
South Africa: Death by Eucalyptus Monocultures

Several of Sappi's plantations surrounding the Ngodwana Mill have been converted from pine to eucalyptus trees without authorization. Data obtained in over 75 years to verify timber plantations' water use demonstrate that eucalyptus trees use 30 to 50% more water than pine trees. Biomass is one increasing demand for eucalyptus.

The multinational South African Pulp and Paper Industries (Sappi) started its operations in 1936 in South Africa. Now it has operations all over the world. Sappi Southern Africa operates five mills and has access to 529,000 hectares of plantations.

In 2014, a new cellulose production facility was implemented to expand Sappi's Ngodwana pulp mill, situated on the banks of the Elands River, approximately 50km west of Mbombela, the capital of Mpumalanga province, South Africa.

The pulp mill was established in 1965, and over the past few decades had undergone various upgrades, primarily aimed at raising the production capacity for pulp and newsprint.

Due to the global decline in demand for printing and writing paper, the company decided to diversify their cellulose production capacity by developing the 'Project GoCell' at the Ngodwana Pulp Mill, with the aim to produce what is called as 'Specialised Cellulose'. As Sappi explains in a press release, "Specialised Cellulose is a sought-after natural, renewable fibre with a wide range of uses in the textile, consumer goods, foodstuff and pharmaceutical industries." (1) The project was first introduced to the public in 2012.

Traditionally, in South Africa, the production of paper and pulp requires primarily fibre from pine trees, thus the majority of Sappi's so-called 'Forests' in the area consist of pine plantations. Yet, the production of cellulose can also be produced with eucalyptus fibre, and that is why Sappi plans to convert several of their pine plantations into eucalyptus plantations.

Moreover, Sappi has a 30% stake in a 25 MW biomass energy unit at Ngodwana Mill, which falls under the South African government's Renewable Energy Independent Power Producer Programme (REIPPP). In this Programme, the Department of Energy in South Africa will procure 27 new projects, paving the way for significant future investment in the renewable energy industry. This biomass energy unit is expected to contribute to the national grid already in 2020. The project will use biomass from surrounding plantations. (2)

More plantations, less water

South Africa is a water stressed region. The areas where plantations have mostly been planted are on the higher rainfall areas, significantly on the 'escarpment' or 'mist belt' region, where the high veld plateau drops of to the Lowveld - where average rainfall is normally above 700mm per year.

In recent years however, the rainfall average in the area dropped significantly. Some areas of the

escarpment region received less than 550mm rainfall. Climate change models predict a further 60% decrease in the stream flow for this eastern part of southern Africa in the near future. It is imperative that any developments take cognisance of the high probability of much less available water, and plan appropriately.

Timber plantations' high water consumption has been a contentious issue for many years in South Africa. As far back as 1915, small farmers were already complaining about the impact of pine, and especially eucalyptus plantations, on the water sources and catchment areas. As timber plantations are established in the upper catchment areas, these get the first access to rainfall. In some cases this leads to very little or even no water further down in the river system. The lack of stream flow in the rivers often impacts the most vulnerable communities, which are dependant on small-scale farming and available natural resources.

Timber plantations consist primarily of alien tree types, such as pine and eucalyptus. These trees are 'evergreen' and consume water whenever it is available. Most indigenous trees are deciduous and shed their leaves during the dry winter months, making more water available for other parts of the ecosystem. For this reason, eucalyptus trees are called 'the selfish' trees, as they will constantly use water even when there is little water available to sustain the integrated environment.

In 1935, the British Empire Forestry Conference was hosted in South Africa. Due to the many complaints that small farmers made about the plantation industry's increasing water use, a series of 'paired catchment' experiments were initiated to verify timber plantations' water consumption. These experiments were conducted in many parts of South Africa and proved that the timber plantations' water use is very significant. They also demonstrated that eucalyptus trees use 30 to 50% more water than pine trees. The data obtained was used to draft the regulations governing the establishment of timber plantations in South Africa as well as the licensing guidelines.

Timber plantations are the only dry land crop in South Africa which is classified as a 'Stream Flow Reduction Activity'. Therefore, a 'water use license' is required to establish timber plantations. The license will be granted or denied depending on the availability of water in each particular catchment. Mpumalanga province was declared as 'over subscribed' in terms of timber plantation's water use allocations, and for the last several years, no new licensing applications for timber plantations have been considered or approved.

Timber growers can convert from one genus to another, such as from pine to eucalyptus, but only if a revision to the licensing conditions had been applied for and approved. Due to the higher water use of eucalyptus plantations, these can only be planted in smaller areas to allow some water retention in the remaining areas.

From pine to eucalyptus industrial plantations

Throughout 2020, residents have raised concerns regarding pine plantations being converted to eucalyptus plantations. Apparently, various pine plantation areas belonging to Sappi have already been converted to eucalyptus without authorisation. Some other local plantation companies, such as the state owned SAFCOL, also have plans to convert their monocultures into eucalyptus.

Local residents are mainly concerned about the eucalyptus trees' increasing water use, since this tree also has faster re-establishment and rotations periods. This high impact extractive model of biomass production will put an even greater burden on an already stressed environment.

It is known that several timber plantations have already been converted in the area surrounding the Ngodwana Mill. Timber companies, including Sappi, have not applied for a revision to their water use licenses, nor have they reduced the areas planted to compensate for more water being used. In response to concerns that various residents raised, a representative of 'Forestry South Africa' - the industry association representing Sappi and other plantation companies – delivered a presentation to the IUCMA (Inkomati Usuthu Catchment Management Authority), wherein he claimed that no revision to the water use license is required. The reason given was that the difference between eucalyptus' and pines' water use was supposedly 'statistically insignificant'. This claim was misleading as the study quoted focused primarily on evapotranspiration. Critical issues such as impact on groundwater were not discussed, and the valuable data obtained from more than 75 years of paired catchment experiments was dismissed.

In contrast, government authorities insist that a revision to the water use license must be applied for, and if there is a conversion from pine to eucalyptus trees (a heavier water user) a smaller area should be planted in compensation.

Government authorities are still reviewing the situation. A formal complaint has been registered with the certification scheme FSC – which still gives Sappi its label despite the irregularities. According to FSC Principle 1, timber plantations must be legally compliant. As it seems that the conversion to eucalyptus plantations happened without authorisation, Sappi's FSC certification must stop.

Rivers are under severe stress. There is less rainfall. Much of the landscape in the region has changed to industrial monoculture plantations, which are constantly seizing any available water resources. The water and soil retention capacity of the biodiverse grasslands has been diminished, and there is a dramatic increase in sedimentation of many local rivers, with a dramatic impact on aquatic fauna and flora. This, needless to say, has severe and detrimental impacts on those who have been confronting the expansion of these plantations for decades.

Converting monocultures into eucalyptus plantations on a large scale and without the appropriate authorisation is irresponsible –to say the least- and can lead to further impoverishment of the region's potential. Water is the most precious resource, without which no subsistence is possible. The timber industry must realise that profits and growth has its limits, and these had long been surpassed in this fragile environment in the south of Africa.

Philip Owen
GeaSphere Africa

For more information see article from NewFrame:

<https://www.newframe.com/big-timber-accused-of-unauthorised-tree-switch/>

www.facebook.com/geasphere

- (1) Sappi, [Sappi Ngodwana Mill's Specialised Cellulose expansion bodes well for future growth](#), 2014
- (2) Sappi, [Biomass-derived energy project at Ngodwana Mill](#), South Africa