



AIJN
EUROPEAN
FRUIT JUICE
ASSOCIATION

THE EUROPEAN FRUIT JUICE INDUSTRY'S CARBON FOOTPRINT

Documentation of
methodology and results
November 2023



ABOUT US

Since our creation in 1962, AIJN, the European Fruit Juice Association, has been dedicated to defending and promoting the interests of the entire fruit juice supply chain, from raw material producers to the bottlers of juices and nectars. Our mission is to engage with EU institutions and relevant stakeholders to ensure a thriving and sustainable future for the fruit juice industry. With a growing urgency for companies to be aware of their emissions and to participate in reducing them, and as part of its sustainability strategy, AIJN was given the mandate to calculate the carbon footprint of the whole industry at the European level.



Why calculate emissions at sector level?

- To understand **how much, and where, the sector emits its Greenhouse Gas (GHG) emissions.**
- To provide a **European overview of emissions** so that all companies around Europe may **benchmark** their own emissions with the European value, compare how they are doing and assess what still needs to be done in certain areas.
- To elaborate a **common methodology** for all companies to use to calculate their emissions, in an effort to help standardise processes and make them more efficient.

By identifying the sector's carbon emission hotspots, AIJN also endeavours to help the sector by defining both sector-specific and company-specific **internal guidelines** for actions to reduce them.

This work is essential at a time where the effects of **climate change** can already be felt. Action needs to be taken to mitigate emissions, and the first step is to understand **how much one emits, why, and what to do to reduce emissions.**

METHODOLOGY

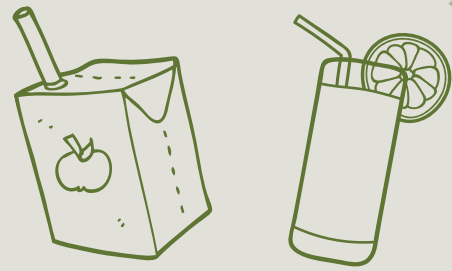
To conduct this analysis, it immediately appeared as essential to gather real, quantitative data to support it. In turn, to support us with this, AIJN hired the consultancy ClimatePartner. Together, we **defined the scope** and **system boundaries** of the study.

Following that, and with the support from our members, we developed a questionnaire that was sent to all AIJN member companies, to collect their data. They were then processed and calculated using the internationally recognised Greenhouse Gas Protocol and the ClimatePartner Protocol.

In other words, this methodology enabled us to calculate the sector footprint by first gathering and calculating individual carbon footprints from companies, via the survey, and then secondly to couple this information with production volumes. This formed the basis to extrapolate the overall carbon footprint of the European fruit juice industry.

This ultimately enabled us to **quantify in tons of CO₂** the industry's collective carbon footprint for 2019*.

* Data from 2019 was used in order to reflect pre-Covid levels, more representative than the levels of 2022 when the study was first initiated.



Scope of the study: system and product boundaries

For this study, the system boundaries, meaning the geographical scope of our analysis, is defined as “the European border”, including Türkiye and Serbia. This means that **companies' activities are only considered if they are from their European sites.**

The products taken into account for the study are also specific to the sector: **only parameters related to fruit juices, fruit nectars and fruit smoothies were taken into account.** Fruit juices and nectars are distinct beverage categories, defined in the **EU Fruit Juice Directive**, with specific authorised processes and substances. Smoothies are commonly defined as products composed of fruit/vegetable juices and fruit/vegetable purees, without any additional ingredients beyond those outlined in the aforementioned Directive.

As a European Association, AIJN's role in the study was to enable the collection of data from participating companies. This study could not have been done without the help and support of these companies, as well as that of AIJN's members, its national associations (you may find them on our [website](#)).

As a disclaimer, AIJN may not represent every single European fruit juice and/or nectar producer.

For who?



This study is intended to be used by any AIJN member, but it may address itself specifically to any sustainability manager or carbon accountant within a company.



RESULTS:



TABLE OF EMISSIONS

SCOPE 1

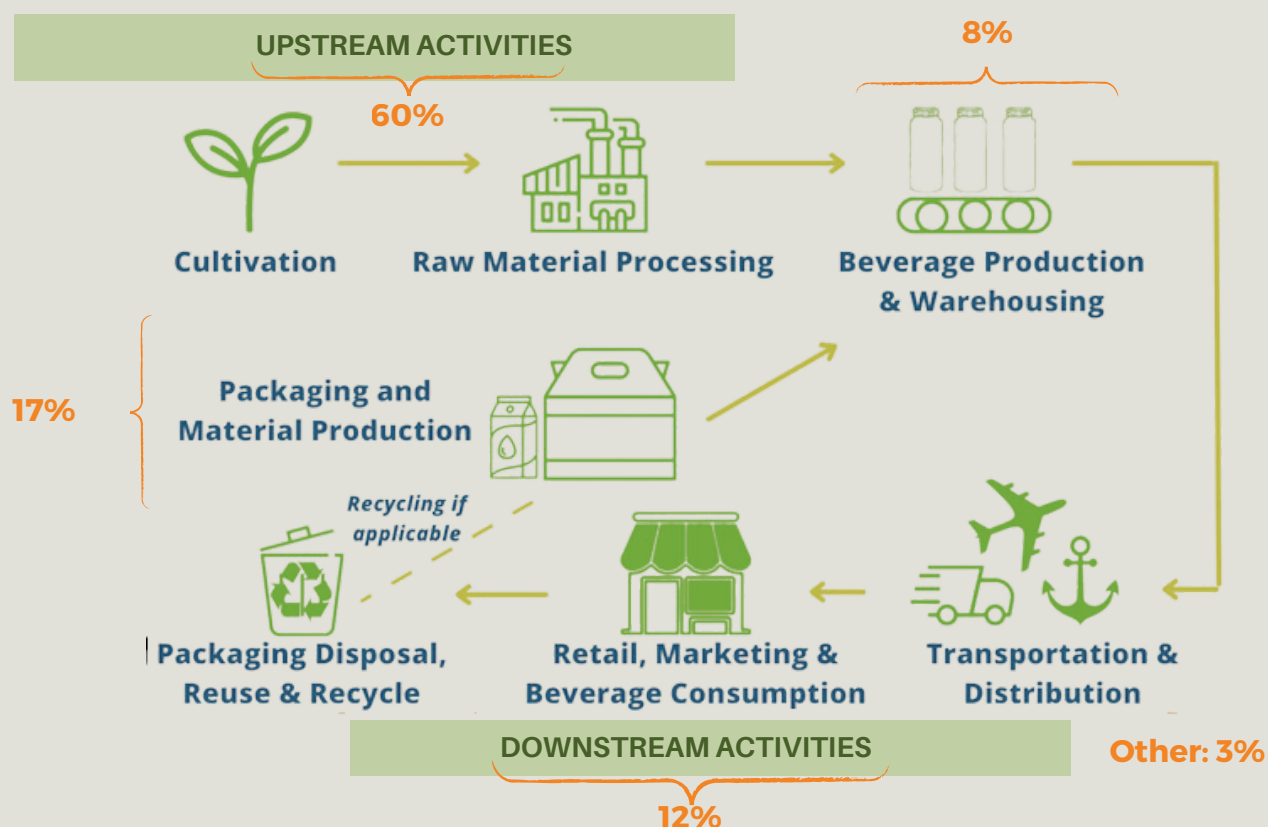
Category	t CO ₂	%
Direct emissions	703,601	7%
Heating	400,898	4%
Cooling	5,916	0%
Vehicle Fleet	296,787	3%
Indirect emissions	90,701	1%
Purchased Electricity	90,701	1%
Upstream and downstream emissions	9,402,386	92%
Purchased Goods and Services	6,600,840	65%
• Raw Materials (unprocessed fruit, concentrate, NFC & other)	4,914,618	48%
• Packaging	1,686,223	17%
Fuel- and Energy-Related Activities (Not included in Scope 1/2)	150,472	1%
Upstream Transportation and Distribution	1,270,403	12%
Waste Treatment	14,616	0%
Business Travel	6,008	0%
Employee Commuting	77,645	1%
Downstream Transportation and Distribution	942,781	9%
End-of-Life Treatment of Sold Products	339,620	3%
Total	10,196,688	100%

SCOPE 2

SCOPE 3



HOTSPOT IDENTIFICATION ACROSS THE FRUIT JUICE VALUE CHAIN



Another of way of presenting the data is to start from the product's point of view. Thanks to the same data gathered, and processed in a different manner, we were also able to calculate the **average carbon footprint of an average type of fruit juice**.



1L of Fruit Juice on average = 1Kg of CO₂ *

** 1kg of CO₂/litre for an average FJ, all types combined, in any packaging format*

**PRODUCT CARBON FOOTPRINT
CRADLE-TO-GATE + EOL**

INBOUND LOGISTIC

RAW MATERIALS

PACKAGING

HEAT

ELECTRICITY

OUTBOUND

END OF LIFE



**GENERAL
EMISSIONS**



**AVERAGE PRODUCT
CARBON FOOTPRINT
1.1 KG CO₂/LITRE**

The main hotspots identified are:

Purchased raw materials: The sourcing and procurement of raw materials, such as fruit, can have a substantial environmental footprint. Impacts could be reduced by considering alternative farming practices, such as regenerative agriculture, increasing water use efficiency, and reducing waste and spoilage as much as possible during production.



Packaging: bottles but also any associated packaging such as caps, labels, and cartons, are essential for preserving the quality and safety of juice products. Notwithstanding, packaging creating and disposal can lead to waste. The choice of packaging materials, recycling initiatives, and cooperation with partners can be key areas of focus for sustainability efforts.



Upstream transportation: The transportation of raw materials, intermediate products, and packaging materials involves energy consumption and emissions. Exploring alternative transportation methods, optimizing routes, and promoting local sourcing can help reduce emissions in this area.



RESULTS ANALYSIS

The proportion of total emissions of each emission category, as shown in the table above, provides valuable insights into the total emissions of the industry, but also into its hotspots, for an average fruit juice producer. **Diving deeper into the hotspots**, as a European trade association, **allows us to identify areas where emissions are concentrated and to prioritize efforts for sustainability and environmental impact reduction with our members.**



CALL TO ACTION:



With this study, AIJN aimed to provide its company members with additional quantitative data on sector emissions, to **act as a benchmark** for them, and also provide a common methodology to help standardise emissions calculation.

The full study mandated by AIJN went further by giving members recommendations on how to reduce emissions, both on an individual company level but also suggestions for cooperation, on a sector level.

This work was conducted with the firm belief that **in order to inspire action in the face of visible and urgent climate changes, we first need to know what we are talking about.**

Should you have any questions, please do not hesitate to reach out to AIJN's Secretariat.