Duratex

FGV | SÃO PAULO SCHOOL OF BUSINESS ADMINISTRATION
Center for Sustainability Studies

INCLUSION OF LCA AS A STRATEGIC THEME IN THE BRAZILIAN COMPANY DURATEX

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Introduction & objectives

Duratex S.A., a Brazilian company with more than 66 years of history, stands out as the largest producer of wood panels, metals and sanitary ware in the Southern Hemisphere. With the purpose of Solutions for Better Living, it has 22 industrial units and forest, located in eight Brazilian states.

In 2016, Duratex developed its first Life Cycle Assessment (LCA) study with the support of the Center for Sustainability Studies (GVces) of the Business Administration School of Getulio Vargas Foundation (FGV EAESP). The study focused on the **carbon and water footprints** of a **tap** of Deca brand, model Aspen Bica Baixa. This tap has high representativeness to Duratex, with considerable sales volume in its competitive line.

Materials & methods

The scope and boundaries of the study were determined according to the Brazilian standard for taps tests (ABNT, 2015), the guarantee period for Deca products and also the water flow considered suitable for washing, providing comfort and effectiveness during the use of the product.

- Product: tap Aspen Bica Baixa
- Function: Release and controlling water flow in washbasins, allowing hand hygiene.
- Functional unit: Washing 200,000 pairs of hands with a tap in a continuous flow of 5 liters/min of water for 15 seconds, during 10 years.
- Environmental impact categories: water use and climate change
- System Boundary: from cradle to grave
- Database and methods: Ecoinvent 3.2; IPCC 2007 GWP 100y (carbon); ReCiPe Midpoint (H) / Water depletion (water)
- Software: OpenLCA (1.5.0 version)

Life cycle stages and processes considered:

Acquisition of materials and pre-processing	Obtaining of ores, sand and oil for metal alloys manufactuing. Components, chemicals and polymers transported to the Deca unit
Production	Mold manufacturing, raw material casting, molding, machining, injection and faucet assembly. Transport between Deca units
Distribution and storage	Finished product transportation to store center
Use	Acquisition of the tap, installation and activation of 200,000 cycles in 10 years of use
End of life	Recycling of tap components; packaging decomposing in the landfill

Results & discussions

The results indicate that the **use stage of the tap is the most relevant one**, contributing with **87% for the carbon footprint and 99% for the water footprint**. This is due to the large volume of water considered over the full life of the product (water footprint), as well as the emissions regarding the treatment of the water (carbon footprint).

Chart 1 – Water footprint analysis

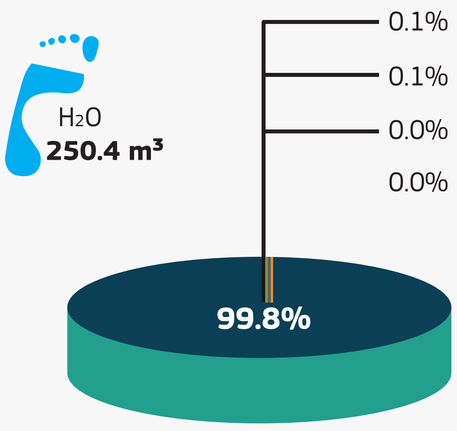
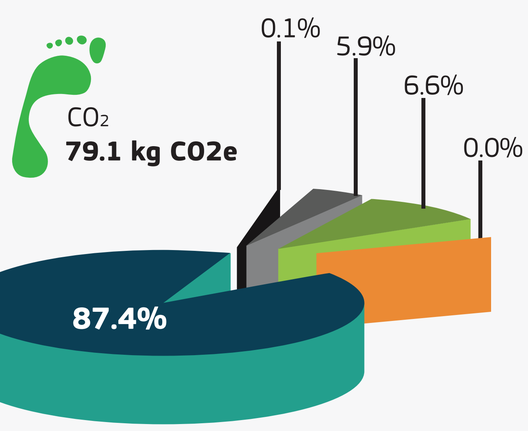


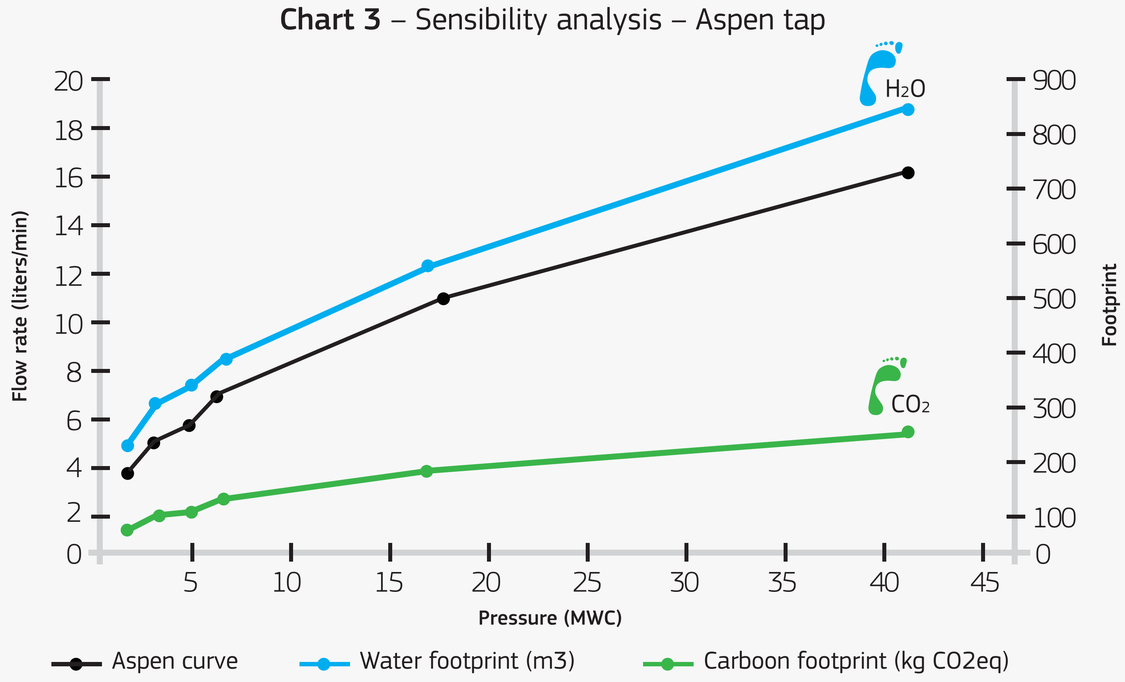
Chart 2 - Carbon footprint analysis



Acquisition of materials and pre-processing | Distribuition and storage | End of life | Use | Production

Use stage sensibility analysis: possible variations of flow and pressure of the hydraulic installations can interfere with environmental impacts calculated in this study, as well as the use profile of the tap. As shown in Chart 3, with each flow increase in 1 liter/min at the use phase, there is an increase of 50 m^3 in the water footprint and 14.5 kg CO2eq in the carbon footprint of the product. This demonstrates that there is a direct influence of both the installation conditions and the users of the product in the total life cycle, therefore reinforcing the efforts needed to develop more efficient products and the constant need for user awareness, aiming at mitigating the impacts at this stage.

Chart 3 – Sensibility analysis – Aspen tap



Production stage: the main contributions in the production stage were analyzed, being the tap body, handle and aerator the most relevant components for the two impact categories considered in the study. Production inputs, raw materials and energy consumption during the casting, machining and electroplating processes are responsible for the greatest impact in the analysis of the process from the cradle to gate.

Chart 4 – Production stage – Impacts related to **water use** for each product component (from cradle to gate)

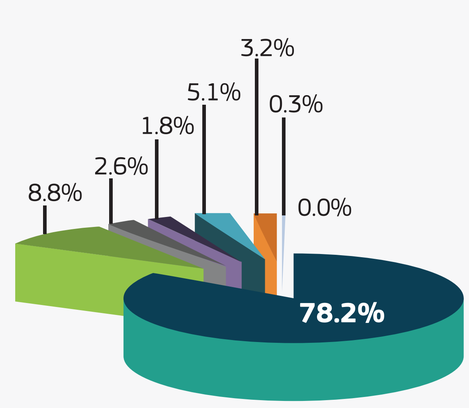
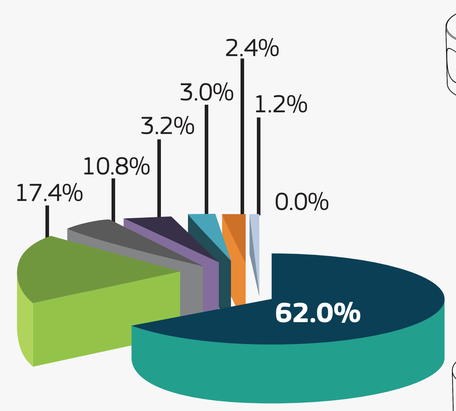
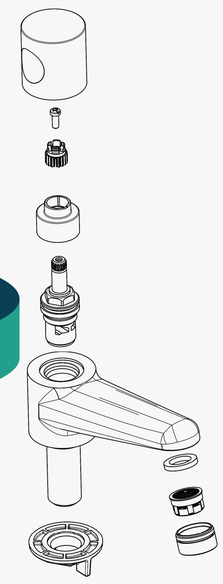


Chart 5 - Production stage – Impacts related to **climate change** for each product component (from cradle to gate)





Body tap | Handle | Aerator | Packing | Purchased componets | MVC cover | Ceramic sealing mechanism | Assembly / Transport

Conclusions

The results of carbon and water footprints for the Aspen tap indicate that the company's main efforts should be directed towards the development of **products that fulfill its function using the lowest possible volume of water**, as is the case of the economical product lines Deca, which now number more than 400 products. In addition, these efforts are aligned with the strategy of **developing new eco-efficient products** and constant improvements made by the brand. In line with this concept, in 2017, the Deca Comfort solution was launched, which maintains the water flow of the tap constant during its use, independent of pressure fluctuations of the hydraulic network, providing the best comfort during use, as well as savings, directly influencing the outcome of environmental footprints. Duratex is gradually implementing this system default for several of its products, thus helping to reduce their product´s lifecycle environmental impacts. By the year 2025, the company is committed to having 100% of its portfolio of metals and sanitary basins eco-efficient. This project, which involved Duratex's Sustainability, Production and Product Development areas, allowed the company to **access the potentials of using LCA within the business context,** as a tool for environmental improvements of the product. As a result, LCA was translated into sustainability commitments that are part of the Company's Sustainability Strategy for the period 2017-2025.

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