# CLIMATE ACTION IN THE AVOCADO SUPPLY CHAIN

**Lessons from our work with Agricola Cerro Prieto (ACP) in Peru**

## Why we started this project

At Nature's Pride, Care for People and Nature is embedded in how we work across our value chain and climate action is a part of it. We have committed to reducing greenhouse gas emissions in line with science-based targets, including our FLAG targets (Forest, Land and Agriculture), which specifically address emissions linked to farming and land use.

**Our SBTI TARGET**

We aim to reduce our FLAG emissions by 42,2% by 2030 from our 2022 baseline year.

For a fresh produce company like ours, most emissions happen at farm level. They are not in our office or packaging center, but in the fields where our fruits and vegetables are grown.

If we want to reduce emissions in a meaningful way, we need to work directly with our growers. That means collecting real data, understanding production systems and discussing reduction opportunities together.

This is why we started a carbon project with Agrícola Cerro Prieto (ACP) in Peru, one of our key avocado suppliers. The aim was not only to calculate a footprint, but to build a longer-term collaboration around measurement, reduction and continuous improvement.



*ACP fields in Peru*

## Building a carbon baseline

ACP is a large agricultural company in northern Peru producing avocados, blueberries and asparagus for international markets. Because the company manages its own fields, packing facilities and logistics, it provides a good opportunity to analyse emissions across the production chain.

Together with ACP, and with Greenticket acting as technical partner and leading the footprint development, we calculated carbon footprints for multiple years.

Looking at several years is important. One year only gives a snapshot, while a multi-year approach allows us to track trends and improvements over time.

Using the GHG Protocol, we analysed Scope 1, 2 and 3 emissions (see Technical Addendum for full methodology). Scope 1 includes direct emissions such as fuel used in machinery and vehicles. Scope 2 covers purchased electricity. Scope 3 includes indirect emissions such as packaging and transport within ACP's operational boundary. In this context, external transport refers specifically to worker transport between surrounding communities and production sites.

For 2024, total emissions for ACP's division were approximately 44,686 tonnes of $CO_2$ equivalent. Around seventy percent came from Scope 3, mainly transport and packaging. Roughly thirty percent came from Scope 1 emissions such as fuel use. Scope 2 emissions were relatively low because ACP purchases renewable electricity certificates.

### SCOPE OF CARBON ACCOUNTING

**Scope 1** – direct emissions (fuel, machinery)
**Scope 2** – purchased electricity
**Scope 3** – indirect emissions (packaging, transport, supply chain)

### $CO_2$ EMISSION INTENSITY ON AVOCADOS

0.25t $CO_2$ per ton of avocado produced (cradle-to-farm-gate, including cultivation, inputs, and on-site operations). It excludes downstream transport and distribution, international shipping to the Netherlands and delivery within Europe.

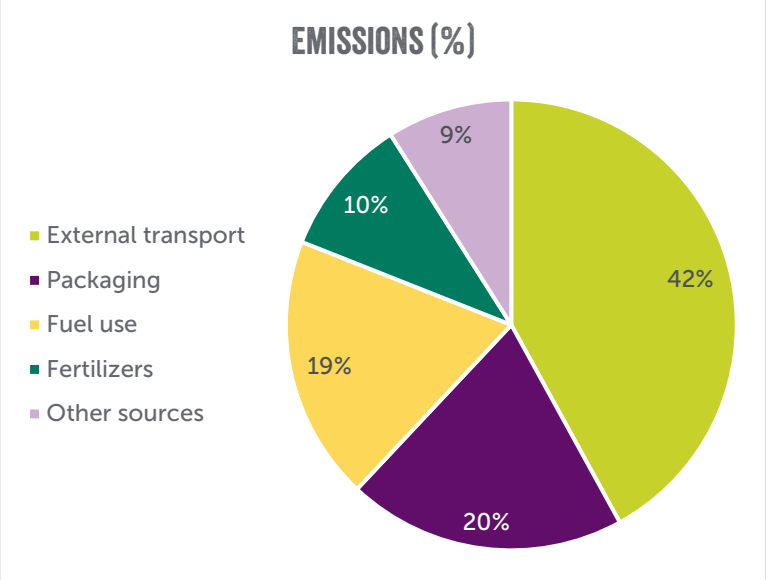
When focusing specifically on avocados, emission intensity was calculated at 0.25 tonnes of $CO_2$ per tonne of avocado produced.

## What drives emissions in avocado production

The footprint analysis helped identify the main emission drivers.

Transport turned out to be the largest contributor, accounting for more than forty percent of total emissions. This mainly includes worker transport from surrounding communities to the production sites.

Reducing emissions in this category is not only a technical challenge. Switching to low-emission vehicles, for example, is currently not within reach due to limited availability, high investment costs and local infrastructure constraints. In addition, many of these transport services are operated by local families who depend on this work for their income. Any transition therefore needs to carefully consider both climate impact and social impact.




Packaging represents another significant share of emissions. Plastic materials and cardboard are necessary to protect fruit quality during export. Changes here often depend on customer requirements and supply chain standards.

Fuel use in trucks, machinery and post-harvest processes is another important source of emissions. Fertilizer use also contributes, mainly through nitrogen-related field emissions. In avocado production, fertilizers are applied through irrigation systems, which allows relatively precise management and optimisation.

## CHALLENGES ALONG THE WAY

The project also highlighted how complex carbon action in agriculture can be. To reduce emissions effectively, reliable and consistent carbon data is essential. However, collecting this level of detail across the value chain is challenging. Carbon accounting requires large amounts of data, and not all suppliers provide detailed emission information, particularly for packaging materials. In those cases, generic emission factors must be used, which limits precision and makes it more difficult to steer and monitor reduction efforts over time.

*Key takeaway*

**RELIABLE, DETAILED DATA IS ESSENTIAL**

Year-to-year variation in weather and production requires long-term tracking to understand real improvements.

Production also varies from year to year due to weather conditions and crop cycles. As a result, total emissions and emission intensity can fluctuate, even when underlying efficiency improvements are being made. This adds complexity to tracking progress and demonstrating consistent reductions.

Another important insight is that many of the initial optimization opportunities—such as improvements in energy use and operational efficiency—have already been realized. This means that further emission reductions increasingly depend on more complex changes, such as system-level adjustments, new technologies or additional investments.

Finally, climate action is not purely technical. Decisions about transport, packaging or technology also affect costs and local livelihoods. Many interventions require balancing environmental benefits with economic feasibility and social impact. Long-term sustainability therefore depends on carefully navigating the balance between environmental, social and economic factors.

### From footprint to reduction

Based on the analysis, ACP and Nature's Pride identified several areas for further improvement. These include piloting electric transport for logistics fleets, optimizing delivery routes and warehouse operations to improve efficiency, and testing more sustainable packaging materials that reduce waste and carbon emissions. There is also growing interest in regenerative practices and new technologies, such as soil-enhancing solutions and renewable energy integration, to further reduce the environmental impact of operations. In addition, ACP is currently working towards ISO 50001 certification for energy management. This is expected to further strengthen energy efficiency practices and contribute positively to future emission reductions.

One example is the potential use of biochar made from avocado pruning residues. This material could be returned to the soil, helping to store carbon and improve soil quality. Before scaling such solutions, further research and feasibility studies will ensure that the benefits are real and measurable.

*"Avocado pruning residues could be turned into biochar, which stores carbon and improves soil quality. Feasibility studies are underway."*

Importantly, this is not a one-time project. ACP will continue updating its carbon footprint each year so progress can be tracked and reduction actions refined over time.



## Engaging people on the ground

A key moment in the project was an on-site workshop with ACP's operational teams. Colleagues from different crop divisions joined a dedicated session to discuss the results and explore reduction opportunities.


*Workshop at ACP*

The discussion showed that awareness of carbon performance is present and growing. Questions about how ACP compares to other producers and what improvements are possible were openly discussed.

Leadership involvement throughout the project helped make sure that carbon reduction becomes part of everyday decision-making, rather than a separate sustainability project.

### WHY THIS MATTERS FOR NATURE'S PRIDE

For Nature's Pride, this collaboration provides valuable primary data for our FLAG-related emissions and supports our pathway toward science-based targets.

More importantly, it shows that reducing emissions in agricultural supply chains requires long-term partnerships. Measurement, transparency and continuous improvement are essential.

By working closely with ACP and continuing this collaboration over multiple years, we are building practical experience that can help us reduce emissions across our wider supply chain.


*Avocado fields at ACP*

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