
Uruguay: The impact of industrial tree plantations on the water crisis

Beginning in May of 2023, Uruguay faced an unprecedented water crisis that lasted more than 60 days. Almost half of the country's population, which lives in the metropolitan area, had no access to drinking water. There were multiple reasons for this crisis. The most obvious reason—and the one most mentioned both in the media and by politicians—was the prolonged drought the country was going through. However, those of us at social organizations know this crisis was due to a lack of planning and poor land management. And even though the drinking water supply has been reestablished, the water crisis that the country faces has not been solved.

Industrial tree plantations

In Uruguay, a country of just 17 million hectares, there are almost 1.3 million hectares of industrial tree plantations, mostly comprised of two species: pine and eucalyptus. A handful of corporate players operate in the country. Among these, Finland's UPM, Swedish-Finnish Stora Enso, and Chile's Arauco stand out; as well as various investment funds in the sector, including GFP (Global Forest Partners), BTG Pactual Timberland Investment Group, The Rohatyn Group, Liberty Mutual and Stafford. Additionally, UPM and Montes del Plata (a company formed from the merger of Arauco and Stora Enso in 2009) have installed three pulp mills, with a total annual production of approximately five million tons of pulp.

Ever since the monoculture tree plantation model began to expand in the country, there have been significant negative impacts. One of the harshest impacts for rural producers who have found themselves completely surrounded by plantations has been the negative impact on waterways. Unable to cope with this impact, and unable to produce on their land, many of these rural producers have been forced to abandon their lands.

In light of the denial of these impacts on the part companies responsible for expanding the plantations, the University of the Republic has played a critical role in contributing data to the debate. Academic studies warn of a 50 percent decrease in water flow when our watersheds are planted with tree plantations (1). Even current research by forestry companies acknowledges a decrease of up to 30 percent (2 and 3).

Despite these data, trees continue to be planted on a large scale on watersheds in Uruguay. They are replacing grasslands—or prairies—which are part of the pampa biome that spans southern Brazil, part of Argentina and Uruguay. Grasslands are incredibly biodiverse-rich ecosystems that fulfill vital functions (4). Replacing them with soy or eucalyptus plantations is just as criminal as cutting down the Amazon to plant oil palm plantations (5).

Since the early 1990s, REDES – Friends of the Earth Uruguay, along with other organizations and representatives of academia, have been warning about how large-scale tree plantations on grassland ecosystems impact water. Studies and cases of legislation from other countries—including from South Africa and Spain, where they tried to prevent water flow decreases—have contributed to this discussion.

The evidence

Since the 1990s, national studies, mostly from academia but also from one company in the sector, have compared the hydrological cycle of a watershed with monoculture tree plantations with that of a watershed with pasture or grasslands. Decades later, the results are alarming.

One study that was even financed by the North American forestry company, Weyerhaeuser, determined that in watersheds with plantations, “the loss of flow of the river is between 25 and 30 percent.” Weyerhaeuser sold its Uruguayan operations in 2017 (2 and 3).

Meanwhile, other studies (in which the University of the Republic has participated), have produced results that indicate a reduction in water flow of up to 50 percent in watersheds that have been affected by the plantations (6).

Even though the data are available, very little is said about these impacts. Worse yet, no measures have been taken to prevent or curb these impacts, even despite the recent water crisis.

During the 12 months of drought in the country, the bureaucrats responsible for overseeing these issues did not mention, much less analyze, the role of large-scale tree plantations or soybean monocultures in the lack of water in rivers and streams.

Also alarming is the lack of political will to analyze and discuss the results of scientific studies that looked at the impacts of plantations on the flow of our rivers, streams and aquifers. And this is in spite of all the national and international news reports warning that extreme events will become increasingly frequent due to climate change.

For decades, the organization, REDES – Friends of the Earth Uruguay, has campaigned to defend water and has denounced the onslaught of tree plantations. The Santa Lucía River basin—which is extremely important given that it supplies drinking water to 60 percent of the country's population—is being forested. And all signs point to ongoing expansion of the forested area. We have demanded that authorities stop this expansion by changing the definition of forest priority soils, that is, areas where tree plantations are allowed. The classification of “forest priority soils” was made based on obsolete parameters that did not take into account, for example, impacts on watersheds. However, we have had no response.

The total area of the Santa Lucía River basin is 1,347,000 hectares. There are currently 47,362 planted hectares (i.e. 3.5 percent of the total), which are located mostly in the headwaters northwest of the basin. Since there are 161,522 hectares of forest priority soils (12 percent of the basin), the expansion of monocultures over this watershed area will continue. Furthermore, there continues to be intense pressure from plantation companies, in particular from Montes del Plata, to declare certain kinds of soils as forestry priority soils—that is, areas where plantations can expand. Currently, tree plantations are not allowed on these types of land, due to the impacts they would cause. However, companies like Montes del Plata have been lobbying to have them reclassified. Were this reclassification to occur, 346,178 more hectares of plantations could be added (25 percent of the river basin), located mainly at the headwaters of the watershed (7).

The future

Climate change has caused an increase in the frequency of extreme events, including significant periods of drought (8). Rising temperatures have huge impacts on the hydrological cycle due to

changes in precipitation, evapotranspiration, and soil moisture; and this is in addition to the pre-existing effects of the environmental crisis. The recent drought was an imminent warning of the drastic change that is needed to preserve water in Uruguay.

Therefore, it is important to implement environmental management and land use planning of watersheds throughout the whole country, and in particular in the Santa Lucía River basin. It should be a priority for the government of Uruguay to recognize the significant impacts that industrial plantations have on water catchment in watersheds, and the resulting social and environmental impacts this has on the population.

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* This article was adapted from the article originally published in the weekly paper, Brecha, on 17/02/2023.

- (1) Water flow: volume of water that, on average, flows through a river channel.
- (2) Faculty of Engineering, Faculty of Agronomy, Eufores S.A., Forestal Oriental S. A. (2016). Network of experimental micro-basins to obtain hydrological and edaphic indicators for tree plantations. ANII, Call for Innovative Entrepreneurs, project ALI_1_2011_1_2349. Final report.
- (3) Femi, M. J. «Rivers of information», En Contexto magazine, F29.
- (4) Jobbágy, E. G. et al. Plantations on grasslands: Towards a holistic vision of opportunities and ecological costs. Agrociencia. (2006) Vol. X N° 2 pp. 109 – 124.
- (5) La Diaria, 2022, [Pastizales, un ecosistema olvidado a la hora de hablar de conservación](#).
- (6) Brecha, 2023, [El impacto de la forestación en el déficit hídrico](#).
- (7) Environmental Information Division, National Directorate of the Environment; Ministry of Housing, Land-Use Planning and Environment (2019). Land use/land cover map of the Santa Lucía River basin.
- (8) Various authors (2019), Climate Change and Land: [an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems](#).