**Columbia Center on Sustainable Investment**
A JOINT CENTER OF COLUMBIA LAW SCHOOL
AND THE EARTH INSTITUTE, COLUMBIA UNIVERSITY

**Briefing for civil society organizations**
**Understanding commercial eucalyptus plantations: How do they work and what are their environmental impacts?**

*If a company wants to use a community's land for eucalyptus plantations, the community should think carefully about whether this is a good idea. Civil society organizations that support communities in interacting with the government or plantation companies can use this briefing document to start to understand the environmental impacts that communities should be aware of. Although not covered in this document, civil society organizations and communities should also think carefully about the other potential impacts of eucalyptus plantations, including potential positive and negative effects on social conditions, human rights, and economic opportunities.*

**What is plantation forestry?**
Plantation forestry involves the planting and management of large numbers of trees. Companies often establish plantation forests so that they can produce timber for construction, wood for fuel, and wood pulp for paper products, among other things. They may also pay farmers to grow trees that the company will buy. Plantations often involve planting extremely large areas with the same type of tree. They can also involve clusters of much smaller areas of one hectare or more (called "mosaic plantations"), where smaller areas of tree plantations are mixed with fields, housing, and other areas. This document focuses on eucalyptus plantations but a lot of it will also be relevant for other types of tree plantations.
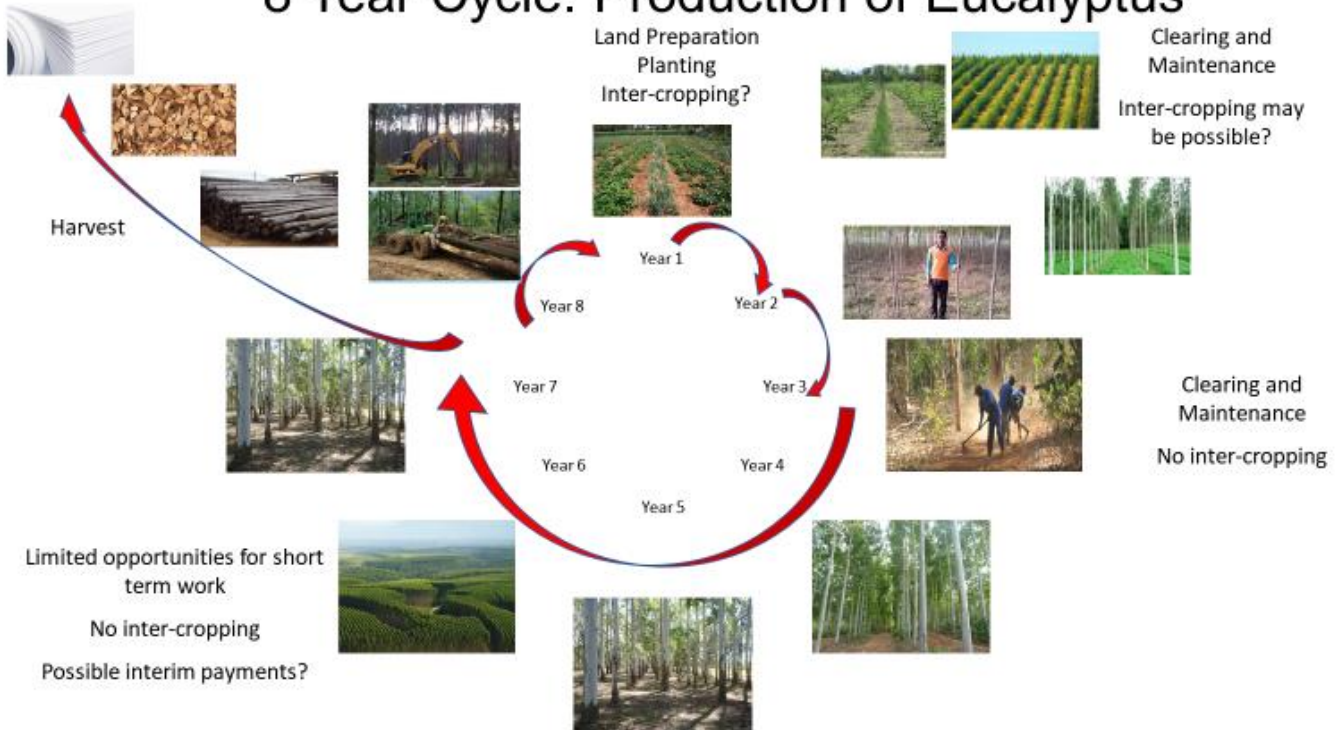
**What is the life-cycle of eucalyptus trees in a plantation?**
Eucalyptus trees typically take eight years from planting to harvesting (when the trees are cut down). Companies that establish plantations will want to benefit from multiple harvests, so plantations usually operate for multiple harvests over many years—sometimes for as long as 50 years or even more. The diagram on the next page shows some of the main activities that take place in different phases of the eight-year cycle.[1]

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[1] The below diagram and text explaining the eight-year cycle were prepared by Dan Mullins for TiNdzila - Centro de Pesquisa sobre Governação de Terras e Desenvolvimento and Terra Firma, *Governação Participativa de Terras: Preparação para Negociação com Investidores Manual de Capacitação sobre Delimitação de Terras, Consultas Comunitárias, Representação Comunitária e Negociação de Parcerias entre Comunidades e Investidores* (2019).

# 8 Year Cycle: Production of Eucalyptus

For each 8-year cycle on a eucalyptus plantation, the key stages are:
- Years 1 and 2: Land is cleared and prepared to make it suitable for the trees to grow. Young trees (saplings) are planted. Grass and bushes are kept from regrowing to prevent fires and competition with saplings for moisture and sunlight. (For community members interested in the jobs that a plantation can provide, years 1 and 2 are likely to have the most job opportunities.)
- Years 3-7: The trees grow during this time and their leaves will block out the sun. Grass and other plants will not usually grow in the trees' shade. (Very few jobs are usually needed during these years.)
- Year 8: In the last year of the cycle, the trees are cut down. The soil—and the remaining tree stumps, if the company is practicing coppice management—are then prepared for the next eight-year cycle.

**How do eucalyptus plantations affect the environment?**

Planting so many of the same tree in one area can have negative effects on the environment.
- **Water depletion.** Eucalyptus trees, like coffee and sugarcane crops, use a lot of water. Depending on the management practices employed and the genetic characteristics of the Eucalyptus planted, eucalyptus can have a high "water use efficiency," meaning that while it uses a lot of water, it produces a lot of wood with the water that is used.[2] Nonetheless, in dry climates or areas with small water reserves, eucalyptus plantations may reduce the amount of stream water available to local farmers and families, especially in the the dry season. They can also decrease the amount of water draining into groundwater reserves.

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[2] Source https://www.tandfonline.com/doi/abs/10.1080/10295925.2000.9631276

- **Deforestation and reduced biodiversity.** Plantation companies often cut down forests and bushlands so they can plant their trees. This can destroy habitats for local wildlife, causing those animals to move away or to die. Other things from the forest that communities use for medicines, food, shelter and other necessities may also disappear.
- **Pollution.** If the plantation uses chemical pesticides, herbicides, and fertilizers, it can harm the health of community members and pollute the soil and nearby rivers and farms. There may also be air and noise pollution from vehicles, processing plants, or other infrastructure that the company builds.
- **Soil damage.** In addition to soil pollution, the plantation may contribute to some soil loss and erosion in the early years. If not well managed, the plantation may also lead to the loss of nutrients in the soil, making it less fertile for future community farming efforts. Eucalyptus trees may also produce chemicals in the soil that stop other plants from growing nearby (this is called "allelopathy").
- **Tree stumps.** When the plantation ends, hundreds or thousands of tree stumps with deep root systems may be left in the ground. This will limit the amount of land available for community members to use for farming. The stumps will take a long time to decompose, which can stop the soil from naturally regaining nutrients. The stumps can be removed but this takes a lot of time and energy.
- **Forest fires.** Eucalyptus trees can promote forest fires, particularly in dry climates. The trees produce large amounts of Eucalyptus oil that is highly flammable and, once set alight, can even cause trees to explode.



**Why is it important to understand how plantations can affect the environment?[3]**
Communities and local farmers rely on the environment to farm, gather water, and do many other activities necessary for a healthy and happy life. It is therefore important to understand how a proposed plantation will affect them. If a company comes to the community asking to use its land for a eucalyptus plantation, or if the company asks local farmers to produce trees on their own land and sell them to the company, then the community needs to access and understand key information about any proposed plantation, including all of the plantation's potential positive and negative impacts. Having this information will help community members to decide whether or not to negotiate with the company and, if they decide to negotiate, what they can ask for during negotiations. Community members should immediately seek the support of

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[3] This section is adapted from CCSI and Namati, *Community-Investor Negotiation Guide 1: Preparing in Advance for Potential Investors* (2018) https://bit.ly/2PDLD2q

legal and technical experts who can explain what any documents the company and government provide, including Environmental Impact Assessments, say.

Once community members have reviewed all relevant information about the company and its proposed plantation, they will need to hold community discussions and decide whether or not to allow the land to be used for the production of trees. When making this decision, community members should think about whether the potential benefits of tree production outweigh the negative effects it might have on them and on the environment, including on local water sources, soils, and forests.

**If the community decides not to allow its land to be used for tree plantations**, the company and government should respect the community's decision. Depending on the land laws of a particular country and the rights of particular communities, families, or individuals, the government or company may be legally required to respect a community's decision. Communities need to know their rights so that they can protect them.

**If the community is open to negotiating with the company**, the community should work with legal and technical experts and civil society organizations to decide what environmental protections the community wants to require the company or other tree producers to comply with, based on a full and detailed understanding of potential impacts. The community can demand that:

- The company follow domestic law, the mitigation measures and management plan included in the Environmental Impact Assessment (EIA), and any additional standards or traditional community rules the community wants;
- The company monitor its environmental performance and/or the performance of producers and the plantation's effects on human health and report regularly to the community and government about this;
- The community be allowed to monitor the plantation (the community can ask the company to provide funding for training and experts to help the community do this);
- A process be established so that community members can communicate their concerns about environmental or other impacts during the plantation's operation;
- The company set up an environmental redress fund before work on the plantation starts, so that there is money to fix any environmental damage that the company leaves behind, including removal of stumps left after the last trees are cut and removed; and
- If the company damages the environment, it will be legally required to compensate the community, change its operations to avoid future damage, and, where possible, fix the problem.

**Want to learn more about how communities can prepare to make informed decisions about proposed investments on their lands?** You can find detailed guides at: ccsi.columbia.edu/work/projects/guidance-for-communities-interacting-with-investors/