

Wood-Based Bioeconomy Solving Global Challenges

Photo: Sibelius concert hall in Lahti, Finland.

We invite you to read about Finnish expertise and innovations related to the emerging bio-based industrial field providing benefits to the entire world! Wood contains ingredients that only recently have been detected and developed for new uses. Traditional mill sites of large forest industry companies are in the process of becoming biorefineries. The start-up boom, which began in Finland around the turn of the century in the ICT and game industries, has also entered to the bio-based industrial field. Research-based spin-offs and start-ups constitute a core element in the business ecosystem of a biorefinery.



Plastic waste in the environment can be reduced by replacing plastic bags with wood-based bags. Photo: Paptic Ltd.

For new pilot and demonstration facilities, major investments have been made, helping start-ups and established companies to test their inventions and accelerate their transition from basic research to commercialisation. In the national innovation system, new multidisciplinary concentrations have been formed and they function as seedbeds for radical process and product innovations and educate specialists for knowledge-intensive services.

Wood-Based Bioeconomy Solving Global Challenges

Publication of the Ministry of Economic Affairs and Employment of Finland. 63 p.
<http://tem.fi/en/publications>

The publication will be released on the 29th of May, 2017.

MEAE brochures 5/2017

Ministry of Economic Affairs and Employment of Finland
More information: Ministerial Advisor, Mr. Reima Sutinen
Reima.Sutinen@tem.fi, phone: +358 29 506 2108.

Table of Contents

Preface:

Radical Innovation from Wood

Introduction

The Landscape for Radical Product Innovations

- The role of forests in the development of the Finnish economy
- The scope of innovations and new products
- The ongoing transformation in the three large Finnish-based forest industry companies
- Start-ups generating exciting innovations as partners in business ecosystems
- Pilot and scale-up facilities for new wood-based innovations

New Business Ecosystems and Value Chains

- Status of and opportunities for timber construction in Finland
- Biofuels
- The chemical industry in the green circular bioeconomy

Sustainable Forestry

- Sustainable forestry and the forest carbon balance
- Certification of forests
- Sustainable bioenergy
- Intelligent machinery for forestry

The Role of Consumers

- How do innovative wood-based solutions relate to the changing consumer reality?

The Way Forward

- From research and piloting to commercialisation



Ministry of Economic Affairs
and Employment of Finland



The first biomedical solutions and commercial applications made of biofibrils have been launched for cell cultivation by UPM. Photo: UPM

Suomi
Finland
100

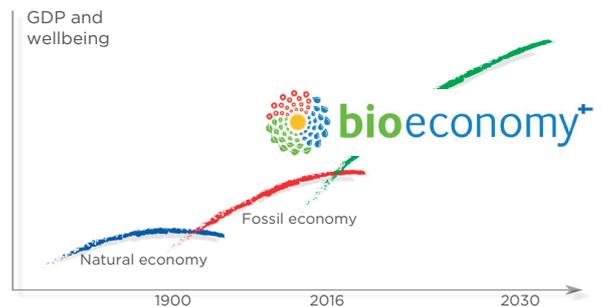
We have invited specialists in the bioeconomy field to compile articles for a publication. In addition, interviews with key actors are included, representing the core of the ongoing transformation process in the bioeconomy field. On behalf of all who have contributed to the publication, we hope that the information package will stimulate dialogue and contacts from a variety of stakeholders, both in Europe and more widely in the global context.

In 2014, the Finnish government published the National Bioeconomy Strategy. It has set the objective to push the bioeconomy output to EUR 100 billion by 2025 and to create 100 000 new jobs.

Many innovations are in the pipeline, and existing logistical and production processes provide platforms for start-ups. Both large and small companies build their businesses on breakthroughs in research and piloting. To reach end users in the markets, new value chains are emerging. Further inspiration comes from evidence that business-based operations – new products and operating modes – contribute to the solving of major global societal problems.

The areal coverage of forests in Finland is the highest among the EU countries. Due to the significance of the forest sector in the Finnish economy, forests are sustainably managed and certified. Individualised forest areas can be monitored by using digitalised databases that also inform forest owners and wood markets about the amount and characteristics of the growing wood resources.

The use of natural resources in a sustainable way, both environmentally and socially, is the fundamental principle. Agricultural land has not been switched to bioenergy production in Finland, materials are used and re-used as comprehensively as possible and biofuel is made from process waste. No fossil fuels are used in the production processes of a bioproduct mill. Globally, wood-based textiles may at least to some extent substitute cotton, which requires much greater amounts of water, chemicals and energy compared to the production of wood-based textiles, when using the new technologies. Consequently, the land now used for the cultivation of cotton plants could instead be used to grow food crops.



The bioeconomy will be the next source of economic growth. With the National Bioeconomy Strategy published in 2014, Finland aims to push the bioeconomy to create new jobs.



Forest certification has had positive effects on the preservation of biodiversity in forests. Photo: Natural Resources Institute Finland.



Baby Tree-shirt, made from Spinnova's 100% wood-based fabric. Photo: Spinnova.

Wood-Based Bioeconomy Solving Global Challenges

Publication of the Ministry of Economic Affairs and Employment of Finland. 63 p.
<http://tem.fi/en/publications>