



Valuation of water provision for poultry slaughter and meat processing

EXECUTIVE SUMMARY

Pif Paf Alimentos, a food company based in Belo Horizonte, State of Minas Gerais, Brazil, produces 22,000 tons of finished products per month, among poultry and pork cuts, sausages and pasta. Overall, the company slaughters 75 million chickens and 500,000 pigs per year. Its mix of products encompasses over 350 items, among them meat products, pizzas, lasagnas, cheese balls and sausages. It also provides raw materials to industries, with its feed factories, breeders and hatcheries.

In its unit located in the municipality of Visconde do Rio Branco, in Zona da Mata, State of Minas Gerais, about 144,000 chickens are slaughtered every day, and there is enough capacity to process 165 tons of meat daily. During the production process, water is an indispensable raw material used primarily to transfer heat and clean in stages such as scalding, evisceration, chillers, among others. Specially when it comes to slaughtering, there are sanitary norms for the use of water during the production process, which require, for instance, continuous renewal and volume consumed. Such requirements limit the implementation of solutions like reuse and recirculation of water in some stages of the process, reinforcing water intensive use in that kind of activity.

In that unit, about 3,620 m³ of water is consumed daily, mostly part of surface water abstraction, which provides 108 m³ per hour. Although a grant ensures the volume of water, the unit eventually finds it difficult to collect the authorized quantity.

On top of that, every once in a while, the region has to take turns in water supply, since the level of the water springs is low. This study aims to understand the dependency upon water and the impact in a scenario of scarcity in the unit, in order to assess fostering green infrastructure projects (i.e.; recovering water springs in the region, creating a Private Reserve of Natural Heritage - RPPN), and hydraulic projects.

In order to measure the relationship of the unit with the ecosystem service of water provision, an exercise was conducted using the retroactive approach (data from 2018), adopting the Replacement Cost Method (RCM). A simulation was made in a scarcity scenario limiting surface water abstraction, which accounts for 70% of the demand in the unit (2,592 m³ per day). The point of abstraction mentioned has been showing significant reduction in supply flow, which also causes conflicts with neighbors. Another relevant aspect is the mild vulnerability of Visconde do Rio Branco municipality according to the Minas Gerais State Climate Vulnerability Index⁷, prone to drought episodes. Considering the estimated unavailability in the scenario, the company would be affected in about BRL 40,000 daily.

Estimates of operational and financial risks contribute to the business decision to engage in regional projects aimed at recovering water springs and degraded areas to improve the environmental quality in the region and potentially increase water supply.

⁷ <http://clima-gerais.meioambiente.mg.gov.br/vulnerabilidade-territorial>



Reporting of Environmental Dependencies, Impacts and Externalities

Responsible for completing: Breno de Paula Aguiar

Project drivers

Objectives: Assess risks and opportunities; estimate total value and/or impact; and understand the business relationship with ecosystem services.

Description: This study seeks to understand the dependency upon water and the impact on business in a scenario of water scarcity. There have been isolated cases and records of lack of water in industrial operations due to water unavailability, which compromises production. Based on that understanding, the idea is to assess the implementation of green structure projects (i.e.; foster projects to recover water springs in the region, create a Private Reserve of Natural Heritage - RPPN), and hydraulic projects.

Project scope

Object of the project analysis: Corporative

Description: Valuate the relationship between poultry slaughter and industrialization activities and the water provision ecosystem service in the manufacturing unit located in Visconde do Rio Branco, Zona da Mata region, in Minas Gerais State.

Geographic area: Visconde do Rio Branco, Minas Gerais State, Brazil

Step(s) of the value chain included: Own operations

Type of approach: Retroactive

Time horizon: 2018

Ecosystem services: Water provision

Water provision

Role of ecosystems in the hydrological cycle and their contribution in terms of water quantity, defined as total production of freshwater.

Method(s) used: Replacement Cost Method

Results

Dependency: BRL 44.3 thousand

Impact: BRL 40.6 thousand

Externality: BRL - 44.3 thousand

Data used

Type of data

Dependency on water quantity: 0.025 m³/poultry slaughtered

Hydrological balance of the water used by the business: 3,620 m³/day

Watershed from where water is collected, name and classification of the water body: Rio Paraíba do Sul watershed, Córrego das Pedras stream, Class II. Secondary, autochthonous data

Watershed used for water replacement, name and classification of the water body: Rio Paraíba do Sul watershed. Secondary, autochthonous data

Further information

- The demand of the unit is 3,620 m³ of water per day. That consumption volume is associated with daily slaughter of about 144,000 chickens and processing of 165,000 tons of meat.
- It is worth noting there are legal requirements concerning sanitary practices that rule the use of water and corresponding volume in certain stages of the production process.
- To account for the impact, we considered the limitation of surface water abstraction in the supply sources located in the industrial unit.

Assumptions made in valuation estimates:

- Among the nine points of water abstraction in the unit, the surface source was considered unavailable, accounting for 2,592 m³/day.
- The values set for acquisition costs are based on the price the water is sold in an existing well in the region (BRL 3.63 per m³).
- The values set for logistics costs are based on a supply system using water trucks (20,000-liter trucks).

Analysis of the results

Water is a critical input in animal slaughter and meat processing. Water unavailability would directly affect production, and the unit would not be allowed to operate. During the production process, there are fundamental stages, such as scalding and evisceration, that do not count on any alternative method other than using water. In the region, there is only one service provider that supplies water in case of emergency, and the second closest alternative provider is 93 miles (150 km) away from that plant; therefore, their logistics costs are higher. Considering the great contribution coming from the water running down Córrego das Pedras stream, the course of water is highly relevant for the business; thus, special attention must be paid to actions involving recovery to strengthen the supply of water provision services coming from that body of water.

Ecosystem service management

Use of Valuation of Ecosystem Services Results: Determination of strategic goals and progress monitoring; Environmental management systems; and Risk assessment.

Description:

- Sector benchmarking to determine business dependency upon water.
- Structuring of a water efficiency program ('PmaisL') focused on rational use of water in production processes.
- Assessment of wastewater treatment system aiming at reuse – whenever allowed.
- Support and promotion of local programs targeted at recovering water springs upstream surface water abstraction.

Realização