

## Water and Sappi's plantations

<p><b>Water</b> holds the key to <b>sustainable development</b>.<sup>1</sup></p>	<p>South Africa's water resources are <b>extremely limited</b>.  <b>450mm/year</b> South Africa average rainfall.  <b>860mm/year</b> Global average rainfall.</p>	<p>Commercial forestry plantations account for <b>3%</b> of <b>total water use</b> in South Africa.</p>
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We focus on using less water per ton of product produced

### What is South Africa's water situation?

South Africa is located in a predominantly semi-arid part of the world. The climate varies from desert and semi-desert in the west to sub-humid along the eastern seaboard. Average rainfall, around 450mm per year, is well below the global annual average of about 860mm. Evaporation is comparatively high. South Africa's **water resources** are, from a global perspective, **extremely limited**.

### Does South African legislation regulate timber plantation water use?

Yes. The National Water Act (Act No 34 of 1998) declares timber plantations (afforestation) as stream flow reduction activities (SRAs).

As SRAs, all existing commercial plantations must be registered as water users and will, in time, be licensed. Only lawful plantations will be granted a licence. The rules of legality for plantations are quite complex, but simply put, are as follows:

- Afforestation that occurred prior to 1972 is lawful and may be registered and licensed
- Afforestation that occurred after 1972 but before 1999 is lawful provided the plantation was planted in accordance with a valid afforestation permit
- Afforestation after 1998 must be in accordance with a valid licence.

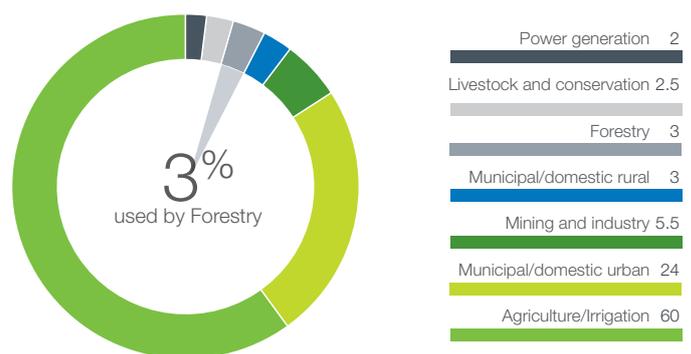
### How much water does forestry use?

Commercial forestry plantations in South Africa account for a little less than 3% of total water-use.

Plantations are not irrigated; they only intercept rainfall, which reduces runoff into rivers and streams.

Agriculture and crop irrigation are the dominant users of water in South Africa.

### Water use by sector in South Africa<sup>2</sup>



Per given volume of water **afforested areas** contribute **3X** as much to South Africa's GDP as irrigated sugar cane.

By **managing water quality** and **quantity**, we **reduce** the **impact** of our plantations on **streams, rivers** and **wetlands**.

Our timber plantations in South Africa play an important role in **mitigating global climate change**, by **sequestering** significant amounts of **CO<sub>2</sub>** every year.

**How valuable are timber plantations compared with other crops?**

Analysis by the previous Department of Water Affairs and Forestry indicates that, per given volume of water used, afforested areas, which are not irrigated, contribute three times as much to the country's Gross Domestic Product (GDP) as irrigated sugar cane.

Plantation management creates as many jobs as irrigated sugar cane per given volume of water.

**How do eucalypts and pine species differ in terms of water uptake?**

Growing under the same conditions and at similar ages, eucalypts use 15-30% more water than pines.

This does not imply that converting pine plantations to a eucalypts will reduce stream flow by 15-30% because they are harvested at different ages: eucalypts at age 8–10 and pines at 18 years. At any given point in time there will be a difference in size between the eucalypts and pines.

However, at certain periods in the rotation of the crop, stream flow will be materially less — especially during low flow periods — in a catchment planted with eucalypts as opposed to a catchment planted to pines.

**How does Sappi mitigate impact on streams, rivers and wetlands?**

We **avoid unnecessary water use** by delineating riparian zones and wetlands and ensuring these are kept free of commercially planted trees.

**Water quality** is managed by regulating drainage and minimising erosion, thereby preventing run-off into streams and rivers.

Pesticide use conforms to the strict FSC®<sup>3</sup> standards which aim to minimise the use and impact of these on the environment.

The amounts of fertiliser used in plantation forestry are minimal and there is no likelihood of leakage into streams and rivers. Consequently, rivers, streams and lakes are not polluted by forestry operations, although there is some sedimentation.

We have a number of procedures to ensure **runoff after harvesting is kept to a minimum**. These include leaving harvesting residue on the ground and ensuring that the correct harvesting and extraction methods are used.

1 Ban Ki-moon, United Nations Secretary General  
 2 Water for Growth and Development in South Africa Version 6, Department of Water Affairs  
 3 Our mills' and forestry certification details, including FSC®, SFI® and PEFC™, are available online (<https://www.sappi.com/certifications>) and summarised in the Sustainability FAQs — Our certifications.

**How and why do trees use water?**

To survive and grow, trees, like all plants, need water to transport nutrients from its roots to where they are needed. They have a vast effective network of pathways consisting of tissues called xylem and phloem to move nutrients. This pathway of water and nutrient transport can be compared with the vascular system that transports blood throughout the human body. The xylem and phloem extend throughout the tree; starting in the roots, transecting up through the trunk and branching off into the branches and into every leaf.

The main driving force of water uptake and nutrient transport into the tree is evaporation of water from leaves.

Many variables affect the amount of water trees use, including weather, habitat, soil conditions, the age and state of the tree and the availability of water.

