

Renewal of manufacturing towards sustainable circular bioeconomy: Analysis of new business models from a transitions perspective

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SUMMARY

Renewal of manufacturing has arisen as a particular innovation policy goal in some Western countries due to a declining and globally relocating manufacturing industry. Previously industrial renewal has been discussed particularly in the context of regional restructuring, while we take a broader outlook through linking renewal to circular economy in the context of globalised business models and product value chains. Our aim is to examine novel business models as part of renewal of manufacturing in the context of circular economy transitions. Empirically, the study analyses the renewal of forest-based industries towards a circular bioeconomy in Finland and Sweden. Specific attention is paid to the role of incumbents in forming new business models for circular economy by utilising concepts of path dependence and path renewal.

EXTENDED ABSTRACT

Renewal of manufacturing has arisen as a particular innovation policy goal in some Western countries due to a declining and globally relocating manufacturing industry. Previously industrial renewal has been discussed particularly in the context of regional restructuring (Coenen et al., 2013; Karlsen and Dale, 2014), while we take a broader outlook through linking renewal to circular economy in the context of globalised business models and product value chains. Recently, calls for circular economy have been made by the European Commission (2014) as the environmental problems associated with current systems of production and consumption prevail. Moreover, for example, China has adopted circular economy as the key premise of its national policy on sustainable development (Geng et al., 2012). A circular economy refers to closing material and resource loops reducing pressure on virgin natural resources by extending the use time of products, their parts and materials, decreasing the amount of energy use and pollution from the production of new products, and cutting production and post-consumer volumes of waste. In an ideal case, new business models and product-service value chains could jointly renew manufacturing making it more competitive and support efforts towards circular economy.

This paper examines the renewal of forest-based industries in Finland and Sweden towards circular bioeconomy. It addresses the following research questions: What aspects of circular economy oriented renewal can be detected in novel business models and value chains of Finnish and Swedish incumbents operating in the context of bioeconomy? What are the current best practices in business models and value creation, and what is their value for renewal? What elements in industrial renewal in the studied cases support transition towards circular bioeconomy and what elements hinder it? Best practices for enhancing circular bioeconomy can be found from many areas, including, for example: manufacturing of multiple end-products in an optimised way, utilising synergies between various processes on a given industrial site, sharing resources with the neighbouring community. Additionally, an efficient management of value chains from raw materials to final products and their recycling, or employing service- and solution-based business models are areas promoting circular economy.

The empirical analysis carried out will comprise a qualitative scoping exercise followed by selected case studies of novel business models contributing to circular bioeconomy (with particular attention on the renewal of forest-based industries). The scoping exercise is carried out to get an overview of the current situation of the bio-based manufacturing in Finland and Sweden, to learn about research and knowledge centres, applications, products and services, actors, networks, existing and expected business models and value chains as well as their economic, environmental, and social benefits. We will utilise web search, newspapers, report reading and conference/seminar observations. More detailed case studies are conducted to understand how manufacturing is already being renewed and the impacts of this renewal for the economic situation of the companies and the society at large, especially for the transition towards circular bioeconomy. The selected cases will pay attention to drivers, networks, barriers,

markets and business models through interviews, conference observation, dedicated information material, evaluations and specific reports on the issues related to the selected case studies.

In studying renewal, we take incumbent actors as a starting point, while cooperation between both new entrants and incumbents is examined in connection to renewal processes. Incumbent firms are traditionally considered poor in developing and managing new technologies (e.g. Dyerson and Pilkington, 2005) and especially new business models (Chesbrough and Rosenbloom, 2002; Chesbrough, 2010) compared to new entrants, who do not suffer from inertia and path dependence. Yet incumbent firms have recently been found to have a more important role in renewal than previously considered. Incumbents have better resources (Hockerts and Wüstenhagen, 2010), legitimacy and access to networks e.g. in the supply chain, research and development (Dyerson and Pilkington, 2005) and the possibility to expand their existing competencies through so called “creative accumulation” (Bergek et al., 2013). It seems that when facing radical changes, only some incumbents survive and prosper. The role of incumbents in processes potentially contributing to circular economy transitions is of interest in this paper. Finally, building on recent openings in sustainability transitions research on path renewal (Coenen et al., 2013) and linking that to the more seminar concept of path dependence (e.g. Arthur, 1994; Sydow et al., 2009; 2013), we examine whether the renewal of manufacturing so far can be defined as a transition towards circular economy – what elements support a transition and what hinder it.

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