Breakout Session: Emissions, Reductions & Removals

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World Cocoa Foundation
Emissions, reductions, removals, Oh my!

WCF Partnership Meeting

26 October 2022
FOOD AND AGRICULTURE SYSTEM IMPACTS

Global greenhouse gas emissions from food production:

- Food: 26%
- Non-food: 74%

Supply chain: 18%
Livestock and fisheries: 31%
Crop production: 27%
Land Use: 24%

- Food and beverages, including packaging
- Infrastructure and mobility, including housing, public infrastructure, and vehicles
- Energy, including fuels, power, and other commodities
- Fashion and related FMCG, including luxury goods
- All other, including pharma, cosmetics, and consumer electronics

Source: Boston Consulting Group (BCG) (2021) *The Biodiversity Crisis Is a Business Crisis*

-68% mean reduction in biodiversity 1970-2016

Source: WWF Living Planet Index

TERRESTRIAL SPECIES DECLINED BY 39 PER CENT BETWEEN 1970 AND 2010
THE LPI FRESHWATER SPECIES SHOWS AN AVERAGE DECREASE OF 76 PER CENT
MARINE SPECIES DECLINED 39 PER CENT BETWEEN 1970 AND 2010

INTRODUCTION TO THE SBTi
Progress to date

Companies with science-based targets are delivering emissions reductions at scale

- Reduced emissions by 29% between 2015-2020
- 1.5B tonnes of annual CO$_2$e emissions covered by the SBTi
- $38tn$ of global market capitalization
- 70 countries and 15 industries

29%
scope 1 and 2 emissions reductions between 2015-2020

53M
Tonnes of CO$_2$ emissions reductions across all targets

1/3
of global economy covered by the SBTi

96%
of targets include scope 3

68%
of targets are 1.5°C aligned

<table>
<thead>
<tr>
<th></th>
<th>Target Setting</th>
<th>GHG Accounting</th>
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</table>
| **Existing**         | “provide companies with a clearly-defined path to reduce emissions in line with the Paris Agreement goals” | Published in 2001  
Convened by WBCSD and WRI  
“provides the world's most widely used greenhouse gas accounting standards for companies.” |
| **New Releases**     | Forest, Land & Agriculture (FLAG) Guidance  
Released Sept 2022  
“set science-based targets that include land-based emission reductions and removals” | Land Sector and Removals Guidance  
Draft released September 2022  
“account for greenhouse gas emissions and carbon removals from land use, land use change, bioenergy, and related topics in their greenhouse gas inventories” |
CORPORATE GHG ACCOUNTING AND TARGET SETTING

1. Measure & Account
2. Set a Target
3. Report
4. Reduce Emissions
5. Update Annually
New activities covered by the guidance

Atmospheric carbon pool

1. Removals
2. Land use change
3. Land use and management
4. Storage in: Land carbon pools; geologic carbon pools
5. Biogenic product CO₂ emissions

Product carbon pool

Sink

Biogenic product carbon storage
Business goals addressed by guidance

There are several business goals supported by accounting for land sector activities and removals. To focus accounting efforts, companies should consider which business objectives they intend to achieve:

- **Identify and understand climate impact risks and opportunities**
  Land sector activities can be drivers behind many climate risks, as the use of land can lead to deforestation, soil degradation, biodiversity loss, etc. Increased attention to land sector activities with company accounting provides a path to understanding and reducing these risks.

- **Set GHG targets and track performance**
  Companies face consumer, investor and stakeholder pressure to develop ambitious climate targets. This guidance helps to set targets to reduce land-based emissions and enhance CO₂ removals in addition to tracking the progress made towards those targets.

- **Inform strategies to reduce emissions and enhance removals**
  This guidance supports the design and implementation of effective mitigation strategies that reduce emissions and increase removals across the value chain by taking into account land sector and carbon removal impacts.

- **Enhance transparency and stakeholder information through public reporting**
  Investors, customers, non-governmental organisations and other stakeholders are increasingly demanding transparency and credibility on corporate GHG emissions and reduction targets. Reporting against this guidance enables transparent and credible reporting of land sector and removal activities.
CORPORATE ACTION:
THE NET ZERO PATHWAY

Emissions reductions

Grasslands:
- Avoided conversion: grasslands
- Improved agri. practices

Forests:
- Avoided conversion: forests
- Natural forest management

Emissions removals (sequestration)
- Trees in croplands
- Reforestation
- Coastal wetlands restoration

‘Insetting’
Contact

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LINKS / RESOURCES

• Science Based Targets Initiative (SBTi) [LINK]
• SBTI How to Set a SBT [LINK]
• SBTI Net Zero Standard [LINK]
• SBTI FLAG Overview [LINK]
• SBTI FLAG Guidance [LINK]
• SBTI FLAG Guidance Resources [LINK]
  • Webinars
  • SBTI FLAG Tool
  • Slides

• GHG Protocol Website [LINK]
• GHGP Corporate Standard [LINK]
• GHGP Corporate Value Chain (Scope 3) Standard [LINK]
• GHGP Land Sector and Removals Draft Guidance [LINK]
• GHGP Training Modules [LINK]
**Importance of the guidance**

**Purpose of the guidance**
- Agriculture, forestry and other land use sector is responsible for **25% of all GHG emissions**.
- Due to the lack of guidance, several important land-based GHG impacts (e.g., land management and land use) have not been included in GHG inventories.
- The GHG Protocol Land Sector and Removals Guidance is intended to support companies by providing clarity on the steps, methods and data needed to calculate GHG emissions and removals from land-based activities and technological CO2 removal activities.

**Relationship to other standards**
- The GHG Protocol Corporate Standard and Corporate Value Chain (Scope 3) Standard provide the foundation for producing a corporate GHG inventory.
- But: limited guidance on land-based activities and CO2 removals and storage.
- Companies should use this guidance in combination with the Corporate Standard and the Corporate Value Chain (Scope 3) Standard.

**Intended audience**
- Companies and other organisations in:
  - Agricultural, forestry, or other land-based value chains, including those on owned or controlled land; supplying to producers; purchasing, consuming, processing or selling food, fibre, feed, bioenergy or other biogenic products; and storing biogenic CO2; and
  - Technological CO2 removal (TCDR) value chains, including those in owned or controlled TCDR operations; purchasing, consuming, processing or selling TCDR products; and companies that store technologically removed CO2.
  - Companies that buy or sell GHG credits from the land sector or removal activities.

**Scope of the guidance**
- Corporate-level accounting and reporting of emissions and removals across scopes 1, 2 and 3.
- GHG emissions from land-use change and land-based activities and CO2 removals and storage.
Science helps us focus on what matters

Alexi Ernstoff, PhD – Global science lead, Quantis

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Our mission

We aim to transform businesses to create a thriving future for people and the planet.
The rules have changed, where should you be focusing your resources?

01

Land use change

02

Land management

03

Removals

Aboveground Biomass (AGB)
Dead Organic Matter (DOM)
Deadwood
Soil Organic Carbon (SOC)
Belowground Biomass (BGB)
### Land-Use Change GHG accounting approaches

#### Traceability Data

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sourcing country</td>
<td>Supply-shed (e.g., farmer group and region); sub-national level, 10x10km grid...</td>
</tr>
<tr>
<td>Farm locations (polygons, or point + buffer)</td>
<td></td>
</tr>
</tbody>
</table>

#### Interpretation

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sourcing country has market-level deforestation due to our sector.</td>
<td>Sourcing region has landscape level deforestation due to our farms, other farms, access roads, or other activity in the area.</td>
</tr>
<tr>
<td>The land for our sourcing farms was created via deforestation.</td>
<td></td>
</tr>
</tbody>
</table>
The rules have changed, where should you be focusing your resources?

01 Land use change

02 Land management

03 Removals
Key carbon pools for removals

- Aboveground Biomass (AGB)
- Dead Organic Matter (DOM)
- Belowground Biomass (BGB)
- Soil Organic Carbon (SOC)
- Debris
- Deadwood
Removals

Narrative: business as part of the solution
Removals

1. Narrative: business as part of the solution

2. Strategy: financial & marketing opportunities

3. 

4.
Removals

1. Narrative: business as part of the solution
2. Strategy: financial & marketing opportunities
3. Science: building and accounting for evidence of improvement
4. Learn more: “Quantification methodology and accounting framework for carbon sequestration in perennial cropping systems”

Download the report
Science says we must focus on reductions and have a long-term removals strategy.

- **Little to no change**
- **Offsetting, insetting, or scope 3 reported removal**

Inspired by IPCC, 2018 & Roe et al. 2019 & 2021

- [www.nature.com/articles/s41558-019-0591-9](http://www.nature.com/articles/s41558-019-0591-9)
Science says we must reduce deforestation, GHG emissions, and do long-term planning for removals

- Address deforestation for scope 3 and at industry-level
- Improve management of land & residues
- Have a within supply chain project that is
  - Traceable to location
  - Traceable across all buyers
  - Monitored
  - Evidence-based

Inspired by IPCC, 2018 & Roe et al. 2019 & 2021

Reminder: Science says you cannot double count something that happened once
Yes, and!

1. Narrative: business as part of the solution

2. Call to action: alignment across industry for accounting methods to drive sustainable business models. **Focus on deforestation in the short-term, plan for removals in the long-term.**

3. Science: building and accounting for evidence of improvement

4. Focus: On what matters

Call to action: alignment across industry for accounting methods to drive sustainable business models. **Focus on deforestation in the short-term, plan for removals in the long-term.**
Climate action and accounting at Barry Callebaut

Tilmann Silber

October 26, 2022
Our validated commitment under SBTi

“Barry Callebaut commits to reduce absolute Scopes 1, 2, and 3 GHG emissions **35% by 2025** from a 2018 base year.”

Re-calculation required by end of 2023 as per new SBTi FLAG guidance.
Our Carbon footprint
Largest contribution from Land Use Change

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>7.83 M tCO₂e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1</td>
<td>1.4%</td>
</tr>
<tr>
<td>Scope 2</td>
<td>2.1%</td>
</tr>
<tr>
<td>Scope 3</td>
<td>96.5%</td>
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</tbody>
</table>

Cocoa LUC: 31.6%
Dairy: 30.3%
Cocoa Farming: 7.0%
Oil & Fat: 5.1%
Ingred. LUC: 5.0%
Sugar: 4.2%
Factories: 4.2%

MAIN COMPONENTS OF OUR CARBON FOOTPRINT (representing 87% of total)

Land Management (LM): Calculation approach aligned with WFLDB

Numbers for FY 21/22
ESTABLISHING THE CARBON IMPACT OF COCOA FARMING

Becoming carbon and forest positive in our cocoa supply chain requires a highly innovative approach. At Barry Callebaut, we pride ourselves on our comprehensive value chain approach. We not only measure the carbon footprint of our operations, we also assess the carbon footprint of our entire supply chain, including the production and processing of all raw materials and related land use change.

In 2019, we have continued our pioneering work with our partner Quantis to develop the first carbon footprint assessment for the cocoa supply chain.

1. Satellite data help detect and map changes in land use over time.

2. Barry Callebaut sends experts on the ground to map all cocoa plantations we source from. Our Katchili database replaces the common use of average country data with farm-specific data.

3. By using the combination of GPS farm mapping, individual farm-level data and satellite mapping, we calculate the emissions resulting from forests replaced for cocoa farming, also called land use change.

WHAT DOES THAT MEAN?

The new assessment will allow us and our customers to have a more precise reduction strategy of cocoa and chocolate carbon footprint.
**direct Land Use Change (dLUC) emissions**

- Calculation approach

Correction for non-cocoa deforestation drivers (e.g., timber use)

Linear discounting of net emissions over 20 years

**CO₂e emissions**

<table>
<thead>
<tr>
<th>Year</th>
<th>Net emissions</th>
<th>Allocated</th>
<th>Depreciated, 2021</th>
<th>tCO₂e per plot, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td></td>
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<td>2015</td>
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<tr>
<td>2020</td>
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Our approach - **Removals**

Generating carbon removals while increasing farmer livelihoods

**Project:** Implementing agroforestry systems on farm by distributing shade trees to farmers. Trees species include fruit trees which provide additional income whilst removing carbon from the atmosphere.

**Locations:** Ghana, Côte d'Ivoire, Cameroon, Indonesia, Brazil

**Carbon impact:** 162,706 tCO$_2$e in 21/22, 3rd party verified

**Co-benefits:** improved farmer income, cocoa productivity, biodiversity
The Gold Standard Value Change program aims to unlock credible carbon claims for corporate reporting in line with GHG Protocol and Science-based Targets.

The program certifies 'interventions' (such as agroforestry) which are undertaken within or around the value chain to remove carbon or reduce GHG emissions.

The program:
- Is independently 3rd party verified by SustainCert
- Aligned with GHG Protocol/SBTi
- Allows for transfer of carbon benefits to customers, incl. scope 3 software (WIP)
Better together: On the journey towards Net Zero with our customers
Collaboration is key - Co-Claiming & Co-Funding

- Customers’ and BC’s scope 3 overlap, so **we can co-claim** reductions & removals therein
- **Certification** enables co-claiming by introducing assurance
- The vast majority of our projects is **co-funded** with our customers
We are developing a **portfolio of customer solutions**

### Make a positive carbon impact through Cocoa Horizons

- You earn carbon benefits from buying chocolate products under the Cocoa Horizons program
- SBTi compliant & third party verified
- Historic engagement of Cocoa Horizons in environmental activities
- **Existing Solution.**

### Accelerate decarbonisation through agroforestry

- You generate incremental positive carbon impact by investing into an agroforestry program
- SBTi compliant & third party verified
- Opportunity to engage your consumers & stakeholders with a strong communication around carbon
- **Solution under development.**

### Be carbon neutral

- You buy into a certified climate neutral program developed in partnership with a globally recognized third party.
- Executed in the cocoa supply chain & its communities through:
  - Insetting (agroforestry & offsetting activities (restoration, cookstoves))
- Opportunity to lead the way in your industry and make a big communications impact
- **Solution under development.**
Thank you!

Tilmann Silber
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Climate & Nature finance in the cocoa sector: opportunities, challenges and solutions for member companies

WCF Partnership Meeting

Florent Dji

October 2022
What do we mean by Climate & Nature Finance?

- Investments undertaken to address climate change and natural ecosystem degradation
- New source of co-financing, adding 20-40% to established investment projects
- Accessible through voluntary or compliance markets
- Generates benefit for Governments, and farmers and communities
  - new revenue stream for government through National REDD+ programs and support for NDCs achievement
  - new revenue stream for farmers and communities (~ +8% to the annual income) and more resilient and sustainable cocoa production
- Emerging funding source: impact investment and blended finance
- Not widely leveraged by Cocoa and chocolate companies
Common types of carbon projects within the cocoa sector

**Value chain intervention projects**

- GAP, Soil, nutrient and pest management
- Tree planting on farms

**Outside of the value chain**

- Reforestation of forests outside of the value chain
- Energy Efficiency & Community Projects

- Carbon reductions and removals
  - Counts towards SBT FLAG
  - Or in case no one in the value chain has a SBTs/Net Zero targets, it may still be certified and used for compensation claims/net zero claims

- Carbon removals
  - Outside of the value chain does not count towards SBT FLAG
  - May be certified and used for climate neutral compensation/net zero neutralisation claims

- Carbon reductions
  - Outside of the value chain does not count towards SBT FLAG
  - May be certified used for compensation claims

Confidential. Do not distribute.
On-farm projects
Supply chain SBTs low carbon emission cocoa
*e.g. Zero deforestation, reduced fertilizer use, agroforestry, etc*

Landscape projects
Off-farm carbon in/offsetting credits
*e.g. restoration, reforestation, conservation*

Community projects
Off-farm carbon in/offsetting credits
*e.g. cookstoves, water treatment, biomass to energy*
### Low carbon commodity

**Definition:** refers to Carbon reduction and or removals within a company's value chain that may contribute to achieving their Scope 3 reduction targets

**Key features:**
- Innovative new concept
- Approach to valorize reduction efforts outside carbon credit schemes
- Main focus on reductions also including removals in accordance with GHG draft guidance
- Space for collaboration among companies around the concept of “co-claiming” of Emissions factors
- Emerging concept of a “low carbon cocoa premium”

**Practical experience:**
- [Concept note for a Low carbon Cocoa PES project in Cameroon, Indonesia and Peru](#) in conjunction with ICCO

### Verified Carbon Claims

**Definition:** refers to carbon that has been audited by a second or third party which can be used for voluntary carbon compensation / neutralisation credits pathway (in/offsetting) to deliver carbon neutral / net zero performance

**Key features:**
- Well established
- It may or may not produce carbon credits
- Generally expressed in terms of tCO₂ removed or reduced

**New emerging ‘compliance’ carbon credits**
- Emerging national regulations in a growing number of countries
- Countries buying carbon credits from other countries (Article 6 transactions)

**Practical experience:**
- [Asubima Forest Restoration, Ashanti, Ghana- FORM Ghana](#): reforestation of degraded forest reserves
- [Mondelez Ivory Coast](#): cookstoves project
How can we unlock climate finance at scale within the cocoa sector

**CHALLENGES**

- **The enabling environment is becoming clearer but we need to ...**
  - Avoid the traditional silos-approach of project implementation
  - Ensure the permanence of the carbon impact over the long-run
  - Develop proper and credible MRV system
  - Provide more certainty and applicability in the issuance, accounting regulatory framework and claims
  - Ensure everyone along the value chain benefits

- **Significant investment needed for both on- and off-farm programs:**
  - Need to create new business models to collectively finance the transition to low carbon cocoa & chocolate
  - Need to fully leverage Climate & Nature finance

**Call for action**

- **Implementation**
  - Prioritize landscapes approach to avoid potential leakage and carbon reversal issues in relation to delivering SBTs and Net Zero performance
  - Integrate concrete Climate & Nature impact targets within the Cocoa & Chocolate sector key initiatives e.g Cocoa & Forest Initiative (CFI), National Cocoa Platforms etc
  - Explore the potentials of Payment for Ecosystem Services at landscape scale to ensure impact permanence and leverage all potential natural capitals including climate, water and biodiversity
  - Work closely with communities to generate stakeholder buy-in and fair distribution of value
  - Partnerships with other cocoa companies, universities or non-profits organisations to reduce costs through collective MRVs and find efficiencies

- **Investment**
  - Setting up a landscape financing mechanism scheme that enhances collective action within pre-competitive spaces at landscape level
  - Explore sector partnerships and public-private co-financing potentials to further promote co-claiming schemes within landscapes
Towards a collective Landscape Roadmap for cocoa?
A theoretical model for achieving Net-Zero collectively within the Asunafo-Asutifi Landscape in Ghana

Total emissions reduction at landscape level for Gold tier Climate Smart Cocoa (CSC) standard

The following analysis shows the estimated carbon reduction performance when taking into consideration the goals established by the Asunafo-Asutifi PES programme to reach a 20,000 ha of CSC production from the total 86,759 ha of cocoa within the landscape.

The estimation herewith displays the overall emissions reductions that could be achieved by year 2030 with full uptake of the Gold tier of CSC (including the planting of 45 trees/ha on the 20,000 ha).

List of farm-level Gold tier CSC interventions with estimated reductions and removals overtime

Emissions Gap that can be filled at Landscape level through forest restoration and conservation projects
From roadmap to projects

Roadmap
(hotspot emission sources and key interventions to achieve targets)

Carbon action plan
Output: List of existing projects and new project ideas

Project/intervention assessment
Output: feasible project/intervention ideas to implement

Implementation
Output: project implementation support

Monitoring
Output: monitoring report
Our contacts

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Offices & global representations:
Verify carbon emissions and removals at scale

Trusted, easy and affordable full scope 3 compliance

Niels Wielaard
Carbon emissions and removals monitoring
Methodology – Ingredients needed

1. Traceability data (geolocation of farms)

2. Cocoa extent (for cocoa-driven emissions and reductions)

3. Carbon stock and change over time
Ingredient 1. Traceability data (500,000+ farms)
Ingredient 2. Cocoa extent 2021
Ingredient 3. Carbon stock and change

LiDAR data:
Measure tree height
Ingredient 3. Carbon stock and change
Ingredient 3. Carbon stock and change
Above ground carbon stocks (tC/ha)

81.5 M MtC
Case study example

Deforestation and biomass density within farms in GHA

- Carbon density (t/ha)
- Deforestation (ha)
Conclusions and recommendations

Case: no recent emissions, stock increasing

Models using tree cover loss ≠ deforestation, measuring blanket emissions not related to cocoa overestimates emissions

Satellite data enables finer grain results more consistent in time and space

Challenge: need for accounting standards
Get in touch!

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