



CRS, CENTRE FOR RESEARCH
ON SUSTAINABLE SOCIETAL
TRANSFORMATION

TRANSFORMATIVE REGIONAL INDUSTRIAL CHANGE: CHANGING ROLES OF ACTORS IN REGIONAL DEVELOPMENT

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Grand societal challenges – a changing context for innovation

Grand challenges such as climate change shift focus away from innovations and innovation policy as engines of economic growth towards simultaneously fulfilling societal goals. They constitute challenges that are global in nature; their realisation, however, depends on action and change in local and regional contexts.

During the past two decades, the concept of regional innovation systems (RIS) has been prominently used as an analytical framework to highlight the importance of the regional level for innovation. Furthermore, it has been used as a policy tool for supporting and stimulating innovation processes.¹ The regional level is considered of particularly high importance as short geographical distances facilitate trust, knowledge exchange, and interactive learning processes between firms, authorities, and the knowledge infrastructure such as universities and research institutes.² The changing focus which grand societal challenges imply for innovation, however, implicates a rethinking of the concept of regional innovation systems as it now stands. Among other things, grand challenges alter the roles that involved actors need to play in order to put innovation into practice. Furthermore, to contribute solutions to grand societal challenges new actors need to become involved in regional innovation systems.

About the project:

This policy brief reports back from social science research within the project Paper Province 2.0. - A large-scale demonstrator of forest-based bio economy, phase 2. Paper province 2.0 is a ten-year Vinnväxt initiative, led by the cluster organisation Paper Province. The aim is to create sustainable growth by developing internationally competitive and attractive research and innovation environments in the region. In conjunction with regional clusters and other private and public research efforts, Paper Province aims at building a large-scale demonstrator to show how bioeconomy works in practice.

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Project period: 2017-2019

Building a forest-based bioeconomy in Värmland

This policy brief focuses on innovation actors at the regional level and the roles that they take on during transformative change. Transformative change targets changes in the directionality of innovation and economic development for addressing societal challenges. The brief is based on research conducted within the VINNOVA initiative “Paper Province 2.0” in Värmland, where regional innovation system actors, with partial VINNOVA funding, work to build a bioeconomy around the traditional regional forest-related industries. During the past two decades, the regional industry has gone from a narrow focus on a few incumbent pulp mills towards building a regional innovation system around a large number of forest-related branches, intending to increase the value added from forest raw materials. Thereby, the notion of a sustainable forest-based bioeconomy refers to the production and use of forest resources and their conversion into an increasing number of products and energy solutions.³ It builds on the principle to use every tree as efficiently as possible by making use of side streams: Waste from one process is used as resource in another, optimally creating circular resource flows between different production processes. The development of a bioeconomy is considered key in addressing grand societal challenges⁴; particularly as biomass currently constitutes the only renewable resource for the production of liquid fuels and materials such as plastics and chemicals.

Traditional actor roles in regional innovation

Regional innovation is considered as an interactive learning process in which knowledge is considered the most important resource, and in which different actors are associated with specific roles. Firms are most strongly associated with innovating, that is introducing novelties in the form of products, services or processes on the market. To do so, they exploit knowledge in the innovation system.⁵ Institutes of higher education, such as universities, research institutes, and laboratories carry out research and are crucial for knowledge input in the innovation system, for the public as well as private sector.⁶ Moreover, universities also take on roles in providing higher education and are crucial for competence building through providing skills and training.⁷ Cluster organisations stimulate innovation through advancing local collaboration and learning processes, technological knowledge spillovers, and the creation of localised forms of knowledge.⁸ However, contributions to innovation systems as they now stand mainly focus on the combination and re-combination of technological knowledge between firms, industry and research.⁹

New actor roles in the context of transformative change

Empirical evidence from Värmland shows that in order to cope with grand challenges, innovation actors need to take on a broader perspective on the industry as embedded in its overall

societal context. Primarily, the cluster organisation Paper Province, the regional authority Region Värmland, and Karlstad University have been investigated. While the conventional roles for innovation-based regional development remain, transformative regional development broadens the spectrum of roles that actors need to carry out.

The case of Värmland illustrates that regional actors, particularly regional authorities, take on a new role in influencing the direction of search; that is in actively creating incentives for actors to commit themselves to transformative change. For example, through setting up an industry-spanning innovation policy through the development of the regional smart specialisation strategy “Värmland’s Research and Innovation Strategy for Smart Specialisation 2015-2020” (VRIS3).¹⁰ Six specialisations were identified, of which a forest-based Bioeconomy has the highest priority. Value-Creating Services is seen as a transverse specialisation cutting across the other five. In close interrelationship, all actors involved in regional innovation take new action with regard to influencing the public opinion regarding transformative change. Cluster organisations that generally represent the industry’s interests take new roles in influencing the orientation of companies towards committing themselves to societal challenges. Regional actors become knowledgeable entrepreneurs who try to break both with established routines and with technological paradigms¹¹, for example by targeting the social acceptance of change. In a similar way, regional actors take new (and so far undiscussed) roles in market creation for products and processes. It is closely interlinked with the understanding that transformative industrial change does not end at the regional boundaries. Engaging in supra-regional policy impact activities becomes increasingly important. In the course of transformative change, the role of universities in providing knowledge and competences broadens towards an increasing importance of social science-related research.

Implications for regional innovation systems

Grand societal challenges require viewing regional innovation systems as embedded into a broader socio-technical context in which innovation activities evolve (see figure 1). They affect the roles that actors take in innovation in that they broaden the spectrum from a narrow view on economic growth towards considering overall societal developments. Important novel roles target influencing the directionality of innovation and industrial development through creating incentives for actors to transform, through creating social acceptance and legitimacy; and through actively engaging in the formation of new markets. In a closely related manner, the involvement of the civil society as a group of actors in (regional) innovation is becoming increasingly important¹²; also implying a growing significance of non-technological knowledge for innovation. A changing perspective on grand challenges however also reveals that transformative change can hardly be achieved within the regional context only. Rather, transformative change is dependent on industrial and societal change across multiple geographical scales and policy levels. Therefore, there is an increasing need for regional innovation system actors to engage in supra-regional policy impact activities.

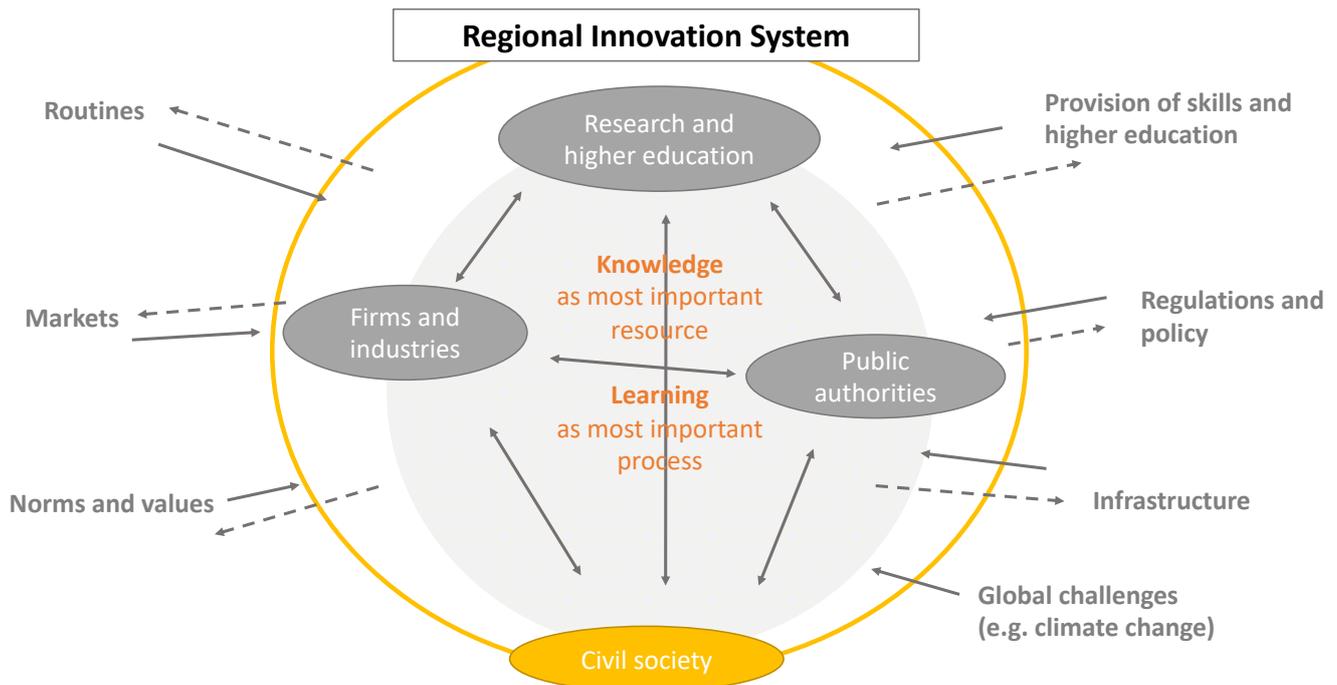


Figure 1: Regional Innovation Systems and their embedding into the broader societal context

Source: Own figure, inspired by readings on regional innovation systems, quadruple helix and socio-technical transitions (e.g. Asheim and Gertler, 2005; Asheim et al., 2019; Grundel and Dahlström, 2016; Geels, 2002)

References:

- ¹ Asheim B, Boschma R and Cooke P (2011) Constructing Regional Advantage: Platform Policies on Related Variety and Differentiated Knowledge Bases. *Regional Studies* 45(7): 893-904.
- ² Asheim BT, Isaksen A and Trippi M (2019) *Advanced Introduction to Regional Innovation Systems*, Cheltenham: Edward Elgar.
- ³ Bugge M, Hansen T and Klitkou A (2016) What is the Bioeconomy? A review of the Literature. *Sustainability* 8(7), 691.
- ⁴ European Commission (2012) *Innovating for Sustainable Growth. A Bioeconomy for Europe*. Brussels: European Union; European Commission (2016) *Mapping of EU Member States' regions' Research and Innovation plans & Strategies for Smart Specialisation (RIS3) on Bioeconomy. Case Study Report, Värmland, Sweden*
- ⁵ Autio E, (1998) Evaluation of RTD in regional systems of innovation, *European Planning Studies*, 6(2):131-140.
- ⁶ Trippi M, Sinovic, T and Lawton Smith, H (2015) The Role of Universities in Regional Development: Conceptual Models and Policy Institutions in the UK, Sweden and Austria, *European Planning Studies*, 23(9): 1722-1740.
- ⁷ Doloreux D (2002) What we should know about regional systems of innovation, *Technology in Society*, 24(3): 243-263.
- ⁸ Isaksen A (2011) Cluster Evolution. In: Cooke et al. (Eds) *Handbook of Regional Innovation and Growth*. Edward Elgar: Cheltenham.; Skålholt, A. and Thune, T. (2014) Coping with economic crises – the role of clusters. *European Planning Studies* 22(10), 1993-2010.
- ⁹ Martin H (2016) Innovation for tackling grand challenges. *Cleantech industry dynamics and regional context*. Lund University, Lund.
- ¹⁰ Region Värmland (2015) "Värmland's Research and Innovation Strategy for Smart Specialization 2015-2020"
- ¹¹ Simmie J (2012) Path Dependence and New Technological Path Creation in the Danish Wind Power Industry. *European Planning Studies* 20(5): 753-772; Isaksen A and Jakobsen S-E (2017) New path development between innovation systems and individual actors. *European Planning Studies* 25, 355-370; Grillitsch M and Sotarauta M(2018) *Regional Growth Paths: From Structure to Agency and Back*, Papers in innovation Studies, Paper no. 2018/01. CIRCLE, Lund.
- ¹² Grundel I and Dahlström M (2016) A Quadruple and Quintuple Helix Approach to Regional Innovation Systems in the Transformation to a Forestry-Based Bioeconomy. *Journal of the Knowledge Economy* 7(4): 963-983.

References figure:

- Asheim BT and Gertler M (2005): *The Geography of Innovation: Regional Innovation Systems*. In: Fagerberg J, Mowery D and Nelson R (eds) *The Oxford Handbook of Innovation*. Oxford: Oxford University Press, pp. 291-317.
- Asheim BT, Isaksen A and Trippi M (2019) *Advanced Introduction to Regional Innovation Systems*, Cheltenham: Edward Elgar.
- Geels FW (2002) Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy* 31(8-9): 1257-1274.
- Grundel I and Dahlström M (2016) A Quadruple and Quintuple Helix Approach to Regional Innovation Systems in the Transformation to a Forestry-Based Bioeconomy. *Journal of the Knowledge Economy* 7(4): 963-983.



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Centre for Research on Sustainable Societal Transformation (CRS)

The Centre for Research on Sustainable Societal Transformation at Karlstad University conducts multidisciplinary research on current and historical trends as well as future challenges. Our researchers work collaboratively across local, regional, national and international issues, and aim to contribute new research results and methods to the field of sustainable development and a range of other societal challenges.

CRS is an inclusive center that unites researchers from many different areas and with different approaches, which fosters a dynamic research environment. Some of the research questions in which our researchers are engaged include: How can we jointly use all the forest's resources in a sustainable way? How does digitization affect tourism and the development of visitor destinations? How is the day-to-day life of a family affected when moving from the big city to an urban area? How can we learn from local and historical knowledge for a sustainable future? These are just some of the issues within CRS's broad research fields.

CRS also runs a graduate school for doctoral students from a variety of disciplines. In addition to offering PhD-level courses, doctoral students are offered activities such as seminars and workshops, often with a special focus, such as academic writing or career opportunities after graduation.

In addition to research projects and postgraduate programs, CRS regularly organizes writing workshops, seminars and networking breakfasts to promote academic writing, research communication and networking.

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