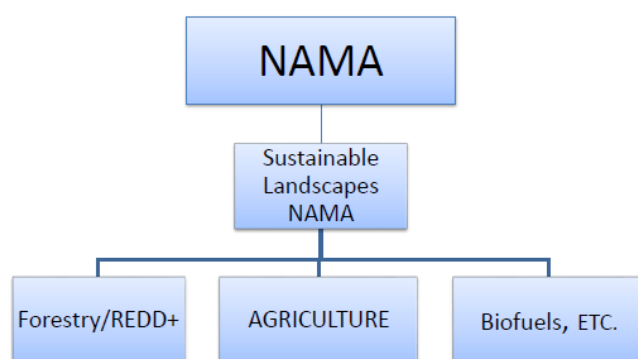


It is important to note that all NAMA submissions to date are at the concept or planning phases, with very few yet progressing into implementation. This is, in part, a product of the relatively new concept of NAMAs, but hinges more on the availability of finance for NAMA implementation. It is not yet clear how NAMAs will relate to REDD+: whether NAMAs remain separate from REDD+ or whether a single NAMA would integrate mitigation activities across all land-use sectors.¹¹ The latter approach would combine emissions and emission changes that occur beyond the forest frontier, allowing for a more holistic landscape-based approach to environmental management and planning (see Figure 3). Integrating across all sectors allows for a more comprehensive approach to be taken toward addressing drivers of deforestation, which often occur outside the forest's margins. Such an

¹¹ Such an approach would be similar to the proposed Reducing Emissions from All Land-Uses (REALU) concept proposed by ICRAF and the ASB Partnership for Tropical Forest Margins. (van Noordwijk *et al.* 2009)

approach has been taken by Indonesia and Ethiopia, which have made clear that REDD+ is viewed conceptually as a sub-sector within its land-based NAMA structure (van Noordwijk *et al.* 2009). Placing REDD+ within the NAMA structure allows the country to take a comprehensive landscape-based approach to NAMAs, using REDD+ funding for forested areas and supported NAMAs for activities that address a wider scope of land-use carbon pools not covered by REDD+ such as agriculture, agro-forestry, home gardens, non-forested peat lands, or sea grasses.

Figure 3: Integrated AFOLU NAMA



Official Development Assistance

An agricultural readiness process could receive official development assistance via two different channels. Funding could come from donors that have traditionally funded mitigation activities in the forest sector and REDD+ in particular and are interested in moving the process towards funding mitigation activities at the landscape level that would also include agricultural mitigation. The second option is that donors funding the traditional agricultural development portfolio geared towards productivity increases in agriculture or agriculture as a tool for poverty alleviation could include a new focus on creating and fostering technologies that create synergies between food security, adaptation and/or mitigation. To date, the mitigation aspect of many possible agricultural practices has not been fully explored, as some of the country studies show.

Budgetary finance

Total public agriculture expenditure is in the order of several hundred billion US dollars, however it is much higher in Organisation for Economic Co-operation and Development (OECD) countries than in developing ones, and within the OECD it is overwhelmingly

concentrated in the United States and European Union. For 2011, the OECD estimated the total support to agriculture in developed countries at USD 364 billion, with 69% as direct support for producers and 31% for general, whole-sector support (OECD 2012). With the exception of a few large emerging countries—in particular China, which is thought to have surpassed the United States and European Union in total spending as of 2011—most developing countries have extremely low levels of government subsidies. In particular, sub-Saharan Africa countries have less than a third of the public agriculture spending average per worker than for low and middle-income countries (FAO 2012). While agriculture has been declining as a share of government expenditure in all regions but South Asia (FAO 2012), it is still a large source of finance that can be harnessed towards climate-related strategies.

5 Conclusions

The debate around the role that agriculture should play in mitigating climate change and sequestering greenhouse gases is politically complex and technically complicated. In many countries, and particularly in developing countries with a large smallholder population, the agricultural sector faces competing priorities, such as national food security goals, poverty alleviation, addressing natural resource degradation and adapting to already-visible effects of climate change. Many of these goals are closer to the immediate, short-term priorities of national decision-makers, relegating climate change mitigation as a secondary priority. It is therefore essential to implement mitigation strategies in concert with strategies that increase the resilience and increase the productivity of agricultural systems.

Despite differences in the forestry and agricultural sectors, experiences from the REDD+ process—and particularly its readiness phase—can offer useful lessons for an agricultural readiness process. The REDD+ readiness process created an overall coherent structure, framework and process of guiding countries towards developing the technical and institutional ability to integrate mitigation activities into their forestry sectors. An overview of the lessons learned from REDD+ Readiness, organized by objectives, governance, process, scope and finance, is provided in Table 8 below.

Table 8. Overview of lessons learned from the REDD+ Readiness process

Readiness component	Lessons learned
Overall Objectives	<ul style="list-style-type: none"> Independent evaluations have identified the following achievements of the UN-REDD Programme and the FCPF readiness programs: The development and establishment of a shared, common framework for REDD+ readiness through the development of a planning framework, set of tools, guidelines and support. The creation of opportunities for the exchange of lessons learned and experiences between countries. The creation of increased political momentum within governments to tackle deforestation and address deforestation drivers. The engagement of governments in broad consultative processes with stakeholders who would otherwise not necessarily have been consulted. Facilitating greater donor co-ordination.
Governance	<ul style="list-style-type: none"> The governance structure of the FCPF and UN-REDD composed of donor countries, implementing countries, and non-governmental organizations is seen as effective by members and observers as it promotes high levels of participation and consensus-based decision making. Attention to stakeholder engagement at the governance level has been central to this success. Readiness fora, such as the FCPF participants meetings have proven to be useful platforms for discussing challenges and progress in REDD+ implementation. They also inform UNFCCC negotiations and create informal opportunities to coordinate negotiation positions. Readiness initiatives need to enhance coordination and harmonize operations, including processes, guidance documents and reporting formats to reduce country costs and increase effectiveness. Synergies, partnerships and coordination arrangements can be leveraged between different programs (UN-REDD, FCPF and other multilateral and bilateral REDD+ readiness initiatives). South-South collaboration is an important consideration in the readiness process, both in building technical capacity as well as in addressing drivers of deforestation. Strengthening governance capacities (systemic, institutional and individual) at sub-national levels was identified as a particular need that should be prioritized in REDD+ countries.
Process	<ul style="list-style-type: none"> Readiness is difficult to define. While there seems to be a general agreement on the components of REDD+ readiness, there are still some discrepancies in assessing and deciding when a country has crossed the readiness threshold. Rather than establishing a finite point of readiness, the FCPF has opted for a gradual and customized approach guided by evaluation and selection criteria during the Readiness Assessment (preparation of the R-Package) as well as during the Carbon Fund assessment and invitation process. The structured process of the R-PP has proven helpful in generating a common understanding of the components of REDD+ readiness.
Scope	<ul style="list-style-type: none"> A majority of countries (80%) have prioritized governance (primarily institutional strengthening, legal frameworks and benefit sharing) for support from the FCPF and UN-REDD - highlighting its importance in the readiness process. However, most concrete support went to support MRV and accounting systems as funds are easier spent and successes more achievable in MRV than governance. Engaging in governance reform is more challenging, requires broad support (within the cabinet and among relevant constituencies), and a long-term political and legal mandate. REDD+ strategies as a component of the readiness process, was the second highest priority for countries after governance, with countries expressing particular needs with drivers of deforestation, development of safeguards and establishment of pilot projects. Very few countries have a clear understanding of the drivers of deforestation in their territory. Such understanding is essential for the sustainability and success of REDD+.
Finance	<ul style="list-style-type: none"> Financing REDD+ readiness at the country level has proven to be a more expensive, complex, and protracted process than anticipated at the time of the FCPF and UN-REDD launch. Understanding the costs of readiness and matching grants is important in gauging supply of funds. A consideration would be to move away from "flat rate" grants, to a system that provides differentially sized grants based on universal criteria. The slow rate of some grant disbursements has delayed country implementation and in some cases, caused political will and interest to wane. Efforts have to be made to curtail delays and deliver on expectations. Transaction costs tend to be overlooked or underestimated and has been one of the main reasons for country programs running over budget.

Given agriculture's economic and cultural significance, it is fundamental to build the science and sound arguments about why and how agriculture should contribute to GHG mitigation, without losing its focus on food security and adaptation. For most developing countries, adaptation and livelihood concerns dominate, and the mitigation agenda could only be pursued if an understanding of the triple wins of sustainable agriculture (productivity,

adaptation and mitigation) is incorporated. The objective of agricultural readiness therefore would be to build a country's technical, institutional and innovative capacity to develop and implement activities that increase the resilience of the agricultural sector and reduce its emissions while maintaining or sustainably increasing its productivity. This process would contribute to capacity building, consolidation of country ownership and confidence building. It would benefit from consultation with stakeholders and apply to both large and small holders.

While lessons from REDD+ offer useful perspectives, it is also important to understand the differences between the two sectors. Unlike the REDD+ readiness process, where there is expectation of large-scale emissions reductions from the forest sector and significant funding through an international mechanism, it is unlikely that there will ever be the expectation of swift emission reductions and large funds in the agriculture sector. Emissions from agriculture, especially from small-scale systems are entrenched and widely dispersed. They occur through thousands of sources across many and very different agricultural systems. Emissions are often costly to measure and emission reductions are difficult to monitor and oftentimes associated with profound uncertainties. Therefore, an emissions-based incentive framework similar to REDD+ is unlikely to emerge for the agricultural sector.

The absence of a dedicated agricultural incentive mechanism does not mean, however, that there is a complete lack of incentives for mitigation actions. Under the UNFCCC, developing countries are encouraged to develop and may receive support for nationally appropriate mitigation actions (NAMA), which may include actions taken in the agricultural sector. They are also encouraged to develop agricultural mitigation programs under the incentive framework for REDD+.

For agricultural readiness to be developed, the following should be considered:

- **There is considerable overlap between agricultural adaptation and mitigation; and between agriculture and REDD+:** There is no other sector where adaptation and mitigation are so closely linked as in agriculture, where sustainability and yield will depend on resilience of the system. This is particularly true for smallholder agriculture. At the same time, agriculture and forestry are also closely interrelated, as agriculture is the most significant driver of deforestation and forest ecosystem services enhance the resilience and adaptive capacity of neighbouring agricultural lands. Therefore, CSA

strategies and activities are essential for the success of REDD+ and vice versa. A landscape approach could be considered that would integrate REDD+ and agriculture to consider carbon emissions, emission reductions, and emission removals that occur beyond the forest frontier.

- **Agricultural climate strategies should focus on ‘climate-proofing’ existing agricultural support.** Agriculture readiness cannot be driven by the expectation of large funds for mitigation. However, by developing agricultural or landscape NAMAs and by combining adaptation and mitigation funding, there may still be significant support for agricultural mitigation strategies. Aside from climate finance, the agricultural sector also has access to substantial investment and finance with public expenditure on the order of hundreds of billions (OECD 2012) and agricultural official development assistance increasing to gross approximately 7 billion USD in 2011 (OECD 2013). This lessens the need to galvanize large amounts of financing to incentivize participation and presents a significant opportunity (and associated challenge) to promote climate considerations within the existing investment frameworks.
- **Coordination among the institutions that govern and fund the agriculture sector to promote an agriculture readiness process may be an alternative to an international policy framework.** A common understanding of agricultural readiness and programs that support countries in building the required capacities would be useful and would promote alignment of objectives along different initiatives. In the absence of an international policy framework, it is quite possible that the agriculture readiness process will be more driven by multilateral, bilateral and/or private initiatives between progressive countries and interested donors or investors willing to invest in a new set of promising mitigation activities.
- **In defining the steps and developing an agricultural readiness process, lessons from the FCPF and UN-REDD governance structure could be applied.** A process could be structured, for example, that allows multiple funders to come in and support particular aspects of a country’s readiness within the context of a coordinated strategic technical and capacity building process. An international Technical Advisory Panel on CSA may also be considered that does not necessarily “govern,” but rather helps guide countries on the technicalities of agricultural mitigation and facilitates exchange of experiences and ideas.

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Annex 1: Country Case Studies

Consulted experts:

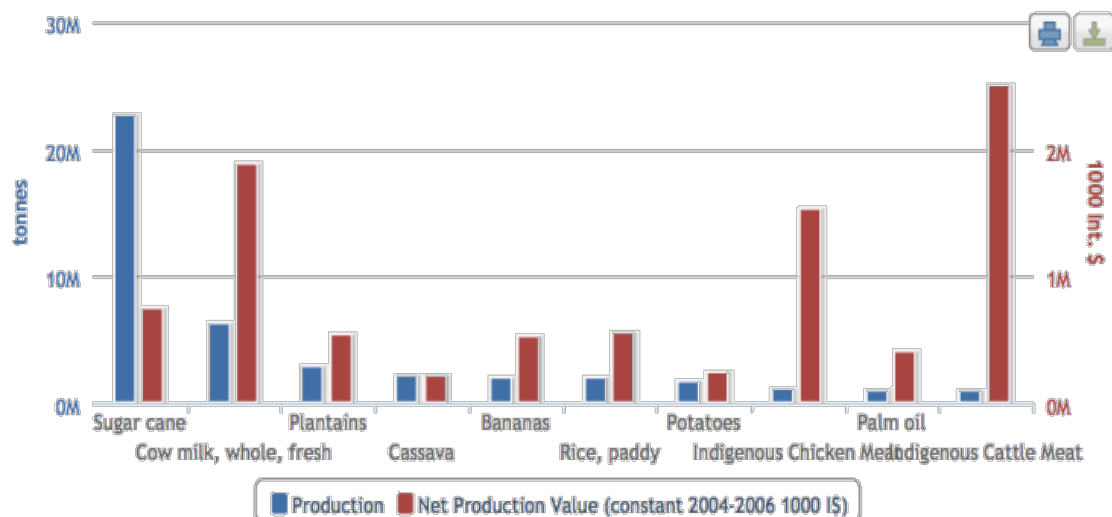
- Ana María Loboguerrero, International Center for Tropical Agriculture (CIAT) - Regional Program Leader for Latin America, formerly in the *Subdirección de Desarrollo Ambiental Sostenible* of the National Planning Department, Colombia
- Andre Rodrigues de Aquino, Carbon Finance Specialist, World Bank
- Andrea Cattaneo, FAO/ESA, Team Leader of climate-smart agriculture project EPIC
- Aura Robayo Castañeda, Climate Change Specialist, Colombian Ministry of the Environment and Sustainable Development
- Do Trong Hoan, Researcher on REDD+, World Agroforestry Center (ICRAF), Vietnam
- Francisco Boshell, Director of the Inter-Institutional Network of Climate Change and Food Security (Red Inter-institucional de Cambio Climático y Seguridad Alimentaria, RICCLISA), independent consultant, professor at the Universidad Nacional de Colombia
- Jeimar Tapasco, Environmental Economist, CIAT, Decision and Policy Analysis Research Area
- Karin Kaechele, Carbon Fund, World Bank
- Le Nghia, FAO Vietnam, Country Coordinator, climate-smart agriculture project EPIC
- Mai Van Trinh, Institute for Agriculture and the Environment, Vietnamese Academy of Agricultural Sciences
- Melaku Tadesse, National Coordinator, Sustainable Land Management Programme (SLMP), Ministry of Agriculture, Natural Resources Sector, Ethiopia
- Néstor Hernández Iglesias, Dirección de Desarrollo Tecnológico y Protección Sanitaria, Colombia
- Pham Thi Sen, Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI), consultant to the Ministry of Agriculture and Rural Development on CSA
- Steve Jaffee, EASER project, World Bank
- Steve Swan, Senior REDD+ Advisor, SNV
- Tsegay Wolde-Georgis, Advisor, Climate and Environmental Sustainability, Agricultural Transformation Agency, Ethiopia

Annex 1.1 Colombia Case Study

Sector Overview

Colombia's National Development Plan 2010-2014 identified agriculture as a key sector for the country's economic and social development. From 1999 to 2007, agriculture contributed 10-14% to the national GDP, providing livelihood and employment for at least 3.7 million people (Ramirez-Villegas *et al.* 2012). The sector employs 21% of the Colombian population, and the agricultural landscape covers about 45% of the national territory. Smallholders produce about two-thirds of national agricultural output and play a key role for rural food security (UNEP 2006). Figure 4 shows the top 10 agricultural commodities by production amount and value. Sugar cane is the most important crop, followed by plantains, cassava, bananas and rice. Cattle meat has the highest production value, followed by cow milk. More than two-thirds of the land area is used as permanent pasture, mainly for extensive cattle ranching (FAOSTAT).

Figure 1: Production amount (on the left) and value (on the right) of TOP 10 commodities (FAOSTAT)

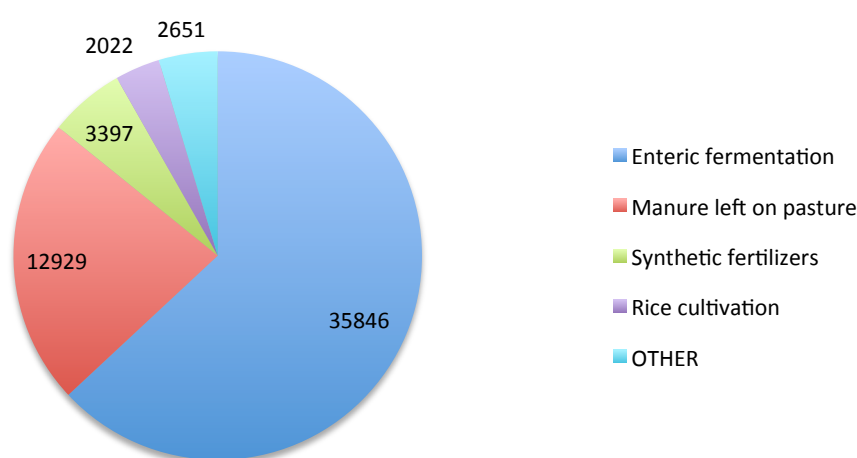


Agricultural Emissions

If not planned in a sustainable way, agricultural expansion in Colombia could lead to an increase in GHG emissions in a sector that already has a large carbon footprint. Colombia's National Communication to the UNFCCC shows that the agricultural and forestry sectors

account for more than half of the country's total GHG emissions.¹² Nitrogen fertilization, cattle ranching, and land-use change are main contributors, and there is good potential for mitigation at low costs (Behrentz *et al.* 2013, expert interviews). Figure 5 shows the most important sources of emissions in the agricultural sector based on FAOSTAT. The livestock sector (manure and enteric fermentation) contributes 86% of total agricultural emissions. In addition, agricultural expansion and the livestock sector are directly responsible for 90% of deforestation (Colombia R-PP 2011).

Figure 2: Agricultural emissions (Gg in CO₂e), 2010 (FAOSTAT)



Policies and Programs Relevant for Agricultural Mitigation

In March 2013, the Ministry of Environment published the Low Carbon Development Strategy (Behrentz *et al.* 2013), including an assessment of the agricultural sector's mitigation potential based on GHG abatement curves and cost-effectiveness. The strategy highlights the essential role of agriculture for Colombia's low carbon development. Yet, the Ministry of Agriculture and Rural Development (short: Ministry of Agriculture), as well as farmers and producer associations, rejected the strategy over its methodological approach. In particular, the use of IPCC emissions factors has been criticized as imprecise and not reflective of the real situation. The Ministry of Agriculture is currently developing a methodology for credible and realistic baselines adjusted to the Colombian situation. For this purpose, the Ministry has

¹² Out of a total of 180,000 Gigagrams CO₂e emitted in Colombia in 2004, 38% came from the agricultural sector and 14% from the land use, land-use change and forestry (LULUCF) sector. (Instituto de Hidrología 2010, expert interviews)

signed a technical and scientific cooperation agreement with the International Center for Tropical Agriculture (CIAT)¹³, with financial support from the private sector.

The government is also initiating programs to reduce emissions in the land-use sector, including the initial design of two agricultural Nationally Appropriate Mitigation Actions (NAMAs): one aimed at fruit trees and another focused on smallholder agriculture (expert interviews).

There are four main public policy instruments currently regulating government actions related to climate change on the agricultural sector:

- National Development Plan 2010 -2014 (NDP)
- National Council of Economic and Social Policy (CONPES) Document 3700
- National Climate Change Adaptation Plan
- National Adaptation Plan for Agriculture

Furthermore, the government is committed to reducing deforestation and has adopted policies in the context of REDD+, most of them directly relevant for agriculture. The country was a pioneer in the World Bank's Forest Carbon Partnership Facility (FCPF) and presented a final version of the Readiness Preparation Proposal¹⁴ (R-PP 7.1) in June 2013, including an assessment of major land-use trends, direct and indirect deforestation and degradation drivers in the most relevant sectors, major land tenure and natural resource rights, and relevant governance issues. In accordance with the Proposal, Colombia favours a nested approach for implementing REDD+ and will promote both sub-national activities and market finance at the project level.

The government also operates several credit programs supporting farmers and the adoption of sustainable practices. The Fund for Agricultural and Livestock Financing (FINAGRO), a public institution acting as a second-tier bank, for instance, supports the implementation of

¹³ See more at: <http://www.aclimatecolombia.org/acerca-del-convenio-madr-ciat/-sthash.GtoIFWdm.dpuf>

¹⁴ The proposal includes objectives to promote the adoption of environmentally friendly, silvo-pastoral production systems for cattle pasture, the improvement of natural resource management, the enhancement of the provision of environmental services, and productivity increases in participating farms.

silvopasture through the facility Rural Capitalization Incentive. FINAGRO also provides dedicated credit lines for small-scale farmers, poor rural communities, and rural women.¹⁵

Table 5 below summarizes mitigation opportunities in the agricultural sector in Colombia.

Table 1: Climate change mitigation opportunities in Colombia's agricultural sector (Climate Focus 2012)

Type of Cooperation	Prioritized Activity
Waste Management	Generating energy from agriculture biomass residues, retrofitting and increasing the energy efficiency of the production.
Agroforestry	Supporting the establishment of sludge management systems for wastewaters from agricultural production process.
	Supporting silvopastoral systems as a strategy to target livestock emissions while supporting afforestation and increasing climate resilience.
Finance	Identifying carbon finance opportunities, addressing barriers to access to carbon markets and channelling private funds towards mitigation projects.

Climate Change Readiness in Agriculture

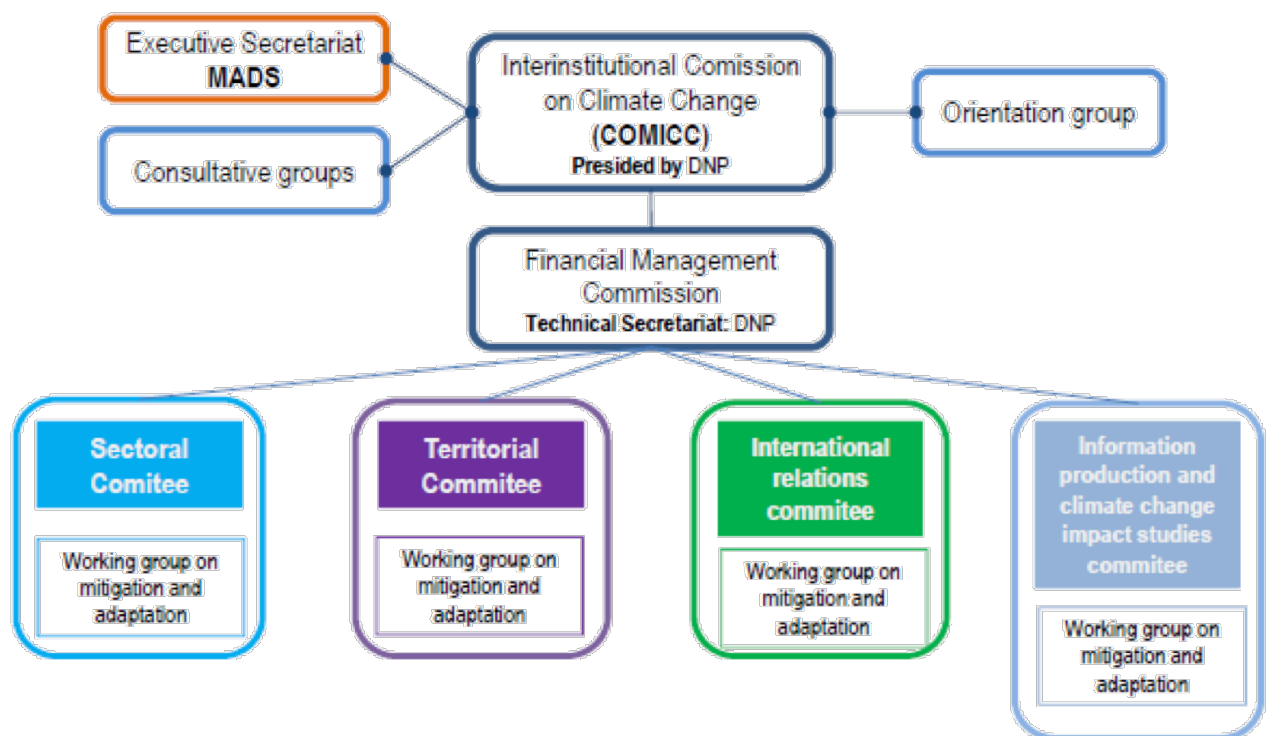
The Ministry of Agriculture would likely lead a climate readiness process in the agricultural sector. However, there are two aspects that could jeopardize the success of such progress: 1) climate change is not yet ingrained or well positioned in the Ministry of Agriculture's agenda, and 2) there is a power struggle and overlapping of competences between the Ministry of Agriculture and the Ministry of Environment that may become a barrier for effective implementation of climate change mitigation activities in the agricultural sector. In addition to the Ministries of Agriculture and Environment, other relevant actors for a potential readiness process could include:

- The Office of the President
- The National Planning Department (DNP)
- The Institute of Environmental Studies, Hydrology and Meteorology (IDEAM)
- The Corporation for Agriculture and Livestock Research (CORPOICA)
- The Colombian Agriculture Institute (ICA)
- Various farmers and producer associations (livestock, coffee, palm oil, bananas, rice, etc.)
- Relevant actors in the REDD+ process

¹⁵ Programas Especiales de Fomento y Desarrollo Agropecuario, Fondo Agropecuario de Garantías (FAG), Incentivos a la Capitalización Rural (ICR)

The National Council of Economic and Social Policy (CONPES) Document 3700 provides the administrative model for the implementation of climate change policy in Colombia. This so-called *Sistema Nacional de Cambio Climático* (SISCLIMA)¹⁶ proposes an institutional arrangement to facilitate decision-making and designate responsibilities on climate change issues (Figure 3). The Inter-institutional Commission on Climate Change (COMICC) under the DNP is responsible for guidance and coordination, and for guaranteeing that all policies, programs and plans related to climate change are implemented and monitored. Every committee within SISCLIMA compiles and analyses information, and provides recommendations to the COMICC relative to its scope. Within each committee, working groups are responsible for in-depth technical reviews. As mentioned previously, the government of Colombia is also undergoing a readiness process in REDD+ and has initiated NAMAs, which are directly related to SISCLIMA and would be linked to a future mechanism in agriculture.

Figure 3: SISCLIMA National Climate Change System (Consejo 2011)



¹⁶ The SISCLIMA is part of the National Development Plan 2010-2014, and the National Environmental System (SINA) created by Law 99 of 1993. SINA establishes a set of rules, activities, resources, programs and institutions that allow the implementation of environmental policy contained in Colombia's Constitution. Available at <https://www.dnp.gov.co/LinkClick.aspx?fileticket=2yrDLdRTUKY%3d&tabid=1260>

The lack of a coordinated and complementary approach between the Ministry of Agriculture and the Ministry of Environment presents a major institutional barrier for agricultural readiness. Concerning technical barriers, despite ample recognition about the significant potential to reduce GHG emissions in the agricultural sector, there are still very few studies detailing how, where and with whom. There is good in-country technical capacity, and human resources (individuals) are available to carry out a climate readiness process, but institutions require technical capacity building (expert interviews).

The United Kingdom also has expressed interest in funding programs that integrate REDD+ with agricultural programs. Despite the availability of agricultural credit programs, financial barriers related to the sustainability of funding prevail. In addition, risks involved with new practices present important barriers. Farmers have small incentives to change their practices without a guarantee to deliver economic benefits (expert interviews).

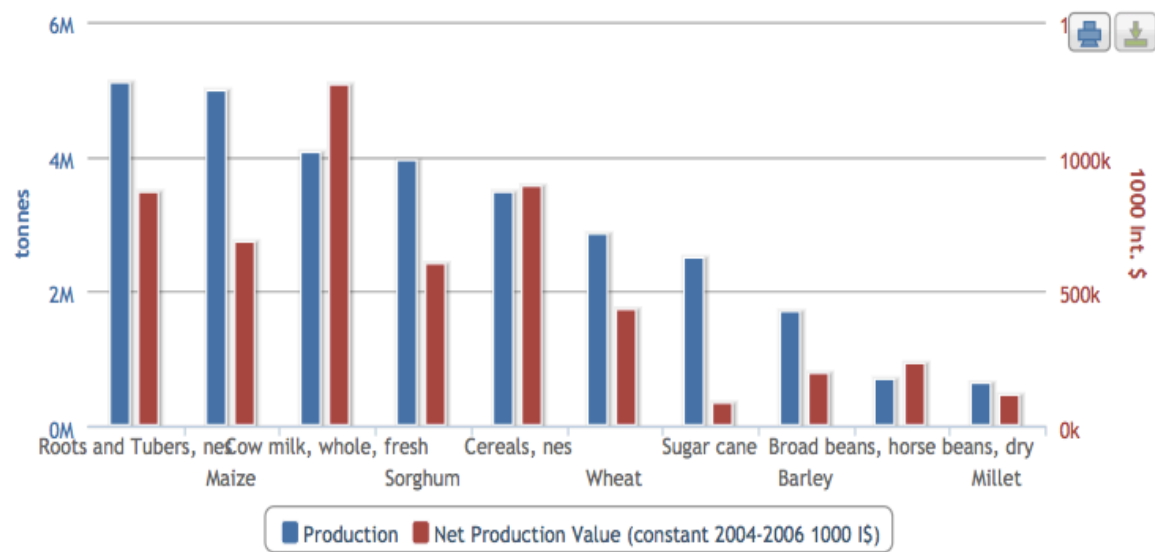
Annex 1.2 Ethiopia Case Study

Sector Overview

In Ethiopia, agriculture forms the backbone of the economy, and agriculture contributes approximately 43% of GDP and 90% of exports. Small-scale and low-input farming systems account for 95% of agricultural GDP and 85% of employment. Figure 4 presents the top 10 agricultural commodities by production amount and value (FAOSTAT). Important agricultural products include roots and tubers, maize, cow milk, sorghum and cereals.

Ethiopia is also home to the largest livestock population in Africa. The sector accounts for one-third of agricultural GDP. Large populations depend directly on livestock, providing 95% of national agricultural output and supporting the livelihoods of an estimated 80% of the poor. It also plays an essential role as draft power in crop production (Ministry 2010, Di Falco *et al.* 2011, FAO 2004, Bill & Melinda Gates Foundation 2010).

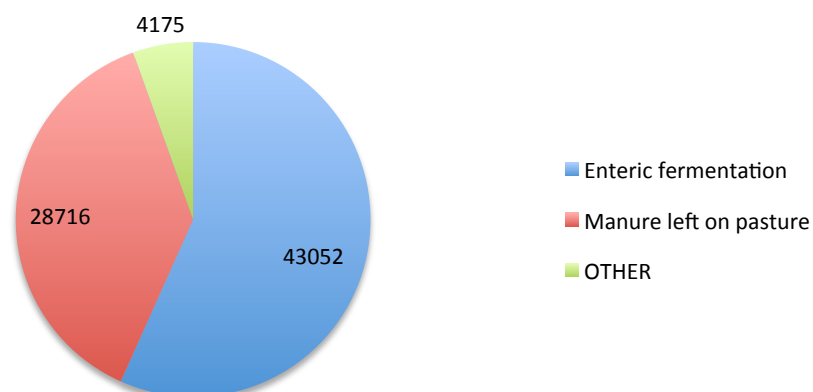
Figure 4: Production amount (on the left) and value (on the right) of TOP 10 commodities (FAOSTAT)



Agricultural Emissions

The expansion of cropland presents the most important driver of deforestation (Federal Democratic Republic of Ethiopia 2011 Path). According to the Climate-Resilient Green Economy Strategy (2011), the agriculture and forestry sectors have the largest mitigation potential. Under a business-as-usual scenario, the agriculture sector would account for 45% of GHG emissions until 2030. Figure 5 shows the most important sources of emissions in the agricultural sector. Based on FAOSTAT data, the livestock sector (enteric fermentation and manure left on pasture) accounts for almost 95% of emissions.

Figure 5: Agricultural emissions (Gg CO₂e) 2010 (FAOSTAT)



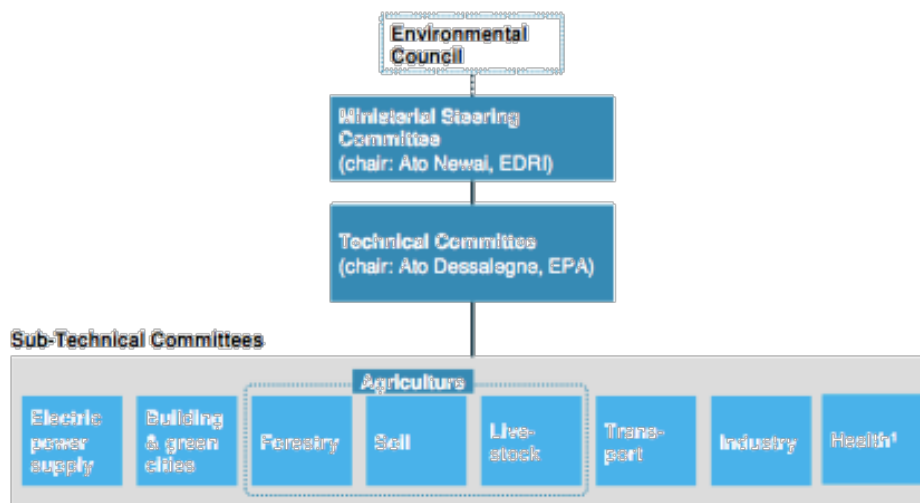
Policies and Programs Relevant for Agricultural Mitigation

The country is committed to reach carbon-neutrality and middle-income status before the year 2025, based on increased agricultural productivity (including livestock productivity), industrialization and export, as set out by the Growth and Transformation Plan (2010/11 to 2014/15) and the Climate-Resilient Green Economy Vision and Strategy-CRGE (Federal Democratic Republic of Ethiopia 2011 Path), launched in 2011 at the Conference of Parties (COP) in Durban. The CRGE is based on four pillars, including two pillars related to agriculture and forestry: (1) “improving crop and livestock production practices to increase food yields, hence food security and farmer income, while reducing emissions”, and (2) “protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks”.

The implementation of the CRGE is based on an inter-ministerial approach under the leadership of the Prime Minister’s Office. Institutions involved include the Environmental Protection Agency (EPA), the Ethiopian Development Research Institute (EDRI), other ministries and government agencies. The Ministerial Steering Committee is responsible for strategy development as well as for decisions about direction and sector initiatives. Figure 6 indicates the management structure for the strategy. In 2012, the Government created a national financial mechanism to support the implementation of the CRGE. The so-called CRGE Facility will provide a vehicle for the mobilization, access and combination of international funding sources. The UNDP Multi-Partner Trust Fund Office serves as a provisional trustee.¹⁷

¹⁷ More information at UNDP Multi-Partner Trust Fund (MPTF) Office: Ethiopia Climate Resilient Green Economy Facility. MPTF Fact Sheet. Available at: <http://mptf.undp.org/factsheet/fund/3ET00>

Figure 6: Management structure of the Climate-Resilient Green Economy Strategy (Federal Democratic Republic of Ethiopia 2011 Path).



The CRGE proposes specific mitigation activities, based on the analysis and initiatives identified by Sub-Technical Committee (STC) for different sectors, including forestry, soil, and livestock. REDD, and a similar mechanism for Reduced Emissions from the Livestock Sector (RELS), are highlighted as ‘investment-ready’ initiatives. For RELS, the STC has identified three mitigation actions that together amount to a mitigation potential of 45 Mt CO₂e until 2030: increased productivity, changes in animal mix, and mechanization. Apart from these investment-ready projects, for each sector, the STCs provide very comprehensive assessments of specific mitigation initiatives, potential levers, feasibility, costs, benefits, resource requirements, and existing projects. Figure 7 provides an example of activities, mitigation potential, and abatement costs in the livestock sector.¹⁸

¹⁸ Rangeland/pastureland management is discussed but not included in this figure.

Figure 7: Mitigation potential and abatement costs of activities in the livestock sector (Federal Democratic Republic of Ethiopia 2011 R-PP).

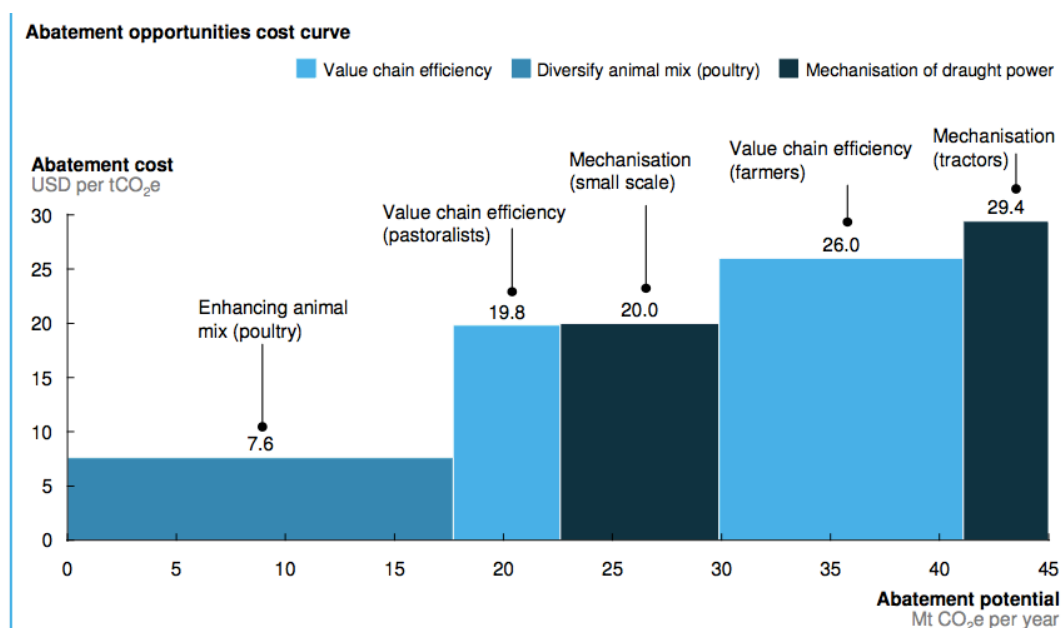


Table 6 provides an overview of mitigation actions and their mitigation potential in the forestry, livestock and soil sectors.

Table 6 Mitigation activities and emissions reductions potential (Wilkes *et al.* 2013)

Activity	Emissions reduction potential by 2030, in megatons CO ₂ e
Ethanol / biodiesel production	1
Change herd mix for more efficient feed conversion	18
Better feed, breeds, management, lower age at take off	17
Reduce draught animal population	4
Improved range management	3
Improved agronomic management of soils	40
Increase yields (better seeds, fertilizers, agronomic practices)	27
Irrigation in arid lands	2-9

Ethiopia is committed to agricultural development by contributing a significant share of public funding to the sector, complemented by international support (Ministry of Agriculture and Rural Development Ethiopia 2010). In 2009, the government signed a Comprehensive Africa Agriculture Development Program (CAADP) Compact, an initiative within the African Union's New Partnership for Africa's Development (NEPAD) with the objective to increase

economic growth based on agriculture-led development. Participating countries have agreed to increase public investment in the agricultural sector to at least 10% of their national budgets and to increase agricultural productivity by at least 6% (CAADP 2013). By 2010, Ethiopia exceeded its Compact commitments.

The operationalization of the CAADP is guided by a Policy and Investment Framework (PIF). It defines four strategic objectives (Ministry of Agriculture and Rural Development Ethiopia 2010):

- To achieve a sustainable increase in agricultural productivity and production
- To accelerate agricultural commercialization and agro-industrial development
- To reduce degradation and improve productivity of natural resources
- To achieve universal food security and protect vulnerable households from natural disasters

The PIF is aligned with the objective to become a middle-income economy by 2020, as consistently embodied in other national policies, including:

- Five-Year Growth and Transformation Plan 2010/11 to 2014/15 (FYGTP)
- Plan for Accelerated and Sustained Development to End Poverty 2005/06 to 2009/10 (PASDEP)
- Ethiopia's Agriculture Sector Policy and Investment Framework: Ten Year Road Map 2010-2020
- Rural Development Policy and Strategies (2003)
- Strategy for Agricultural Development-Led Industrialization (ADLI)

In addition, Ethiopia is a FCPF participant and submitted a Readiness Preparation Proposal (R-PP) in 2011. After some revisions, the FCPF R-PP was signed and went into effect in October 2012, and the REDD+ readiness implementation was officially launched in January 2013. Ethiopia's REDD+ readiness process takes a landscape approach and aims to create a land-use strategy instead of a REDD+ specific strategy. The R-PP supports a set of measures for improved land management to reduce agricultural expansion, including: to increase productivity and intensification, grazing land management and pasture improvement

techniques, to integrate animal feed and fertilizer production into reforestation, and “profitable forestry” (FCPF 2013 Ethiopia).

Agricultural climate readiness

With the CRGE vision and strategy, the government has demonstrated strong political commitment for climate change mitigation and low-emissions development of the agricultural sector (expert interviews). The institutional framework established as part of the CRGE process, including the financial mechanism as well as procedures for cross-sectoral consultations, present an important element for a readiness process. Despite these positive developments, some uncertainty has emerged with a recent restructuring of the government. In June, a draft bill proposed the transformation of the EPA into a Ministry for Environment and Forest (Abiye 2013). There is still a strong need for institutional and technical capacity building.

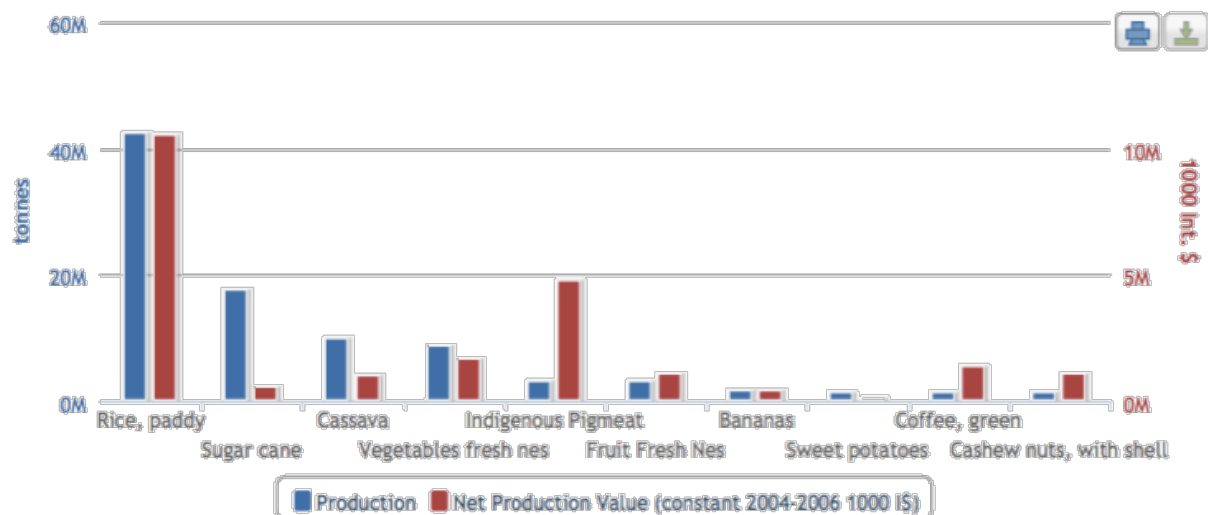
Readiness in the agricultural sector does not go far beyond the comprehensive and detailed proposals for agricultural mitigation initiatives outlined in the SRGE strategy, e.g., there is no MRV system. However, given the sector’s role as a driver of deforestation, an agricultural readiness process could, to a large extent, build on or learn from the on-going REDD+ process, in terms of technical and institutional capacity building, for the development of technologies for sustainable agricultural intensification or the funding mechanism. Currently, the REDD+ process is still in a very initial state. The understanding of agricultural drivers and awareness of REDD in the agricultural sector, for instance, is limited, and the focus of REDD+ activities is still unclear. But the REDD+ process is expected to advance quickly with the support of recently disbursed donor funding (e.g., from Norway, the United Kingdom Department for International Development - DFID). The design phase has just started in 2013-2014 and will continue for about 18 to 24 months. In addition to training and capacity building, the phase will result in comprehensive assessments of drivers, institutional framework, benefit-sharing arrangements, and MRV systems, etc., as to provide the basis for the implementation phase and the emission reduction phase. Several successful pilot projects could serve as models.

Annex 1.3 Vietnam Case Study

Sector overview

Vietnam is one of the countries most affected by climate change, in particular the agricultural sector, which is dominated by small-scale farming systems and accounts for roughly 20% of GDP¹⁹. Paddy rice is the most important crop, covering three-quarters of the harvested area, employing two-thirds of the rural labour force, and providing a major source of livelihood, income and staple food, especially for the poor. Rice is important for subsistence with only about one-quarter of harvested rice entering the market (Yu *et al.* 2013). Figure 8 presents the top 10 agricultural commodities by production amount and value. Other than rice, important products include sugar cane, cassava, vegetables, coffee, and pig meat.

Figure 8: Production amount (on the left) and value (on the right) of TOP 10 commodities (FAOSTAT)



The agricultural sector, and rice cultivation in particular, has seen rapid growth since the mid-80s, attributable to economic and tenure reforms (*Dôĩ mới*), the widespread adoption of modern varieties, improved irrigation infrastructure, and the application of synthetic fertilizers and pesticides. Yield improvements and intensification have contributed to economic growth, food security and poverty alleviation, transforming a food-deficit country into one of the leading exporters of rice and other agricultural products. In recent years, however, typhoons,

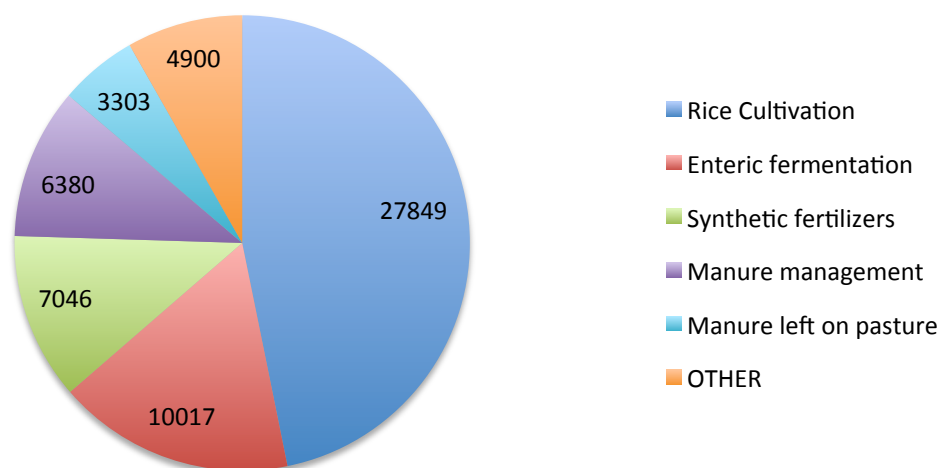
¹⁹ General Statistics Office of Vietnam. Available at: <http://www.gso.gov.vn>

floods and droughts have substantially reduced yields. In particular for rice, yields have been stagnating. Technological modernization has led to impressive gains in production and welfare, but at high environmental and social costs. In combination with increasing pressure on agricultural land from industrialization and urbanization, a potential decline and increasing variability in productivity pose a serious threat to food security and welfare (Fortier & Trang 2013).

Agricultural emissions

Rice cultivation offers significant potential for mitigation, including improved management of water, fertilizer, manure, and residues, and the adoption of new varieties. Other important emissions sources include agricultural soils, livestock (enteric fermentation) and manure management (Socialist Republic of Viet Nam 2010). The agriculture sector also plays a major role as a direct driver of deforestation, mainly due to the conversion for export commodities (Socialist Republic of Viet Nam 2011). Figure 9 shows the most important sources of emissions in the agricultural sector. Rice cultivation is the most important emitter in the agricultural sector, accounting for almost half of all emissions mainly from methane, followed by livestock (including enteric fermentation and manure).

Figure 9: Agricultural emissions in Gg CO₂e, 2010 (FAOSTAT)



Policies and Programs Relevant for Agricultural Mitigation

With an initial focus on adaptation, Vietnam has adopted several policies defining the strategy and framework for climate change:

- National Target Program to Respond to Climate Change (2008)
- Support Program to Respond to Climate Change (2009)
- National Climate Change Strategy (2011)
- National Action Plan to Respond to Climate Change (2012)

In 2011, Vietnam adopted the Program of GHG emissions reductions in the Agriculture and Rural Development Sector up to 2020 (Ministry of Agriculture and Rural Development Vietnam 2011). It sets an emissions reductions commitment of 20% by 2020 and outlines mitigation targets and activities for specific subsector. Major commitments for the sector are presented in Table 8.

Table 8: Mitigation activities and targets (FAOSTAT)

Subsector	Activity	Target in million tons CO ₂ e
Crop production		
Rice cultivation	Improved cultivation techniques for rice production, such as water irrigation and inputs savings, including the system of rice intensification (SRI), the 3 reduction 3 gains system, alternate wetting and drying system, etc.	4.18 (on 3.2 million ha)
Rice residue management	Improved residue management, including the collection and reuse of straw, and restrictions on burning and burying	1.54 (for all rice cultivation)
Other	Technical solutions to increase fertilizer efficiency; Transformation of rice cultivation areas to industrial crops with lower emissions and higher economic revenue, etc.	Unspecified
Livestock production		
Feedstock	Scale up processed feed to 30%	0.91
Dairy cows	Provide molasses urea blocks for 192,000 cows	0.37
Manure management	Biogas installation;	1.46
	Composting of pigs and poultry waste in households	3.56

Responding to concerns over the quality and sustainability of agricultural growth, the government has adopted a Program on Restructuring the Agricultural Sector towards Greater Added Value and Sustainable Development.

In addition, the government has adopted several REDD+ policies with implications for the agricultural sector. Vietnam is a UN-REDD National Program Country (currently in phase II);

it participates in the FCPF and submitted a Readiness Preparation Proposal in 2008. In 2012, the government approved a National REDD+ Action Program, outlining Vietnam's strategic options, such as forest policies, legislative and administrative reform, integrated land-use planning and zoning, improvement of forest tenure security, enforcement of planning and environmental requirements, promotion of alternatives to forest conversion and forest degradation. An independent evaluation of the UN-REDD Program has found that the program's design and strategy was ill defined and overly ambitious. "REDD readiness" was not well understood and some components and steps were missing. However, given its early start (2009) and the revisions of the REDD readiness process (both UN-REDD and FCPF), this is reasonable. More robust initial analysis would have better informed subsequent design and policy formulation processes.

Other policies relevant for the agricultural sector include:

- 2010 to 2020 Agricultural and Rural Development Strategy
- 2011-2015 Socio-Economic Development Plan
- Green Growth Strategy

Climate Change Readiness in Agriculture

As Vietnam was one of the early countries to sign up for the REDD+ process, the work on building capacity and institutions within the Readiness Phase is advancing. Experts noted that there are still a number of problems, for example concerning data and MRV. Similarly, the private sector is not engaging as hoped, but the progress in this area is visible. Despite the fact that forestry and agriculture are both part of the Ministry of Agriculture and Rural Development, experts report little cooperation between the two departments, which could inform a possible mitigation process in agriculture. So far, there are no real 'pull factors' that could help to move the agricultural sector towards a model that better incorporates the mitigation goal for agriculture, though the recently developed target for reducing emissions from agriculture by 20% is a step in this direction. It still needs to gain better traction and political support outside the agricultural ministry, experts report.

Work on mitigation practices for agriculture is on-going, with international support from the FAO, the University of Aberdeen, Bioforsk (Norway), and others. The work focuses particularly on low-emission practices in rice (alternative wetting and drying, biochar

incorporation, etc.), livestock management practices, and soil carbon sequestration. However, translating this research into a number of concrete recommendations for farmers has been seen by experts as still taking time, partly due to low capacity among extension agents in this area, a lack of financial support and adoption incentives. Experts repeatedly emphasize the need to make the case for farmers to receive not only mitigation benefits, but also the potential economic benefits of risk mitigation and the easing of particular constraints around production factors, including labour.



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