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Implementing smart specialisation roadmaps in Lithuania: Lost in translation?

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ABSTRACT

The study of Future-Oriented Technology Analysis (FTA) and how they translate into policy decisions and practice has gained pace in the last decade. In this paper, we present a case study on the application of FTA methods for entrepreneurial discovery and the design of S3 policy mixes in Lithuania, where a three-staged FTA process was adopted for defining the country's smart specialisation (S3) priorities and their implementation strategies. We unpack the methodological assumptions underpinning the process and show how the design of the policy mixes in the roadmaps moved away from proposed guidelines. Focusing on the last stage which involved the development of roadmaps for the implementation of selected S3 priorities, our study suggests that the participatory FTA approach encouraged joint ownership of the selected priorities, fostered trans-sectoral dialogue, and entrepreneurial learning. Through the reflective gaze of three alternative scenarios and the broad outlooks of the implementation of the S3 roadmaps, evaluation and key learnings from the project are presented.

1. Introduction

Smart Specialisation strategy (S3) is an economic transformation agenda aimed at increasing a country's competitiveness by prioritizing smart, sustainable and inclusive growth in specialized industrial and service domains. As a place-based economic transformation agenda (S3) is explicitly aimed at strengthening regional innovation systems by concentrating resources in innovation and linking them to specific sectors and market niches (Wyrwa, 2014; European Commission, 2010; Foray, 2012). The ultimate objective of S3 is to diffuse knowledge regarding the value of a new activity for future specialisation in order to generate collective emulation and imitative entry into the new domain. In this regard, the policy instruments driving this strategy involve various types of public–private partnerships, ranging from direct public funding of entrepreneurial projects to collaborations between national laboratories, firms and government scientists. What distinguishes S3 from traditional industrial and innovation policies is its emphasis on entrepreneurial discovery – a bottom-up collective reflection process that gives a pivotal role to market forces and private stakeholders in discovering information about new activities and translating specialisation strategies into economic and social outcomes (Ahlqvist et al., 2012; OECD, 2013).

Emphasizing the identification of potential domains of specialisation that might be beneficial for the country given its existing productive assets (Foray, 2011), the entrepreneurial discovery process as an organizing logic, we argue, does not only provide opportunities and potentialities for the system to generate experiments and successful discoveries. It also facilitates imitative entry: when the initial experiment and discovery are successful and diffused, disparate agents are likely to be induced to shift their investments away from old domain to promising new domains of the future. Among the plethora of futures methodologies, the Future-Oriented Technology Analysis (FTA) has been identified as a potential instrument that could drive the entrepreneurial discovery process because it encourages trans-sectoral dialogue and learning, and helps to distil measurable outputs from public–private partnerships.

Herein, we evaluate the potential of FTA as a method for entrepreneurial discovery process and the design of S3 policy mixes. Our empirical focus is the Lithuanian national foresight project where a three-staged FTA process was adopted for defining S3 priorities and their implementation strategies. The European Union in its effort to develop an inclusive European economy has adopted smart specialisation as a flagship policy aimed at encouraging member states to enhance their innovativeness and competitiveness by focusing their endogenous potential in specific sectors and industries (Foray et al., 2011; Wyrwa, 2014). Having a national smart specialisation strategy has become an ex ante conditionality for nation states to access the EU Structural funds from 2014 to 2020 (EU 2010). In meeting this demand, the Lithuanian Ministry of Education and Science launched the process of identifying Lithuania's S3 priorities. The expert discussions and emerging roadmaps were to be fed into specific R&I policy mixes to implement the priority areas to be funded by the EU Structural Funds from 2015 to 2020. These roadmaps are expected to become the basis for thematic research and industrial (R&I) priority development programmes. In addition, the exercise in itself was expected to spark and contribute to the development of innovative triadic

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partnerships between universities, industries and government to identify of opportunities for innovation in emerging technologies. Furthermore, the R&I priorities identified by the expert panels need not only to be consistent with Lithuania's national innovation strategies. They were to be shared by all parties involved in their implementation. The overall process and key underlying assumptions have been described in detail by Paliokaitė et al. (2015). Specifically, we focus on the last stage – developing roadmaps for the implementation of selected S3 priorities. In the case of Lithuania, we define S3 roadmaps as heuristic guidelines used for the implementation of specific S3 priority over 2014–2020.

The key focus of this paper is how bottom-up FTA translates into policy decisions. Any FTA process is not just knowledge-generating, but often vision-building and direction-setting process (Daheim and Gereon Uerz, 2008). Value is created, when FTA insights are turned into action and results, such as enhanced reaction to opportunities and threats, new strategies, successful innovations or behavioral change of the innovation system actors. However, literature suggests that effectiveness of project-based foresight exercises remains low in practice. FTA research is so far primarily driven by the aim to identify successful methods and processes. Only a few empirical studies have studied the effectiveness of FTA. The case study analysed in this paper responds to this gap. The research objectives are twofold: firstly, to present the methodological approach adopted for designing smart specialisation roadmaps in Lithuania, thus showing the potential of this method for entrepreneurial discovery, and secondly, to discuss the key learnings, focusing on the specific factors and risks that affected the quality of final result as well as possible implications for future implementation and governance.

The paper unfolds as follows: First, we review literature on FTA and roadmaps as well as governance context related to their implementation. Following this is the methodological approach. We close with an evaluation of the process and its implications for policy.

2. Bottom-up FTA, roadmaps and participative decision making

Future-oriented technology analysis is an umbrella term used to describe overlapping futures methodologies used to analyse the potential impacts and consequences of technologies (Cagnin, et al., 2013; TFAMWG, 2004; Johnston, 2008; Carabias-Hutter and Haegeman, 2013). These methodologies range from strategic foresight, forecasting, technology assessment, and cumulatively provide policy makers the potential to understand emerging futures and designing forward-looking policies (Ahlqvist et al., 2012; Cagnin et al., 2012). Among the plethora of methods frequently combined in FTAs include Future workshops (Müllert and Jungk, 1987), Delphi (Gordon and Pease, 2006; Kanama et al., 2008), a survey for collective cooperation and convergence of differential viewpoints on 'what should be done from now on', and scenario development and analysis (Bishop et al., 2007), which provide a forum for discussion of potential technological, social, political events with direct implications on potential smart specialisations. FTA's and roadmaps have been used to create idealized visions and concepts and to encourage collaboration and cooperation among various institutional spheres and stakeholders. In addition, they have been employed in developing governance structures for emerging technologies and disruptive transformations (Shaper-Rinkel, 2013). As an integrative approach to developing and shaping the understanding of emerging technologies in foresight exercises, Carabias-Hutter and Haegeman (2013, p.58) argue that FTA 'does not only provide approaches and methods about scanning issues that can be measured (i.e. trends), but also indicate to policy-making that those future issues are seldom considered in policy design but must be tackled today if we are to develop our societies in sustainable ways'. Thus, FTA facilitate experimentation and learning in ways that orient innovation systems to be adaptive, and enable government and actors to create spaces for new market formation (Cagnin et al., 2012). Applied to smart specialisation projects aimed at developing the economic potential of nations, regions and states, FTAs are frequently employed to generate and develop robust technology and innovation agendas capable of developing an inclusive economy (Cooke, 2001; Carabias et al., 2012). In what we refer to as a bottom-up approach to FTA, emphasis is placed not just on the identification of gaps, opportunities and customizing areas of high potential promise, but also how to accelerate the transfer of emerging knowledge and technologies to selected priority areas (Shaper-Rinkel, 2013). The strength of the bottom-up FTA in the development of smart specialisation strategies, we argue, lies in its entrepreneurial approach in mobilizing the differential visions and perspectives of both experts and end-users in identifying and mapping potential convergence of technologies and areas of future innovation (Georghiou and Harper, 2013; Haegeman et al., 2013). In combining outputs from methods that have matured separately, FTA serve as a public policy modelling tool used in exploiting the structural and temporal relations between government, policy makers, industry leaders, and experts in producing judgement about innovations and smart specialisation priorities.

Outcomes of the FTA exercise are frequently used to guide the roadmapping process – the identification, evaluation and selection of strategic pathways to achieving S3 priorities. Conceptual roadmaps which consist of nodes and links are used in showcasing the relationship and convergence between S&T and their applications, and how they could potentially deliver S3 objectives. Thus, roadmaps refer to multi-layered and time-based charts showing alternative and competing development pathways identified and agreed upon by experts and decision makers as having the potential to lead to a set of possibilities in the near future (Probert and Radnor, 2003; Saritas and Oner, 2004; Yasunaga et al., 2009). Garcia and Bray (1998) unpacked three categories of roadmaps: emerging technology roadmaps, issue-oriented roadmaps, and product technology roadmaps. They go further to identify three fundamental benefits of roadmapping. These include consensus building among decision makers about a set technology management, science, and research policy needs, developing target or priority areas, and a framework for coordinating the efforts of different stakeholders. In general, roadmaps provide a mechanism to coordinate the activities and resources of all institutions and other stakeholders to plan, manage, review, and transition to the S3 priorities (Kostoff and Schaller, 2001; Rinne, 2004).

The above-discussed stream of FTA literature sees roadmaps as the interaction between the way actors in the innovation system simultaneously construe and are constrained by the temporal structures that are both enacted and changed through practice (Cunha, 2004). This pro-active ('shape the future') than reactive approach relates to the concept of 'open' ('collaborative', 'participative') FTA (Daheim and Gereon Uerz, 2008). The role of FTA in facilitating societal interactions and knowledge transfer (Mode 2 and Mode 3 of knowledge creation) within the innovation systems is critical as it supports the processes of a mutual cross-learning (Carayannis and Campbell, 2009) and leads to the emergence of effective triple, quadruple or quintuple helixes – cooperation systems of knowledge, know-how, and innovation for more sustainable development (Carayannis and Campbell, 2010).

While roadmaps communicate the vision of normative futures (Rinne, 2004), how they translate into policy decisions and inform national foresight programs remains unclear. The literature illuminates many recommendations on how to manage discontinuous change by cultivating forward-looking methods and processes, especially by implementing project-based FTA exercises carefully facilitated by external consultants. However, although sensing and anticipating are not particularly difficult, building an organisational structure that facilitates an effective response to change can be challenging (Rohrbeck and Gemünden, 2011; Weber, 2012). Empirical research based on case studies and surveys confirm that, despite the perceived importance of strategic FTA (Daheim and Gereon Uerz, 2008; Rohrbeck, 2010) the implementation of institutionalised FTA systems and links between FTA results and implementation of effective strategic response is limited (Rohrbeck, 2010). The results of one-off FTA exercises are not always implemented in practice. One possible explanation for this persistent