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# Co-production of forestry science and society: Evolving interpretations of economic sustainability in Finnish forestry textbooks



Teijo Rytteri<sup>a,\*</sup>, Taru Peltola<sup>b</sup>, Leena A. Leskinen<sup>c</sup>

<sup>a</sup> Department of Geographical and Historical Studies, University of Eastern Finland, PL 111, 80101 Joensuu, Finland

<sup>b</sup> Université Grenoble Alpes - Irstea - UR DTM, 2 rue de la Papeterie – BP 76, 38 402 Saint-Martin-d'Hères cedex, France and Finnish Environment Institute, PL 101, 80101 Joensuu, Finland

<sup>c</sup> School of Forest Sciences, University of Eastern Finland, PL 111, 80101 Joensuu, Finland

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### ABSTRACT

In this article, we explore how forestry scientists have promoted and defended particular definitions of economic sustainability as a response to socio-economic challenges. Drawing on an analysis of Finnish forestry textbooks, we discuss the evolving conceptualizations in terms of co-production of scientific ideas and social orders. We argue that to fully understand what economic sustainability means in forestry one has to analyze the choices and preferences concerning the components of scientific ideas, and to identify links between these choices and the evolving societal discourses, social norms, rules of authority, power relations and partnerships, as well as historical events.

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### Introduction

“The concept of sustainability is already theoretically ambiguous to some extent. In practice, it is even more difficult to define” (Lihtonen, 1959; p. 15).

Studies on sustainability have demonstrated that many principles striving towards the sustainable use of forest resources were already formulated during the Middle Ages driven by concern about

\* Corresponding author. Tel.: +358 50 347 3964.

E-mail address: [teijo.rytteri@uef.fi](mailto:teijo.rytteri@uef.fi) (T. Rytteri).

overconsumption (Radkau, 2012; Grober, 2012; Wiersum et al., 2013). Definitions of sustainability have also been subject to historical change since the beginning of scientific forestry (Wiersum, 1995; Hölzl, 2010). For example, in the United States, the meaning of sustainability has been reported to have changed a number of times during the 20th century (Parry et al., 1983).

Modern ideas of sustainable forest use aim to integrate economic, social, cultural and ecological aspects of sustainability (e.g., Wiersum, 1995). This may increase the confusion about its contents. Being one of the most popular and commonly used terms in environmental and economic debates, sustainability is also among the fuzziest and most ambiguous (Detten, 2011); definitions are innumerable (e.g., Grober, 2012; Spindler, 2013).

Even if we leave socio-cultural and ecological aspects aside and focus on interpretations of economic sustainability, we can still observe the multiplicity of framings involved (e.g., Söderbaum, 2011). American foresters in the 1930s were already well aware that the definition of sustained yield in forestry depended on the spatial and temporal scales applied, as well as the type of forest crop utilized (e.g., Hall, 1933; Wackerman, 1937).

Our aim in this article is to thoroughly explore why and how forestry's definitions of economic sustainability multiply and change. We start from the premise that understanding sustainability depends on the internal logics of forestry science, but at the same time scientific ideas are always framed by social, political and economic interests (Hölzl, 2010). Hence, the article contributes to the discussion about socio-economics in forestry which Schlüter and Detten (2011; p. 325) define as a research program "which focuses on analysis of the social interactions behind forest management practices."

Our analysis of the socio-economics of sustainable forestry focuses on the interpretations of economic sustainability in Finnish forestry textbooks since the mid-19th century. Previous historical analysis of this evolving concept (Rytteri and Leskinen, 2012) highlights how internationally prominent scientific ideas of economic sustainability were, in practice, modified according to societal developments in a national context. Consequently, the resource use challenges in national forestry policy were also framed accordingly. In this article, we extend the historical analysis by discussing the contextuality of sustainability (see Detten, 2011) in relation to the idea of co-production of scientific truths and social orders, developed in social studies of science and technology (Jasanoff, 2004). We deconstruct the idea of economic sustainability as a policy imperative and explain which choices and concerns have led to the adoption of particular interpretations of economic sustainability—and which preferences have been at stake when dominant definitions have changed. We argue that such a view is critical to understanding the hidden politics inherent in conceptualizations of the economic practices of forestry.

### Co-production of economic sustainability and society

Science study scholars have argued that science is not an autonomous way of knowing but a social practice like any other form of knowing. The generation of new knowledge is affected by the social, spatial and temporal contexts in which the practices of knowing are embedded (see Fortmann and Ballard, 2011). Studying the role of science in modern democracies, Sheila Jasanoff argues that "much that we claim to know [...] comes bundled up with histories of specific cultures and places" (Jasanoff, 2010; p. 249). This also applies to the concept of sustainability which is always both scientific and historical, as well as political and economic (Sample and Sedjo, 1996; Hölzl, 2010). Hence, the contents and definitions of economic sustainability should always be scrutinized as embedded within the historical context in which they appear. This implies that scientific ideas, such as sustainability, are subject to evaluation and gain their authority through social processes.

Jasanoff's (2004) notion of the co-production of science and social orders is meant to call analytic attention to the ways scientific ideas gain legitimacy in society. Co-production refers to the historical and institutional evolution of scientific ideas and society (Wesselink et al., 2013). It differs from those approaches that focus on participatory or community knowledge production (Landström et al., 2011; Jonsson and Wilk, 2014; Fortmann and Ballard, 2011). The historical and institutional perspective of co-production explains "how authoritative technical knowledge is produced in society and gets stabilized and institutionalized over time, so that it becomes a 'given' or 'taken for granted truth'" (Corburn, 2007; p. 152).

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