

Author's Accepted Manuscript

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www.elsevier.com/locate/envdev

PII: S2211-4645(17)30101-X
DOI: <https://doi.org/10.1016/j.envdev.2018.02.004>
Reference: ENVDEV381

To appear in: *Environmental Development*
Revised date: 20 February 2018
Accepted date: 20

Cite this article as: Indra Muizniece and Dagnija Blumberga, Methodology for determining potential of forest bioproduct commercialization, *Environmental Development*, <https://doi.org/10.1016/j.envdev.2018.02.004>

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METHODOLOGY FOR DETERMINING POTENTIAL OF FOREST BIOPRODUCT COMMERCIALIZATION

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Abstract

In the context of bioeconomy, the use of bioresources in manufacturing of high value added products is becoming more and more topical. This factor and others are leading scientists to develop both new innovative products made from biomass and manufacturing technologies for these products. The remaining question is: which of these products is better and is it even possible to mutually compare two different products? Therefore, the authors of this paper have developed an algorithm for screening methodology based on multi-criteria approach, with which it is possible to analyse and mutually compare the commercialization and overall potential of innovative products with high added value from forest biomass. The method is adjusted to conditions in Latvia, evaluating 30 bioproducts from forest biomass.

Keywords

Bioeconomy; Biotechnomy; Products with high added value; Forest resource

1. INTRODUCTION

Due to the current interest in the bioeconomy concept, its principles and implementation of the Bioeconomy strategy developed by the European Commission (European Commission, 2012), in recent years' extra attention is paid to sustainable use of forest resources. Biotechnomy – the extended concept of the bioeconomy idea is used in this study (Blumberga et al., 2016; Blumberga et al., 2015). Biotechnomy is the rational use of local bioresources - based knowledge and research for creation of innovative products with a high added value and significant commercialisation potential. Bioproducts are produced via innovative and modern biotechnologies (Blumberga et al., 2016). There are three cornerstones for biotechnomy of forest biomass: availability of bioresources, development of biotechnologies and ecodesign of bioproducts. Biotechnomy places more emphasis on the technological aspects related to bioresource and bioproduct use. Through the biotechnomy approach, products that provide larger social and economic benefits at the national level, and products developed in line with eco-design principles, are manufactured taking into account sustainable development principles and the rational use of natural resources. In biotechnomy, fuel production from forest biomass cannot be considered as a high added value product, because it is possible to gain not only classical wood products (for example, construction supplies, furniture, household objects) and fuel from forest biomass, but even food additives (for example, glucose, starch, xylan derivatives), animal feed, textiles and a wide range of chemical compounds. It is stated in the research of the European Commission, that it is possible to obtain over 150 valuable chemical compounds from wood bark alone (European Commission, 2014). Sustainable forest biomass uses in accordance with biotechnomy principles and their development does not mean the replacement or downgrading of current forms of forest biomass use. Biomass biorefinery is considered as the base of the bioeconomy, which includes biomass transformation in marketable bio-based products (food, feed chemicals, and/or materials) and bioenergy (biofuels, power and/or heat) (IEA Bioenergy, 2016; Budzianowski, 2017).

This factor and others are leading scientists to develop both new innovative products made from biomass and manufacturing technologies for these products. The remaining question is: which of these products is better and is it even possible to mutually compare two different products? Therefore, the authors of this paper have developed a new algorithm for screening methodology, with which it is possible to analyse and

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