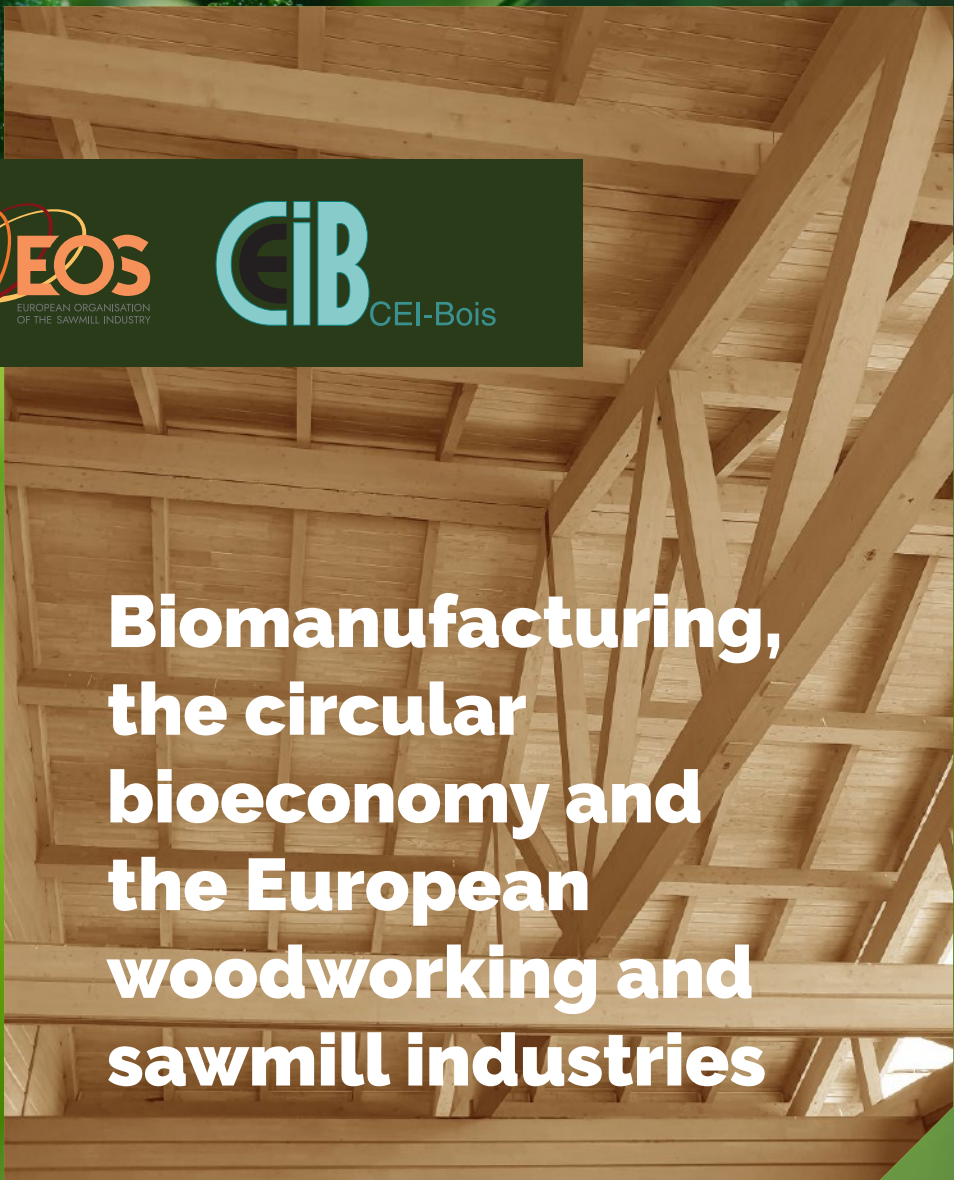




© PT / Adobe Stock



Biomanufacturing, the circular bioeconomy and the European woodworking and sawmill industries

How good is your understanding of biomanufacturing and the bioeconomy?

Take our quiz and find out.

Which of these pictures illustrate biomanufacturing?



© Jan / Adobe Stock

Yes No



© Jan / Adobe Stock

Yes No



© Stora Enso

Yes No



© mariusitu / Adobe Stock

Yes No



© Moelven

Yes No



Yes No



© DragonImages / Adobe Stock

Yes No



Answers

- 1** Yes - biopolymers offer sustainable, lower carbon and renewable materials to replace fossil-based plastics.
- 2** Yes - the President of the European Commission accompanied by the Prime Ministers of Sweden and Finland visiting Stora Enso's Innovation Centre in Sweden in early 2024 where the next generation of bio-based materials are being developed.
- 3** No - this is the Mongstad oil and gas refinery in Norway however Carbon Capture and Storage test trials have been carried out here.
- 4** Yes - mid-rise homes being constructed with engineered timber, a key bio-based material that can store carbon and substitute for carbon intensive reinforced concrete.
- 5** No - the car industry is still in the early stages of moving from fossil-fuel based components to bio-based ones. In future these car bodies could be made from the polymers in Question 1.
- 6** Yes - although admittedly hard to tell. In this case we can see the world's first timber wind turbine frame being erected in Sweden by Modvion. If this was a steel frame the answer would be 'No'.
- 7** Yes - being a carpenter and making products from wood may well be one of the oldest professions in the world but it is also an example of biomanufacturing.

Your score?

- 7/7** Excellent - Well done you have reached 'von der Leyen standard'
- 6/7** Very good - you are at the same standard as Commissioner Wopke Hoekstra
- 5/7** Good - you are officially 'MEP standard'
- 4/7** Average - could have done better, could have done worse
- 3/7** Poor - stop following Fox News
- 2/7** Very poor - time to leave the ID
- 1/7** Awful - are you awake?
- 0/7** No words.

Biomanufacturing, the circular bioeconomy and the European woodworking and sawmill industries



*Timber is a bio-based material hence
biomanufacturing is not a new process*

**The aim is a dynamic and successful circular bioeconomy -
the means of achieving it is by a significant increase in biomanufacturing**

A bioeconomy refers to the production and consumption of biomass-based goods, services, and energy. It encompasses biomanufacturing sectors such as forestry, pulp and paper production, agriculture, fisheries and the food industry. It also covers parts of the chemical, pharmaceutical, biotechnological and energy industries as well as the manufacturing of cellulose-based textiles. The vision for a dynamic and successful European circular bioeconomy entails a system where materials, chemicals and energy are based on renewable biological resources that allow economies to move away from fossil-based inputs. In short, a circular bioeconomy is about breaking the dependence on non-renewable resources (UNECE/FAO, 2022).

A circular bioeconomy based on the criteria of sustainability and biogenic renewable carbon is

a tool to avoid the depletion of natural resources and to maintain an ecological balanced planet.

From the perspective of the European woodworking (CEI-Bois) and sawmill (EOS) industries a bio-based material can be described as follows:

'A bio-based material is a renewable material produced using substances derived from living organisms, excluding those embedded in geological formations and/or fossilised. Commonly they are derived from a plant, animal or other micro-organism and as such they will contain and continue to store recently removed atmospheric carbon.'

Dr Andrew Norton, Technical Adviser
to CEI-Bois & EOS and
Member of the European Commission's Expert
Panel on Carbon Removals



Timber is one of the oldest and most well established bio-materials

Some of these bio-based materials, including wood, have been in use for thousands of years hence biomanufacturing is not new. Other bio-based materials are very recent inventions e.g. biopolymers which can be used to make a nature-based plastic to replace fossil fuel-based plastics. Further bio-based materials are at various stages of development and will be available this year, next year or in ten or twenty years' time.

Ultimately we can reasonably expect that many of the materials currently produced using fossil fuels could potentially be replaced with existing or future bio-based materials. Many of these new bio-based materials that will drive a steady increase in biomanufacturing will be derived from a wood feedstock.

While new and coming bio-based materials are most welcome we should not lose sight of the existing bio-based materials that we already have. The danger is that the longer we have had such products the more likely we are to forget about them!





Wood-fibre based insulation is a well-established product that stores carbon



© infograf / Adobe Stock

The amount of recycled wood used in new products is growing steadily

We should remind ourselves that some of the more well-established bio-based products have already substituted for huge quantities of fossil fuel based products thereby preventing the level of GHG emissions from being even higher than they already are. Many of these products, especially in the construction industry, have been storing carbon for decades or centuries preventing the carbon returning into the atmosphere and instead growing the existing product-based carbon sink. The fact that we have poor or no existing data on what such products have achieved with regards substitution and carbon storage does not detract from the fact they have had a major positive impact to date and, which is of key importance, they have the potential to deliver most of the necessary carbon reductions and storage that we need in the short to medium term i.e. between now and 2040.

For bio-based wood products to deliver their climate benefits to their maximum potential in the short to medium term will be predicated on the security of supply of forest-based biomass as a key biomanufacturing feedstock and specifically timber into the construction industry. Meeting the supply demand for forest biomass and a transition to a sustainable and circular bioeconomy should be addressed not by exclusively relying on new raw material but also through material efficiency and recovery, including the collection of wood for reuse, recycling or energy recovery at the end of life.

The European Commission has a role in helping to foster and secure an increase in the supply of woody biomass plus a role in supporting its most efficient use.



© nowyn / Adobe Stock



© Andrii / Adobe Stock



Within biomanufacturing the construction industry has the potential to play a catalysing role because *the demand for wood use in the built environment generates residues and manufacturing by-products that are utilised in the production of other wood-based products and solutions and/or used to generate bioenergy. Sawn wood is therefore the “engine” of the bioeconomy (and in carbon storage volume – sawn wood is the greatest product store for CO₂ emissions)* and from a climate perspective the best use it can be put to is in the built environment where it both substitutes for carbon intensive alternatives (concrete, steel, brick and block) and stores carbon for many decades.

All timber used in construction, including engineered timbers such as Cross Laminated Timber, Laminated Veneered Timber and Glulam, can both store carbon and substitute for carbon intensive alternatives such as concrete



Rue Montoyer 40
1000 Bruxelles – Belgium
www.cei-bois.org & www.eos-oes.eu

CEI-Bois – EU Transparency register n° 470333818389-37
EOS – EU Transparency register n° 024776016336-52



Construction timber is at the heart of the bioeconomy offering the possibility of storing yet more carbon and of substituting for carbon intensive alternatives such as concrete and steel as with these mid-rise engineered timber builds in Stockholm, Sweden