

Short-Rotation Forestry Could Hold the Key to Lowering New Zealand's Fossil Fuel Dependency

Following a two-year exploration of renewable energy solutions, Crown Research Institute Scion has released a statement highlighting the potential of short-rotation forestry (SRF) to significantly reduce New Zealand's current reliance on fossil fuels – in particular, coal. The relevant media release can be found [here](#).

SRF involves cultivating fast-growing tree species that can be harvested within a relatively short period, typically three to fifteen years, to produce substantial amounts of biomass quickly for the emerging bioenergy market (for more information on biomass refer to our introductory article on bioenergy [here](#)). Scion suggests that bioenergy produced from SRF has the potential to replace 6% of New Zealand's annual fossil fuel demand from less than 1% of the land area required for fossil fuel production. This could complement other renewable sources like wind, solar, hydro and geothermal, and therefore contribute to New Zealand having a more diverse and resilient mix of energy supply.

As part of Scion's research, Scion has also released its "Short Rotation Forestry Bioenergy Handbook" which serves as a roadmap for landowners, forestry investors and government agencies on how to establish a bioenergy forest operating under SRF principles. A copy of the handbook can be found [here](#).

Scion's research includes the following suggestions:

- SRF should be implemented on lower value land, particularly land that is classified as Land Use Capability Classes 5-7 (i.e. non-arable

land), and in locations close to processing facilities;

- the optimal species for SRF are species such as *Pinus radiata* and *Eucalyptus*, which are most appropriate for producing biomass due to their rapid growth rates and ability to regenerate quickly after harvesting;
- trees in SRF should be planted between 650 and 1250 stems per hectare, with no trimming or pruning required (and it may also be useful to breed trees with optimal characteristics in contrast to conventional plantation tree breeding, such as high levels of branching); and
- trees should be harvested between 12 and 18 years of age.

The above strategy aims to optimise land use for SRF while minimising environmental impact and promoting sustainable forestry practices.

The biomass produced from SRF can then be utilised in the creation of various forms of biofuels, such as wood pellets, torrefied briquettes or liquid biofuels, all of which serve as sustainable / renewable alternatives to coal and other fossil fuels. One of the key environmental benefits noted by Scion is the carbon sequestration capability of these fast-growing trees, which absorb carbon dioxide from the atmosphere as they grow. This process helps mitigate climate change by offsetting the emissions produced when the biofuels are eventually used for energy.

As part of its research, Scion has undertaken an economic analysis of SRF profitability which includes income that would be generated from New Zealand Units under the Emissions Trading Scheme, based on the carbon value of standing trees in SRF plantations (calculated on an 8-year "averaging point"). This analysis provides investors with a general idea of the potential returns on their investment in SRF – making it an attractive and exciting option for landowners to

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contribute to the bioenergy industry while also sequestering carbon dioxide, and generating New Zealand Units, all with the result of mitigating climate change.

We will be closely monitoring further development in this area. Scion has advised that during 2024 they will be identifying genetic stock of *Pinus radiata* and *Eucalyptus* with specific traits for bioenergy and undertaking forestry trials to evaluate the performance of SRF.

Want to know more?

If you are interested in exploring SRF further please get in touch with our [specialist forestry team](#). We can assist in preparing joint venture forestry agreements and forestry rights or leases for SRF.