

Barion

Wastewater assimilation, investments in solutions to reduce impacts to users located in Alto Rio Iguaçu Watershed

EXECUTIVE SUMMARY

Founded in 1959, Barion is a medium-sized business based in Paraná State that manufactures chocolates, cookies and wafers. Having a manufacturing facility located in Colombo, part of its relationship with the natural capital occurs through the wastewater it produces and the impacts on Alto Rio Iguaçu watershed.

For a few years, the company has been implementing new operational procedures in its production line, aiming at reducing the organic loading concentration released from its industrial wastewater. In this study, Barion expects to understand how important the implemented operational improvements are for the ecosystems.

In order to calculate the externality, seven water-related physiochemical parameters were selected and then compared to legal requirements, as well as to the current parameters found in the water body. In order to estimate the valuation, Barion used results from lab analyses run in its gross wastewater,

in other words, before the wastewater was treated by the effluent treatment plant (ETP).

The study considered data from 2016 and used the Avoided Costs Method for the valuation, taking into account the costs to implement an ETP and variable costs to treat water.

After all calculations, Barion realized that, for 10 years, it has been saving the wastewater assimilation ecosystem service in the water body from the release of the following parameters: BOD5 days, COD, settleable solids, vegetable oils and animal fats, ammonia nitrogen and hydrogen sulfide, thus avoiding an externality of about BRL 312,000.

Considering the results, the study allowed for thinking about the benefits produced to users located downstream the watershed, and about the value invested in actions and technologies to improve wastewater treatment, justifying the investments made.



Reporting of Dependencies, Impacts and Externalities

Responsible for completing: Rubia Elaine Moisa e Patrícia Amarante

Project drivers

Goals: Understand the business relationship with ecosystem services.

Description: For a few years, Barion, in its unit located in Colombo, has been implementing new operational procedures in its production line, aiming at reducing the organic loading concentration released from its industrial wastewater. Thus, Barion expects to understand how important the implemented operational improvements are for the ecosystems.

Project scope

Object of the Project Analysis: Project

Description: Colombo unit

Geographic Area: Rio Iguaçu watershed

Step(s) of the Value Chain Included: Own operations

Type of Approach: Retroactive

Time Horizon: 2016

Ecosystem Services: Regulation of wastewater assimilation

Regulation of wastewater assimilation

Ability of ecosystems to degrade, reduce or eliminate toxicity, disinfect or dilute pollutant loads.

Method(s) Used: Avoided Costs Method (ACM).

Results:

Externality: BRL 312,600

Data Used:

Pollutants considered in the analysis: BOD_{5 days'}, COD, floating material, vegetable oils and animal fats, ammonia nitrogen and sulfide

Type of Data:

Primary, autochthonous, acquired

Water body that will receive wastewater and its class: Sewer network

Primary, autochthonous, own data

Type of treatment applied before releasing wastewater in the body of water: Currently, the wastewater generated by Barion is treated in a Effluent Treatment Plant (ETP) consisting of: a grease trap in the cafeteria, a passage tank, a grease trap in production, a primary decanter, gravel filters, an equalization tank, an aeration tank, two secondary decanters, a collection tank and a final polishing filter.

Primary, autochthonous, own data

Further Information

Results from physical metrics: 703 mg/L (BOD); 1.390 mg/L (CDO); 254 mg/L (vegetable oils and animal fats).

Assumptions adopted in the valuation estimates: In order to estimate the valuation, Barion used results from lab analyses run in its gross wastewater, in other words, before the wastewater was treated by the ETP; the data refers to 2016.

Adjustments or derivation applied to the methods and tools used: —

Others: In order to calculate the ecosystem service valuation, Barion assumed a monthly wastewater treatment cost of BRL 0.30/m³ of treated wastewater, and an annual investment of BRL 30,000.00 to implement the current ETP.

Explanatory Notes: Barion releases its wastewater into SANEPAR sewer network, which observes the same releasing parameters established by CONAMA Resolution # 430/2011, except for the parameters listed below:

- BOD_{5 days} = 1,000 mg/L
- COD = 2,000 mg/L

Analysis of the results

After all calculations to value the regulation of wastewater assimilation ecosystem service, Barion realized that, for 10 years, it has saved the wastewater assimilation ecosystem service in the water body from the release of the following parameters: BOD_{5 days}, COD, settleable solids, vegetable oils and animal fats, ammonia nitrogen and hydrogen sulfide, thus avoiding an externality of BRL 312,600 in the past 10 years.

Management of ecosystem services

Use of ecosystem service valuation results: Cost-benefit analysis; Definition of strategic goals and progress monitoring; Environmental system management.

Description: Based on the results obtained with the valuation of the ecosystem service for the assimilation of water effluents, the company Barion intends to continue the operational procedures adopted in its production line, as well as to optimize them. The results obtained also aid in decision making in cases of enlargement of lines or volumes produced.

Realização



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