Assessment of Risks Related to Water Provision at Mogi Mirim Technology Center, Sao Paulo

EXECUTIVE SUMMARY

Itaú Unibanco is a company that operates in the financial industry, both in Brazil and abroad. Seeking to offer the best solution to customers, and aligned with movements and trends in society, Itaú directed its efforts to implement the digital bank. To get ready for the digital segment, a robust and effective information technology infrastructure will be necessary.

In this context, in March 2015, the Mogi Mirim Technology Center was launched, located in the town it gets its name from, an inland area in the State of Sao Paulo. In the data center, where digital services, transactions and bank data storage activities are processed, water plays a critical role in cooling IT equipment, in order to keep them operating properly. Therefore, water provision in the region was critical to select the town where the new data center would be built.

However, initially, the analysis considered only water availability for the business own operations, not covering the multiple uses in the same watershed and, consequently, the company interaction with other local players. Thus, as a way to complement previous analyses, Itaú Unibanco valuated the water provision ecosystem service to understand its dependency, the impact that would be produced to the company in case of unavailability of part of the water needed for its operations, and the externality the business generates to other players due to water consumption.

To run those analyses, annually conducted between 2014 and 2020, three scenarios were considered. For water dependency, the current scenario was considered, with 100% supply from the water utility, with no water unavailability, combined with the volume produced by the Effluent Treatment Plant (ETP). For impact, two unavailability scenarios were considered: 30% and 100% of the water needed for operations, combined with the volume produced by ETP in both scenarios. The externality was calculated for the current scenario and also simulated for both scenarios of unavailability, as described above.

In the current scenario of 100% supply, since there is no expectation of water unavailability for the period established, there is no impact caused by use of water and financial resources. The results obtained from the simulated scenarios, as described in the Annex, show that CTMM dependency on water consumption increases throughout time per banking product unit (the sum of our net operational revenues for water collection costs). The reason why it happens is that, to support the banking product growth, it is necessary to increase investments in information technology and, by extending the digital structure, water consumption is also expanded. Because of the nature of the water used in CTMM, which uses a water-based closed-loop cooling system, there is no return to the same water body where the water was collected, thus causing great externality.

Considering a scenario with 30% water unavailability, the results show that costs to purchase water would be about twice as much as the costs currently incurred to ensure CTMM operations. The replacement alternative considered was to use water imported from Alto Tiete watershed, transported in a tank truck, since the company has already mapped/contracted this replacement alternative.

The scenario of 100% unavailability in the quantity of water needed from the utility considers not exactly the unavailability of the water resource itself, but rather the company inability to access it, because, in extremely adverse scenarios of water scarcity, the supply for human consumption would be priority in the region. Thus, in a case like that, 100% of the necessary water would be replaced by tank trucks. In that scenario, the

company would not produce any externality to the region, since it would not impact the water consumption in Mogi Mirim neighboring areas.

More broadly, the valuation project allowed for a reflection about the consumption of natural resources – about water, in this specific case – comparing a digital structure to a physical structure. According to the bank holistic perspective, the digital structure consumes less resources. However, the conclusion was that the consumption of natural resources supports the technological transition, and it is critical to anticipate the necessary infrastructure for digital advancement and growth.

Reporting of Dependencies, Impacts and Externalities

Responsible for completing: Marília Pinto Fonseca Lins and Rafael Perez Vaz Morais

Project drivers

Goals: Assess risks and opportunities; Assess impacts on stakeholders; Communicate internally or externally; Understand the business relationship with ecosystem services.

Description: Calculate impact on ecosystem services caused by the building of the new Data Center, in Mogi Mirim (CTMM), which is the largest data center in Latin America and will support the bank growth in the next years. The construction was phased, and in 2015 the first complex of buildings was launched.

Project scope

Object of the Project Analysis: Project

Description: Mogi Mirim Technology Center

Geographic Area: Mogi Mirim, Sao Paulo

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

Type of Approach: Retroactive and prospective

Time Horizon: 2014 through 2020

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 (RCM).

Results:

Dependency: BRL 5.2 million to BRL 27.8 million

Impact: BRL 1.5 million to BRL 27.8 million

Externality: BRL -829,000 to BRL -5.9 million

Data Used:	Type of Data:
Dependency on the quantity of water: From 2014 through 2020, ranging between 1.05 and 3.46 m^3/banking product	Primary
Hydrological balance of the water used by the business: From 2014 through 2020, ranging between -94.5 and -476 m^3/year	Primary
Watershed from where water is collected, name and classification of the water body: Parana River Watershed, Mogi Guacu River, Class 2	Secondary
Watershed used for water replacement, name and classification of the water body: Alto Tiete Watershed (replacement with tank trucks)	Secondary

Further Information

Results from physical metrics: Water unavailability ranging from 28,300 to 505,200 m^3.

Assumptions adopted in the valuation estimates:

- The time horizon was determined according to the first phase of the project, where the structure installed in 2014 will support the bank growth until 2020.
- Scenario 1 - No utility unavailability (100% supply – current scenario)
- Scenario 2 - 30% utility unavailability (water crisis)
- Scenario 3 - 100% utility unavailability (water scarcity)
- There is no return of water to the water body
- The volume of water lost in the cooling process was not accounted for
- For the volume of water produced in ETP, the value used is the plant installed capacity

Adjustments or derivation applied to the methods and tools used: For the externality financial calculation, the current value to buy water was used, not the value to import water.

Others:

- For water import, the m^3 value for reclaimed water is the same applied to the m^3 of drinking water.
- The scenario of 30% of water unavailability was established considering the difference between the smallest and the largest capacity registered in the water body reservoir from where water is collected by the utility.

Explanatory Notes: Banking Product is the revenue the bank earns by charging interests, rates and fees.

Analysis of the results

Looking at the results, one can see that water dependency increases as years go by. That fact is associated with an increase in the demand for digital services. The bank is evolving with the technology and, to be ready for the digital segment, a robust, but efficient infrastructure will be necessary. In our data center, where digital services, transactions and bank data storage activities are processed, the water plays a critical role in cooling IT equipment, so as to keep them operating properly (a temperature rise in machines affects their performance). Thus, as more technology activities are implemented, there is need for more IT equipment, consequently demanding more water.

In scenario 1 (which reflects our current situation) there is no unavailability, so it does not affect us when it comes to use of water and financial resources.

In scenario 2, a simulation was run considering a potential water crisis that would affect us, making 30% of the water demanded from the water utility unavailable. In that case, we would be highly impacted, according to the results.

In that scenario, the costs incurred with water supply and availability would be a critical factor in the decision making involving new investments. Estimates for the following three years in this scenario would increase direct costs for water supply in about 102%. In other words, a 30% reduction in public supply does not imply proportional costs, but rather higher costs.

In scenario 3, the simulation assumes the water utility could not meet our demands and we would need to use 100% imported water. In that case, the externality would not be affected by water consumption in Mogi Mirim region.

Management of ecosystem services

Use of ecosystem service valuation results: Cost-benefit analysis; Assessment of damages caused to natural resources; Definition of strategic goals and progress monitoring; Social and environmental impact assessment; Risk assessment; Reporting; Management accounting.

Description: Currently, we do have a goal to seek a reduction in water consumption per banking product by 2020. The goals are met by optimizing internal processes, managing the new data center equipment more effectively. Studies to increase ETP use, with sources from local community, can be an alternative for reuse. Additionally, studies to drill artesian wells will start before the expansion of the data center project.

Based on the scenarios considered and based on our dependency on water resources to operate the data center, we realized that the projects designed to achieve water independency can be critical to adapt in case of water crisis scenarios.

Simulation of costs for the next three years in scenario 2 can help in the decision making of new investments in water management actions within the project.