THRIVING NATURE

Thriving Nature

Becoming carbon and forest positive

Our goal
By 2025, we will be carbon and forest positive.

Our approach
Deforestation and forest degradation are important drivers of climate change and biodiversity loss – the two major environmental challenges of our time. The main driver of deforestation and forest degradation is the expansion of agricultural land linked to commodities such as soy, palm oil and cocoa, all three ingredients found in chocolate products. In addition, when looking at cocoa, climate change, poor soil quality, the suboptimal use of agrochemicals, and a lack of natural inputs, such as shade cover and pollinators, are putting even more pressure on cocoa farmers, who are already struggling with declining cocoa yields. To ensure the stability of ecosystems, the entire chocolate industry must be committed to reducing its carbon footprint and achieving a deforestation-free supply chain. That entails, on one hand, mitigating the impact of climate change, preserving ecosystems and restoring natural biodiversity and, on the other hand, empowering communities, helping farmers prosper and increasing the long-term productivity of cocoa in environmentally suitable areas.

We welcome the European Union's (EU) draft Regulation on deforestation-free products aiming to minimize EU-driven deforestation and forest degradation, and reduce greenhouse gas emissions and biodiversity loss. We are confident that the Regulation can achieve its objectives if it is part of a smart mix of measures and is accompanied by enhanced cooperation with other non-EU countries, including technical and financial assistance, in order to support the development of government-mandated traceability systems and the swift transition to sustainable agricultural practices. Barry Callebaut was also one of the leading signatories behind the Cocoa & Forests Initiative (CFI) Frameworks for Action. The power of CFI is that it brings together public and private stakeholders, underlining that industry requires an enabling public policy environment to further scale impact. In 2021/22, we teamed up with other CFI signatory companies in a joint project in order to streamline the accounting approach for carbon throughout the industry and create a level-playing field. This work is ongoing with final results expected in 2022/23. We also contributed to the development of the West Africa Cocoa Farm Dataset and Deforestation Risk Assessment (DRA), working together with the World Cocoa Foundation and Climate Focus in partnership with the World Resources Institute as well as other companies. The DRA will contribute to a better understanding of deforestation dynamics through an industry level view of cocoa plot locations across West Africa, thereby facilitating effective landscape partnerships and encouraging precompetitive collaboration. Paired with the outputs of the risk assessment, collaboration can proceed in the areas that matter most for addressing deforestation. The creation of the comprehensive dataset is underway, and a beta version of a risk assessment has been developed. The final risk assessment will be subject to peer review and then be made available as a freely accessible public good through WRI's Global Forest Watch platforms to help drive aligned deforestation risk management across the cocoa sector for impact at scale.

A crucial next step will be the implementation of government-mandated end-to-end traceability systems. Additional steps include the setting up of a cocoa farmer registry and a review of current land tenure

Implementation of our intensified agroforestry approach covering

11,000

hectares

policies to ensure better supply management and compliance with national forest and agricultural policies. We will continue to work with the governments of Côte d'Ivoire and Ghana, our industry partners and other stakeholders to protect and restore forests, support sustainable cocoa production and thriving communities, and build a forest positive future.

Carbon positive progress

Greenhouse gas (GHG) emissions in a food company's supply chain are, on average, 87% of its total emissions[12]. For Barry Callebaut, this means that our emissions extend far beyond the locations and facilities where we produce our chocolate and cocoa products, fillings, decorations and compounds. This is why, as part of our Forever Chocolate target to be carbon positive by 2025, we are committed to assessing the carbon impact created by our own operations (scope 1), the impact generated by the energy we use (scope 2), and the impact of our supply chain (scope 3), which includes the production and processing of all the raw materials we source, and related Land Use Changes (LUC).

In 2019, we released our science-based targets. These carbon reduction targets have been externally assessed and support the global carbon reduction trajectory required to limit global warming to +1.5 °C.

Cutting emissions begins by improving the energy efficiency of our operations and changing the sources of energy that we use. On top of the large number of efficiency initiatives executed by our operations teams, we are progressively replacing fossil fuels with green electricity wherever possible. In 2021/22, we increased our consumption of renewable energy and 29 of the company's 66 factories are now sourcing 100% renewable electricity.

We continue to expand our sources of renewable energy with new solar installations. For example, our chocolate factory in Port Klang, Malaysia, switched on a system with more than 4,700 photovoltaic panels in March that will generate 2,500 MWh/year of clean energy, eliminating emissions of 1,500 t of CO_{2e}/year. In May 2022, our factory in Pennsauken, New Jersey (US), went live with a 690 kW rooftop solar array that produces 840 MWh/year, also contributing to reducing our carbon emissions.

In October 2021 **"The Barry Callebaut Chocolate Box"**, our brand-new Global Distribution Center which is also the largest chocolate warehouse in the world, was formally inaugurated in Lokeren, Belgium. The center was designed to deliver against the highest sustainability standards (BREEAM) for a logistical warehouse. This norm guarantees a sustainable approach from the design to the operation of the center. The building is CO_2-neutral. There are 12,000 m² of photovoltaic panels on the roof and we use a geothermal system to extract heat or cold from the ground. The entire system is fossil-fuel-free and all the energy that is used in the building, including charging stations, forklifts and high bay installations, is supplied by on-site renewable energy sources.

Our scope 3 emissions, primarily from Land Use Change (LUC), form the biggest part of our carbon liability. LUC means the carbon emissions resulting from the transformation of forest land to agricultural land. However, identifying and measuring deforestation and carbon emissions associated with LUC at a large scale and in sufficient detail is notoriously difficult. This becomes all the more complicated when working with third-party suppliers who have complex supply chains.

Through the implementation of innovative technologies and in collaboration with academia, start-ups, and other stakeholders, we are committed to tackling these challenges, reducing our carbon footprint and achieving a deforestation-free supply chain.

In 2020, we developed the **first satellite-based assessment approach for cocoa-related LUC emissions**. Since 2018/19, we have also partnered with the **Gold Standard Foundation** and **SustainCert** as the first company to pilot their **Value Chain Interventions Guidance** and develop a methodology to monitor and certify carbon removals and reductions from value chain interventions (scope 3). Based on this work, we established a portfolio of supply chain interventions such as agroforestry that are now being implemented in major cocoa-growing regions. The resulting carbon benefits can be shared with our customers and suppliers.

12 CDP: Hungry for change: Are companies driving a sustainable food system? Available from https://www.cdp.net/en (accessed August 5, 2021)

In 2021/2022, we published our Deforestation-free Protocol describing the processes we are developing to reduce deforestation within our supply chains for cocoa and other ingredients. The traceability of our ingredients is crucial in order to monitor and prevent deforestation. This year, we continued to put a particular focus on monitoring farms at risk of sourcing from protected areas. Currently, we are covering 230,749 farms mapped within 25 kilometers of national parks, game reserves, forest reserves, and classified forests 1 and 2 in Côte d'Ivoire.

Combining this data with the other farms mapped, we now have GPS maps for 399,413 farms, covering 79.7% farms in our direct supply chain[13]. As a result, we have established traceability to farm level for the cocoa volumes coming from these mapped farms.

In order to provide third-party suppliers with a solution to identify the forest areas where preservation and protection activities have to be enhanced, we partnered with EcoVision Lab, part of ETH Zurich (Swiss Federal Institute of Technology in Zurich, Switzerland). In 2021, this collaboration led to the publication of an industry-first, indicative High Carbon Stock (HCS) map for Southeast Asia that identifies forests with high conservation value and areas where deforestation would cause the highest carbon emissions. This innovative work was expanded in the fiscal year under review and will eventually enable HCS mapping in other regions such as West Africa.

In 2021/22, we also further improved our LUC and deforestation monitoring in partnership with Swift Geospatial, which leverages near real-time open access disturbance alerts. This can be overlaid with internal data for cocoa and other ingredient growing areas to better understand deforestation patterns.

In addition to our efforts to reduce our emissions from LUC, we are pursuing carbon projects that cover various ingredients through collaboration with trusted partners, including scientific institutes, NGOs, technology providers, suppliers and farmers. In these projects, we aim to translate climate-smart management strategies into practical agronomic advice for farmers, helping them to implement and report carbon reduction measures in our supply chain and our customers. We are aligning our claims generation to the upcoming requirements for SBTi FLAG and developing internal systems that will support our customers in their reporting needs. In 2021/22, we worked on our emission factor governance by collecting emission factors from our ingredient suppliers and assigning each one a quality rating. Specifically for dairy, we developed a carbon tracking tool that enables us to live-monitor our carbon footprint based on our purchases. In a next step, we will be able to identify the largest source of emissions and thus the greatest potential for interventions, given that dairy is one of the major contributors to our overall corporate GHG emissions. The use of animal feed additives is widely recognized as an effective means of reducing methane emissions in dairy cattle. We have developed an insetting project with Verra to this end, building on previous work in dairy. Where credits are generated within our supply chain, we will allocate them to our dairy purchases and apply Verra certification towards the reduction of our dairy emissions.

In addition, we have also commenced several pilot projects with dairy, sugar cane, sugar beet, palm oil and coconut suppliers, focusing on soil carbon and crop nutrient management to reduce carbon emissions.

13 In line with our core principle of partnering with other stakeholders to create tangible impact on the ground and make sustainable chocolate the norm, this KPI extends beyond our direct supply chain, covering more than 12,000 farmers from our indirect supply.

Ecosystem restoration, biodiversity and agroforestry

Through our agroforestry and reforestation efforts, we aim to mitigate the impact of climate change and restore natural biodiversity while helping farmers to prosper and increase their long-term productivity.

Enhancing on-farm ecosystems with agroforestry helps farmers to develop cocoa farms that are more resilient to drought and disease, have better soil quality, produce better and higher yields, and provide them with an additional source of income. Additionally, cocoa grown in the shade is linked to increased biodiversity, carbon removals, and nutrient retention in the soil. By carefully observing the local natural ecosystems, we can determine the best mix of native species to promote cocoa and soil regeneration, and attract pollinators, such as birds, bees and other insects, while providing extra income for farmers and removing carbon.

This year, we further developed our agroforestry approach with a focus on long-term success through training, extended monitoring and payment for ecosystem services. In partnership with the Cocoa Horizons Foundation and major customers, we launched our intensified agroforestry approach covering 11,000 hectares in Ghana and Côte d'Ivoire. We also started a collaboration with third-party cocoa bean suppliers, supporting them in setting up an agroforestry system. We aim to continue to massively expand our intensified agroforestry approach in the coming financial year, focusing on tree growth and survival to maximize permanent carbon removals on our farms while at the same time diversifying farmer income and improving their livelihood.

One of the reasons farmers are hesitant to commit to long-term investment in their farms is their limited land tenure and tree rights. In contrast to many other countries, applying for land certificates in West Africa is often a very expensive and very time-consuming administrative process. For this reason, we joined forces with industry players, donors and local implementers under the Côte d'Ivoire Land Partnership (CLAP) in 2019 to develop an upscaling model for land registration. This year, 130 land tenure documents were issued as part of the pilot, with the ambition to issue more than 9,000 by 2023. In Ghana, we co-funded the "Cocoa Household Income Diversification Project" under the Beyond Chocolate Partnership. Through the contributions of our customers to the Cocoa Horizons program and our partners Meridia, IDH – The Sustainable Trade Initiative, ALDI SÜD, Solidaridad West Africa and the Ministry of Development Cooperation Belgium, a group of around 500 Ghanaian cocoa farmers, about 30% of whom are women, received their land registration documents in June 2022.

Having formal rights to the land they own increases farmers' legal tenure security, resolves land disputes, and gives them peace of mind. Farmers are able to safely invest in their land in order to secure their livelihoods and family legacies. Land rights are essential to ensure a living income for farmers and sustainable cocoa production. This is why we aim to involve additional stakeholders at a precompetitive level to apply this approach beyond our own supply chain.

Biodiversity is an important element for evaluating our progress on becoming forest positive. Our commitment to biodiversity is focused on both on-farm (agroforestry) and off-farm (reforestation) activities. Restoration of degraded forests and ecosystem corridors between and near farms aims to bring back the ecosphere of a forest, such as water, soil quality and native plant species. But the restoration of these ecosystems extends beyond just the environmental factors. These landscapes are connected to farms and communities, so protecting and restoring these ecosystems can also improve the livelihoods of farmers and enhance the well-being of farming communities.

Currently, we are active in the Agbo 2 Forest in Côte d'Ivoire, in which, although designated as protected, many hectares of forest have been lost over time to illegal slash-and-burn, logging and poor agricultural practices. In May 2021, supported by the Cocoa Horizons Foundation, and in partnership with FORLIANCE, EticWood, the forest governance organization and, most importantly, the local communities, we commenced a large reforestation and biodiversity restoration initiative on 300 hectares. Through this activity, we are also creating employment opportunities for local communities. In fiscal year 2021/22, we planted over 50,000 seedlings, focusing on 20 different tree species, some of which International Union for Conservation of Nature (IUNC) recognized as endangered species, with a current survival rate of over 70%. Such a high survival rate is mainly due to favorable weather conditions and close collaboration with the local community and authorities. By involving them in income-generating activities through the creation of a nursery, firebreaks and regular patrols, we managed to foster acceptance, sensibilization and education in regards to reforestation. We are currently exploring further opportunities to scale up our restoration activities over the coming years.

Key Metric

8.11

million tonnes CO_{2e}

The carbon footprint in our supply chain from farm to customer

Enabling KPIs

3.52

CO_{2e} intensity per tonne of product

25%

Sourced raw materials demonstrated not to be contributing to deforestation

Our commitment to the UN SDGs

Our measured impact

In 2021/22, our overall carbon footprint was 8.11 million t CO_{2e}, which is a +3.4% increase in comparison to our previous reported footprint. This increase was mainly driven by our volume growth (+4.8%). At the same time, we managed to reduce our GHG intensity through increased use of renewable energy in our factories and by sourcing a higher percentage of certified non-cocoa ingredients. As a result, our carbon intensity for 2021/22 slightly decreased from 3.57 t CO_{2e} to 3.52 t CO_{2e} (–1.4%) per tonne of product. Since the commencement of Forever Chocolate in 2016, we have reduced our overall corporate carbon intensity per tonne of product by more than 18%. Additionally, through agroforestry insetting, we achieved 162,706 t CO_{2e} of scope 3 removals, according to the Gold Standard Value Chain Intervention methodology and independently certified by SustainCERT. Accounting for these removals, our net carbon footprint was reduced to 7.95 million t CO_{2e} and our carbon intensity was further reduced to 3.45 t CO_{2e} (–3.2%) per tonne of product.

In 2021/22, we distributed over 9 million trees, of which 5,053,922 non-cocoa trees for agroforestry projects, 50,798 trees for reforestation projects and 3,912,022 cocoa seedlings.

The percentage of sourced raw materials demonstrated not to be contributing to deforestation was 24.5% in 2021/22 compared to 28.7% the previous year. The drop is mainly due to changes in the Maplecroft risk index.

CDP, an independent organization that assesses the carbon reduction plans of over 14,000 companies, for 2021 awarded Barry Callebaut, for the first time, an A for global forest stewardship, along with 23 other high-performing companies leading in corporate action and transparency on deforestation. We also achieved Leadership status for our carbon reduction and supplier engagement efforts for the fourth consecutive year.