

# PREPARING FOR THE WORST

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**AT THE HEIGHT OF THE WORST DROUGHT IN GENERATIONS, JERSON KELMAN TOOK OVER AS HEAD OF THE COMPANY SUPPLYING SÃO PAULO WITH WATER. HE SPOKE TO WATERFRONT ABOUT TRYING TO AVERT DISASTER.**

**In December, newspaper reports spoke of “a looming disaster” in São Paulo. Now, two months later, how would you say the situation developed?**

The four interconnected reservoirs of the Cantareira System have a useful storage of almost one billion cubic meters. Until recently, this seemed to be sufficient to regulate the river flows and supply potable water to roughly 10 million people, which corresponds to half the population living and working in Metropolitan Sao Paulo. However, the current drought is no doubt an outsider, from a statistical point of view. The inflow volume to the reservoirs in the last months has been roughly 20 per cent of the average. In the worst year of a long historical record (more than 80 years), the inflow in these same months had been more than 50 per cent of the average!

Currently there isn't any drop left in the useful storage. However, there is still some water left below the regular intake. In the middle of February, there was still 76 million cubic meters to be pumped out from the so-called “dead storage” through an emergency installation. There is no concern about the quality of the water as there has been always some flow to downstream from submerged gates.

Obviously, Sabesp (the water company that supplies metropolitan Sao Paulo) can't allow the reservoirs to go entirely dry, which would lead to an extremely difficult situation in which all would depend only on the inflows. Therefore, we have been decreasing the pressure in the grid. First, this operation was performed only during the night hours, in order to decrease the leakage (some installations are more than 70 years old and physical losses are of the order of 20 per cent). However, as it became more and more necessary to use water parsimoniously, the time intervals of reduced pressure were prolonged and part of the population (less than one per cent) is suffering

from insufficient water for long hours and even days. In general, these families are poor and live in high places, where the water pressure in the pipes is unable to force the water in. Furthermore, they aren't equipped with water tanks. For this reason, we provide free of charge water tanks for low-income families.

Unfortunately it can get worse if it doesn't rain sufficiently in the right places. Since my first day as president of Sabesp (January 9, 2015), I've been saying that we have to hope for the best and prepare for the worst.

**In December, the Cantareira reservoir system was down to 7 per cent of capacity. In late January, it was down to 5.4 per cent. Is it still decreasing?**

Given the fact that the rainy season in Sao Paulo starts in October and ends in April, with peak in January and February, the decline of storage that you describe was indeed alarming. After all this is the time of the year when inflow is always greater than outflow. The current year is an exception. Fortunately, this trend seems to be reversing in the first half of February. By mid-February, the storage had recovered to 7.8% of the useful storage.

**There were fears that Cantareira would dry up in July. Is that still a threat? For how long would the other reservoirs be able to serve São Paulo?**

The other two important systems – Tiete and Guarapirang – are also stressed because they have been supplying water to part of the consumers originally attended by the Cantareira system. Consequently, there is now little water in storage.

In my third day as president of Sabesp, I spent a few hours flying by helicopter with Sabesp technicians in search of new water sources in the neighbouring river basins. We also looked for ways to bring water from the only remaining reservoir in the metropolitan area (Billings) to the existing water treatment plants.

The good news is that it was possible to find some small rivers with reasonable flow in the upstream reaches, close to the basin divides, blessed by orographic rains. Sabesp will fetch this water

through several emergency apparatus, pump it up the hills and dump down into small creeks at the other side of the crest, that belong to the drainage area of both, Guarapiranga and Tiete reservoirs. As the engineering works will be finished still in 2015, there is no reason for despair, even with very low rainfall.

**You introduced fines on higher-than-average consumption in February. When do you hope to see any results?**

The results are already showing. Some consumers complain about the increase of their water bills, but most now understand that using more water than necessary not only hurts them economically but also, more importantly, is a selfish behaviour.

**Are you still considering a rationing of water?**

If we did not have a water crisis, water production in Metropolitan Sao Paulo would be higher than 70 m<sup>3</sup>/s. Now it is 50 m<sup>3</sup>/s. In other words, there is already a reduction in production of 30 per cent. An important part of this saving is water that would be lost as leakage to the ground. However, another part is due to decrease of consumption, either voluntary or involuntary. It is voluntary when the consumer changes his or her habits to save money or because he or she understands how difficult the situation is. It is involuntary when the consumer simply doesn't have enough water, due to a decrease in water pressure. Saving more water would demand an extremely tough rationing process that would impose a sacrifice that is much more difficult and would affect much more people than in the current situation. We should only decide to proceed in this way if there are no other alternatives. Fortunately, the emergency engineering works that I mentioned before may solve the problem.

**How can São Paulo work to avoid a situation like this in future?**

São Paulo has a well-conceived Master Plan designed to increase the water availability by 25 m<sup>3</sup>/s in the next years. The Plan counts with water from



**JERSON KELMAN** took over as head of Sabesp in January, as newspaper reports spoke of a “looming disaster” in São Paulo.

large areas covered with Eucalyptus. It is well known that forests increase evapotranspiration and, therefore, decrease the amount of water that otherwise would flow to the reservoirs used for water supply. So, one couldn't say that water shortage is a result of deforestation. On the other hand, trees are important to control erosion and increase infiltration and, therefore, the base flow. In other words, local deforestation, at a scale insufficient to alter the pattern of regional rainfall, tend to increase the mean and the variance of river flows.

**To what extent has the recent downpour and resulting flood in São Paulo alleviated the situation?**

Unfortunately most of the rain fell in the city, downstream from the catchment areas of the water supply reservoirs. Water storage has increased a bit, but not sufficient to revert the situation.

**There's a saying from the semi-arid north-east of Brazil: “The first thing that the rain washed away is memory of a drought”. Do you agree?**

Yes, I agree. This is why a crisis is a too good opportunity to be wasted. ●

neighbouring basins and with the re-use of served water. However, this extreme drought took us all by surprise.

**To what extent do you believe the water shortage is a result of deforestation?**

During the helicopter flight over the upper Tiete river basin, I could observe

**SÃO PAULO** is the most populous metropolitan area in the southern hemisphere. In February, the biggest reservoir system supplying the city was at a seven per cent capacity.



*“We found some small rivers with reasonable flow in the upstream reaches, blessed by orographic rains”*