



COMPARATIVE CARBON FOOTPRINT

soy, corn and cotton

2020



AMAGGI

For over four decades AMAGGI has made sustainable progress in each stage of the grain and fiber production chain, identifying opportunities and incorporating challenges that promote, not only the company's growth, but the development of the entire local and global food market.

Through four major business areas - Agro, Commodities, Logistics and Operations, and Energy - the company operates in the agricultural production of soybeans, corn, cotton and fertilizers, in the sale of grains and agricultural inputs, in large-scale national and international logistics for grain outlets, and in the generation and sale of electric energy.

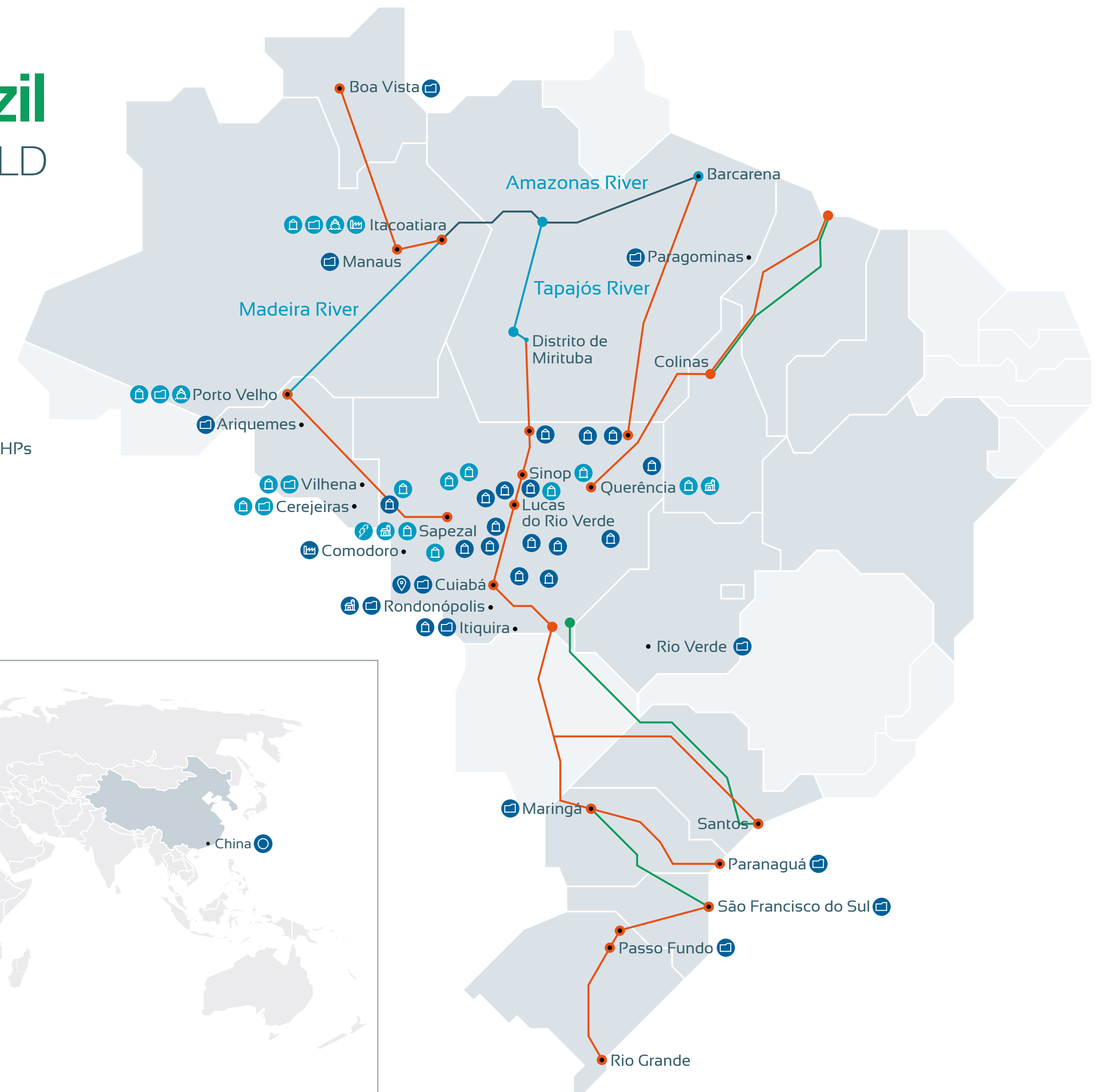
Its mission of contributing to the development of agribusiness is permeated by respect for the environment and constant improvement in the lives of people and communities where it is present.

In practice, the commitments made in the Global Sustainability Positioning, with a vision until 2025, cover operations, the surrounding communities and the respective value chain. AMAGGI also has a structure that encourages rural producers' and local suppliers' development, reflecting on several socio-environmental and quality certifications.

And, guided by the United Nations Global Compact Global Sustainability Positioning principles (UN), AMAGGI invests in actions and partnerships with the civil society, non-governmental organizations (NGOs), suppliers, customers and the government.

Presence in Brazil AND IN THE WORLD

-  Headquarters
-  Plant
-  Trading Office
-  Farm
-  Warehouse
-  Port Terminal
-  Shipyard
-  Small Hydroelectric Plant - SHPs
-  ISO 14001 Certification
-  Joint Venture
-  Waterway
-  Joint Venture Waterway
-  Highway
-  Railroad



AMAGGI

Carbon Footprint



PROJECT OBJECTIVE AND CONTEXT:

The 'AMAGGI Soy Carbon Footprint project' aims to determine the carbon footprint of all soy, corn and cotton fiber produced and exported by AMAGGI. The results demonstrate significant advances achieved by the company towards developing a more sustainable agricultural production, supported by AMAGGI's Global Sustainability Positioning and "Towards a deforestation and conversion free grain chain" commitment.

Thus, an assessment was carried out on AMAGGI products' carbon footprint impacts, to then render transparency to the obtained result. Additionally, the project compares AMAGGI's carbon footprint performance with other production scenarios: average soybean production scenarios in Brazil, Argentina, Canada, United States (USA) and Ukraine; average corn production scenarios in Brazil, France, Hungary, USA and Ukraine; and an average scenario of cotton fiber production in USA.

To carry out this project, AMAGGI relied on the expertise of the EnCiclo Soluções Sustentáveis, a sustainability consulting company which core business focuses on life cycle assessment (LCA) projects, circular economy and support for sustainable decision-making.

The study Carbon Footprint also had a critical review from the ACV Brasil company, based on the ISO 14044: 2006 - Environmental management - Life cycle assessment - Requirements and guidelines.



Scope

SOY

The Carbon Footprint proposal is to measure the total amount of GHG emissions (Greenhouse Gases) caused by a process or product, directly or indirectly. In the case of AMAGGI's soy comparative carbon footprint, the calculation includes the GHG emissions that occur throughout the life cycle of this product, taking into consideration the "birthplace to the destination port" scope.

This carbon footprint was modeled in accordance with the ISO 14040 and 14044 Life Cycle Assessment (LCA) and the ISO 14067 carbon footprint standards. The results are presented in terms of 01 kg of product in natura in the Port of Amsterdam (declared unit) – for grains. All impacts of the value chain were accounted for, from the extraction and production of raw materials (e.g. fertilizers, pesticides) to the product delivery at the destination port.



Product life cycle stages

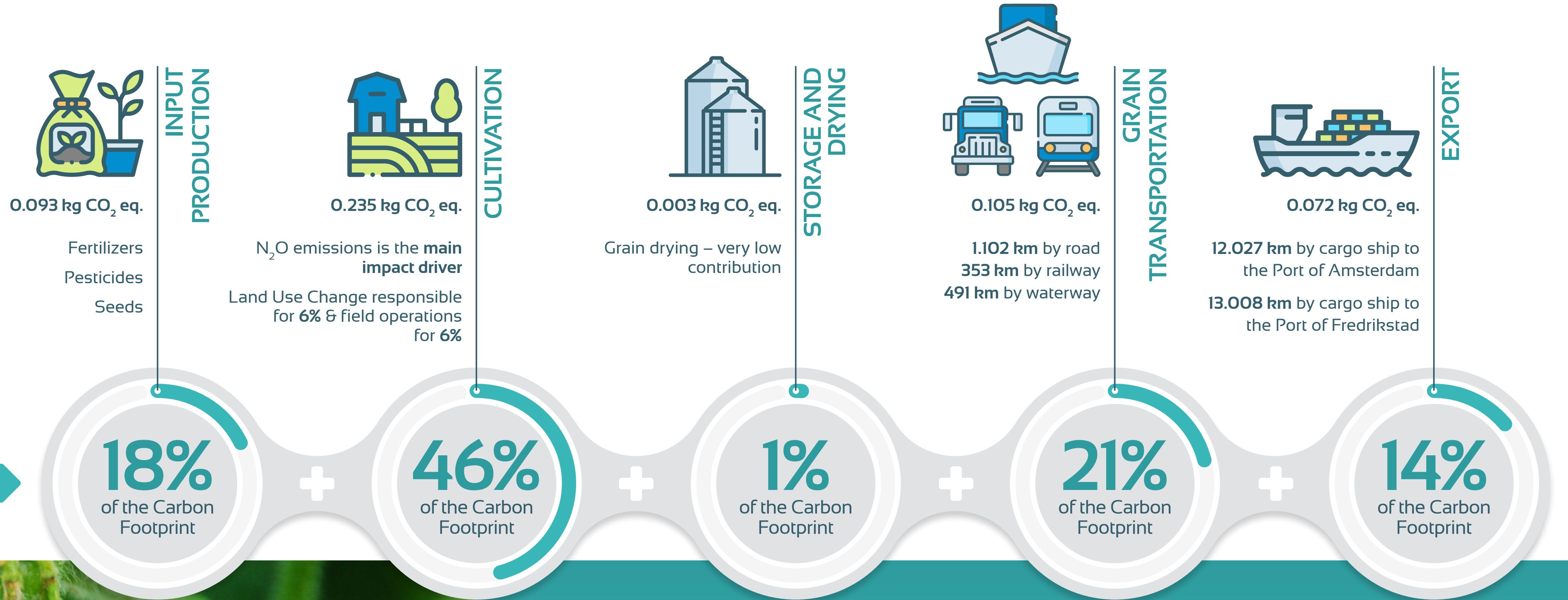


AMAGGI main results

SOY VALUE CHAIN CARBON FOOTPRINT



NOTE: the data shows the result for AMAGGI's carbon footprint per process stage and compares delivery emissions to the Port of Amsterdam and the Port of Fredrikstad, where Denofa is located. Denofa is AMAGGI's non-GM soy crushing plant.



GRAINS OF SOY

kg of CO₂ eq. per kg of product delivered to Europe

AMAGGI **0.508**

USA **0.557**

UKRAINE **1.169**

CANADA **1.368**

BRAZIL **2.524**

ARGENTINA **4.135**

Carbon footprint of soy produced by AMAGGI X Footprint from Brazil and other soy exporting countries (to Europe)

Scope

CORN

The Carbon Footprint proposal is to measure the total amount of GHG emissions (Greenhouse Gases) caused by a process or product, directly or indirectly. In the case of AMAGGI's corn comparative carbon footprint, the calculation includes the GHG emissions that occur throughout the life cycle of this product, taking into consideration the "birthplace to the destination port" scope.

This carbon footprint was modeled in accordance with the ISO 14040 and 14044 Life Cycle Assessment (LCA) and the ISO 14067 carbon footprint standards. The results are presented in terms of 01 kg of product in natura in the Port of Amsterdam (declared unit) – for grains. All impacts of the value chain were accounted for, from the extraction and production of raw materials (e.g. fertilizers, pesticides) to the product delivery at the destination port.



Product Life Cycle Stages

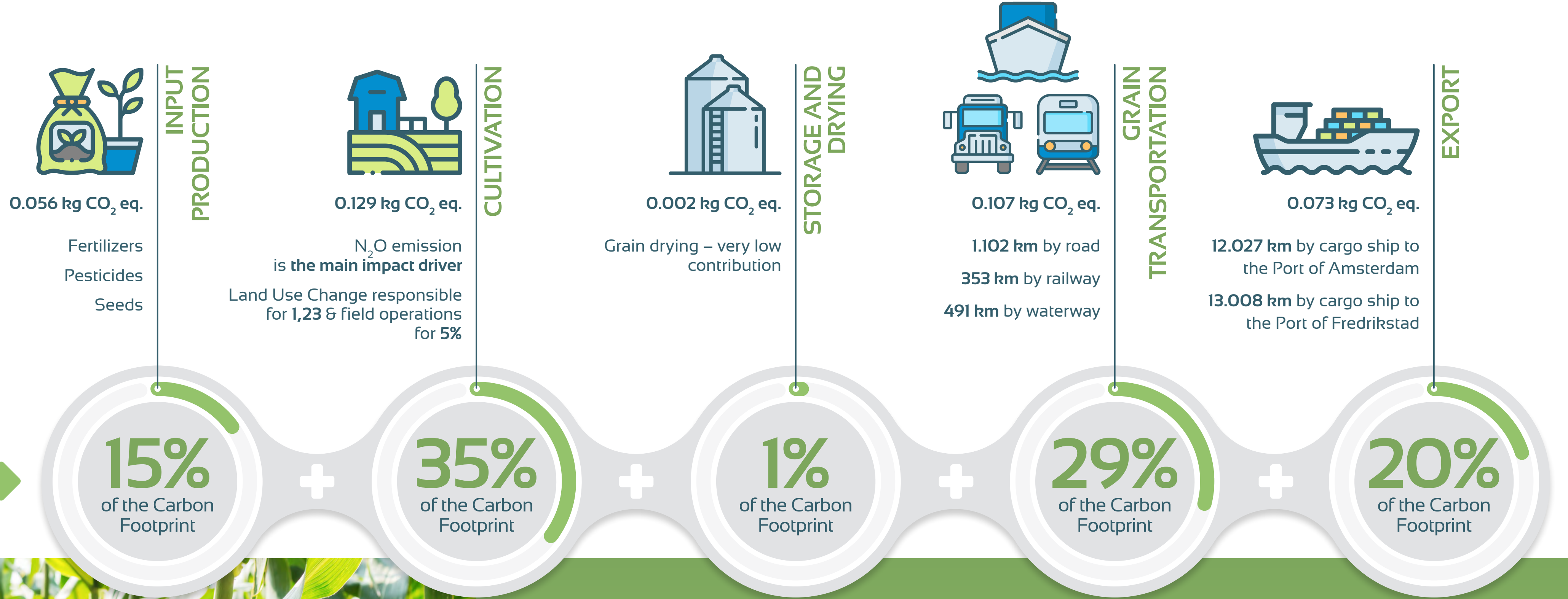


AMAGGI Main Results

CORN VALUE CHAIN CARBON FOOTPRINT



NOTE: the data shows the result for AMAGGI's carbon footprint per process stage and compares delivery emissions to the Port of Amsterdam and the Port of Fredrikstad.

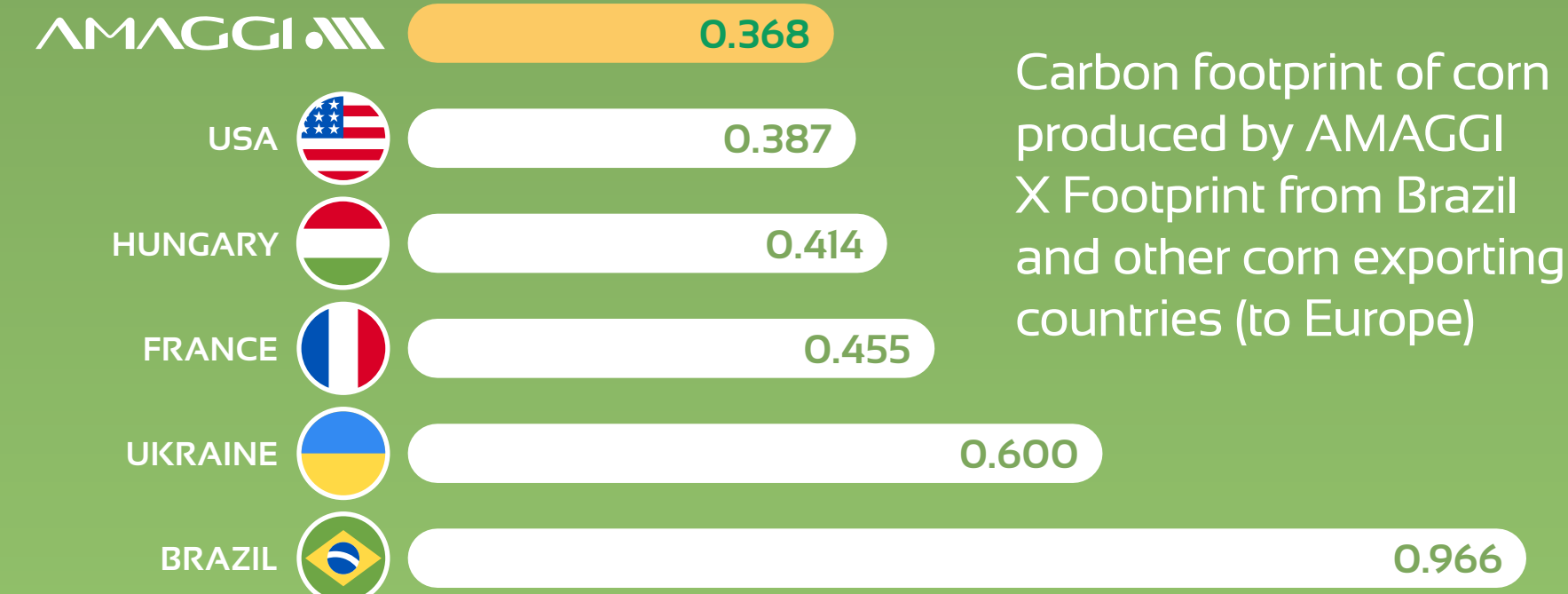


AMAGGI'S AVERAGE
Amsterdam: 0.368 kg CO₂ eq.
Fredrikstad: 0.371 kg CO₂ eq.



GRAINS OF corn

kg of CO₂ eq. per kg of product delivered in Europe



Scope COTTON

The Carbon Footprint proposal is to measure the total amount of GHG emissions (Greenhouse Gases) caused by a process or product, directly or indirectly. In the case of AMAGGI's cotton fiber comparative carbon footprint, the calculation includes the GHG emissions that occur throughout the life cycle of this product, taking into consideration the "birthplace to the destination port" scope.

This carbon footprint was modeled in accordance with the ISO 14040 and 14044 Life Cycle Assessment (LCA) and the ISO 14067 carbon footprint standards. The results are presented in terms of 01 kg of cotton fiber in the Port of Shanghai (declared unit). All impacts of the value chain were accounted for, from the extraction and production of raw materials (e.g. fertilizers, pesticides) to the product delivery at the destination port.



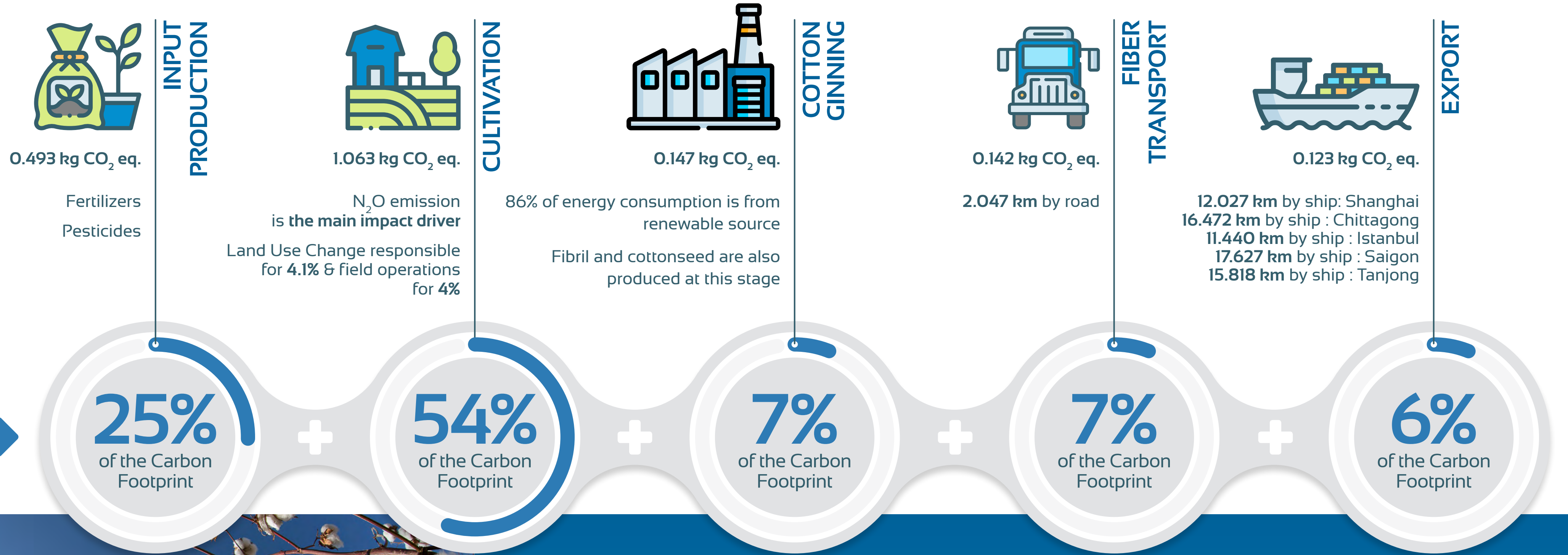
Product life cycle stages



AMAGGI Main Results

COTTON FIBER VALUE CHAIN CARBON FOOTPRINT

NOTE: the data shows the result for AMAGGI's carbon footprint per process stage and compares delivery emissions to the Ports of Shanghai, Chittagong, Istanbul, Saigon and Tanjung.



AMAGGI'S AVERAGE

Shanghai: 1.998 kg CO₂ eq.
 Chitagong: 1.963 kg CO₂ eq.
 Istambul: 1.919 kg CO₂ eq.
 Saigon: 1.974 kg CO₂ eq.
 Tanjung: 1.957 kg CO₂ eq.



Cotton FIBER

kg of CO₂ eq. per kg of product delivered to Asia

Carbon footprint of fiber produced by AMAGGI X USA fiber Carbon footprint (exported to Asia)

AMAGGI

1.967

USA

4.927

Why is AMAGGI's carbon footprint smaller?

ACCORDING TO THE DATA OBTAINED IN THE SOY, CORN AND COTTON FIBER CARBON FOOTPRINT COMPARATIVE REPORT, **AMAGGI'S FAVORABLE RESULTS ARE MAINLY BASED ON:**

- ✓ **Low land use change:** The company is committed to not expanding over areas of native vegetation. Most of the areas used for farming were opened over 20 years ago and these sites are constantly monitored.
- ✓ **Technology and climatology.** An example of this is the development of an intelligent and integrated platform with climatological data, which allows for the management of activities in the field, and agricultural equipment performance. The expectation is a continuous reduction in the consumption of inputs, and an increase in cultivar quality.
- ✓ **Exchange the agricultural machinery fleet for more efficient, modern and economical models, with less polluting engines and more sustainable fuels.** Currently, 100% of the fleet uses diesel with a lower sulfur content and 10% uses biodiesel mixed with diesel.
- ✓ **All farms maintain researchers to investigate pests and diseases that can affect crops.** As a result of these efforts, important advances have already been achieved, such as the development of biological control of some pests and diseases, a practice that has the potential to reduce chemical pesticides application in crops. The result is an increase in the safety of products for consumption and a reduction in greenhouse gas emissions.
- ✓ **Maximizing land use with crop succession.** All AMAGGI farms allow for the cultivation of two crops in the same agricultural year: soy, followed by corn or cotton. This practice brings greater profitability and productivity, reducing the need for expansion to new areas and potential pressure for deforestation.
- ✓ **No-till practice on 100% of the farms.** Management in which cultivation is carried out without the plowing and harrowing steps, keeping the soil always covered with growing plants and plant residues. Thus, the beneficial microorganisms on the soil are preserved, fertility is improved due the retention of organic matter, incidence of erosion is avoided, and CO2 emission is reduced. The Company also chooses seeds and cultivars according to their genetic potential for productivity, tolerance and resistance to pests. Avoiding the use of pesticides.
- ✓ **Phytosanitary control and integrated pest management (MIP)** is another initiative undertaken by the company in order to minimize the use of pesticides. Through this, constant on-site monitoring of the crop is carried out, supported by technology, allowing for applications of natural and chemical pesticides to be carried out only when and where necessary, significantly reducing the amount applied and the resulting environmental impacts. In addition, chemical pesticides are chosen for their efficiency and low toxicity.
- ✓ **There is no irrigation for cultivation.** Crops receive only rainwater, with planting and harvesting planned to take place according to the local hydrological cycle. The local climate allows for the cultivation of two crops in the same year.
- ✓ **All AMAGGI farms are certified in socio-environmental standards,** such as the RTRS (Round Table Responsible Soy), PROTERRA Standard, and A.R.S. (Amaggi Responsible Standard), Responsible Brazilian Cotton Standard (ABR) / Better Cotton Initiative (BCI).

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