# CJ SELECTA LCA Study

**SUTDY The carbon footprint of a product quantifies greenhouse gas (GHG) emissions throughout its life cycle, from raw material extraction to final disposal**

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## LCA SUTDY

## GOALS

- Encourage the adoption of best agricultural practices to reduce greenhouse gas (GHG) emissions at the farm level and throughout the value chain
- Provide the accurate value for SPC carbon footprint
- Ensure Accountability and Transparency
- Sensitivity analysis: Primary data vs Ecoinvent database
- Measure the real scenario of CJ Selecta operations
- Take strategic decisions
- Promote CLIMATE RESILIENCE

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# CJ Selecta STUDY

Functional unit: 1 ton SPC

Primary data collection from **100% of farms**

PEFCr Guidelines for animal feed

Economic alocation

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# STANDARDS & SCOPE

**OpenLCA software version 2.0**

**Impact assessment method “IPCC 2021 GWP 100 years”**

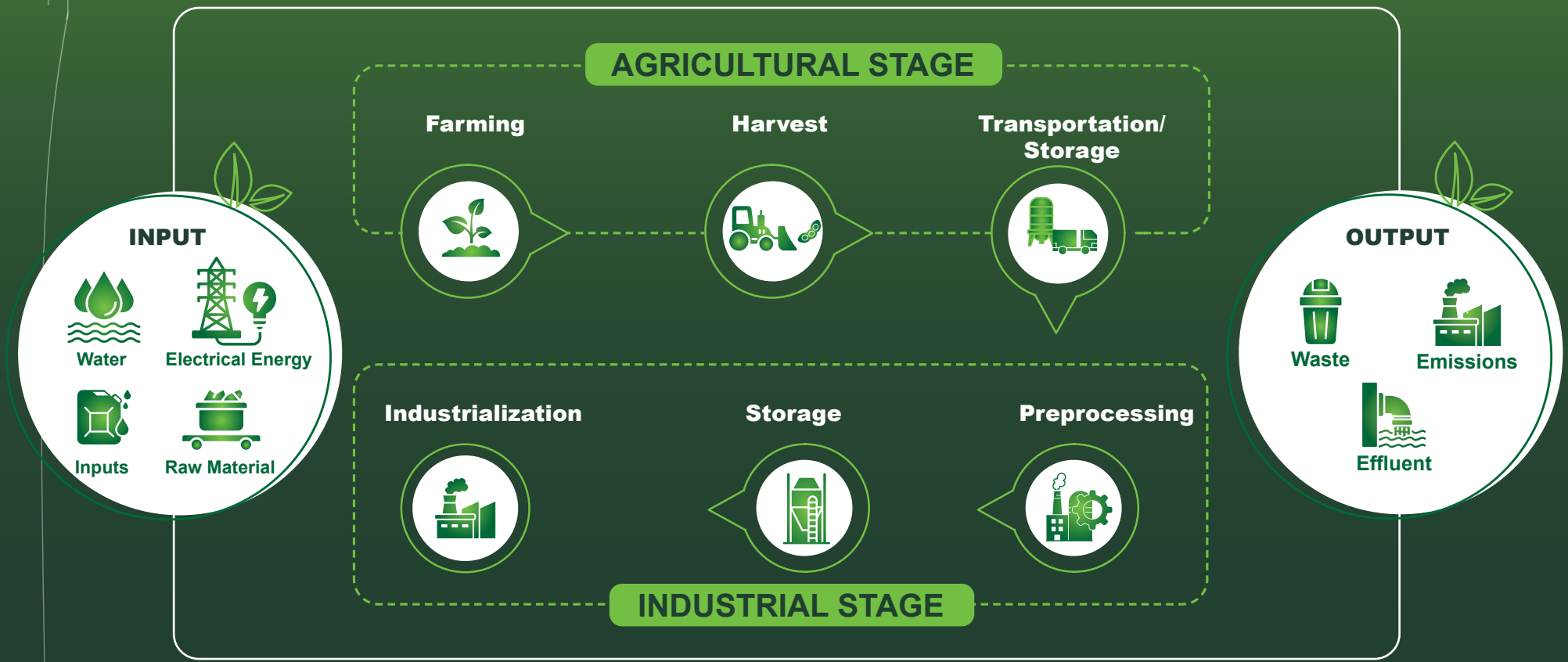
**BRLUC and ICVCALC**

**MAPBIOMAS**

**PAS 2050-1:2012**

**Ecoinvent database version 3.10**

# 4 BORDERS OF THE SYSTEM



# INDUSTRIAL STAGE

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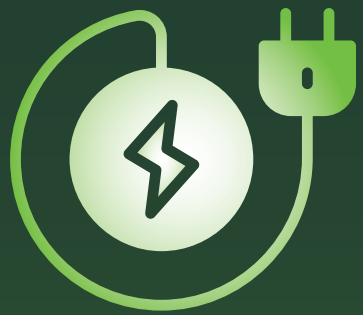
The energy used by the plant comes from the boiler, which generates electricity and steam used in the processes

**ELECTRICAL ENERGY**



**ENERGY - STEAM**

# AGRICULTURAL STAGE

**PRIMARY DATA COLLECTION**

**FARMER ASSESSMENT:**

- **No-Till planting**
- **Second crop planting**
- **Integrated Pest Control**
- **Use of Inoculants**
- **Fuel consumption**
- **Technologies in Pesticide Application**
- **Technologies in Fertilizer**
- **Biological pesticides**
- **Biofertilizers**
- **Irrigation**

**TECHNOLOGY PROFILE**

# 6 OVERALL RESULTS

**Carbon footprints of product ($tCO_2e$/t of product)**

**SPC NGMO ($tCO_2eq$/t)**

**With LUC***

**0.617**

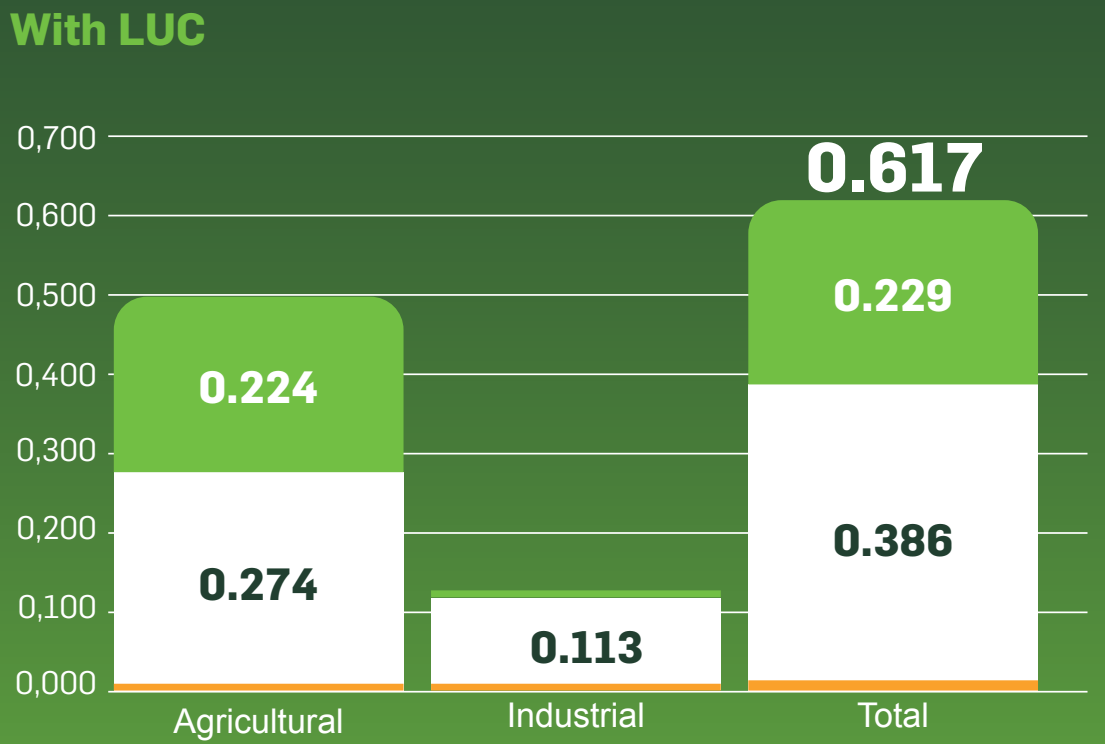
**Without LUC***

**0.388**

***Land Use Change**

# 7 Emissions per each stage of life cicle

- Biogenic ($tCO_2e$)
- Fóssil ($tCO_2e$)
- Land Use Changes ($tCO_2e$)



# Emissions per each stage of life cycle and impact category

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| Item | Biogenic | Fóssil ($tCO_2e$) | Land Use Change | |
|---|---|---|---|---|
| AGRICULTURAL: | 0.001 | 0.273 | 0.224 | 80.7% |
| INDUSTRIAL: | 0.001 | 0.113 | 0.005 | |
| SUM: | 0.002 | 0.386 | 0.229 | TOTAL 0.617 |

# 9 FINAL CONSIDERATIONS

The study shows that the agricultural stage is responsible for the majority of emissions, accounting for 80.7%. This is mainly due to fuel combustion in agricultural machinery and land use changes (LUC). A third-party sensitivity analysis revealed significant discrepancies in the results associated with the agricultural stage. This analysis compared primary data collected from soybean producers with data from the Ecoinvent database and LUC information obtained from satellite images. These findings underscore the importance of collecting primary data to ensure accurate assessments.

## FUTURE DIRECTIONS

- **Encourage the adoption of best agricultural practices to reduce greenhouse gas (GHG) emissions at the farm level and throughout the value chain**
- **Implementing regenerative agriculture practices can lead to further reductions in carbon emissions and enhanced carbon sequestration.**