



Reviewing natural resources law in the light of bioeconomy: Finnish forest regulations as a case study[☆]

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ABSTRACT

Development of bioeconomy is high on political agendas around the world. As part of bioeconomy policies governments have initiated reviews of the contemporary laws in order to identify and remove potential barriers and address the shortcomings as well as develop new tools to facilitate transition to bioeconomy. This paper discusses the role of natural resources law in bioeconomy and considers the needs for developing legislation to better meet the future challenges. As a concrete case study the article evaluates regulations governing the use of forests in Finland from the perspective of bioeconomy. The paper shows that major deficiencies in regulations governing the use of forests in Finland in developing bioeconomy relate to ecological and social sustainability, resource efficiency, and conflict management. The article concludes that there is a need to increase integration, adaptability, transparency and public participation in Finnish forest regulation to facilitate the transition to and maintain sustainable bioeconomy.

1. Introduction

Bioeconomy, i.e. an economy that is based on utilization of renewable biological resources as a source of raw material for producing energy, goods and services is an emerging policy concept receiving high level of interest around the globe. For instance the Organisation for Economic Cooperation and Development (OECD, 2009) the European Union (EC, 2012) and several EU member states like Germany (Federal Ministry of Food and Agriculture, 2014), Finland (Ministry of employment and the economy, Ministry of Agriculture and Forestry, Ministry of the Environment, 2014 (later on Finnish Bioeconomy Strategy, 2014), and Sweden (VINNOVA, 2012) as well as countries outside Europe including the United States (White House, 2012) have developed policy strategies to support the growth of bioeconomy. The high level of political interest in bioeconomy is based on a number of potential benefits: reduced greenhouse gas emissions, decreased dependence on fossil resources and improved food security. It is also expected that growing bioeconomy sector increases employment (McCormick and Kautto, 2013).

Across various scientific publications, policy documents and comments in recent years, quite different definitions have been used for the term bioeconomy (McCormick and Kautto, 2013). This paper leans on definition adopted by the EU commission in its bioeconomy policy

strategy. Accordingly, bioeconomy “encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy” (EC, 2012, 3). The strategy recognizes agriculture, forestry, fisheries, food, pulp and paper production, as well as parts of chemical, biotechnological and energy industries to be key sectors in bioeconomy (EC, 2012, 3).

While definitions vary, the central idea behind the concept can be identified: in contrast to an economy that is based on utilization of fossil resources, in bioeconomy the services, material, and energy are derived from renewable biological resources. In this respect bioeconomy is nothing new in itself, as before the industrial revolution economies were mainly bio-based (Scarlat et al., 2015).

Nevertheless, transition towards a modern bioeconomy implies major challenges. The switch entails the transformation of conventional industrial processes and products into bio-based processes, the development of industrial biotechnologies, and opening of new markets for bio-based products and services. It has been acknowledged that public policies, including appropriate legislative frameworks, are needed for the transition (e.g. Scarlat et al., 2015; McCormick and Kautto, 2013).

As in the end bioeconomy is about using biomass to produce marketable goods, services and energy, the questions how we regulate the production, management and use of renewable natural resources are of

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crucial importance when moving towards bioeconomy. Therefore it is natural to approach the issue of transition to bioeconomy from the perspective of natural resources law.

Due to the scarcity of natural resources and their significance in national economies, the use of natural resources has been promoted and regulated for a long time through legislation and there are comprehensive regulatory regimes in place for regulating different natural resource uses. On one hand these contemporary, often sector specific regulatory frameworks, such as for agriculture, fisheries, forestry and water management, already include elements capable of sustaining the development of bioeconomy. On the other hand, transition to modern bioeconomy implies vast socio-technical change raising new challenges and concerns (and intensifies some of the old ones) and therefore questions about the adequacy of these contemporary regulations to facilitate and sustain bioeconomy have been raised (e.g. Endres, 2013; Borgström and Mauerhofer, 2016).

Public policies to support bioeconomy are currently being developed. As part of bioeconomy policies governments have initiated reviews of the contemporary laws in order to identify and remove potential barriers and addressing the shortcomings as well as developing new tools to facilitate transition to bioeconomy (e.g. Finnish Bioeconomy Strategy, 2014). Yet legal scholars have paid surprisingly little attention to the connections between law and bioeconomy. This paper aims to contribute to the thus far limited literature on the role of law in developing bioeconomy and to help law and policy makers to establish sound regulator frameworks at this important early stage of developing bioeconomy policies. The article focuses on analysing the role of natural resources law in bioeconomy and as a concrete case study assesses regulations governing the use of forests in Finland from the perspective of bioeconomy. The analysis covers both private and publicly owned forests. The scope of the analysis is limited on regulations governing the management and use of forests, but some observations are also made related to the use of extracted forest biomass, such as an issue of resource efficiency. This is to indicate how the sustainability challenges related to the bioeconomy calls for natural resources law to develop towards more holistic direction and to stretch beyond its traditional functions. The focus is on legal regulation, but where relevant, attention is also paid to non-legally binding soft law instruments such as strategies, programs and plans. Also economic instruments like state subsidies and taxation are included in the assessment. The assessment leans on the previous work, where we have developed analytical tools for assessing and developing regulatory systems for bioeconomy (Borgström and Mauerhofer, 2016). However, for this study the assessment criteria have been slightly modified to match the specific challenges related to the development of natural resources law in the context of bioeconomy. While the assessment focuses on forest sector in particular the aim of this study is also to contribute to the overall discussion on the future of the natural resources law in the modern bioeconomy.

The article is structured as follows. The Article starts by building a framework for assessing natural resources law in the context of bioeconomy in Section 2. The section first discusses the features towards which development of bioeconomy challenge natural resources laws to be developed and concludes by proposing a framework for assessing and developing natural resources laws for the bioeconomy. The framework was utilized in the assessment of the contemporary laws regulating the use of forests in Finland. Section three presents the key findings of this assessment. Section four provides conclusions.

2. Assessing natural resources law in the light of bioeconomy

2.1. Natural resources law in the era of bioeconomy: new directions

Just like other legal fields, also natural resources law has its own starting points, historical roots and principles that separate it from other fields of environmental regulation. As an example, the key

environmental law principles such as precautionary principle and polluter pays principle are not to the same extent the starting points for natural resources law as they are for pollution control or nature conservation law (Määttä, 2013).

From the perspective of developing bioeconomy some of the characteristics and historical starting points of natural resources law seem out-dated. Therefore, in addition to the moderate development of rules at the surface level of law, such as introducing new sustainability standards, responding to the challenges of modern bioeconomy may imply more fundamental changes in regulatory structures, objectives and principles of natural resource law. In this regard strengthening the role of certain functions of natural resources law, increasing integration, adaptability and public participation and transparency have been identified as important directions towards which development of bioeconomy challenges natural resources law to be developed (Borgström and Mauerhofer, 2016, Määttä, 2013). In the following these issues are discussed in more detail.

2.2. Key functions of natural resources law in the era of bioeconomy

In the previous research we have identified five key issues and concerns that call for regulatory intervention in developing bioeconomy (Borgström and Mauerhofer, 2016) These include:

- Supporting and facilitating bioeconomy markets and innovations
- Managing increased competition between different uses of biological resources
- Securing sustainability of production, management and use of biomass
- Managing health and environmental risks related to the development and utilization of new technologies
- Increasing resource efficiency

Addressing the above mentioned issues is not merely an issue of natural resources law and some of them seem to fall beyond the “traditional functions” of natural resource law. According to Freyfogle “Natural resources law performs three basic functions: it specifies the parts of nature that can be owned and the basic terms of use rights, it facilitates resource-related transactions, and it provides mechanisms to coordinate uses and resolve inevitable disputes” (Freyfogle, 2011, 396). However, natural resources law has a key role to play in responding to those challenges and development of bioeconomy also challenges natural resources law to develop and broaden its objectives to cover new areas such as resource efficiency (Määttä, 2013, Similä, 2016).

While facilitating bioeconomy markets through regulatory instruments that create demand for bio-based energy, goods and services falls mostly within other policy sectors and laws such as those regulating the public procurement, building standards etc., also natural resources law has significance in facilitating the natural resource related transactions and making sure that the markets function well. First of all natural resources law specifies the parts of nature that can be owned and defines the basic use rights (Freyfogle, 2011, 396). In this regard development of bioeconomy with the associated innovations in utilizing alternative biomasses, which have previously been regarded valueless, raises interesting legal questions related to the property and use rights. For instance who has right to use seaweed in the offshore? Also the questions about rights to use biomasses in other's lands are important in developing bioeconomy markets.

Furthermore, natural resources law has also relevance in regulating raw material markets after the resource has been separated from the nature. In general, the starting point is freedom of contract and it is mostly the law of property that is applied (Kokko, 2012). However, natural resources laws have also been used to limit and support the functioning of the resource markets. For instance in Finland the Forest Act (1093/1996) amongst others defines the obligations for forest

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