



**environment, forestry
& fisheries**

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Chapter A: Introduction and background

A.1. Introduction

The Carbon Tax Act (Act No. 15) of 2019 (referred to as “C Tax Act” in this document) attempts to incentivise reduction of fossil fuel emissions and to increase sequestration associated with the land use and forestry sectors. This means that permanent carbon dioxide (CO₂) removals from atmosphere are used to offset against emissions from the use of fossil fuels and other fugitive emission for companies reporting and accounting under the C tax scheme. In the C tax scheme sequestration represents the number in respect of greenhouse gas emissions, expressed in terms of carbon dioxide equivalent, that were sequestered in respect of that tax period as verified and certified by the Department of Environment, Forestry and Fisheries (DEFF).

Sequestration in the forestry sector can broadly be split into 3 major activities, namely a) removals in the forest C cycle (including land use change related management), b) storage of C in harvested wood products (HWP) and c) substitution of energy intensive materials or fossil fuels with timber products (Figure A.1).

Forestry activity related carbon (C) sequestration can be achieved through:

- Afforestation and reduction of deforestation;
- Extension of the rotation ages in current plantations or reduced harvest, integral harvesting and use of wood parts of the trees;
- Substitution with tree species with higher capacity of carbon uptake and storage over a rotation (e.g. faster growth, wood with higher density or increase productivity through genetic improvement);
- Manufacture of harvested wood products (HWP) from domestically produced timber;
- Production of harvested wood products with a longer lifetime or increased recycling of products in order to further delay emissions from HWP;
- Substitution of energy intensive products such as steel or cement with wood products (i.e. product substitution);
- Increase of the carbon permanently stored in the soils, deadwood and litter pools;
- Reduction of controlled biomass burning such as burning of harvest residues;
- Reduction of greenhouse gas emissions from fertiliser application.

Sequestration in the forest ecosystem is a result of the net uptake of C during photosynthesis, accumulation in the deadwood and soil pools, decomposition losses associated with turnover of C in deadwood and emission of greenhouse gasses due to disturbances (e.g. harvest, fires) and application of fertilisers. Disturbance due to management intervention has the largest impact on the C balance resulting in either net removals or net emissions of CO₂ into the atmosphere. One of the largest impacts on managed forest plantation C balance is the level of harvest relative to growth increment (Grassi et al., 2018). It is generally accepted that afforestation results in a net removal of CO₂ from the atmosphere for the first rotation, but deforestation causes emissions of similar magnitude. It is important that accounting CO₂ removals from atmosphere under financial mechanisms or emissions reduction mitigation action are permanent.

HWP removals are a function of manufacture of long-life timber products, which are stored in the HWP pool, and emissions from the existing (historical) HWP pool back to the atmosphere due to