THE SUBMISSION OF FINLAND TO NOTIFICATION NO. 2011-121 – REQUEST FOR SUBMISSIONS OF INFORMATION ON EXPERIENCES AND RESULTS FROM ASSESSMENTS OF THE IMPACTS OF BIOFUEL PRODUCTION AND USE ON BIODIVERSITY AND IMPACTS ON BIODIVERSITY THAT AFFECT RELATED SOCIOECONOMIC CONDITIONS

In the decision of the Conference of the Parties **(COP 10 Decision X/37: Biofuels and biodiversity)**, the member countries were requested to submit information on their experiences of the impacts of biofuel production and use on biodiversity.

The main outlines of the approach for increasing the use of renewable energy are set out in the Long-term Climate and Energy Strategy submitted as a report to the Finnish Parliament in November 2008.

The blending obligation of biofuels has been amended and the national obligation for 2020 is 20 per cent. A significant share of the biofuels will be based on second generation biofuels which are double accounted. The use of biofuels (without double accounting for the 38 per cent target) will be 7 TWh in 2020. It is planned that there will be three large-scale second generation biofuel plants using forest biomass in Finland.

Below Finland gives information on the work done relating to forest energy and the impacts on forest biodiversity, as well as on the results of the thorough scientific assessments that are being made in order to contribute to and assist with the ongoing work in CBD.

Wood-based fuels (wood based energy production in Finland)

Wood-based fuels are the second most important source of energy in Finland, after oil products. Today they cover about a fifth of total energy consumption in Finland. In view of the objectives to increase the share of renewable energy, the most significant biomass resource which can be made use of lies in forests.

In Finland forest biomass is used for energy production both directly (harvesting residue, small diameter wood from thinnings, stumps) and as by-products from further processing (black liquor, bark, sawdust). Forest industry by-products are already fully utilised for energy production, which means that growth has mainly taken place in the use of forest chips. During the 2000s the use of forest chips in electricity and heat production has increased six-fold, and now the aim is to further double their use from the present level by 2020. The objective set by the Finnish Government to meet the obligation to increase the share of renewable energy is that by 2020 the primary use of wood-based fuels totals 100 TWh. The objective for the use of forest chips is a quarter of this (25 TWh), which corresponds to an annual use of forest chips of about 13.5 million cubic metres.

In the future the processing of biomass into transport biofuel is going to become an even more significant way of using energy generated from biomass. So far no transport biofuels are being manufactured from forest biomass in Finland, but the objective is that the processing of biofuels for transport from wood raw material would also evolve as a significant business in our country.

The fact that most of the forest-based bioenergy derives from burning waste liquors and other forest industry by-products means that in practice the majority of the wood-based energy is harvested as roundwood. Of the Finnish forest 90 per cent are already being covered by roundwood harvesting

operations. This means that the impact of forest energy on biodiversity is closely linked to the other impacts of forestry and of roundwood harvesting.

The branches and crowns of harvested trees cannot be used by traditional forest industry to produce sawn wood or pulp and paper. In connection with forest management measures in young stand tending and first thinning sites, the smallest trees with the weakest growth potential or poorest quality are removed from the site to allow the remaining trees enough room, light, nutrients and water to grow well. The branches, crowns and small diameter wood thus rarely find use in the traditional forest industry, but these could very well be utilised in energy production. Also stumps can also be lifted from regeneration areas and crushed and burned for energy.

According to the recommendations for harvesting energy wood, part of the harvesting residue and stumps are left in the forest. In certain sites none of the harvesting residue or stumps are removed. The growing use of forest biomass for energy implies, however, that more and more of the crowns, branches, stumps and roots will be removed from forest, which may have stronger impacts on the structure and functioning of forest ecosystems than the use of forests has had so far. Removing the underground parts of the growing stock, in particular, may cause significant changes in the long-term functioning of the ecosystem. As yet, however, we lack the research information to assess the functional impacts.

More efficient utilisation of forest biomass would reduce the amount of decaying wood. The decrease in the amount of wood left to decay in forest has already led to the endangerment of certain species. Even if the harvesting of energy wood were mainly targeted to small-diameter decaying trees and harvesting residue, more large-sized decaying wood might also be damaged or destroyed when harvesting wood for energy. It also seems that certain species which thanks to harvesting residue have managed to survive in commercial forests as well would in the future suffer from the decline in habitats. In the recommendations for harvesting energy wood efforts have been made to take these impacts into account and to minimise the harmful consequences. The recommendations are updated as we gain more experience and research information.

Action needed to preserve forest biodiversity

The principle of sustainable forest management is duly followed in all forest-related operations, including the production of forest chips. Besides this, we also follow the national recommendations for collecting energy wood (Forestry Development Centre Tapio 2010). The recommendations take account of the potential harmful impacts of the harvesting of energy wood in a very comprehensive way and recommend measures to minimise these. The recommendations are updated on a regular basis as we gain more experience and research information.

As mentioned earlier, the impact of forest energy on biodiversity is closely linked to the other impacts of forestry and of roundwood harvesting. In recent years further efforts have been made to enhance the protection of forest biodiversity by increasing the share of protected forests and improving their quality and by developing nature management in commercial forests. Of the Finnish forest area about nine per cent is protected. Diverse and well-functioning ecosystems provide us with various kinds of services, of which wood production from forest is one example. The biodiversity of forest nature and ecosystem services which maintain the functions of forest nature are taken care of as part of their utilisation. The mission of Finland's National Forest Programme 2015 adopted as a Government Resolution in December 2010 is to create growing

welfare through diversified management and use of forests, including the preservation of the environmental benefits of forests

The impacts of the harvesting of forest energy are being assessed in several research projects that are under way, for example, at the Finnish Forest Research Institute, Finnish Environment Institute and universities. In 2011 a specific risk mapping on renewable energy was launched with the aim to assess the potential risks relating to all forms of renewable energy.

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