

# Upfield plant-based products carbon footprint labelling.

October 2021

**TABLE OF CONTENTS**

INTRODUCTION ..... 3

GLOBAL WARMING, THE CARBON FOOTPRINT OF PRODUCTS AND WHY IT MATTERS ..... 3

CARBON LABELLING - MEASURING AND COMMUNICATING THE CARBON FOOTPRINT OF UPFIELD’S PLANT-BASED PRODUCTS ..... 4

LIFE CYCLE ASSESSMENT AND SCOPE OF THE CARBON FOOTPRINT OF UPFIELD’S PRODUCTS: FROM CRADLE-TO-GRAVE..... 4

UNIT FOR MEASURING THE CARBON FOOTPRINT ..... 6

ASSESSMENT METHOD ..... 6

CRITICAL REVIEW ..... 6

DATA COLLECTION AND MODELLING..... 6

CLIMATE CHANGE IMPACT RESULTS AND CARBON LABEL COMMUNICATIONS ..... 6

CLIMATE CHANGE IMPACTS ..... 6

CARBON LABEL AND ON-PACK COMMUNICATIONS ..... 6

REFERENCES ..... 7

## INTRODUCTION

For Upfield it is important to find ways to support consumers in making informed choices and compare the environmental impacts of different foods. As a food company producing dairy alternatives, Upfield has an opportunity to inspire people to make food choices that are better for the planet. One of the ways Upfield is doing this is to ensure that Upfield brands share environmental information about their products on their packaging through on-pack labels and comparative claims. On-pack information about the environmental impacts of Upfield products are based on life cycle assessments (LCA) completed by external experts that comply with recognised standards. All comparative claims are substantiated by ISO-compliant and critical reviewed life cycle assessment which meet recognised standards and the public disclosure of results.

This document explains how the carbon labels and comparative claims of Upfield plant-based products are generated. It shares additional details behind the products' greenhouse gas emissions calculations, methodology, specifics of the studies conducted and data sources to support the calculations and claims.

## GLOBAL WARMING, THE CARBON FOOTPRINT OF PRODUCTS AND WHY IT MATTERS

Burning of fossil fuels, deforestation, and agriculture leads to the emission of greenhouse gases (GHG), which have increased substantially since large-scale industrialisation began in the mid-1800s. Human-caused (anthropogenic) greenhouse gas emissions consist of carbon dioxide (CO<sub>2</sub>) from burning fossil fuels, as well as nitrous oxide (N<sub>2</sub>O) for example from fertilizer use, and methane (CH<sub>4</sub>) for example from enteric emissions of cattle.

Concentrations of CO<sub>2</sub> in the atmosphere are naturally regulated by processes that are part of the global carbon cycle, such as plant photosynthesis and absorption by the ocean. Although these natural processes can absorb some of the greenhouse gas emissions produced each year by human activity, today, emissions are exceeding the capacity of these processes to absorb carbon.

Rising concentrations of CO<sub>2</sub> as well as other greenhouse gases leads to an increase in the average surface temperature on earth, called *global warming*. Rising temperatures may produce changes in precipitation patterns, storm severity, and sea level. Collectively, this is commonly referred to as *climate change*.

The rapid rise in greenhouse gases is a problem because these emissions are altering the climate and the ocean environment faster than some living things can adapt, threatening the way human society functions today<sup>1</sup>. An increase of 2°C compared to pre-industrial period temperatures is associated with serious negative impacts on the natural environment, human health, and well-being, including a much higher risk that dangerous and possibly catastrophic changes in the global environment will occur.

Today, the global food system is responsible for at least a quarter (25%) of global greenhouse gas emissions. Agriculture and associated land use change (as well as fertilisers, pesticides, and manure) are the largest source of these emissions, contributing approximately 87% of the food system's total emissions and accounting for 24% of global GHG emissions. Animal agriculture alone contributes 14.5% of human-produced (anthropogenic) GHG emissions.

Later stages of the food value chain, such as packaging, retail, transport, processing, food preparation and waste and disposal, combined contribute around 5-10% of global GHGs, and their importance and impacts are expected to grow. In the fight against the climate crisis, food companies face a clear challenge when it comes to improving the global food system, reducing environmental impacts, and communicating their sustainability efforts with transparency and traceability.

Consumers are more and more aware and interested in environmental information, and this awareness is an important factor when determining if consumers will use environmental labelling and claims to inform their decisions. Today it is more important than ever for companies to communicate the impacts of their products based on scientific metrics.

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<sup>1</sup> IPCC, AR6 Climate Change 2021 report <https://www.ipcc.ch/report/ar6/wg1/>

Different food products and product categories have different GHG emissions due to a variety of reasons; for example crop yield per hectare, fertilizer and other agrochemical use, direct and indirect land use change, on-farm machinery and fuel use, and enteric emissions from cattle digestion.

For many food and beverage companies, most impacts occur outside of their owned assets, often in the upstream supply chain or downstream during the product use stage, also known as scope 3. A product carbon footprint (PCF) over the entire life cycle of a product quantifies the total greenhouse gas emissions associated with the product over its value chain, from the extraction of raw materials to the end-of-life.

## CARBON LABELLING - MEASURING AND COMMUNICATING THE CARBON FOOTPRINT OF UPFIELD'S PLANT-BASED PRODUCTS

Upfield's plant-based products are dairy substitutes for spreading, baking and cooking. Since 2018, Quantis has conducted Life Cycle Assessments (LCA) of Upfield's plant-based alternatives for European, UK and North American markets in order to provide robust and reliable data so that the carbon footprint of Upfield products can be communicated with an on-pack label.

The studies assessed Upfield's plant-based products compared to dairy products with the same functional use in the same markets. Studies included Upfield's plant-based products for each market (a "product" refers to a recipe and packaging combination) such as margarines, spreads, creams and cheeses. These products are then assigned a "carbon label value" to communicate the GHG emissions of each product. The carbon label provides product-specific environmental information in hopes to facilitate decision-making for consumers that wish to decrease the environmental footprint of their food choices. This document provides a short summary of the scope of these studies, functional unit (e.g., the service the product provides) and system boundaries (the agricultural and industrial processes needed to produce the product), the method (how the processes to produce the product are converted to GHG), and data sources for disclosing the carbon footprint of Upfield's on-pack and comparative product claims.

## LIFE CYCLE ASSESSMENT AND SCOPE OF THE CARBON FOOTPRINT OF UPFIELD'S PRODUCTS: FROM CRADLE-TO-GRAVE

Life cycle assessment (LCA) is a metric-based methodology used to assess environmental impacts resulting from, for example, GHG emissions, waste production, water, land, and energy use. Environmental impacts are calculated over the life cycle of a product which can be defined in different ways (system boundaries). The most common are cradle-to-gate and cradle-to-grave.

The different system boundaries, which describe what is included in the footprint, allow fair comparisons across products. **With a cradle-to-gate scope** the GHG emissions are considered from the extraction of raw materials through to product manufacturing. For **cradle-to-grave scope**, the GHG emissions are considered from the extraction of raw materials through to the *final use and disposal* (e.g., beyond product manufacturing, through to distribution, use and eventual disposal).

The LCAs performed for Upfield's products consider all identifiable activities over the product life cycle (cradle-to-grave) for all products in the different markets (see Figure 1), to provide transparent and reliable information.

Data were collected with a cradle-to-grave approach for the product recipe, key ingredients' sourcing countries, production factory, energy mixes, packaging designs, transportation, and packaging end-of-life scenarios. Spatially differentiated agricultural life cycle inventory data was generated (archetypes), as well as land use change (LUC) emissions for agricultural ingredients.

The functional unit (FU) of the studies are 1 kg of Upfield's plant-based product and assumes that the dairy equivalent used for the same purpose e.g., spreading, cooking, whipping, etc. is also 1 kg.

The LCA results of Upfield products' greenhouse gas emissions are used for the on-pack carbon label.

**The LCA system boundaries include:**

- Farming (crop production or milk production)
- Manufacturing of plant-based alternatives and dairy products
- Packaging production
- Distribution
- Retail
- Consumer use
- Packaging end-of-life

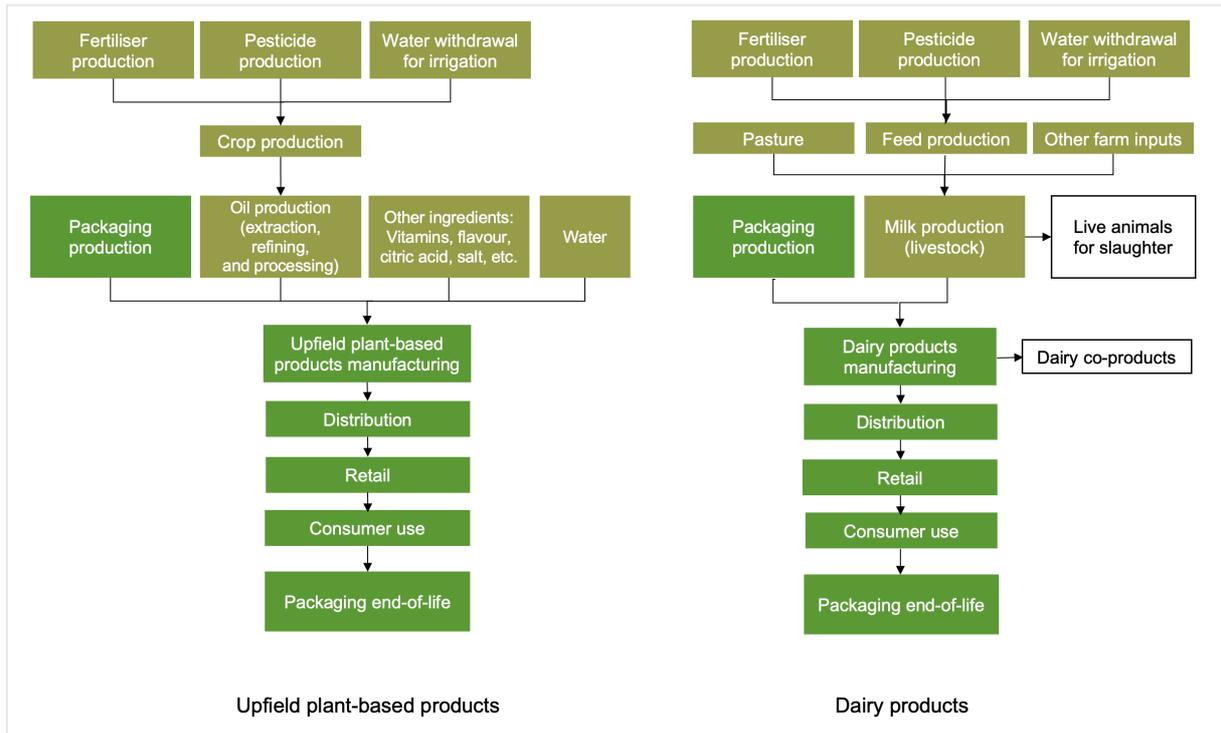


Figure 1. Schematic of the systems evaluated

**The study does not include impacts from:**

- Capital goods at the distribution centre and at the point of retail
- Labour, commuting of workers, administrative work, cattle insemination, and disease-control processes
- Food loss and food waste during distribution, at retail point and at restaurants, hotels or canteens

## UNIT FOR MEASURING THE CARBON FOOTPRINT

The value on the carbon label of each product indicates the GHG emissions of Upfield's plant-based products expressed in carbon dioxide equivalents (CO<sub>2</sub>-eq). This unit is a global consensus value, also used by the UNFCCC<sup>2</sup> and the European Commission. This unit allows for the influence on climate of all GHGs (e.g., N<sub>2</sub>O and CH<sub>4</sub>) to be expressed in a common unit. All greenhouse gases are expressed in this same unit of CO<sub>2</sub>-eq, based on their respective global warming potential (GWP) from international reference values which describes how a gas influences the climate over a 100-year time frame.

## ASSESSMENT METHOD

LCAs of Upfield's plant-based products followed the regionalised LCA methodology described by Liao et al. (2020) to compare the environmental impacts of Upfield's plant-based alternatives with dairy products sold in the same market based on 1 kg of product. A total of 17 environmental indicators were assessed. The LCAs use an attributional approach as per PAS 2050 (BSI, 2012), aligned with the latest international standards for dairy products, published by the International Dairy Federation (IDF, 2015) and the European Dairy Association (EDA, 2016).

## CRITICAL REVIEW

The LCA respects ISO 14040 and 14044 standards for public disclosure of results. The studies have been peer-reviewed by a panel of three independent experts in LCA, agronomy and dairy production.

## DATA COLLECTION AND MODELLING

Upfield plant-based alternatives: primary data for the recipes and ingredients sourcing for Upfield products was provided by Upfield and reviewed by Quantis.

Data representative of specific markets' dairy practices were used to model dairy processing. Data that are representative of country and region averages, published by the Dairy Associations and governmental and economic institutions (e.g., the European Commission), were used to model packaging and distribution. All data have been assessed by Quantis to ensure that it meets the quality standards required to make comparative assertions.

The LCA modelling tool SimaPro version 9.2 was used to model individual datasets (such as oilseeds and packaging) required for plant-based and dairy products.

## CLIMATE CHANGE IMPACT RESULTS AND CARBON LABEL COMMUNICATIONS

### CLIMATE CHANGE IMPACTS

The multiple LCAs performed show that most of Upfield's plant-based products have significantly less climate change impacts than equivalent dairy products. Climate impacts for Upfield's products are dominated by vegetable oil ingredients' production and product distribution, which can vary significantly depending on distances travelled to consumer markets. For further information about the environmental impacts of Upfield products compared to dairy equivalents please contact [www.upfield.com/contact/](http://www.upfield.com/contact/).

### CARBON LABEL AND ON-PACK COMMUNICATIONS

Information shared on-pack about the carbon footprint of Upfield's plant-based products reflects the GHG emissions over the life cycle of the product, assessed in each market or region. For regions, a conservative approach was taken, using the highest single country value of all markets evaluated.

Besides the carbon label, some Upfield products include a comparative claim on-pack, highlighting the difference between GHG emissions of the Upfield product compared to the dairy equivalent. Reduction claims expressed in percentages, are based on a specific market and are rounded down to provide more conservative values and to make them as easy to understand as possible by consumers (e.g., 43% reduction is rounded to 40%). As approximations exist in any life cycle assessment, a conservative approach avoids misleading communication and greenwashing.

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<sup>2</sup> United Nations Framework Convention on Climate Change : [https://unfccc.int/files/essential\\_background/background\\_publications\\_htmlpdf/application/pdf/conveng.pdf](https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf)

For further information about the environmental impacts of Upfield products and comparative claims against dairy products, please contact [www.upfield.com/contact/](http://www.upfield.com/contact/).

## ABOUT QUANTIS

Quantis guides top organizations to define, shape and implement intelligent environmental sustainability solutions. In a nutshell, our creative geeks take the latest science and make it actionable. They deliver resilient strategies, robust metrics, useful tools, and credible communications.

With offices in the US, France, Switzerland, Germany, and Italy, and clients around the world, Quantis is a key partner in inspiring sustainable change on a global scale.

Discover Quantis at [www.quantis-intl.com](http://www.quantis-intl.com)

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