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# The Swedish forest-based sector - a natural part in a circular economy

## Circular economy – contribution from the forest-based sector

The forest-based sector must be recognized and assessed as an important player in a circular economy. The raw material, the production processes and the products are all parts of circular systems, that contribute to fulfill a resource-efficient and circular economy in Europe.

Sweden is by area the third largest country in Europe, covered with nearly 70% of forest. The forest is one of Sweden's most important resources, natural renewable, which play a central role in an ecological sustainable society and for the economy. The utilization of the forest must occur in a manner that maintains both productivity and biodiversity with renewal and vigor without damaging other ecosystems.

Ever since the 1920's the total standing volume of Swedish forests has increased. The fact that the forest is today growing faster can be explained by changes in land use and improved forest management. In Sweden, 45 % of the harvested forest is used by sawmills, 45 % by the pulp and paper industry and 10 % for fuelwood, poles etc.

Recycling prolongs the use of virgin fibres from sustainably managed forests. They provide a key material for the bio-economy. Forest-based industry competitiveness is built on a sustainable combination of virgin and recycled fibre material.

**The circular economy should consider renewability as an integral part of bio-economy.**

## Forest fibers are a true circular resource

The forest based sector is a circular sector, built on a unique natural resource, based on the carbon cycle that starts with the photosynthesis. Large quantities of carbon dioxide are captured by the trees while growing and transferred into products and energy in a never-ending cycle. Forest products are used, reused,

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recycled and recovered over and over again to finally end up as bioenergy. Carbon dioxide is released and a new cycle starts.

Active and sustainable forestry is the key to this renewable resource. The raw material is used to produce a variety of products for example sawn timber, wood constructions, pulp, paper, bioenergy, board, biofuels, textiles and chemicals, thereby replacing fossil resources and substituting products.

Bioenergy is the main energy source in this sector. The part of the tree that is not used as fibre source, will be bioenergy for the process. In the forest industry, 96 % of the heat used in the processes, is bio-based. Part of it is distributed to the society – a renewable energy source. After use and reuse/recycling/recovery the products end up as bioenergy. Using wood products is therefore good for the climate.

**Closing the loop - Production is efficient and process waste is turned into resources**

The Swedish sawmills have high technical standard and are leading regarding quality and productivity. About half of the sawmilling products goes directly to the building sector. A major part is construction timber used for beams, studs and other load bearing elements. Other parts are used for further processing. The wood working industry is also using timber for pallets and packaging, carpentry, doors, floors, windows, stairs, kitchen and baths, furniture, boats etc.

Wood is coming from a renewable resource and has an eco-efficient life-cycle. In manufacturing, the by-products from sawmills are used as raw material for the pulp and paper industry and as bioenergy and the production create minimal waste. There is no other building material that require so little energy to produce as wood. Not only is the production and processing of wood highly energy efficient, giving wood an ultra-low carbon foot-print, but wood can also be used to substitute for other materials which require large amount of energy to produce. In most cases the energy necessary for processing and transporting wood is less than the energy stored by photosynthesis in the wood.

The processes in pulp and paper production units are efficient, from the intake of raw material to the final product. At every step, measures are implemented after assessment of resource efficiency, environmental impact and costs. Chemicals are recovered in an internal circuit, parts of the wood that do not become fibre source in the process are used as energy or nutrients for agriculture and inorganic waste can be used as construction material. In the pulp and paper industry around 90 % of the process waste is recovered.

Legislation is in place for the industry in the whole value chain and there is no need for any directives on eco-design – it would harm the investment will and

innovation and become a trade barrier. Market-based measures and incentives are preferable and the optimal way of achieving improvement.

**Reuse and recycling are already efficient**

Wood products can be reused, repaired, recycled and finally energy recovered at the end of the life-cycle. There are already legal systems in use like the packaging and packaging waste directive for collection and recovering of wooden packaging, the waste directive for wood etc. The average life-time for wood constructions is estimated to 75 years and there are voluntary systems to collect, renovate and reuse old building parts. The panel industry is partly using recycled fibre for their manufacturing. Smart implementation of the cascading use of biomass implies the reuse and recycling of wood where recycling infrastructure and re-manufacturing are present. However, an efficient energy recovery is sometimes the best economically and environmentally option.

Recycled fiber is an important resource for the paper industry. Efficient systems for separate collection of paper products have been established for many years in Sweden, managed by the industry. Recycling rates of 95 % for newsprint and magazines, 75 % for paper and carton board packaging and 85 % for copying paper have been achieved. The responsibility taken by the producers in the whole value chain as well as the national landfill ban have contributed to the good results. The waste hierarchy should be the leading principle. However, Sweden is a geographically big country with a sparse population, why ban on incineration would be counterproductive in terms of environmental impact. There are cases when incineration with heat recovery is the best choice.

Recycling targets must be ambitious but realistic. They must not discriminate between materials such as metal, glass and plastic. Where targets are to be set, the first step would be to define harmonized calculation methods that are clear and transparent. The calculation methods should make reference to standards, for recycled paper EN 643, to define when material streams qualify for recycling.

**No recycled fibers without virgin fibers**

To produce paper products virgin and recycled fibers are used. The fibres have different properties and must be used in a clever and efficient way, choosing the right fiber to the right products. The fiber types complement each other and are part of the total fiber flow in Europe. The Nordic countries with large forest areas are the main suppliers of virgin fibers while the paper industry in continental and south Europe mainly is based on recycled fibers. This continuous flow of fibers from the Nordic countries is vital for the European paper industry as recycled fibers are worn out after some cycles. That is, there will be no recycled fibers without virgin fibers. This means that there must not be requirements on content of recycled material in products in any regulations or voluntary instruments.

## Resource efficiency targets and indicators

The European Commission and Parliament have proposed to set resource efficiency targets, expressed by means of a couple of indicators, in order to follow up improvements. Methods for calculation are still very immature and the availability of reliable data is deficient. Proposed indicators are disadvantageous for member states with an industry structure based on raw materials compared to member states with business later in the value chain or in the service sector. To set targets, legally binding, is thereby not meaningful by now, neither on European level nor member state level. If relevant indicators are developed, these must primarily be used at country-level to indicate improvements.

## Supporting and promoting bio-based products – good for the climate

Bio-based products can replace many fossil products in the society. Incentives and support to producers are necessary as well as information in public procurement and to consumers. Innovation and development of new processes, materials and products are costly and enabling measures are essential.
Building in wood has been shown to be advantageous compared to other building materials. The material is renewable, the building methods have economic and environmental advantages and the constructions store carbon for many years, thereby reducing the climate effect.
The Commission has given a mandate to the European Standardization Organization CEN to develop standards with the aim of promoting bio-based products in Europe. This work will result in standards on how to inform about bio-based products, intended for business to business and business to consumer. The standards are planned to be in place in 2016.

## The forest-based sector creates jobs and social welfare

The industry is based on a natural resource, mainly grown within the European Union. The sector generates jobs in remote areas and makes a large contribution to the Swedish economy. Approx. 55000 people are employed directly, and the export value was 124 billion SEK 2014. The wood resource is used where it generates the greatest added value. Cascading use of wood fibres is the leading principle – it results in resource efficiency, sustainable use of raw materials, jobs, competiveness, economic strength and social welfare. This principle indicates the intention and direction but must not be required in legislation.