THINK GREEN

How bioeconomy and forestry can mitigate climate change and make EU prosperous
The focus on forests as a carbon sink is from a forestry point of view a short term solution. In the long term the climate benefits from the forests and the forest products are much more important. At the same time, the halting of deforestation is an important element in global measures to mitigate climate change. In various places worldwide, deforestation is often poverty-driven. In Europe, however, conditions are different. Since 1990, the EU’s stock of growing timber has increased by almost one third. As a result, the EU’s forests now annually bind carbon dioxide equivalent to 10 per cent of the EU’s emissions of greenhouse gases. This is a fantastic accomplishment and the sustainable forest resource can do much more to help reach the EU’s climate targets and successfully develop a bioeconomy.

To fully develop a sustainable bioeconomy, more innovation and political measures are needed. Together, these will lead to a flourishing, green industry and to a wider variety and greater number of employment opportunities in the EU.

Furthermore, forests have an important role for biodiversity as well as human recreation. There is no contradiction in managing forests and practising sustainable forestry.

The best way to tackle climate challenges is active forest management with increased growth and sustainable felling and production of timber products, fibre and energy. This is what our journal is all about.

Mårten Larsson, head of bioeconomy, the Swedish Forest Industries Federation
THE VISION

Ex-prime ministers fight for bioeconomy

European leaders must exercise political leadership and decouple economic growth from environmental degradation. This is where the bioeconomy comes in. The bioeconomy can also tackle other major challenges facing society. So write two former prime ministers, Göran Persson (Sweden) and Esko Aho (Finland).

In a statement from the European Forest Institute (EFI), Göran Persson and Esko Aho emphasise that we are living in a time of accelerated change and unprecedented global challenges. However, the 21st century also offers fantastic opportunities. The bioeconomy is one of them.

Unfortunately, the bioeconomy’s development is threatened by a major obstacle. This obstacle is the privileged position enjoyed by the fossil-based economy.

The fossil economy generates major environmental costs that are not absorbed by the markets in any way. Furthermore, in many cases, the fossil economy benefits from different types of subsidies. Facing this operating framework, the development of the bioeconomy cannot be left to the markets and technology alone.

Decoupling growth from environmental degradation requires a major shift towards a low-carbon, renewable and resource-efficient society that has a sustainable economy. Such a shift requires political leadership, vision and strategic action. As outlined below, Göran Persson and Esko Aho set out three strategic policy developments required to develop Europe’s bioeconomy:

▶ A global carbon price: This would create a global incentive for fossil-based industries to move towards low-carbon alternatives. Carbon pricing mechanisms (e.g. fees, taxes, or cap and trade systems) offer incredible benefits for the development of the bioeconomy.

▶ A long-term, predictable and coherent bioeconomy policy framework: “It is time to enter a new era.”

▶ Close communication with society: Bioeconomy has to be sustainable, not only in rhetoric, but also in action. The first generation of biofuels emerged a decade ago. Their arrival was accompanied by negative environmental issues. These have provided a lesson in how not to start bioeconomic development.

NEW DEVELOPMENT WILL create new bioproducts that, by outperforming and replacing fossil-based products, will enhance the move to a low-carbon economy. Rapid advances in biotechnology and biorefineries mean that virtually everything that is now made from oil can also be made from renewable biological resources. The bioeconomy will also support new jobs in rural and urban areas, states Göran Persson and Esko Aho.

The bioeconomy can tackle society’s grand challenges, states Göran Persson and Esko Aho, ex-prime ministers in Sweden and Finland.
THE PRODUCTS
All this can be made from wood!

Everything made using fossil-based materials today can be made from forest-based inputs tomorrow. The transition can even start from today’s industrial operations and build on the process knowledge they offer.

The EU needs to create fairer market conditions for biobased products that have high added value. This could strengthen the EU’s competitiveness, even in face of the Union’s high energy and labour costs.

Furthermore, high added value promotes greater cascade use. Such use improves resource efficiency. In turn, this opens a way for the EU to achieve the targets in its Circular Economy Package.

Nanocellulose
This transparent gel has a host of uses. It can, for example, be used as a texture agent in foods, a stabilizer in paints, a biobased barrier in drinks cartons and insulation in buildings.

Multi-störey wood buildings
Several examples already exist. Key success factors are industrial production systems, speed and wood as a light, eco-friendly and renewable building material.

Biofuels
Forest industry residues are already being used as a vehicle fuel. However, the biofuel volumes from raw materials can increase substantially and also be used by aircrafts.

Pharmaceuticals
Cellulose powder is used as a drug carrier in tablets and affects how quickly a drug is taken up by the body.

Lignin-based carbon fibre
Lignin is the substance that binds the fibres in growing trees. It can be used as a biobased carbon fibre that replaces steel in high-value products that have to be strong and light. Wind turbines, aircraft, vehicle chassis, sports equipment (tennis rackets, bicycles, etc.) and even vehicle batteries are just a few examples.

Biocomposites
Wood fibre is an element in various composites used to make items such as instrument panels, furniture and containers.

Printed electronics
Electronics can be printed on paper in an ordinary printing press. The results can be used for smart packaging, printable solar cells, advertising signs and new types of sensors.

Textiles
Fabrics made from wood fibre are in demand from the fashion industry. They can also be used in “technical fibres” for furniture, partitions, surface coverings, car interiors and agritec textile ground covers.

Fish feed
Forest industry residue streams can be used to replace fishmeal in fish feed. Microfungi eat the wood’s sugar and are then ground into a powder.

Windows
Wood can be made transparent and thus used for windows, partitions, displays and touchscreens. Wood insulates better than glass. It is also stronger.

ILLUSTRATION: JOHAN JARNESTAD

THE PRODUCTS
All this can be made from wood!
Europe has great potential to develop its bioeconomy. We have the raw material resources and the industrial expertise that is needed to become a global leader,” says Joanna Dupont-Inglis, Director of Industrial Biotechnology at EuropaBio (European Association for Bioindustries).

There is no doubt that a bioeconomy offering sustainable growth would bring many economic benefits to Europe. It would create jobs, add value to many sectors (e.g. farming and forestry) and revitalise rural areas. The environmental benefits would, of course, also be huge. According to the European Bioeconomy Alliance (EUBA), the bioeconomy offers a viable solution to today’s fossil carbon equivalents. It has the potential to remove up to 2.5 billion tonnes of CO2 emissions each year. This amount is more than half the greenhouse gas emissions generated by EU industries and households in 2013.

“In Europe, there is a growing appreciation of sustainability. This will increase the demand for renewable alternatives to traditional fossil-carbon based products. The challenges we face are commercialising emerging bio-based products on a larger scale and creating new markets for these,” says Joanna Dupont-Inglis at EuropaBio.

What is needed to unlock the full potential of the European bioeconomy?

“In terms of policy, we need a holistic, predictable and supportive EU framework. This would stimulate the necessary cooperation between different sectors. Instead of the old linear fossil-carbon models, we have to work in new, innovative and more complex ways with many different industries.”

How important is the forest industry?

“The forest industry already makes a very significant contribution to the development of Europe’s bioeconomy. For example, the industry is investing heavily in biorefineries and the development of new biobased packaging materials and new forest products.”

What might happen if Europe does not seize the growth potential?

“At the moment, Europe has the technology and expertise to lead the global transition. However, other regions are acting very fast. What we do not want to see is all the investment, jobs and technology going overseas to regions which have more attractive and supportive conditions. We have the potential to be a real asset in the EU’s quest to create jobs, growth and competitive, sustainable, biobased solutions. We must not lose this.”

The Bioeconomy has the potential to remove more than half the greenhouse gas emissions generated by EU industries and households.
To reach its climate targets, the EU should emphasise the importance and potential of the bioeconomy. Many important decisions will need to be taken. To realise the full potential, there needs to be a meeting of ministers where the focus is on the bioeconomy.

It is no secret that gaining support for issues spanning several areas is not easy within the EU. The bioeconomy stretches across a number of EU processes and is influenced by a host of directives.

For bioeconomy to be a leading issue in the EU, there must be a transborder collaboration without too detailed legislation. With the right decisions, market forces will support bioeconomic development. Detailed regulation, however, would impede it. The EU has a bioeconomy strategy that is currently being updated in line with the new climate targets. To demonstrate serious commitment to realising the EU’s climate targets for 2030, would it not be a good idea to hold a ministerial meeting to link all the processes under the bioeconomy umbrella?

The right decisions for the forest industry to drive ahead a growing bioeconomy are:

► Promote active forestry with sustainable felling and production of timber products, fibre and energy.
► Maintain the competitiveness of existing industries in order to exploit the process expertise it has amassed. Allow the market’s economic forces to provide impetus.
► Avoid detailed control. It limits competitiveness and creates obstacles to the flow of raw materials from forests. One example that may inhibit the development of the bioeconomy is legislation on cascading use. The principle is excellent, but avoid legislation.
► Create the right conditions for cluster growth and industrial symbiosis (which is cascade use in practice). Besides maximising added value, this creates “side flows” in production. Through biomass, it also benefits the climate.
► Increase construction with wood in Europe. This will rapidly give the most direct climate benefit.
► Support innovation and research and development that facilitate the journey from laboratory to demo plant to manufacture.
► Review the rules regarding state support. To meet the climate challenge, make green options cheaper than fossil options.
► Develop public procurement standards and rules that promote the development of what is truly sustainable.

The EU must take the right decisions

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Anyone travelling through the Nordic countries soon realises that there is a lot of forest. An enormous amount in fact. Here are ten facts about the Swedish forests and the importance of our green industry.

- In Sweden alone, forest covers 70 per cent of the surface. There are 87 billion trees.
- There is now twice as much wood in Sweden as there was 90 years ago.
- One per cent of our forest is felled annually. Nonetheless, growth outpaces felling.
- For every tree harvested at least two new are planted.
- Sweden is the world’s third largest exporter of forest-based products.
- 80 per cent of our forestry based products are exported.
- The substitution effect of the Swedish forest industry products are equivalent to Sweden’s annual carbon dioxide emissions.
- Environmental and production targets in forestry are brought in line with each other, since the Swedish Forestry Act was updated in 1993.
- Sweden’s forest industry has reduced its emissions by over 60 per cent since 2005 and also uses almost no fossil fuels in its processes.
- The forest industry is one of Sweden’s most important business sectors. It directly employs 70,000 people in Sweden.

We welcome you to visit our active, Swedish forests. It is an extraordinary experience. Do not hesitate to contact us for further details about why forest industry is a crucial answer to meeting the EU’s climate challenge.