



Agriculture, Forestry and Other Land Uses (AFOLU) and the Climate Bond Standard

Background Paper to eligibility criteria

**AFOLU Technical Working Group
Climate Bonds Initiative**

DRAFT FOR PUBLIC CONSULTATION

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I. Introduction

The Agriculture, Forestry and Other Land Use sectors, including fisheries (hereafter referred to as AFOLU) play a critical role in the global carbon cycle, as they provide both opportunities for emission reductions and can act as a carbon sink. Developing approaches that enable investors to identify AFOLU bond issuances that have a beneficial climate-related impact is important, as it encourages the direction of significant capital towards green growth, which is a widely recognized need for the global response to climate change.

This paper provides context to the work of the AFOLU Technical Working Group (TWG) under the Climate Bond Initiative (CBI) Standard and Certification Scheme. The AFOLU TWG has explored the issues around developing 'climate-smart' eligibility criteria for bonds linked to the AFOLU sectors. In addition to setting out the eligibility criteria, this paper also presents the issues considered by the TWG in arriving at the proposed eligibility criteria.

Issues discussed by the TWG included:

- Should the eligibility criteria be based on AFOLU interventions or outcomes?
- How broad should the scope be for eligible AFOLU interventions?
- Beyond mitigation (i.e. avoided Greenhouse Gas (GHG) emissions and carbon sequestration), what other considerations (e.g. adaptation and resilience, social safeguards and improved livelihoods) should be addressed in the eligibility criteria?
- Which elements of existing standards should be incorporated in the CBI AFOLU standard?
- How narrow or broad should the AFOLU standard be in order to minimize overlap with other CBI standards?

In considering these issues, the TWG focused on two over-arching objectives:

1. Credibly verifying environmental and social outcomes of activities supported by bond issuances
2. Maximizing 'viable' bond issuances (i.e., eligibility criteria are easy for issuers to use and enable a wide range of suitable AFOLU interventions)

Accompanying this background paper are the proposed eligibility criteria for AFOLU investments linked to certified Climate Bonds. These criteria support AFOLU investments where all of the following conditions are met:

- The investment results in land and natural resource (soils, plants and animals) management that directly contributes to reducing atmospheric Greenhouse Gas concentrations (GHGs), consistent with avoiding dangerous climate change, and, at minimum, has a net positive impact on mitigation (i.e. net GHG reduction).
- The issuance should demonstrate significant attention to climate risks and a clear plan for achieving a positive effect on adaptation capacity and socio-ecological resilience in a manner consistent with international, national and sectoral priorities and other relevant, scientifically robust guidance (see Appendix 3 for selected references).
- There is periodic and independent third-party assessment by accredited assessors of alignment between (i) stated uses and objectives for bond proceeds and (ii) actual activities and outcomes (direct, relevant impacts) supported by bond proceeds.
- There is a neutral (at minimum) or positive net impact experienced by stakeholder groups in local communities and a neutral (at minimum) or positive net effect on biodiversity and regulating ecosystem services (e.g., water supply, air quality). Compliance is maintained with all existing relevant regulations.

These criteria should be recognized as a starting point. The TWG has done its best to present a comprehensive first version of the AFOLU sector-specific guidance. It is expected that additions and revisions will be made over time, based on issues that arise in early stage application of this guidance and availability of new or improved methodologies that can increase the climate mitigation integrity of subsequent bond issuances. The TWG recommends that the AFOLU guidance be reviewed annually for the first 3 years of its use.

Vision

As part of the Climate Bonds Initiative's (CBI) goal to accelerate a global transition to a low-carbon, resilient economy, the AFOLU climate bond standard seeks to maximize viable bond issuances with verifiable environmental and social outcomes. This guidance should be recognized as the first set of sector-specific guidance for AFOLU. All groups and individuals involved recognize the breadth and complexity of this sector and emphasize that this guidance be seen as a foundation on which to encourage increased transparency, and consistency in application of scientific best practices and data in the context of bond issuances. Note that CBI expects that the AFOLU guidance may be tightened over time, however any approvals given will not be removed or changed retroactively.

Objective

To create sector-specific guidance for investors, industry and governments that will help drive transparency and better reporting for projects and assets linked to AFOLU Climate bonds.

Process

The Climate Bonds Initiative, together with Clarmondial, undertook development of the AFOLU sector-specific guidance under the Climate Bonds Standards in response to industry demand. The TWG members were selected based on their scientific knowledge and on-the-ground AFOLU experience. Beginning in October 2014, TWG members were invited to provide primary inputs and to set initial parameters for criteria development and make ongoing inputs through conference calls and review of interim drafts.

A separate Industry Working Group (IWG), including members from corporate agribusiness, forestry, consulting, banking, and asset management, was convened in January 2015 to serve as a 'sounding board' for draft outputs from the TWG. The IWG members did not have any veto power over decisions made by the TWG, but ensured that industry had a chance to comment on the draft output and ensure practicality.

Several versions of this guidance have been shared with both groups. The current draft has general approval of the TWG and the IWG members, built through many months of discussion and consensus development. The next step is soliciting public comments over a 60-day period, which will be reviewed by the TWG and used to revise the AFOLU criteria prior to publication of the final guidance. It is envisaged that this AFOLU guidance will be reviewed and updated on an annual basis.

Participants

For a list of TWG and IWG members, please refer to Appendix 2.

Accompanying documents

This document is supplemented by the following documents, which are also available to the public:

- AFOLU Industry Guidance
- Climate Bonds Standard

II. Low-carbon AFOLU investments

'AFOLU-related investments' refers to management of land and natural resource (soils, plants, animals, water, air) within a specified production area, including but not limited to:

- Working agricultural land (cropland, farmland, conservation lands, orchards, etc.)
- Livestock
- Private and public forest lands
- Pasture, grasslands and rangelands
- Wetlands and mangroves and coastal and riverine fisheries
- Inputs to and outputs from landscapes and aquatic systems intended to meet demands for food, fuel and fiber (including harvested wood products)

It also includes associated infrastructure and technologies.

AFOLU-related investments have received significant attention since the food price spikes of 2008, both negative (e.g. in the context of food price speculation and land grabs) and positive (e.g. as a 'real asset' investment alternative to equities). AFOLU-related asset classes traditionally form an important part of many institutional investor allocations such as forestry in the US and agriculture in Australia. In addition these types of investments are essential components of most emerging economies where AFOLU-related sectors are key contributors to national economies state budgets, employment, and food and nutritional security, among other aspects. Appropriate and responsible investments in the AFOLU-related sectors can help developed and emerging economies transition to more sustainable growth pathways, especially where these investments help to increase adaptation capacity and resilience to climate change. Generally, investor interest in these sectors is likely to increase due to fundamental drivers such as the need to meet higher caloric demands for a growing global population with a fixed resource base (land, aquatic systems) complemented by global concerns about food security and a rising interest in impact investing.¹

Climate change mitigation and AFOLU

The Intergovernmental Panel on Climate Change (IPCC) estimates that the AFOLU sectors contribute about 24% of direct GHG emissions.² Research by the United Nations Food and Agriculture Organization (FAO), published in April 2014, indicates that GHG emissions from agriculture, forestry, and fisheries have nearly doubled over the past 50 years and could increase a further 30% by 2050 in the absence of greater reduction efforts.³

The IPCC indicates that the economically feasible mitigation potential for the AFOLU sectors in the year 2030 is expected to be 7.2 to 11 GtCO₂eq/year.⁴ Demand side GHG mitigation measures (e.g. encouraging changes in dietary habits; reducing retail and consumer food waste) have a significant, but more uncertain potential for mitigation estimated at 0.76 to 8.6 GtCO₂eq/year by 2050.⁵ Note that the TWG has excluded demand side measures from this standard for the time being. Major categories for AFOLU mitigation include, but are not limited

to: afforestation and reforestation; sustainable forest management and reducing deforestation; cropland and tree crop management; grazing land and rangeland management; restoration of organic soils⁶; fisheries management; and wetland and peatland rehabilitation and management. Across these categories, there are specific management practices with implications for volumes of GHG emissions and the trends for some of these are illustrated in Figure 1 (note that the figure does not account for carbon sinks, and soil carbon variations are only partially considered within this diagram).

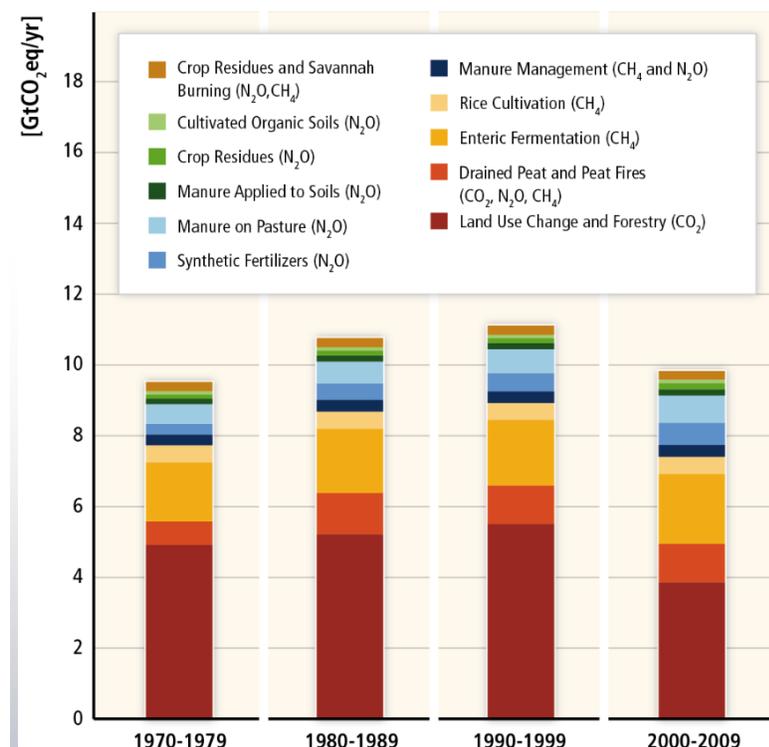


Figure 1: Agriculture and forestry emissions, 1970 – 2009, IPCC Fifth Assessment Report⁷: Agricultural non-CO₂ emissions (e.g. N₂O, CH₄) have risen, but emissions from land use change and forestry have decreased.

Many companies operating in AFOLU-related sectors are exploring how they can increase the efficiency of management in their direct operations and in the operations of their suppliers to reduce GHG footprints.⁸ Mitigation measures in the AFOLU sectors can take the following major forms:

- Carbon sequestration (e.g. carbon uptake in plants and soils);
- Reduced GHG emissions, and;
- Increased GHG emission efficiency (i.e. fewer GHGs emitted per unit of production).⁹

Examples of potential interventions are summarized in Table 1. Studies suggest that significant, relatively low-cost mitigation potential exists in the AFOLU sector, and that some of these opportunities may have significant economic and financial benefits for producers and nations.¹⁰

While global and regional projections of AFOLU mitigation opportunities are available, these opportunities need to be calibrated to specific geographic as well as sector-wide contexts with consideration for intervention success factors such as socio-economic conditions, tenure arrangements, commodity market access, etc.¹¹

Table 1: Some examples of some potential AFOLU-related interventions to mitigate GHG emissions and/or increase carbon sequestration. Please note that these are selected examples and the list is not comprehensive.

Agriculture	Forestry
<ul style="list-style-type: none"> • Restoration of organic soils and degraded lands • Agroforestry, introduction of perennials in the farming landscape • Conversion to improved management practices e.g. certification, introduction of drip irrigation to help adapt to increased water stress and other technologies to improve resource use efficiency • Resource use (including energy) efficiency upgrades of agricultural infrastructure and supply chains • Improved agriculture and manure management • Sustainable intensification of production, e.g. through mixed cropping • Financing sustainable sourcing, e.g. trade finance for certain products 	<ul style="list-style-type: none"> • Afforestation and reforestation, e.g. green-field forestry on degraded lands, land reclamation • Improved Forest Management e.g. certification of forestry practices • Protecting natural forest e.g. under certification, as part of an set-aside • Enhancing efficiency e.g. tree-crops rejuvenation and rehabilitation • Carbon capture in Harvested Wood Products and use of woody biomass • Improved resource use (including energy) efficiency in processing, including wood drying kilns and mills • Locking up carbon in long term pools, e.g. Harvested Wood Products (HWPs) • Incorporating set asides, e.g. for High Conservation Value Forests (HCVFs)

Companies and other entities that seek to achieve net reduction in AFOLU emissions will be interested to generate reasonably accurate estimates of GHG emissions reductions that are likely to result from changes in land and water management and supply chain processes. Various tools have been developed for estimating mitigation impact in the AFOLU sectors to support regulated and voluntary GHG offset programs and supply chain approaches. Some well-known examples include¹²:

Approved methodologies for offset standards:

- UNFCCC approaches (Clean Development Mechanism, Joint Implementation)
- National and state approaches (California offset protocols)
- Voluntary carbon market approaches (Verified Carbon Standard, Gold Standard, American Carbon Registry, Climate Action Reserve)

GHG estimation tools:¹³

- The Cool Farm Tool
- CALM Calculator
- COMET-Farm
- EX-ACT Carbon Balance Tool
- Carbon Benefits Project toolbox

Climate change adaptation and resilience, and AFOLU

Appropriate investment in AFOLU-related sectors is also critical for promoting adaptation¹⁴ to climate change and facilitating increased climate resilience¹⁵ in the social, economic, and environmental systems that underlie production of food, feed, fuel, and fiber. Yields from land- and water-based production systems are likely to be influenced by climate change, with impacts on profitability, food security and health, and government budgets. For example, the IPCC's Fifth Assessment Report (2014) noted that the negative impacts of climate change on crop yields have been more common than positive impacts.¹⁶ This includes the significant uncertainty regarding the impact of elevated CO₂ levels on the nutritional quality of plants, such as the protein content of wheat.¹⁷ Climate change trends are also affecting the volumes and distribution of aquatic species.¹⁸ Figure 2 (A), (B) and (C), illustrate the impacts that climate change is likely to have.

Maintaining and enhancing productivity of agricultural and forested landscapes and aquatic ecosystems will increasingly require strategic investments to promote adaptation capacity and resilience. This should be of immediate interest to governments, which are developing and implementing the economic framework for natural resource management, and also to farsighted AFOLU asset owners and managers concerned about long-term profitability and revenue predictability. To counteract material impacts of climate change on businesses operating within the AFOLU sectors, investments to promote adaptation capacity and resilience are likely to be necessary. Cost-effective adaptation investments may avert the costs of up to 65% of projected losses due to climate change.¹⁹

Bond issuers can refer to national-level adaptation planning to understand major opportunities and constraints for AFOLU projects in the regions where they operate. Under the UNFCCC, fifty Least Developed Countries (LDCs) have submitted National Adaptation Programmes of Action (NAPAs), which address urgent and immediate adaptation needs.²⁰ A number of countries have developed National Adaptation Plans (NAPs), which are intended to encourage integrated development and cross-sector planning to address medium- to long-term climate change threats to food security, livelihoods, and economic progress.²¹ Other countries have submitted adaptation components in National Communications to the UNFCCC²² or developed climate resilience strategies and regional initiatives.²³

Many companies have begun to invest in adapting their businesses to make them more resilient to climate change.²⁴ However, it is generally recognized that investment mechanisms for climate change adaptation and resilience are at an earlier stage of development than mitigation mechanisms, which have been tested in a broader range of sectors and geographies.

Adaptation and resilience interventions are likely to vary by region, but could include²⁵:

- Introducing new plant and animal breeds (e.g. improved varieties that have a higher drought tolerance, or that are less susceptible to diseases likely to be exacerbated as a result of climate change);
- Upgrading or creating irrigation and agricultural water management systems;²⁶
- Installing and upgrading enhanced systems for observation and early warning (e.g. weather information systems);
- Improved marine and fishery management including information systems to promote resource use efficiency, e.g. minimize waste;
- Facilitating changes in practices (e.g. providing training and inputs to enable land managers to implement agroforestry and conservation agriculture or to more efficiently use agrichemicals such as nitrogen fertilizers);

- Supporting uptake of land management strategies that are better suited to expected climatic changes;
- Establishing wildfire management systems by providing equipment, early warning systems, and training;
- Creating infrastructure to reduce post-harvest losses and waste (e.g. building silos and cold storage facilities);
- Protecting or enhancing natural buffers in coastal and riverine zones (e.g. mangroves, sea grass, corals) and restoring wetlands to reduce impacts of sea level rise, flooding, storm events;
- Introduce new agricultural techniques to restored wetlands (e.g. reed or Alder wood as a renewable resource), to keep them in production while saving the carbon stock;
- Fostering sustainable aquaculture practices, including strategically located fish farms managed to the highest industry standards (including input sourcing and management);
- Creating micro-credit and insurance mechanisms to help landowners and land users cope with extreme events;
- Investing in food security initiatives, in particular localized initiatives that support local nutrition security;
- Promoting the increase in carbon sinks, e.g. in protecting primary forests, supporting increase in woody biomass growth, and promoting long-lived, recycled Harvested Wood Products (HWPs), and;
- Adapting trade finance and working capital provision so that it facilitates improved management along supply chains.

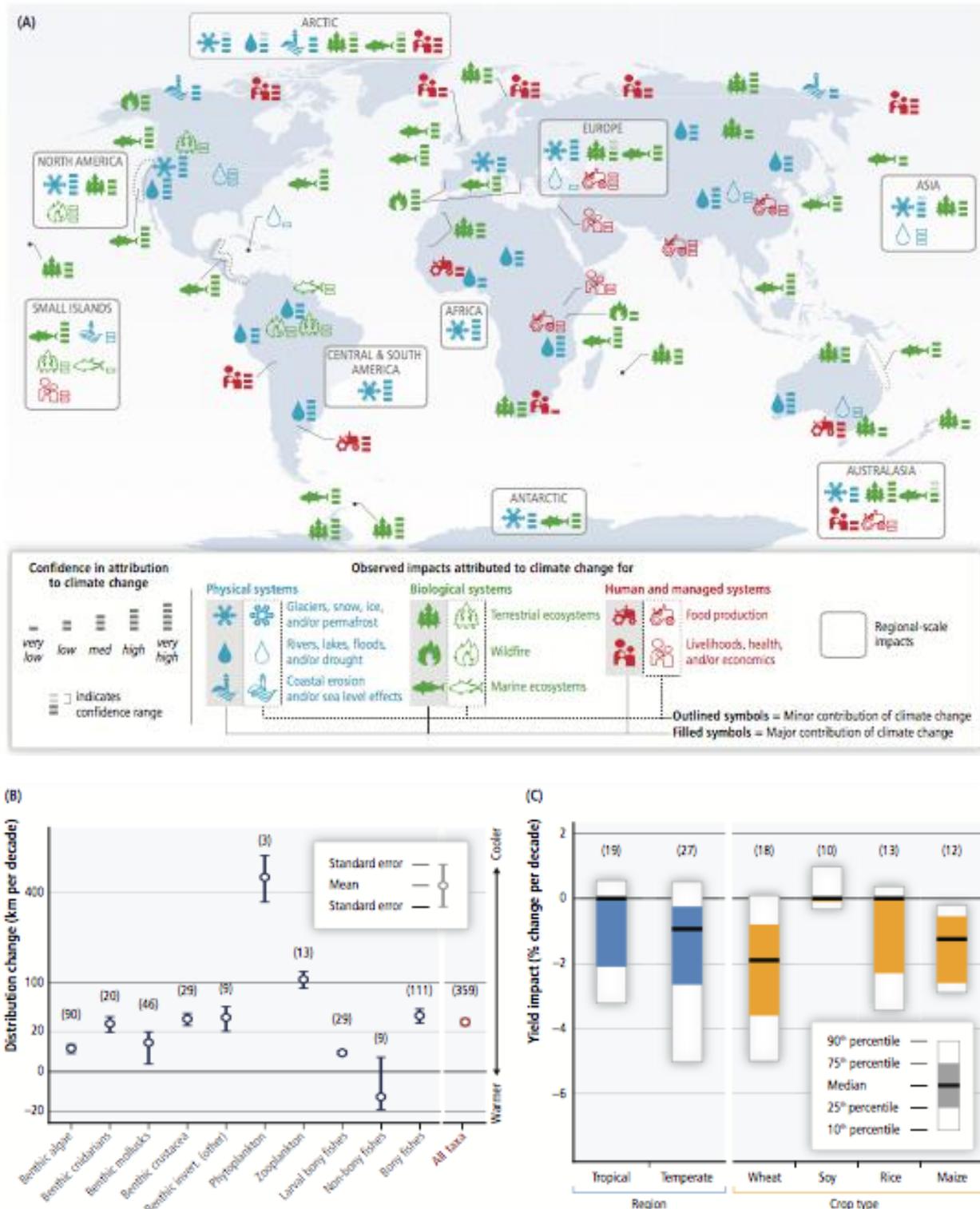


Figure 2: From IPCC Working Group II, Fifth Assessment Report (2014): (A) Global patterns of impacts attributed to climate change. Symbols indicate categories of attributed impacts, the relative contribution of climate change to the observed impact, and confidence in attribution. (B) Average rates of change in distribution (km per decade) for marine taxonomic groups based on observations over 1900 – 2010. Positive distribution changes are consistent with warming. The number of responses analyzed is given within parentheses for each category. (C) Summary of estimated impacts of observed climate changes on yields over 1960 – 2013 for four major crops in temperate and tropical regions, with the number of data points analyzed given within parentheses for each category.²⁷

III. AFOLU bond market and potential for growth

Funding needs and revenue sources

According to the 2014 IPCC Working Group III summary, between USD 343 and 385 billion per year is needed to stabilize global GHG emissions.²⁸ However, it is unclear if this estimate includes AFOLU. Estimates for amounts required for the AFOLU sectors vary widely. The UNFCCC has estimated that globally about USD 14 billion will be required for AFOLU in 2030. Slightly more than half of this is expected to be required for developing countries alone, and approximately USD 11 billion will be needed to purchase new capital (e.g. to irrigate areas, adopt new practices, and to move processing facilities).²⁹ In the context of the forestry sector, estimates vary.³⁰

- The International Institute for Applied Systems Analysis (IIASA) suggests USD 30–53 billion are required per year to achieve zero net deforestation and degradation by 2020;
- UNEP estimates that USD 17-33 billion per year is required to achieve a 50% reduction in deforestation by 2030, and;
- WWF estimates that a minimum of USD 42 billion per year is needed by 2020.

Estimates suggest that between USD 7 billion and 7.6 billion are required per year for adaptation measures in the Agriculture, Food and Forestry sectors.³¹ In its most recent publication (2014), the IPCC summarizes various studies, indicating that adaptation could be as little as USD 9 billion and as much as 109 billion per year.³²

Several UNFCCC mechanisms have stimulated limited funding for mitigation and adaptation in the AFOLU sectors including through the Adaptation Fund, the UNFCCC Clean Development Mechanism (CDM) and Joint Implementation (JI) mechanism, which have influenced the creation of a global voluntary carbon market. While REDD+³³ has received significant attention in policy dialogues such as the UNFCCC, the UN Convention on Biological Diversity (CBD), the Convention to Combat Desertification (UNCCD), and the post-2015 Sustainable Development Goals (SDGs), funding for low-carbon growth in AFOLU sectors has been relatively modest. At a global level, sales of voluntary or government-sanctioned carbon offset credits are unlikely to generate sufficient funding to meet AFOLU sector mitigation and adaptation needs.³⁴

The objective of the CBI AFOLU standard is not to specify eligibility criteria for receiving offset credits that can generate revenue through sale of credits in carbon markets. Offset (carbon credit) based revenue streams are only likely to be considered relevant by investors where there is robust market demand for purchase of offset credits (e.g. geographies where there is a clear policy framework such as in the US State of California).

To mobilize investment in a sustainable AFOLU sector from large pools of global capital, issuers of AFOLU climate bonds will need to repay bond debt by generating revenues in more traditional ways such as through sale of agricultural, forestry, or fishery products or revenue streams related to production (e.g. inputs, trade finance).

Current state of play for AFOLU-related bonds

Research conducted by CBI and HSBC has identified up to USD 4.2 billion in outstanding bonds clearly aligned with the AFOLU sector, representing 1% of the total universe of climate-themed bonds.³⁵ Paper and pulp manufacturers were responsible for the majority of the 42 AFOLU-related sector bonds described in the CBI and HSBC report. For example, Swedish forest

products company SCA issued a “green bond” in 2014, which included a commitment to increase forest cover by 1% each year.

Bonds are more commonly used in the agricultural sector than in the forestry sector. Existing examples of agricultural ‘green’ bonds are limited, however Australia has experience with agricultural project bonds and Brazil with rural bonds.³⁶ In 2014, the legislature in the US State of Hawaii approved issuance of special purpose revenue bonds to offer loans and financial assistance to agricultural enterprises.³⁷ Many corporations in the agriculture, food and beverage sectors have experience with bonds (e.g. recent corporate issuances in Indonesia³⁸, and internationally³⁹) and these are relatively commonplace among larger companies in the food and beverage and agriculture-related industries. Table 2 provides recent examples of bonds in the agriculture and forestry sectors.

Importantly, bond issuers are generally not required to be explicit in their use of proceeds. The Climate Bonds Standards are pioneering in that they promote transparency on intended use of proceeds and independent review of GHG baselines and proceeds management, thereby holding issuers accountable for activities and outcomes. However, given that the starting point for transparency around issuances and use of proceeds is low, it is important not to set hurdles too high given the current relative lack of strong financial incentives for issuers.

Table 2: Examples of recent bonds in the AFOLU sectors

Sector	Issuer	Year	Description	Credentials
Forestry - mixed	SCA	2014	SEK 1.5bn bond, eligible projects for funding: renewable energy, fuel-switching to bio-fuels, biofuels from forest waste, energy efficiency, water & waste management, sustainable forestry	Cicero second opinion
Agriculture - mixed	BRF	2015	Eligible categories: energy efficiency, GHG emission reduction, renewable energy, water management, waste management, sustainable & efficient packaging, sustainable forest management, raw material use reduction	Sustainalytics second opinion
Agriculture and livestock	Beijing Shunxin Agriculture Co. Ltd.	2015	RMB 1bn general bond issue	N/A
Agriculture	DLG	2013	DKK 1bn general bond	N/A
Forestry	Sumitomo Forestry	2013	JPY 20bn to pay back first series of unsecured corporate bonds, invest in wood construction material businesses and other businesses	N/A
Fisheries	Marine Harvest	2014	General corporate purposes	N/A
Fisheries	Minh Phu Seafood Co.	2014	VND 500bn for general corporate purposes	N/A
Livestock	Tyson Foods	2014	Financing of acquisition (Hillside Brands)	N/A
Agriculture	Golden Agri Resources	2012	\$1.5bn in Malaysian Ringgit for general corporate purposes	Sukuk
Agriculture	Monsanto	2013	\$1bn refinance purchase of The Climate Corporation and other general corporate purposes	N/A
Agriculture	Government	2014	Ca. \$1.5bn through the Bank of	N/A

	of Thailand		Agriculture & Agricultural Cooperatives to pay back debts associated with the rice pledging scheme	
Agriculture	Government of Vietnam	2012	Earmarking of government bonds for investments in upgrading irrigation systems, e.g. to control saltwater intrusion	N/A

How can bond certification help grow the market?

Capital markets have an important role to play in mobilizing equity and debt funding for green growth, including in the AFOLU sectors. Capital markets provide ways for existing and new companies, governments and other organizations to access sizeable funding, and can give the public an opportunity to support low-carbon growth through their investment choices as well as through institutional investors such as pension funds. Historically, interest in green growth and 'sustainability' has primarily been directed at equities, however the debt capital markets, including bond markets, are receiving increasing attention with respect to their role in financing green growth and the transition to a low-carbon and climate-resilient economy.

In order to meaningfully grow the market, bonds in the AFOLU sectors should fit the needs of both investors and issuers. Table 2 suggests that second party certification is only just starting to generate interest, and that the market as a whole is relatively nascent. Therefore, at this stage it is important to proactively engage issuers in order to illustrate that the potential benefits outweigh the costs and additional perceived risk (i.e. 'exposure' if environmental commitments are unmet). By determining the types of activities to finance through bonds, issuers will be key drivers for the AFOLU climate/green bond market, however potential bond investors can also drive the market's growth by signaling the types of investments they are eager to make.

For bond investors, this means eligibility criteria should promote bond issuances that are:

- Relatively straightforward, predictable, and easy to understand (e.g. in terms of the source and credibility of expected cash flows);
- Transparent regarding use of bond proceeds and intended impacts, allowing independent third-party scrutiny;
- Sizeable and liquid, and preferably rated, and;
- A comparable investment opportunity relative to non-green-labeled bonds. This may mean, for example, involving concessional funding or government incentives to improve the risk / return profile, particularly at this nascent stage.

For bond issuers, this means eligibility criteria should:

- Allow a relatively wide scope for eligible activities (e.g. climate risk reduction within agribusiness supply chains, out grower schemes for forestry plantations);
- Indicate scientifically robust references and approaches for calculating climate benefits (e.g. guidelines for selecting among existing methodologies and tools);⁴⁰
- Cater to a range of potential issuers (and users of the guidance), including: (a) relatively large companies, including banks, who able to aggregate across sectors and industries, (b) smaller companies and organizations, where there may need to be some aggregation and, or, concessional support, and (c) government agencies, and;
- Leave room for issuances that are short-term (e.g. 3-6 month tenor) *inter alia* trade / input finance, insurance, uptake of relevant, proven technology.

Development of the CBI AFOLU standard is intended to broaden knowledge and capacity among potential AFOLU bond issuers in order to promote major growth of an investment-grade climate bond portfolio. The standard will also facilitate the issuance of bonds from issuers who would otherwise find it difficult to gain recognition for their low-carbon investments. ‘First mover’ issuers will need to minimize potential reputational risks associated with making independently audited commitments. As bond issuers gain experience, better understanding of profitable deal sizes and structures will emerge for different types of AFOLU interventions.⁴¹ As AFOLU bonds are successfully issued, new investment sources are likely to open up and to meaningfully increase and diversify investor interest.⁴²

Creation of the CBI AFOLU standard presupposes significant latent demand for bonds among institutional investors that want to invest in ‘green’ initiatives with predictable cash flows – for example, bonds issued by governments⁴³ and development banks⁴⁴. Advent of the AFOLU bond standard will also test the extent to which land- and water-based mitigation interventions can be valorized without ‘payment for performance’ (i.e. offsets). By providing a clear definition of eligible activities, the AFOLU standard can help investors to find desired investment opportunities as inaugural CBI-certified bond issuers step forward.

Clear guidance should help to grow the market of investment-grade bonds that are clearly identifiable as ‘low-carbon’ and ‘climate smart’ AFOLU bonds and allow investors to easily incorporate them into investment strategies. It will also support the development of a securitization market for AFOLU assets through gradual investor education on asset performance and increasing familiarity.

Table 3 provides an overview of the potential bond types, issuers, and revenue streams of bonds that could be eligible for certification due to financing AFOLU deployment.

Table 3: Map of potential AFOLU-linked Climate Bonds

Bond-types	Issuers	Revenue streams	Purposes	Potential examples
Public sector bonds	Government agency	Government budget through dedicated Special Purpose Vehicle (SPV) backed by government guarantee	Enhance national food security	Climate-Smart Agriculture (CSA) ⁴⁵ infrastructure, e.g. weather stations and meteorological data collection, agricultural storage infrastructure.
Financial institution bonds	Bank	Pay back from borrowers, backed by bank	Increase financing to high-quality rural borrowers	Syndicated portfolio of loans to a set of agricultural borrowers (in particular those with good historic performance), e.g. local producers upgrading their operations
Portfolio bonds	Asset manager	Commercial activities	Leverage funding for a mix of investments	Portfolio of diverse yet related assets financed through a grouped bond issue, e.g. mix of new and existing forestry, agriculture investments
Project bonds	Project owner e.g. asset manager	Revenues from new / improved productivity	Leverage funding for a specific project	Large land rejuvenation project that is commercially viable (e.g. planting of tree crops on degraded lands)

Bond-types	Issuers	Revenue streams	Purposes	Potential examples
Corporate bonds	Food / beverage company	Returns from productivity and margin improvements (backed by corporate balance sheet / assets).	Increase & diversify investor engagement – source new forms of investment for supply chains	Investments in improved agricultural infrastructure (e.g. storage), certification of supply chains.

Note: Some bonds may be a combination of two approaches e.g. asset-backed securities backed by government agencies or local authorities; or covered bonds with financial institution and portfolio bond characteristics.

IV. Key issues in developing criteria

Starting point

The approach for developing criteria is defined in the introduction to the Climate Bond Standard.⁴⁶ The end goal of the initiative is to catalyze increased investment, by both private and public bodies, in material land- and water-based mitigation – including adaptation and resilience interventions – to accelerate a global transition to a low-carbon, resilient economy. For example, by financially empowering responsible players in the agri-food, forestry, and fishery sectors (ie, sustainability-seeking value chain actors), these entities may out-compete or positively influence their less responsible counterparts (eg, illegal forestry extractors). This necessitates development of verifiable, science-based criteria for certifying bond offerings linked to AFOLU-related assets and activities that result in beneficial climate-related impacts.

While mitigation through AFOLU interventions is clearly an essential part of the global response to climate change, there are several features that differentiate the AFOLU sectors from other arenas for climate bond issuance, specifically⁴⁷:

- Terrestrial and aquatic systems can act as both sources of or as a sinks for GHGs.
- Stocks vs. flows: some approaches measure GHGs from land use by estimating the difference in carbon stocks ('stock-difference method'), instead of looking directly at fluxes (measurement of emissions over intervals of time, which is common in other sectors).
- Impacts of natural events on rates of GHG emissions can be large (e.g. fires) and it may be difficult to separate 'natural' and anthropogenic impacts.
- Temporal cycles in GHG emissions, linked to management (e.g. harvesting) and other factors (e.g. drought), occur at multiple scales (e.g. annual, inter-annual).
- Issues of permanence and legacy of activities are complex: different carbon pools may be more or less vulnerable to future release to the atmosphere. Land management activities may have long-term impacts on emissions (e.g. draining of peatlands may influence GHGs for many decades). Saturation of GHG uptake will also vary due to management practices, and over time.
- Spatial variation in GHG emissions is very high, influenced by inherent landscape characteristics (e.g. different types of above- and below-ground carbon pools) and management decisions (e.g. using existing farmland vs. draining peatlands).⁴⁸
- Emissions and sequestration potential is highly heterogeneous in nature. The UNFCCC (and associated IPCC guidance) therefore encourages improving methodologies over time, while also stressing that time-series information must be comparable. Users of the CBI AFOLU standard will be encouraged to review relevant inventory information for

their country and sectors. This means that uncertainty around net emissions from this sector is high.

- AFOLU interventions have high relevance for adaptation efforts and importance for rural livelihoods and environmental integrity (e.g. biodiversity, watershed functioning, food security and thus political stability).

In this iteration of the AFOLU eligibility criteria, the TWG goes beyond broad principles to offer tangible guidance for bond issuers and investors. This iteration will initiate early experience with balancing the objectives of large volume of bond issues and mitigation integrity. By explicitly planning for revisions (annually for the first 3 years), obvious gaps can be filled, inconsistencies can be clarified, and new scientific knowledge and available methodologies can be integrated to shrink the error bars around mitigation estimates, while remaining realistic about cost-effective measurement. Revisions to the standard may emphasize distinguishing among different 'shades of green' (ie, bonds related to different magnitude of mitigation and adaptation; bonds with multiple environmental and social benefits) as well as setting higher thresholds for climate mitigation integrity (eg, for different geographies or practices). **Revised criteria will not be retroactively applied to bonds already certified under an earlier version.**

There remain a number of issues that the TWG considered in order to develop and finalize the criteria including:

- Should the eligibility criteria be based on either AFOLU interventions or outcomes, or both, or some combination of the two?
- How broad should the scope be for eligible AFOLU interventions?
- Beyond mitigation (i.e. avoided emissions, sequestration), what other issues (e.g. adaptation and resilience) should be addressed in the eligibility criteria?
- Which elements of existing standards should be incorporated in the CBI AFOLU standard?
- How narrow or broad should the AFOLU standard be in order to minimize overlap with other CBI standards?

Issue: Eligibility based on interventions, outcomes or a combination?

Defining bond eligibility based on interventions means that the process is tracked as a proxy for expected climate-related impact. Defining eligibility based on outcomes means that actual impacts are tracked (e.g. net reduction in GHG emissions in tCO₂eq). There are compelling reasons for using either interventions or outcomes as the basis for defining eligibility under an AFOLU standard.

On the one hand, defining a set of eligible AFOLU interventions is likely to:

- Be inflexible for bond issuers, but less open to misinterpretation regarding 'what's in and what's out.'
- Exclude important activities, which could inhibit some potential issuances.
- Be measurable during implementation phases.
- Place emphasis on implementation activities with less attention to actual environmental outcomes, although oversight of compliance may be more straightforward.

On the other hand, an outcome-based approach to defining eligible bonds is more likely to:

- Be flexible for bond issuers, although more open to misinterpretation regarding 'what's in and what's out.'

- Enable a broader scope for diverse interventions and leave more room for combining multiple interventions based on local context, but be difficult to specify comprehensively.
- Require measurements as outcomes occur or via appropriate proxy metrics.
- Place emphasis on achieving intended environmental outcomes, but also require more intensive monitoring to ensure compliance.

The TWG has discussed creating scope for use of either 'prescriptive' and, or, 'principles-based' approaches to the AFOLU eligibility criteria – or some combination of the two, including the possibility of specifying:

- A prescriptive approach for AFOLU interventions for which the net effects of implementation are well understood (in most relevant geographies) and for which robust methodologies have been developed under existing standards.
- Outcomes or principles-based guidance for AFOLU interventions for which the knowledge base is not yet comprehensive.

The TWG recommends initially prioritizing AFOLU interventions believed to represent the greatest mitigation potential, recognizing that these may not coincide with AFOLU interventions with the greatest potential for bond issuance.

Given that transparency tends generally to be low for how bond issuers use proceeds, it is unlikely that potential green bond issuers will have significant appetite for high monitoring costs, and this must be balanced with the need for bond-funded activities to be credible and robust. The Climate Bonds certification approach requires that an assurance report be provided by a qualified, accredited organization, and compliance with this will be checked from time to time to ensure compliance with the use of proceeds commitment by the issuer. If an issuer falls out of compliance with the Climate Bond Standard, they risk losing the Climate Bonds certification, which may result in negative publicity and reduced investor demand.

Conclusion: Interventions & Outcomes

The TWG has agreed that, given the variable levels of scientific certainty for different AFOLU interventions in different regions, a combined approach is advised, in particular in the initial stages of these guidelines. This means that bond issuances can assert one of the following approaches to be certified according to the CBI standard: (1) specify one or more well-characterized AFOLU interventions to be implemented with bond proceeds and estimate net GHG reduction based on best-available factors; or (2) specify a set of less well-characterized AFOLU interventions to be implemented with bond proceeds in combination with an impact monitoring plan.

Issue: Breadth of eligible AFOLU interventions?

There is a wide array of potential AFOLU interventions that could be defined as eligible under the AFOLU standard. These vary in terms of:

- Complexity:
 - Essential components such as management practices, training, infrastructure (e.g. storage, processing), information systems (e.g. weather), inputs (e.g. fertilizers, feed additives), and technologies (e.g. equipment, improved genetics);
 - Experience, capability, and suitability in different regions;
 - Heterogeneity of stakeholders;
 - Potential impacts on social issues (in particular land tenure) and biodiversity, and;

- Reliance on public support or policy changes.
- Financial viability:
 - Execution costs, including design and impact monitoring;
 - Ease and costs of monitoring activities, outcomes, and revenue and benefit flows;
 - Reliance on carbon offsets or Payments for Ecosystem Services (PES)⁴⁹ schemes for revenue generation (as opposed to initiatives that can marshal multiple potential revenue streams), and;
 - Financial viability under different commodity market conditions and payback periods.
- Evidence base for GHG reduction and co-benefits (in Non-Annex I countries, and even within Annex I countries).
- Cost-effectiveness.

While a conservative approach to eligibility, anchored in the set of approved methodologies under existing standards, is likely to foster better verification of ‘green’ outcomes,⁵⁰ it may also restrict issuances to initiatives that rely on PES and carbon offset schemes, which until now have been relatively weak revenue sources, and this is unlikely to change significantly in the medium-term. Liberal inclusion of AFOLU interventions, i.e. not restricted to activities certified under an existing carbon offset or PES scheme would likely result in:

- A greater number and diversity of bond issuances that encompass a broader set of geographies;
- Bond issuances designed to finance a diverse set of activities that can be tailored to complex production landscapes (i.e. with multiple land cover / land use types and diverse types of land managers);
- Wider potential for co-benefits associated with a wider set of AFOLU interventions. (examples of co-benefits include increased soil carbon leading to greater soil fertility and reduced desertification in dryland areas), and;
- Less easily quantified mitigation outcomes (e.g. complex combinations of land management practices, which are not yet well documented in scientific literature) and, possibly, greater risk of unintended negative outcomes.

The TWG has considered designing the eligibility criteria in the following ways, which are not exclusive:

- Specifying an overall baseline (Business As Usual) and projected net GHG reduction across the whole set of activities included in the bond, which would then represent the sum of mitigation that is possible and anticipated across multiple types of activities.
- Outlining principles for how to handle project components that are ‘beyond the farm gate’ (e.g. transport or processing infrastructure; training and extension) or far ‘upstream’ (e.g. fertilizer production; Research & Development – R&D) or ‘downstream’ (e.g. market and consumer initiatives⁵¹). Principles could specify the need for more rigorous activity documentation or emphasize an outcomes-based measurement approach.

Potential issuers are recommended to utilize best practice, examples of which are summarized in Appendix 3. General best practice is also available from the general Climate Bonds Standard documentation, and from the Green Bond Principles (in particular “Green Bonds, Working Towards a Harmonized Framework for Impact Reporting, March 2015). Best practice includes reporting on use of proceeds (signed vs. allocated amounts, methods for adding and removing initiatives), expected environmental impact within a clearly defined period (including scope of results, uncertainty, comparability), explanation for calculation and reporting of results (e.g. methodology used for calculation and baseline assumptions).⁵²

The TWG also discussed whether thresholds should be established for certification under the Climate Bonds Standard, i.e. minimum level of mitigation and, or, adaptation required. The alternative is to simply require net positive mitigation impact (ie, net GHG reduction). Different thresholds according to sector and geography may emerge over time however at the moment, this is not practical. The discussion about thresholds and baselines is also covered in the following sections.

Here it is also important to enable flexibility, so that the issuer is able to propose interventions to the Climate Bonds Standard for consideration.

Conclusion: Breadth of Eligible Interventions

All AFOLU categories will be included at this point e.g. from near-shore and riverine fisheries to grasslands, forestry and livestock management. This facilitates an integrated approach in production landscapes (e.g. combined sets of interventions tailored to specific contexts) and would not restrict bond issuances from addressing multiple food, fiber and fuel commodities. However, eligible interventions are limited to activities that directly affect management within a specified production area and result in net positive mitigation impact (ie, net GHG reduction). For example, eligible interventions could include planting improved species, establishment of a specialized finance mechanism promoting reduced use of chemical inputs, or specialized trade finance that promotes uptake of improved farming practices. Investments in infrastructure would only be eligible to the extent that they have direct impacts on GHG emissions in the specified production area (e.g. upgrading irrigation infrastructure, or installing a landscape network of livestock watering points provided that these do not undermine local hydrological systems). Note that transportation upgrades would be handled under the CBI transport standard. Efforts to assess mitigation impact should use at minimum Tier-2 IPCC approaches, however Tier 3 is recommended where such information is available and accessible. Note that for jurisdictional / national approaches, consistency with national accounting systems should be prioritized (e.g. for REDD+). Recommendations laid out in relevant IPCC and UNFCCC guidelines should be followed as these lay the foundations for many of the voluntary and legislative approaches.⁵³

Issue: Eligible mitigation interventions, and going beyond mitigation?

Mitigation:

The TWG has considered different scales and types of potential mitigation effects. Bond issuances could in theory support activities or infrastructure that have:

- A quantifiable mitigation outcome on-site. For example, improved fertilizer management can reduce farm-level N₂O emissions.
- GHG impacts off-site. For example, sustainable intensification in croplands can reduce agricultural expansion into forests or marginal lands (positive impacts). However it is also important to note that negative impacts off-site may also occur, for example displacement of unsustainable land use practices may result in comparable emissions elsewhere.
- A positive transformational effect on a region. For example, successful initiatives are mimicked across the larger region, leading to 'scaled up' mitigation.
- A positive transformational effect on a supply chain. For example, other companies may adopt the practices of companies financed by certified bonds and thereby gain experience with mitigation strategies, leading to new expectations for commodity production practices.

- A positive transformational effect on sectoral business practices. For example, CBI-supported initiatives can test novel AFOLU methods at scale and pave the way for broader application.

The TWG has discussed the use of a combined prescriptive and ‘principles-based’ approaches to the AFOLU eligibility criteria, including the possibility of specifying a prescriptive approach to mitigation components of bond issuances together with guiding principles for adaptation, resilience, and risk reduction components (adaptation, resilience and other risks are discussed in the section below).

For a prescriptive approach to mitigation components, the following questions were discussed by the TWG:

- Is it useful to set some minimum level of mitigation (e.g. 20% reduction in tCO₂eq from a BAU baseline) or should any net mitigation effect be eligible?⁵⁴
- Should mitigation effect be estimated using: (a) site-level measurements, (b) regional or national averages, (c) sectoral averages, or some other approach?
- Should the eligibility criteria include different specifications for mitigation activities with different levels of permanence (e.g. avoided fire, sequestrations)?⁵⁵
- Should on-site mitigation components be handled prescriptively, while off-site, regional, supply chain, and sector components are handled by guiding principles (perhaps in reference to existing standards relevant to the issue)?

Adaptation, resilience and other impacts

In addition to avoided GHG emissions and carbon sequestration, AFOLU interventions can have co-benefits related to adaptation, resilience, and risk reduction as well as unintended negative consequences for people and ecosystems. It is challenging to quantify the full set of potential benefits, risks, and revenue streams in an integrated way, although a number of vulnerability and adaptation capacity indices, which incorporate different environmental and institutional variables, have been developed and tested.⁵⁶ AFOLU interventions can have many different effects over the near-, medium-, and long-term including avoided input costs, increased productivity, avoided losses, cash flows from PES or carbon offset schemes, increased supply chain profits from eco-labeling, long-term sustainability of ecosystem services (e.g. water security), increased re-investment by farmers and reduced risk exposure, among other effects.

It is possible for AFOLU interventions to have negative effects at local (e.g. reduced economic opportunity where land becomes ‘off limits’), regional (e.g. reduced agrochemical costs increases farm profitability triggering agricultural expansion into marginal areas), or global scales (e.g. ‘leakage’⁵⁷). AFOLU interventions may also incur unintended negative consequences for human rights (e.g. ‘land grabbing’), biodiversity (e.g. replacement of diverse agricultural systems with homogeneous land management, or mono-cropping), or ecosystem services (e.g. radical changes to land management practices may influence local hydrology) that create risks for the viability of bond-supported initiatives. Given the geographically dispersed nature of AFOLU initiatives, they are vulnerable to the actions taken by local residents (e.g., illegal logging). Initiatives with negative biodiversity impacts can quickly lose their positive narrative value, reducing the appeal of a green bond, and even become targets of public campaigns, which could deter institutional investors. It may be the case that the most effective bond-supported initiatives will deliver positive benefits or reduced risks for local communities and ecosystems.

It is therefore required that issuers demonstrate careful consideration of potential trade-offs and risks, and ways that these are monitored and mitigated as appropriate. The Climate Bond Standards Board will review and determine if these trade-offs were acceptable.

For a principles-based approach, to adaptation, resilience, and risk reduction components, other questions emerged:

- Are there any interventions that should be automatically ineligible (e.g. afforestation of native grasslands)? Or, indeed are there any that should be automatically eligible in certain regions (e.g. restoration of native mangroves)?
- Are baselines relevant and feasible for adaptation, resilience, and risk reduction (e.g. avoided costs such as insurance payouts; number of potential beneficiaries)?⁵⁸
- Is there a rationale for inclusion of initiatives that emphasize only adaptation, resilience, and risk reduction (i.e. no mitigation component)?
- What is the scope of adaptation, resilience, and risk reduction to be addressed in the eligibility criteria (i.e. direct economic impacts or also impacts on human rights, biodiversity, ecosystem services)?⁵⁹
- Should eligibility criteria promote or give preference to initiatives that combine mitigation, adaptation, resilience, and risk reduction?

Conclusion: Mitigation, And Issues Beyond mitigation

In terms of mitigation, the TWG recognizes that there are many potential approaches to mitigation. Issuers are encouraged to use best practices, e.g. as specified in widely accepted voluntary carbon credit standards and approaches. Issuers must demonstrate that there is a net positive climate impact, i.e. net reduction in GHG emissions over the life of the issuance compared to Business As Usual within the geographical area / sector. For projects that do not aim for net positive adaptation / resilience impacts, this standard strongly encourages projects to aim for higher net GHG reduction, however the Climate Bonds Standard reserves the right to decide what is and is not acceptable in a specific situation. In terms of projects primarily focused on generating adaptation and resilience improvements, no net GHG emission increases are required over the life of the issuance. Issuers are expected to use best practice, and to make reference to scientifically sound literature in the context of performance metrics.⁶⁰

The TWG believes that bond issuers should consider the wider sustainability impacts (e.g. land rights) of the intended AFOLU interventions before requesting certification. Generally, the TWG is in favor of neutral or positive net effect on social issues and neutral or positive net effect on biodiversity and ecosystem services. The TWG expects bond issuers to adhere to local legislation, national priorities, industry best practices (e.g. vulnerability assessment), and principles of responsible investment.⁶¹ Furthermore the TWG suggests weighting adaptation and resilience-focused interventions on par with mitigation due to the urgent requirement for such investments within the AFOLU sectors. Mitigation, adaptation and resilience-focused investments should be in line with published national priorities (e.g. national adaptation plans), and where relevant, bond issuers should prepare an adaptation plan that delineates relevant objectives, methods, and measurable indicators that can be independently verified. Issuers may wish to include additional impact metrics and are free to do so, including metrics on habitats or species conserved, biodiversity impact or others.

Issue: Inclusion of elements from existing standards?

Development of the AFOLU standard can and should build on the set of existing standards in the AFOLU sectors.⁶² However, these standards vary in important ways, such as:

- Type and size of reward mechanism (e.g., price premium for certified products, guaranteed market access);
- Emphasis on risk reduction (e.g., environmental risk, regulatory risk);
- Geographic or commodity relevance, and;
- Objectives and eligibility criteria.

The TWG discussed adopting a ‘modular’ approach to the AFOLU eligibility criteria that would review existing standards and incorporate relevant components, noting that different standards take different approaches.⁶³ In concept, the TWG intends for the CBI standard to be inclusive and to avoid ‘picking winners and losers.’ This should also allow for inclusion of some government, company, and crop-specific standards, where these have appropriate modules addressing climate issues.⁶⁴

The TWG also evaluated how existing standards could help in addressing environmental and social risks associated with bond-supported activities and infrastructure. Appendix 3 provides a non-exhaustive list of some of the major relevant standards.

In principle, the TWG agreed that all AFOLU-related standards should be considered, if those standards are considered reasonably robust⁶⁵ and enable suitable quantification of GHG impact and, if appropriate, relevant to national mitigation and adaptation plans (for a non-comprehensive list see Appendix 3). Issuers should seek to apply relevant industry best practice standards as and when appropriate, e.g. for palm oil – Roundtable on Sustainable Palm Oil (RSPO), for beef – Global Roundtable on Sustainable Beef, though recognizing that these do not require quantification of GHG impact.

The TWG discussed extensively whether to provide recommendations for ‘best practice’ guidance for the forestry sector. In particular, there was discussion about the application of FSC, PEFC, and regional standards (e.g. in North America and Australia).⁶⁶ Notably, none of these standards require quantification of GHG impact or recommend GHG reduction targets. However, the TWG felt that issuers should be encouraged to use the appropriate industry best practice and guidance (standards) for the relevant geography (i.e. tropical forestry vs. temperate) and activity. In cases where application of such a standard does not require addressing relevant local social and environmental issues, the issuer will be required to prove that such issues have been considered and are addressed in the monitoring framework.

For aquaculture and near-shore fisheries, issuers are encouraged to meet industry best practices, and this may also be demonstrated by adherence to internationally recognized standards.⁶⁷

Conclusion: Inclusion of Existing and Future Standards

The TWG suggests refraining from ‘picking winners and losers’ among standards, and recommends a process-based approach to standards, i.e. credible (third party audited) standards that incorporate – or have the ability to incorporate – relevant metrics in the context of the specific bond issuance. Essentially, issuers need to demonstrate that scientifically robust approaches are used to quantify and track GHG impacts and relevant non-GHG impacts. The TWG acknowledges the important and relevant work of the UNFCCC (e.g. CDM & JI methodologies, NAMAs⁶⁸ and national inventories⁶⁹), and of the regulated and voluntary carbon market standards and strongly recommends that these be used as guidance, where relevant. In terms of non-carbon credit-related standards (i.e. social and environmental impacts and

demonstrating no net harm), any credible, widely accepted standard is in principle acceptable.⁷⁰ However the Climate Bonds Standard reserves the right to judge suitability on a case-by-case basis. All issuances must include independently verifiable claims on GHG mitigation impacts using at minimum IPCC Tier-2 and above level approaches (Tier 3 level information may be expected in some circumstances, in particular in areas with exceptional data availability). Resilience and adaptation-focused bonds must also include reference to independently verifiable indicators that directly relevant to published national priorities.

Issue: Overlap with other CBI standards?

Other CBI standards for water, bioenergy, and transport are currently being developed. Depending on how narrowly or broadly the AFOLU standard is defined; eligible interventions could also be eligible under these other CBI standards. For example:

- Manure management, forestry waste management, etc. may overlap with the bioenergy standard.
- Cold chain infrastructure (e.g. renewable energy; energy efficiency) may overlap with the renewable energy standard.
- Irrigation, water management systems, etc. may overlap with the water standard.

To determine the best approach, the TWG has weighed the following considerations:

- Whether to direct its attention primarily to ensuring that the AFOLU criteria are internally consistent and rigorous or to direct some of its attention to delineating the points of intersection with other CBI standards and negotiating the boundary lines with TWGs for these other standards?
- How to undertake boundary setting while multiple related standards are under simultaneous development?
- Whether it would be easier for bond issuers to navigate several narrowly bounded standards or to select one of several somewhat overlapping standards, based on the set of AFOLU activities within their project?

Conclusion: Overlap with Other CBI Standards

Overall, CBI sector-specific guidance must not be contradictory. This AFOLU-sector guidance is bounded by guidance on water, transport, solar and wind energy and bioenergy. In particular for bioenergy, care must be sought so that there is no undermining of either set of guidance. This will likely mean increased scrutiny where potential bioenergy crops are concerned (in particular palm oil, maize / corn, sugarcane) and where solid biomass is destined for energy use. The AFOLU standard is not designed for entities working predominantly in the bioenergy industry (producing biodiesel, trading pellets, sourcing for bioenergy production, etc).

v. Proposed eligibility criteria (subject to updates)

Based on the key issues discussed by the TWG, and considering that this guidance should be considered as a starting point, the AFOLU TWG is proposing a first version of low-carbon eligibility criteria for AFOLU assets, for a 60-day public consultation period.

Eligibility criteria

The following criteria are added to Part B – Low-carbon criteria, under clauses 8 [Eligible initiatives and physical assets] and clause 9 [Technical criteria] of the Climate Bond Standard version 1.0. Many types of assets can be included under this bond guidance. Examples are included below. Note that other types of assets may be eligible under other sector-specific guidance with the Climate Bonds Standard guidance:

- Land assets i.e. real estate, this includes land purchases, leases, investments in improving the land assets such as replacing old planting stock and related infrastructure that can help improve management such as weather stations and storage facilities.
- Water assets i.e. fishing rights, coastal areas, this includes improved management practices of such assets and related infrastructure.
- Animal and plant management, this may include R&D, breeding, upgrading to use improved varieties, certification and post-production supply chain management (e.g. packaging and supply chain management).
- Information technology, this may include investment in new information and information management systems such as installation of precision agriculture technologies.
- Finance, this may include trade finance and working capital programs tied to improved management.

Proposed eligibility criteria for the AFOLU-related sectors under the Climate Bonds Standard:

Sustainability area	Recommendations
Environmental and social sustainability	<ul style="list-style-type: none"> • Adherence to national and local laws, e.g. on managing environmental impact. • Where possible, adherence to industry best practice (through credible certifications, see Appendix 3). • Neutral or positive net effect on social issues and neutral or positive net effect on biodiversity and ecosystem services such as could be demonstrated by use of IFC Performance Standards or similar relevant industry best practice (for example, adherence to EIB's Statement of Environmental and Social Principles and Standards or EIB Environmental and Social Handbook).
Greenhouse gases (mitigation)	<p>Each issuer must propose a clear GHG baseline, which must describe the calculations and assumptions (inputs) used to arrive at that baseline. Issuers must also estimate net expected GHG impact compared to Business As Usual within a relevant sector / geography, as well as a credible, independently verifiable, method of tracking impact over the life of the bond. Bonds that are primarily focused on adaptation and resilience, they must at minimum have net positive impact on mitigation (i.e. net GHG reduction). Recognizing the wide variation between sub-sectors and geographies as well as the option for adaptation and resilience focused bonds, all CBI certified bonds must at minimum achieve net positive impact relative to their established GHG baseline. Issuers must state if there are long-term impacts beyond the life of the bond. Note that this threshold is likely to be revised and tightened over time, as more information becomes available. However, certification will not be withdrawn retroactively.</p>
Adaptation and resilience	<ul style="list-style-type: none"> • Adaptation & resilience-focused bonds are eligible.

- These must also demonstrate net positive mitigation impacts (i.e. mitigation impact > 0) relative to the GHG baseline, though they may focus more on adaptation and resilience impacts.
- These must be relevant according to government priorities (e.g. NAPAs) and, or, scientifically credible sources and approaches.

Indirect impacts	Issuers are expected to use industry best practice e.g. by adhering to relevant third-party social and environmental certifications, as well as general business good practice e.g. as enshrined in the IFC Performance Standard and general guidance around leakage. Additionally, issuers must credibly demonstrate neutral or positive effect on biodiversity and neutral or positive effect on local communities.
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During the first iteration of this standard, bonds may be certified using the proposed eligibility criteria. The criteria will be reviewed by the technical working group as required, at least once a year. No retrospective changes will apply to bonds certified through the current criteria.

Implementation of eligibility criteria

The Climate Bond Standard has an existing implementation process for eligibility criteria, consisting of 7 steps resulting in a decision on certification, based on the recommendation of an eligible, independent third party. Third party certifiers approved by the Climate Bonds Standard may wish to consider the following information sources (not exhaustive list):

- IPCC Emissions Factor Database⁷¹
- National inventories, NAPAs, NAPs, TNAs, NAMAs, Jurisdictional REDD+ programs, national communications and other national reports submitted to UNFCCC⁷²
- Guidance on calculating emissions and removals issued by IPCC⁷³
- Methodologies and protocols issued by UNFCCC (CDM and JI)⁷⁴
- Methodologies and protocols issued by national bodies with legislation mandating greenhouse gas reductions, e.g. California⁷⁵
- Other relevant national information sources, providing information on proxies and calculation methods, e.g. USDA COMET-Planner⁷⁶
- Credible voluntary carbon market methodologies⁷⁷
- Credible third-party standards and protocols for social and environmental issues⁷⁸
- FAO information sources, including FAOSTAT
- Credible third party tools for estimating emissions and removals, including EX-ACT, FullCam, CALM, CAR livestock tool, LCA tools⁷⁹
- Scientific resources, e.g. FAO STAT and CGIAR research.

It will also be important to determine at what point bond issuers have to achieve full compliance with the eligibility requirements. One option is that compliance is required for the full portfolio at the beginning. It may be unlikely, where multiple initiatives exist within a portfolio, that all components are compliant from the beginning. The bond issuer would have to address this.

Note that it is expected that information on baselines and progress will improve over time, as the sector specific guidance under the Climate Bonds Standard evolves.

Suggested evidence required during the validation process:

Sustainability area	Recommendations
Environmental and social sustainability	<ul style="list-style-type: none"> • Certificates issued by relevant certification bodies • Verifiable information on compliance with local and industry best practice.
Greenhouse Gases (mitigation)	<ul style="list-style-type: none"> • GHG and baseline calculations performed by accredited organization, using relevant, up-to-date information and best-practice approaches.
Adaptation and resilience	<ul style="list-style-type: none"> • Reference to NAPAs or similar information sources where available: proposal of relevant performance indicators to be monitored over time. • If not available, reference to other scientifically sound basis for demonstrating adaptation and resilience impacts and associated performance indicators.

The implementation of eligibility requirements will demand periodic verification. Organizations certified under the Climate Bond Standard are required to report at least annually, and when material changes take place that is likely to influence mitigation, adaptation and, or, resilience impacts.

Entry and progress requirements are suggested below:

Requirements	Possible approaches
Entry level	<ul style="list-style-type: none"> • 100% of the portfolio complies with eligibility requirements. • 50% of the portfolio complies with the eligibility requirements; the remaining part should achieve certified status within 3 years.
Monitoring & reporting	<ul style="list-style-type: none"> • 100% of the portfolio complies with eligibility requirements at all times. • Issuer has a credible plan in place to ensure 100% compliance by the end of the 3rd year, including annual targets.

APPENDIX 1

About the Climate Bond Standard and Certification Scheme

The Climate Bond Standard and Certification Scheme ('the Scheme') is a project of the Climate Bonds Initiative with the cooperation of major investor groups, environmental NGOs and corporations from the financial sector.

Its aim is to assure investors that their funds are being used to deliver a low-carbon, climate resilient economy. This is achieved through:

- Supporting the credibility of the Scheme through the organizations publicly supporting and endorsing the project.
- Transparent and stakeholder-focused governance
- Ensuring the technical low-carbon credibility of the Scheme across different sectors through evidence-based deliberation.
- Ensuring the practicality and accessibility of the Scheme through easy-to-use, low-cost product offering.

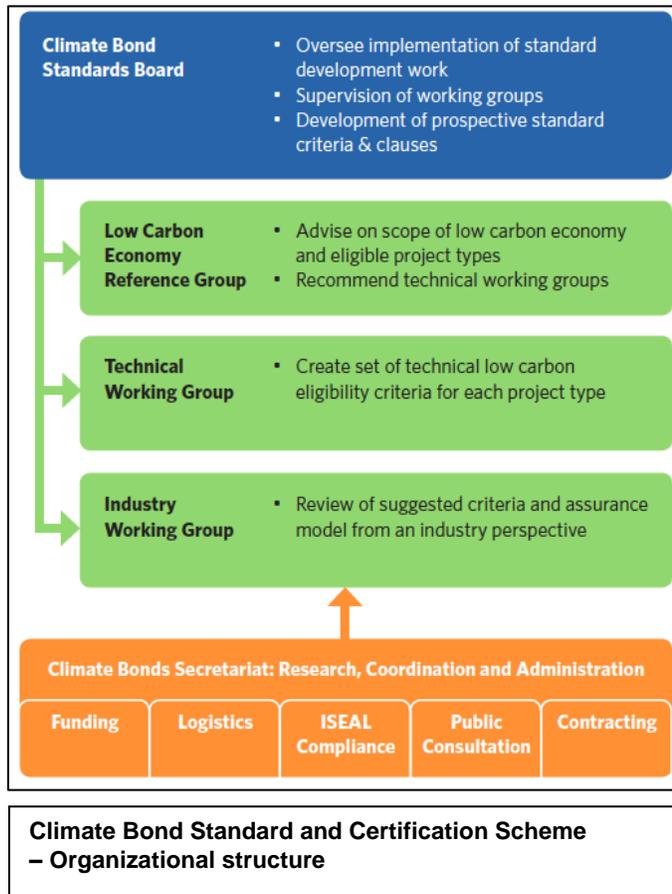
Deploying climate change solutions requires some USD 1 trillion of investment in energy, transport, industry and building sectors each year, above business as usual.⁸⁰

Bonds are particularly suited for providing the capital for infrastructure required to build the climate economy, notably in buildings, energy, transport, waste and water. Bonds can provide the long-term, low-cost capital needed for deployment of proven technologies and also free up corporate balance sheets for new developments.

In order for this market to grow, new tools need to be at hand to:

- Assist bond issuers in meeting investor demand for climate-themed bonds;
- Assist investors in recognizing such bonds; and
- Assist governments to easily support investments in such bonds.

Certified Climate Bonds against an easy-to-use Climate Bond Standard will provide integrity and reduce reputational risks for all those involved in participating in a new asset class.



Progress to date

The Climate Bond Standard prototype version was officially launched in November 2011. Over the course of 2012, numerous milestones on the way to building a credible standard and certification scheme were achieved including:

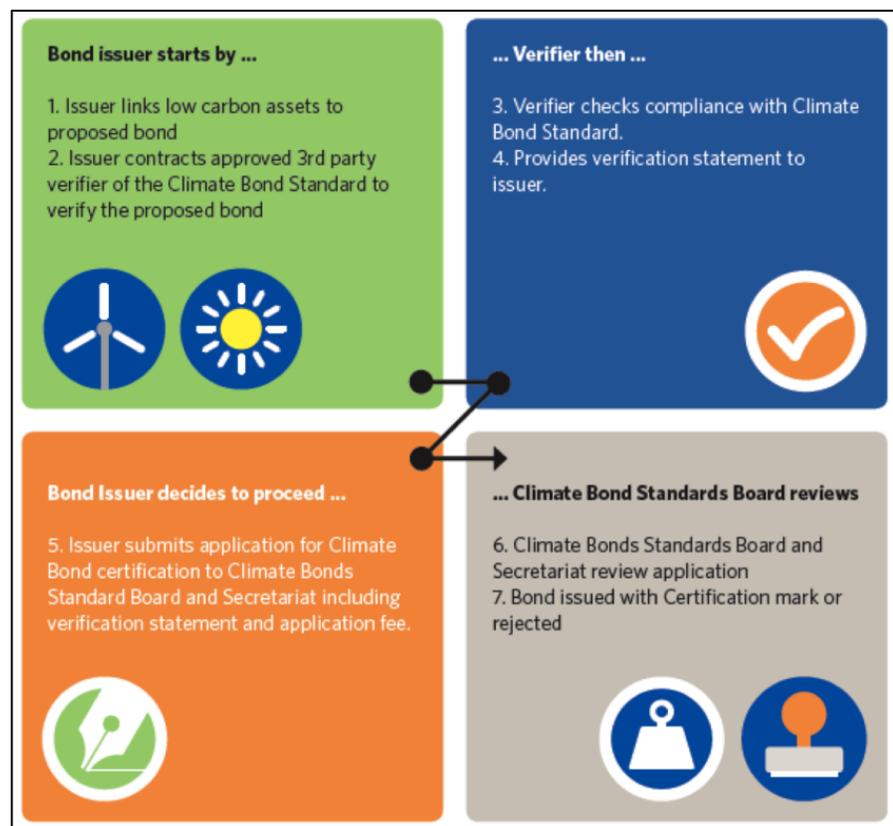
- Building a broad-based coalition of supporters for the Scheme.
- Establishing a Climate Bond Standards Board of six not-for-profit organizations balanced between large institutional investors and reputable environmental NGOs.
- Establishing an Industry Working Group of rating agencies, banks, fund managers, assurance providers and consultants.
- Launching the final approved prototype text including supplementary materials of a report on a 60-day public consultation and a brochure highlighting the benefits of the Scheme.
- Registering the Climate Bonds Certified mark for copyright use by the CBI.
- Finalizing the certification of a first 'test' bond linked to wind assets including the development of a contractual agreement between the CBI and the issuer.

How bond certification works

In the prototype phase of the Scheme, we have proposed a straightforward 7-step process for bond certification as illustrated in the chart right.

Issuers must firstly link the bond to low-carbon project assets or activities. These activities are listed in Part B of the Climate Bond Standard.

A prospective issuer of a Climate Bond would be required to secure a verification statement from a 3rd Party Verifier that the bond is in compliance with the Climate Bond Standard. The issuer then submits both an application for certification and the verification statement to the Climate Bond Standards Board and Secretariat for review.



Beyond the prototype phase, the certification and assurance model of the Scheme will be finalized by a dedicated Assurance working group that will consider accreditation for verifiers; complaint resolution mechanisms; and the role of verifiers vis-à-vis the Standard Board.

APPENDIX 2

Members of the AFOLU Technical Working Group

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APPENDIX 3

Selected references

General references

- Climate Bonds Standard: <http://www.climatebonds.net/standards/standard>
- IPCC: <http://www.ipcc.ch>
- IPCC Emissions Factor Database: <http://www.ipcc-nggip.iges.or.jp/EFDB/main.php>
- FAO STAT: <http://faostat3.fao.org/home/E>
- Green Growth Knowledge Platform: <http://www.greengrowthknowledge.org>

National references

- National Communications to the UNFCCC: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php and http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/3625.php
- Submitted National Adaptation Programme of Actions (NAPA): http://unfccc.int/adaptation/knowledge_resources/ldc_portal/items/4722.php
- Submitted Nationally Appropriate Mitigation Actions (NAMAs): <http://www4.unfccc.int/sites/nama/SitePages/Home.aspx>
- Global Climate Change Alliance national programs: <http://www.gcca.eu>

Mitigation references

- UNFCCC CDM Methodologies: <https://cdm.unfccc.int/methodologies/index.html>
- UNFCCC JI Methodologies: http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php
- Verified Carbon Standard: <http://www.v-c-s.org>
- American Carbon Registry: <http://americancarbonregistry.org>
- Gold Standard: <http://www.goldstandard.org/luf>
- European Commission monitoring and reporting of GHG emissions: http://ec.europa.eu/clima/policies/g-gas/monitoring/index_en.htm

Adaptation references

- European Climate Adaptation Platform: <http://climate-adapt.eea.europa.eu/agriculture-and-forestry>
- US EPA Climate Change Impacts and Adapting to Change: <http://www.epa.gov/climatechange/impacts-adaptation/>
- Guidelines for Integrating Climate Change Adaptation into Fisheries and Aquaculture Projects: <http://www.ifad.org/climate/asap/fisheries.pdf>
- Climate Adaptation Knowledge Exchange (CAKE): <http://www.cakex.org>
- ADAPT Asia-Pacific: <http://www.adaptasiapacific.org>
- Asia Pacific Adaptation Network: <http://www.apan-gan.net>
- Global Adaptation Network: <http://www.ganadapt.org>

AFOLU industry best practice standards

- ITC Standards Map: <http://www.standardsmap.org>
- ISEAL Alliance: <http://www.isealliance.org/our-sectors>
- GIIN IRIS (impact reporting metrics): <https://iris.thegiin.org>
- Climate and Community & Biodiversity Alliance: <http://www.climate-standards.org>
- Sustainable Agriculture Initiative Platform: <http://www.saiplatform.org>

- Forest Stewardship Council (FSC): <https://us.fsc.org>
- American Tree Farm System: <https://www.treefarmssystem.org>
- Canadian Standards Association: <http://www.csasfmforests.ca>
- Programme for the Endorsement of Forest Certification: <http://www.pefc.org>
- Sustainable Forestry Initiative: <http://www.sfiprogram.org>
- Aquaculture Stewardship Council: <http://www.asc-aqua.org>
- IRFS (IAS41): <http://www.iasplus.com/en/standards/ias/ias41>
- USPAP: <http://www.uspap.org>
- AASB: <http://www.aasb.gov.au>
- SASB: <http://www.sasb.org/standards/status-standards/>
- TEEB: <http://www.teebweb.org>

ENDNOTES AND REFERENCES

¹ According to the Global Impact Investing Network, “impact investments are investments made into companies, organizations, and funds with the intention to generate a measurable beneficial social or environmental impact alongside a financial return.”

² IPCC CLA Industry Chapter, IPCC Working Group III:
https://www.ipcc.ch/pdf/unfccc/sbsta40/SED/3_roy_sed3.pdf

³ Tubiello, F.N., Salvatore, M., Córdor Golec, R.D., Ferrara, A., Rossi, S., Biancalani, R., Federici, S., Jacobs, H., and A. Flammini. 2014. Agriculture, Forestry and Other Land Use Emissions by Sources and Removals by Sinks, 1990-2011 Analysis. ESS Working Paper No., 2, Mar. 2014. FAO. Rome, Italy. Available from: <http://www.fao.org/docrep/019/i3671e/i3671e.pdf>

⁴ IPCC, 2014: Summary for Policymakers. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available from: https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf

⁵ *Ibid*

⁶ For a summary of the economic potential for GHG agricultural mitigation in soils please refer to Chapter 8, IPCC 4th Assessment Report, Working Group 3

⁷ IPCC CLA Industry Chapter, IPCC Working Group III:
https://www.ipcc.ch/pdf/unfccc/sbsta40/SED/3_roy_sed3.pdf

⁸ There is increasing emphasis on ‘in-setting’, which refers to internalizing carbon costs and making supply chains more efficient, rather than purchasing GHG offsets.

⁹ <http://www.fao.org/docrep/015/an112e/an112e00.pdf> and examples of Walmart’s efforts to reduce supply chain GHGs can be found in this journal article: Plambeck, E.L. (2012), “Reducing greenhouse gas emissions through operations and supply chain management” in *Energy Economics* 34 (2012) S64-S74. Available from: <http://uscib.org/docs/plambeck.pdf>

¹⁰ For example, see company strategies such as Yara: *Climate Smart Agriculture* (January 2015), http://www.yara.fi/images/Yara%20Climate%20magazine_tcm431-174907.pdf and estimates on the costs and benefits of precision farming investments in Australia and the EU (e.g. by CSIRO, 2007), description of nitrogen management products by Dupont Pioneer:

http://www.pioneer.com/CMRoot/Pioneer/About_Global/news_media/media_kits/documents/N_Services_White_Paper.pdf, also see Cooper, P.J.M, Cappiello, S., Vermeulen, S.J., Campbell, B.M., Zougmore R., Kinyangi, J. 2013, “Large-scale implementation of adaptation and mitigation actions in agriculture”, Working Paper No. 50. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Full report and summary booklet available from: <http://tinyurl.com/nn9lzfr>. Note however that the costs and benefits of mitigation and adaptation interventions are highly site and sector specific.

¹¹ Examples of useful guides include UNEP & GEF TNA Guidebook (2012), “Technologies for Climate Change Mitigation: Agriculture Sector” and Climate Focus & California Environmental Associates (2014), “Strategies for mitigating climate change in agriculture”, available from: http://www.climateandlandusealliance.org/uploads/PDFs/Abridged_Report_Mitigating_Climate_Change_in_Agriculture.pdf

¹² Additional examples are available from the CGIAR Research Program on Climate Change Agriculture and Food Security (CCAFS): <http://ccafs.cgiar.org/quantification-data-unveils-opportunities-low-emissions-agricultural-development#.VRuXqFyVs3Y>

¹³ Importantly, many methodologies and tools were developed for specific regions or interventions and may not be ideally suited to broader application. For a summary of such tools and GHG calculators, please refer to Denef K., Paustian K., Archibeque S., Biggar, S. and D. Pape. 2012. Report of Greenhouse Gas Accounting Tools for Agriculture and Forestry Sectors (Interim Report to USDA under Contract No. GS23F8182H 140). Available from: www.usda.gov/oce/climatechange/techguide/Denef_et_al_2012_GHG_Accounting_Tools_v1.pdf

¹⁴ IPCC (2014) defines adaptation as: “The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial

opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.” Available from: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf
Capacity for adaptation will depend on available assets and their distribution within a population as well as institutional infrastructure.

¹⁵ IPCC (2014) defines resilience as: “The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity and structure, while also maintaining the capacity for adaptation, learning and transformation.” Available from: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf

¹⁶ IPCC, 2014: Summary for policymakers: *In Climate Change 2014: Impacts, Adaptation, Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. March, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32. Available from: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf

¹⁷ Porter, J.R., L. Xie, A.J. Challinor, K. Cochrane, S.M. Howden, M.M. Iqbal, D.B. Lobell, and M. Travasso, 2014: Food security and food production systems. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K. L. Ebi, Y.O. Estrada, R. C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea and L.L. White (eds.)]. Cambridge University Press, Cambridge United Kingdom and New York, NY, USA, pp. 485-533.

¹⁸ *Ibid*

¹⁹ ECA (2009), Shaping climate-resilient development: A framework for decision-making, A Report of the Economics of Climate Adaptation Working Group, a partnership between ClimateWorks Foundation, Global Environment Facility, European Commission, McKinsey & Company, The Rockefeller Foundation, Standard Chartered Bank and Swiss Re.

²⁰ http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4585.php

²¹ Kissinger et al. 2014. Climate adaptation and agriculture: Solutions to successful national adaptation plans. CCAFS Policy Brief no. 9. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark.

²² UNFCCC National Communications: http://unfccc.int/national_reports/items/1408.php

²³ Regional plans include the European Climate Adaptation Platform: <http://climate-adapt.eea.europa.eu/countries>, other nations have specific strategies, e.g. USDA 2014 Climate Change Adaptation Plan: http://www.usda.gov/oce/climate_change/adaptation/adaptation_plan.htm.

Preventionweb provides a useful overview of national focal points on adaptation:

<http://www.preventionweb.net/english/hyogo/national/list/>

²⁴ Several examples are presented in the UNFCCC Private Sector Initiative database on actions on adaptation: http://unfccc.int/adaptation/workstreams/nairobi_work_programme/items/6547.php

²⁵ Additional interventions are suggested in F.N. Tubiello & M. van der Velde in FAO 2011. The state of the world’s land and water resources for food and agriculture (SOLAW) – Managing systems at risk. Food and Agriculture Organization of the United Nations, Rome and Earthscan, London. Website for sector-specific reports and summaries: <http://www.fao.org/nr/solaw/the-book/en/>

²⁶ Note that rapid technology depreciation should be considered in determining bond tenure in these cases.

²⁷ IPCC, 2014: Summary for policymakers. In: *Climate Change 2014: Impacts, Adaptation, Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. March, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32. Available from: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf

²⁸ A general summary of expected financing needs vs. available financing can be found at:

http://unfccc.int/press/fact_sheets/items/4982.php

²⁹ https://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/adaptation.pdf

³⁰ WWF, March 2012, “WWF submission on finance to AWG LCA”, available from:

<http://unfccc.int/resource/docs/2012/smsn/ngo/201.pdf>

³¹ <http://siteresources.worldbank.org/INTCC/Resources/EACCReport0928Final.pdf>

³² M.G. Heal, C. Dubreux, S. Hallegatte, L. Leclerc, A. Markandya, B.A. McCarl, R. Mechler and J.E. Neumann, 2014: Economics of adaptation. In: *Climate Change 2014: Impacts, Adaptation, Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. March, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

³³ REDD+ refers to reducing emissions from deforestation and forest degradation and conserving, sustainably managing and enhancing forest carbon stocks.

³⁴ http://www.forest-trends.org/documents/files/doc_4841.pdf

³⁵ <http://www.climatebonds.net/files/post/files/cb-hsbc-15july2014-a3-final.pdf>

³⁶ FAO Investment Centre, Working Paper, 2012: Innovative agricultural finance and risk management: Strengthening food production and trade in the transition region. Available from: <http://www.fao.org/3/a-at658e.pdf>

³⁷ [http://ballotpedia.org/Hawaii_Bonds_for_Agricultural_Enterprises,_Amendment_2_\(2014\)#cite_note-text-1](http://ballotpedia.org/Hawaii_Bonds_for_Agricultural_Enterprises,_Amendment_2_(2014)#cite_note-text-1)

³⁸ Indofood Sukses Makmur – an Indonesian listed diversified agricultural company

³⁹ For example, corporate bonds issued by DLG Finance, Arla, Nestlé, J.M. Smucker Company (SJM), Danone, Food Corporation of India, Unilever, etc.

⁴⁰ Importantly, the set of available methodologies under existing certification standards will have gaps in coverage for many potential AFOLU interventions (e.g. many agricultural commodities are not addressed by current standards).

⁴¹ For example, bond issues in the forestry sector will need to account for the likely mismatch between fixed date bond payment requirements and typical forestry cash flows, complicated requirements (e.g. FLEGT compliance), and common risk factors in emerging markets such as weak infrastructure (e.g. few mills) and competition with illegal logging.

⁴² Given their generally low familiarity with agricultural supply chains, many impact investors and consultants are at risk of misunderstanding ‘green’ investments in this sector or shying away altogether.

⁴³ E.g. North Rhine-Westphalia sustainability bond:

https://www.nrwbank.com/en/press/pressarchive/2013/131121_Presse_Release_Green_Bond.html

⁴⁴ For example, recent World Bank green bond:

<http://treasury.worldbank.org/cmd/htm/PioneeringGreenGrowthBond.html>

⁴⁵ CSA is a term that encompasses agriculture, forestry and fisheries. It has 3 main pillars: sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change, reducing and / or removing GHGs. Refer to FAO for more information: <http://www.fao.org/climate-smart-agriculture/72611/en/>

⁴⁶ http://standards.climatebonds.net/wp-content/uploads/2011/11/ClimateBondStandard_Text_24Nov11.pdf

⁴⁷ Many of these are modified from P. Iversen, D. Lee, M. Rocha, May 2014: “Understanding Land Use in the UNFCCC”. Available from:

http://www.climateandlandusealliance.org/uploads/PDFs/Understanding_Land_Use_in_the_UNFCCC.pdf

⁴⁸ Another spatial issues for AFOLU sectors is leakage, however this affects all sectors.

⁴⁹ PES is defined as “a voluntary transaction for a well-defined ecological service, with at least one buyer, at least one provider, and based on the condition that the buyer(s) only pay if the provider(s) continue to deliver the defined ecosystem service over time.” (Wunder 2005, quoted from CIFOR:

<http://www.cifor.org/project-websites/payment-environmental-services/>)

⁵⁰ Discrepancies between reported and actual net GHG emissions can occur, even where there is reputable, detailed guidance. For example, in some regions, afforestation on drained peatland soils will be reported under a ‘forest’ designation, excluding significant GHG emissions from peat soils. See

<http://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html>

⁵¹ <https://www.fieldtomarket.org/>

⁵² The African Development Bank (AfDB), European Investment Bank (EIB), International Finance Corporation (IFC), and the World Bank (IBRD) have initiated discussions on common impact reporting.

⁵³ IPCC suggests that “Key Sources” (i.e. sectors responsible for significant GHG contributions) are measured at higher tiers. Tier 1 approaches are simple methods using default values, Tier 2 are similar but use country-specific emission factors and other more specific data, Tier 3 are more complex, and specific to the industry and location. A useful reference is FAO, 2014, “Estimating greenhouse gas emissions in agriculture: a manual to address data requirements for developing countries”. Available from: <http://www.fao.org/climatechange/41521-0373071b6020a176718f15891d3387559.pdf>

⁵⁴ It is possible that bond issuances will support activities or infrastructure that are not ‘additional’ (i.e. would have been implemented through some other form of financing in the absence of the CBI-labeled bond). It’s not clear that this is a problem since green bonds are simply intended to steer capital toward environmentally beneficial initiatives as an alternative to other financial opportunities. Green bonds do not carry the same ‘additionality’ expectation as do REDD or other offset schemes.

⁵⁵ See approaches used in carbon offset markets: www.comet-planner.com

⁵⁶ For examples, see: World Economic Forum. 2014. Climate Adaptation: Seizing the Challenge. Geneva, Switzerland. <http://www.weforum.org/reports/climate-adaptation-seizing-challenge>

⁵⁷ This refers to displacement of emissions as a result of an intervention, e.g. a crack-down on illegal land clearing may under some circumstances simply move such illegal land clearing to another area

⁵⁸ Refer to work on adaptation and resilience by groups such as CIAT, CIRAD, IITA, ICRAF, CATIE, CABI, IIED and others (CARE, OXFAM) on resilience in terms of different crops and farming systems. Also refer to the Resilience Adaptation Transformation Assessment and Learning Framework (RATALF), supported by GEF-STAP and CSIRO.

⁵⁹ Refer to work by CCB standard, Conservation Open Standards, Equator principles, IFC performance standards, ISEAL, Carbon Fund Methodological Framework, FSC, FPIC, WB REDD+ Safeguards, and GEF / World Bank / EIB. Another source of possible impact metrics can be found here:

<https://iris.thegiin.org/metrics>

⁶⁰ For example, as recommended by the Climate, Community and Biodiversity Standards (December 2013), see pg. 32:

https://s3.amazonaws.com/CCBA/Third_Edition/CCB_Standards_Third_Edition_December_2013.pdf

further summaries of good approaches can be found at UKCIP: <http://www.ukcip.org.uk/wizard/>

⁶¹ See: Principles for Responsible Investment in Agriculture and Food Systems, October 2014

<http://www.fao.org/3/a-au866e.pdf>

⁶² For example: World Resources Institute Greenhouse Gas Protocol Guidelines

(<http://www.wri.org/publication/policy-and-action-standard>); Life Cycle Analysis (LCA) approaches along entire value / supply chains; WWF Commodity Finance Guide; landscape approaches, e.g. VCS, Gold Standard, jurisdictional REDD+; Strategic Environmental and Social Assessment (SESA); International Financial Inclusion Framework for a Harmonized Approach to Greenhouse Gas Accounting (which also covers AFOLU), the World Bank / FAO / AFD ex-ante appraisal of development initiatives in AFOLU (<http://www.fao.org/tc/exact/ex-act-home/en/>).

⁶³ For example, FSC certifies management systems rather than activities per se and also has an assessment method for risk “contamination” throughout the value chain.

⁶⁴ Another approach to establishing eligibility for ‘green’ finance is illustrated by an inventory of sustainable loans (totaling ~USD 21B) developed by Rabobank, which uses a sustainability rating for clients based on one of forty certifications, roundtable membership, and other factors and which also includes sectors perceived to be intrinsically sustainable.

⁶⁵ For example, this may be determined with reference to the International Carbon Reduction and Offset Alliance (ICROA): <http://www.icroa.org>

⁶⁶ WWF & World Bank, July 2006: “Forest Certification Assessment Guide (FCAG): A framework for assessing credible forest certification systems / schemes”. One noted concern with respect to forestry standards is the relative dearth of independent research on comparisons of main certification schemes.

⁶⁷ References include the Global Sustainable Seafood Initiative (GSSI) Requirements and Indicators, the Best Aquaculture Practices (BAP) program and the Aquaculture Stewardship Council (ASC) standards. For example, refer to: <http://www.ourgssi.org/benchmark-tool/about-the-gssi-global-benchmark-tool/>

⁶⁸ Nationally Appropriate Mitigation Actions: <http://unfccc.int/focus/mitigation/items/7172.php>

⁶⁹ National inventories available from:
http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php

⁷⁰ One guide to determining the credibility of a standard includes certification under ISEAL, e.g. <http://www.isealliance.org/our-work/defining-credibility/codes-of-good-practice/standard-setting-code> and <http://www.isealliance.org/our-work/defining-credibility/credibility-principles> - this also includes any credible eco-labels: For example, refer to http://www.globalecolabelling.net/categories_7_criteria/index.htm. An index of eco-labels is also available from: <http://www.ecolabelindex.com/ecolabels/>. An OECD overview is also available, see OECD (2013), "A characterization of environmental labeling and information schemes", available from: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/EPOC/WPIEEP\(2013\)2/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/EPOC/WPIEEP(2013)2/FINAL&docLanguage=En)

⁷¹ http://www.ipcc-nggip.iges.or.jp/EFDB/find_ef_main.php

⁷² http://unfccc.int/national_reports/items/1408.php

⁷³ <http://www.ipcc-nggip.iges.or.jp/public/2006gl/>

⁷⁴ <http://cdm.unfccc.int/methodologies/index.html> and <http://ji.unfccc.int/index.html>

⁷⁵ <http://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm>

⁷⁶ www.comet-planner.com

⁷⁷ Verified Carbon Standard, American Carbon Registry, Gold Standard (where land use methodologies exist), CAR, etc.

⁷⁸ Roundtables, ISEAL approved standards, CCBS

⁷⁹ An overview of these is provided in V. Colomb, M. Bernoux, L. Bockel, J.L. Chotte, S. Martin, C. Martin-Phipps, J. Mousset, M. Tinlot and O. Touchemoulin, 2012: "Review of GHG Calculators in Agriculture and Forestry Sectors: A Guideline for Appropriate Choice and Use of Landscape Based Tools". Available from: http://www.fao.org/fileadmin/templates/ex_act/pdf/ADEME/Review_existingGHGtool_VF_UK4.pdf

⁸⁰ World Energy Outlook 2011. www.iea.org