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Policy capacities for new regional industrial path development – The case of new media and biogas in southern Sweden

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Policy capacities for new regional industrial path development – The case of new media and biogas in southern Sweden

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Abstract Over the past few years, a growing body of work in economic geography and innovation studies has enhanced our understanding of forms and determinants of regional industrial path development. The importance of policy, however, has received limited attention and accordingly, the role of policy for the emergence and development of new regional industrial growth paths remains largely unexplored. This paper takes an institutional perspective and suggests that the regional innovation system (RIS) approach can contribute to conceptualizing and analysing the role of policy for new regional industrial path development. We argue that in order to turn regional preconditions into new growth paths, RIS require strong policy capacities, consisting of formal and governance capacities. In the empirical part, we analyse the emergence and further development of two new growth paths in the region of Scania in southern Sweden, namely biogas and new media. Based on personal interviews with policy makers, representatives from knowledge and supporting organizations and firms as well as a document analysis, we investigate how policy interventions have influenced the rise and evolution of these two industries. We show that in both cases policy-led initiatives have played an important role in enabling new path development. We find that policy can play multiple roles in nurturing and maintaining new growth paths and that these are closely interlinked with particular policy capacities of RIS.

Keywords: new path development; regional policy; regional innovation system; capacity building

JEL-Codes: O10; O30; O38; R11; R58

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Over the past few years, a growing body of work in economic geography and innovation studies has enhanced our understanding of forms and determinants of regional industrial path development. The importance of policy, however, has received limited attention and accordingly, the role of policy for the emergence and development of new regional industrial growth paths remains largely unexplored. This paper takes an institutional perspective and suggests that the regional innovation system (RIS) approach can contribute to conceptualizing and analysing the role of policy for new regional industrial path development. We argue that in order to turn regional preconditions into new growth paths, RIS require strong policy capacities, consisting of formal and governance capacities. In the empirical part, we analyse the emergence and further development of two new growth paths in the region of Scania in southern Sweden, namely biogas and new media. Based on personal interviews with policy makers, representatives from knowledge and supporting organizations and firms as well as a document analysis, we investigate how policy interventions have influenced the rise and evolution of these two industries. We show that in both cases policy-led initiatives have played an important role in enabling new path development. We find that policy can play multiple roles in nurturing and maintaining new growth paths and that these are closely interlinked with particular policy capacities of RIS.

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1. Introduction

In economic geography, innovation studies and related disciplines, there is a growing interest in the question how new regional industrial growth paths¹ emerge. Evolutionary economic geography (EEG) has significantly enhanced our understanding of the path dependent nature of regional development and different forms and mechanisms of regional industrial change (Boschma and Frenken, 2006, 2011; Boschma and Martin, 2010; Martin, 2010). Recently, new contributions have sought to shed more light on the scope of policy-initiated and -supported new regional industrial path development. This includes attempts to connect evolutionary thinking with a geographical political economy perspective (Dawley, 2014; Dawley et al., 2015; Pike et al., 2016), with the technological innovation system (TIS) framework (Martin and Coenen, 2015) and with a more sociological view on the creation of new pathways (Karnøe and Garud, 2012; Simmie, 2012). Moreover, also protagonists of the RIS approach are increasingly engaging with the debate on new regional industrial path development (Asheim et al., 2016; Isaksen and Tripl, 2016; Morgan, 2013).

The current discussion, however, devotes surprisingly little attention to important policy preconditions for new path development, such as the capacity of regions to develop collective action. This paper seeks to address this shortcoming by complementing the RIS perspective with insights from the literature on regional governance in general (Jones, 2001; Morgan, 2004; Pike and Tomaney, 2001, 2004) and regional capacity building in particular (Cole, 2006a; 2006b). We aim at, on the one hand, going beyond firm centric accounts that dominate the EEG literature by considering a variety of actors, their interrelation and connections to higher spatial scales, and, on the other hand, at a stronger consideration of institutional aspects such as the political autonomy of regions and the capability of policy actors to shape regional development. We put forward the notion of ‘policy capacities’, which constitute the enabling and constraining factors for collective action at the regional level. By doing so, we suggest a conceptual framework to explain why and how (some) regions manage to exploit conditions, use existing resources and preconditions and in collective action turn them into new development paths. Furthermore, we establish a link

¹ The literature frequently distinguishes between path renewal and new path creation as two forms of new path development. The first describes the diversification of established industries into new but related ones, while the latter describes the rise of industries that are entirely new to the region. As we consider the two as hard to delimit empirically and the distinction as not core to our analysis, we apply the overall notion of new (regional industrial) path development (e.g. Isaksen and Tripl 2016).

between policy preconditions in the region and multiple roles that policy can play in shaping new regional industrial path development (Morgan, 2013).

The paper is structured as follows. Section 2 reviews the literature on new regional industrial path development with a particular focus on the role of policy. Section 3 develops a conceptual framework for analysing processes of new path development. Section 4 explores the emergence and further development of two successful new growth paths in southern Sweden, namely new media and biogas, and investigates how policy interventions and initiatives have influenced and accompanied their evolution. Section 5 concludes the main findings and provides suggestions for future research.

2. Literature review: new path development and the role of policy

Current approaches to new regional industrial path development are largely inspired by EEG (Boschma and Frenken, 2006; Boschma and Martin, 2010) EEG considers new path development as outcome of (mainly) endogenously triggered branching processes in existing industries by which firms over time slowly diversify into technologically related fields (e.g. Frenken et al., 2007; Essletzbichler, 2007; Neffke et al. 2011). In this literature, the role of policy is seen as assisting regional branching processes by stimulating cross-sectoral knowledge flows through firm diversification, new firm formation, labour mobility and social networking (Boschma, 2013). Yet, the role of policy has gained relatively little attention in the EEG debate so far (Coenen et al. 2016; Hassink and Klaerding 2011; MacKinnon et al., 2009; Morgan, 2013; Rodríguez-Pose, 2013).

Recently, an emerging body of work has begun to address more specifically the role of policy in new path development. Simmie (2012) links evolutionary theories of path dependence with a sociological view on the creation of new pathways by knowledgeable agents. He concludes that new growth paths are often created in niches where pioneering actors set in motion change by deviating from established regime practices. National policy can play an important role through providing financial incentives such as subsidies and tax reliefs. Dawley (2014) and Dawley et al. (2015) emphasise the role of a wider set of actors that mediate the rise and development of new growth paths. They shed light on the importance of what they call “evolutionary inspired (...) strategic and contextual regional policy intervention” (Dawley, 2014: 1). They show that regional policy actions are affected by the national political

economy of market regulation and industrial policy, and demonstrate the need for an alignment of regional policy initiatives with national and supra-national policy frameworks.

Morgan (2013) draws attention to multiple roles of the state in shaping new path development, emphasizing in particular “its roles as producer, regulator, animateur and purchaser” (Morgan, 2013: 337). The first role refers to a direct involvement of the state into the production of goods and services, for instance in the case of state-owned companies. Such a direct market involvement can steer new developments, but also foster negative lock-ins, as it has been the case in many old-industrialised regions (Grabher, 1993; Morgan, 2013). The second role refers to setting and enforcing laws and regulations, for instance in the form of industrial standards, social and environmental regulations or intellectual property rights. By setting the regulatory framework, the state can actively steer technological development and influence regional economic development (Coenen et al., 2015). The third role, the animateur, refers to bringing together public and private actors and facilitating knowledge exchange between them. This becomes visible in typical regional innovation policy tools such as clusters and science parks that aim at networking between firms, universities and governmental agencies (Martin et al., 2011). The fourth role, the purchaser, refers to a situation when the state procures goods and services from private sector suppliers. Through public procurement for innovation, the state can actively steer innovation and economic development (Edquist and Zabala-Iturriagoitia, 2012).

Recently, also protagonists of the RIS approach have sought to contribute to research on new path development (Tödting and Tripl, 2013; Isaksen, 2015). Isaksen and Tripl (2016) argue that regions have varying capacities to develop new growth paths, depending on their endowment with organisational thickness and degrees of specialisation of economic structures. Organizationally thick and diversified regions offer favourable conditions for new path development, as they can benefit from industrial variety and the possibility to combine diverse knowledge bases locally. This is less the case for organizationally thick and specialized as well as for organizationally thin RIS, which have less scope for local knowledge re-combinations. Subject on their organisational endowment and the degree of related variety, different RIS require different types of policy interventions to stimulate path renewal and new path creation (Asheim et al., 2016; Isaksen and Tripl, 2016).

The concepts mentioned above have in common that they focus on existing regional preconditions as enabling or constraining factors for new path development, calling for place-

based and customized regional policy interventions. Furthermore, key contributions named argue for a stronger consideration of policy (Dawley, 2014; Dawley et al., 2015; Simmie, 2012), emphasise multi-scalarity of policy processes and provide a clear indication for the importance of actions taken by multiple RIS actors (see also Fornahl et al., 2012; Martin and Coenen, 2015). Although pointing at different roles that the state can take (Morgan, 2013), we find that the literature remains rather descriptive about these roles, not paying attention to the actual capacities that are needed in order to actively shape new regional industrial path development. By taking a RIS perspective and drawing on insights from the regional governance and capacity building literature, the next section elaborates more closely on this shortcoming and by doing so, develops an own conceptual framing.

3. Analytical framework: policy capacities for new regional industrial path development

The RIS approach advocates a multi-actor perspective, with firms, universities, R&D centres, intermediary organisations as well as governmental agencies that collectively contribute to regional innovation and growth. From a RIS perspective, the broader organisational context, including private and public actors and their actions, as well as the institutional setting, including formal and informal rules and codes of conduct, need to be taken into account in order to understand new path development (Asheim and Gertler, 2005; Braczyk et al., 1998; Doloreux, 2002). Moreover, RIS are seen as open, nationally and internationally connected systems, which allows adopting a multi-scalar perspective, putting emphasis on the interrelationships between regional and supra-regional (policy) levels (Asheim et al., 2011b).

In the existing literature on policy and new path development, little has been said about the actual capacity of regional actors to align with and adopt to supra-regional policies (Dawley et al., 2015). EEG provides valuable theoretical insights on lock-in and path-dependencies in regional economic evolution, yet considers firms as main agents of change and pays relatively little attention to region-external influences (Boschma and Frenken, 2009; Coenen et al., 2016; Pike et al., 2016). Due to its focus on a broad range of actors, institutions and policies as well as multi-scalarity, we consider RIS as suitable framework to study the role of policy in new path development. However, RIS scholars have only recently started to engage in the debate on new path development, implying that a coherent conceptual framework does not yet exist. Particularly, we find that recent RIS accounts pay little attention to important

policy preconditions, including the political autonomy of regions and the capacity of RIS actors to develop collective action (Asheim et al., 2011a, 2013; Isaksen and Trippel, 2016; Tödting and Trippel, 2013).

We put forward the argument that specific policy capacities should be considered crucial for new path development and that these are closely connected to specific roles of the state (Morgan, 2013). In the following, we aim at making these capacities more explicit. Thereby, we follow the broad understanding of policy common in the RIS literature which considers policy as collective action of various public and private actors that commonly shape (and result in) public authorities' decisions (Morgan and Cooke, 1998). RIS actors are not seen as passive targets of policy interventions, but as directly or indirectly influencing policy decisions (Flanagan et al., 2011). Policies are designed and influenced by RIS actors who are embedded in an institutional environment, often described as the 'rules of the game' that govern the behaviour of actors (North, 1990; Rodríguez-Pose, 2013). Since policies also influence the behaviour of actors, they can be considered as part of the institutional environment. Thus, we see policies as part of the institutional environment of a RIS and as shaping and being shaped by the behaviour of RIS actors.

We use insights from the regional governance literature, which deals with the relationship between governance and economic development (e.g. Jones, 2001; Jones and MacLeod, 2004; Morgan, 2002, 2004) and focuses on the economics and politics of decentralisation and devolution (e.g. Morgan, 2006; Pike and Tomaney, 2001, 2004; Rodríguez-Pose and Gill, 2004, 2005). Similar to RIS, this literature understands regional actors not as passive targets of supra-regional policies and institutional settings. Rather, it sees regional institutions and relational assets (Storper, 1997) as crucial for the capacity of regional governments to steer regional economic development (Rodríguez-Pose and Gill, 2005; Pike and Tomaney, 2001).

Inspired by Cole (2006a, 2006b) who explains decentralisation as a process of local and regional capacity building, we argue that respective insights are valuable when addressing new regional industrial path development. Motivated amongst others by John (2001) and Pasquier (2002), Cole (2006a, 2006b) interprets capacity in two ways: On the one hand in terms of resources that regions have to possess to conform to national or supra-national directives or to implement policies; and on the other hand in terms of the "internal qualities of localities and regions, their visions of the future and perception of their role" (Cole, 2006a: 39). Taken as a whole, capacity constitutes of several dimensions such as the emergence of more cohesive local government structures, strengthening of local political leadership, the

development of more entrepreneurial forms of policy-making, asymmetrical policy delivery, the growth of sub-national expertise and the emergence of new local and regional public arenas for collective action (Cole, 2006a :32, 39). This literature provides insights on how policy-led change in regions can come about and considers both the importance of ‘hard’ aspects such as the autonomy of regional political decision making as well as ‘soft’ aspects such as regional identity and inter-regional collaboration between local policy and business actors for strengthening territorial visions. Moreover, it highlights that political arrangements must be understood in light of specific traditions, social dynamics and economic change; and most importantly, that capacity building should not be considered as a single event, but as process that takes place over time (Cole and Pasquier, 2015; Martin and Sunley, 1997).

These findings call attention to aspects that have been less discussed in the debate on new path development. In particular, we argue for a distinction between formal aspects and internal qualities of regions when addressing new path development and intend to integrate this differentiation in the RIS framework. We reason that the role that policy can play depends on the *policy capacity* of the RIS, and introduce two dimensions of policy capacities: formal and governance capacities.

With *formal capacities* we understand the political autonomy of regions to decide on matters with regard to regional economic development (i.e. the degree of decentralization), which sets the formal scope of action for regional authorities and determines the extent to which regional actors can formulate their own development strategies. In addition to political autonomy, we also consider a region’s endowment with financial resources as important for new path development. Thus, we define formal capacities as the hard resources that regions have in order to implement policies and to steer economic development, and consider thereby both political autonomy and financial control. These formal capacities can be seen as formally tied to regions and relatively stable over time.

However, we contend that formal capacities alone are not a sufficient condition for new path development. Social features and dynamics, which are in the following termed *governance capacities*, should be considered important as well. In Cole’s (2006a, 2006b) work the ‘internal qualities’ highlight the role of inclusive decision-making between policy makers and other stakeholders in the region, the development of regional expertise and common expectations, the use of regional competences and the creation of common future visions and platforms for collective action. We argue that such governance capacities are decisive for regions to make use of their formal capacities.

Attempting to tailor these internal qualities to RIS, we argue that one dimension of governance capacities refers to regional institutional thickness (Amin and Thrift, 1994). The literature on RIS implies that new path development does not only require organisational thickness, i.e. a critical mass of firms, universities and supporting organisations, but also institutional thickness, i.e. an innovation and cooperation culture between firms, policy makers, and a wide set of stakeholders that interact for innovation and regional development (Cooke, 1992; Isaksen and Trippl, 2016). Intense and continuous interaction between these actors is an important prerequisite to recognise regional preconditions and to identify development opportunities that relate to existing competences and skills (Asheim et al., 2011a). Furthermore, it is crucial for developing shared norms and values, and for aligning interests and expectations towards a common development goal. It leads to trust and reciprocity (North, 1990; Sabel, 1993), which in turn improves interaction and collaboration in later stages of path development.

However, there is also a negative side to institutional thickness, as too intense collaboration can lead to political, functional and cognitive lock-in (Coenen et al., 2015; Grabher, 1993; Hassink, 2010) and hinder new path development. Therefore, we argue that governance capacities are also about institutional change (Mahoney and Thelen, 2010; Zukauskaitė, 2013). Institutional change can be seen as the spontaneous result of uncoordinated choices by multiple agents, or as purposefully designed and implemented by actors who interact in a collective process of lobbying, bargaining or voting (Kingston and Gonzalo, 2009). Incumbent actors often have an interest in preserving the status quo and hindering institutional change. Strong governance capacities therefore imply that policy makers have the necessary bargaining power to break up inefficient institutions and to shape new ones. Another hindrance to institutional change is bounded rationality of policy actors who are not fully aware of potential development opportunities (Ostrom, 2005). Overcoming bounded rationality requires policy actors to engage into continuous policy learning (May, 1992; Moodysson et al., 2015), and to build up the necessary absorptive capacity to recognise new developments and opportunities, to use old and develop new expertise and expectations, and to apply them for new path development. Institutional change is also closely related to organisational change, for instance through a modification of the organisational support structure of the RIS (Tödting and Trippl, 2013).

Put briefly, policy capacities constitute the enabling and constraining factors for collective action at the regional level. Formal capacities define the general room for policy action; it

matters greatly whether or not policy makers have the right to formulate their own regional development strategies and whether they have the financial assets to turn them into practice. However, regions can only make use of their formal capacities if they also possess strong governance capacities, referring to the quality of local interactions and the scope to induce regional institutional change.

4. Empirical analysis: the emergence of the new media and biogas industries in Scania

The following analysis is based on qualitative research methods, including personal interviews with key stakeholders and studies of policy reports and other strategic documents. 37 semi-structured interviews with firm representatives, industry experts, policy makers and university representatives were conducted between year 2012 and 2015 (17 for biogas and 20 for new media). The interviews were carried out in Swedish or English and were transcribed; important quotes were, if necessary, translated to English.

4.1 The regional innovation system of Scania

Scania is the southernmost county of Sweden. Traditionally, its economy has been based on natural resources and agriculture. During the 19th century, the region developed an additional stronghold in the maritime sector, with a particular focus on shipbuilding in the capital city Malmö. After the maritime industry declined and eventually disappeared in the 1990s, considerable efforts have been undertaken to restructure the regional economy towards more high-value-added sectors such as information and communication technology (ICT) and medical technology, and more recently, also clean technology and creative industries (Benneworth et al., 2009; Dahlström et al., 2010; Martin and Coenen, 2015). In terms of knowledge infrastructure, the region possesses a strong and diversified higher education sector, with amongst others Lund University (LU) and the young but rapidly growing Malmö University College (MU). Furthermore, the region is well endowed with a large number of intermediary RIS organisations (Martin et al., 2011). This makes it an organisationally thick and diversified RIS with favourable conditions for new path development (Boschma, 2015; Isaksen and Trippel, 2016).

With regard to political and administrative matters (i.e. the formal capacities), the county level in Sweden has the main responsibility to deliver on public health care and public

transport. In addition to these core functions, however, Scania is one of few Swedish counties that enjoys extended devolution with the purpose “to create sustainable regional growth and development” (Sveriges Riksdag, 2010).² This devolution can be considered significant as it gives regional policy actors the formal right to formulate their own regional development strategies (Dahlström et al., 2010; Region Skåne, 2013). However, as financial resources devoted to regional development are limited (of the total budget of 35.1 billion SEK in year 2016, 87,5% are devoted to public healthcare, 6.5% to public transport, and only 0.5% to regional development) (Region Skåne, 2015a), the actual implementation of strategies remains strongly dependent on funding from higher administrative levels.

4.2 The role of policy in the emergence of the new media industry

New media is one of the most dynamic new growth paths in the region (Martin and Moodysson, 2011). With its epicentre in the western harbour area of Malmö, the industry comprises today several hundred innovative firms of mostly small and medium size, and a dedicated policy support structure. New media covers a wide range of activities at the intersection of ICT and creative media content, and includes market segments such as video games, digital design, app development, television, radio, film, advertising, marketing and others (Cooke, 2002; Grabher, 2002).

Early phase of new path development

An important stimulus for new path development has been the perceived need of the city of Malmö to overcome its negative lock-in into declining industries related to shipbuilding and heavy machinery. Attempts to overcome this local crisis include the conversion of the old harbour area into a modern business and housing district, which is today the location of most of the new media companies, as well as the foundation of Malmö University College (MU) in year 1998. With the establishment of a School of Arts and Communication (K3), MU focussed parts of its educational activities on media and design, and thus, even though unconsciously, ensured at a very early stage the provision of skills needed for the new growth path. K3 also played a key role for building up governance capacities related to new media, by generating interest for design and creative industries among decision makers.

² For more information about devolution in Sweden, see OECD (2010) and Region Skåne (2013).

“K3 was a driving force, but more as an exciting construction than as a concrete actor. We were fascinated by K3.” (Former Head of Business and Regional Development, County Council of Scania)

An important early step in new path development was a pilot cluster project named M-Town, initiated in 2002 by a group of entrepreneurial individuals who previously worked in the ICT industry, and supported by regional government bodies. M-Town was meant to bring together companies within the TIME-industry (i.e. Telekom, Internet/IT, Media and Entertainment), and to create linkages between ICT and the media companies. The initiative illustrates that public and private policy actors very early made attempts to nurture new path development by playing the role of an amateur (Morgan, 2013), trying to facilitate knowledge flows across sectors to integrate different but related industries. M-Town had an important role as pilot project, building governance capacities and shaping common interest and expectations among RIS actors. Furthermore, it laid the ground for later policy initiatives around new media.

“The mission was to form a cluster, out of believe that southern Sweden had a pretty good position in terms of games, filmmakers and mobile platforms. That was a good enough base to try to start a cluster.” (Former CEO of M-Town)

Further strengthening of the organisational support structure took place in 2003, when Malmö Municipality established a business incubator for service companies (Malmö Incubator MINC), which soon hosted a number of new media ventures.

The next stage was the establishment of a cluster initiative named Media Meeting Place Malmö (MMM) in 2004. MMM reflects a continuation and widening of the previous initiative M-Town, and sheds light on the role of governance capacities in terms of close, continuous interactions between RIS actors. MMM was initiated by Malmö Municipality and the County Council of Scania, which successfully exploited funding opportunities from the national level. They jointly responded to a funding opportunity by a national research-funding agency in the framework of a nationwide strategy to foster creative clusters in Sweden. Potential cluster initiatives should be boundary spanning by linking government, academia and industry through a triple helix constellation, and by linking experience industries with related industries in the region (Heed et al., 2008). Policy makers in Scania could demonstrate a high potential for triple helix collaboration due to the early commitment of the regional government in supporting M-Town, a focus on media and design at MU, as

well as a growing number of new media related companies in the region. They reacted on this opportunity and applied for finance, and the cluster initiative received funding for a five-year period. This underpins the influence of supra-regional policy influences on the development of new regional industrial growth paths (Dawley, 2014; Dawley et al., 2015; Simmie, 2012). Moreover, the successful application reflects strong governance capacities: RIS actors were seizing national funding opportunities and were able to tie them up to competences available in the region. This acquisition of funding compensated for a lack of financial means available for regional economic development in Scania.

Further path evolution

When the national funding for MMM ended in 2009, the cluster initiative had reached more than 70 member organisations. In order to keep the growth momentum, a consortium of public and private actors got together to apply for EU structural funds. With a growing number of regional firms collaborating around the theme of new media, the consortium could demonstrate that this has become a significant new growth path, and that regional policy makers have been dedicated to maintain the development. The engagement of private sector actors as well as the long-term commitment by public authorities convinced the EU level authorities to provide 1,24 million EUR financing, which, co-financed by the regional consortium, permitted the initiative to continue for another three years. The role of the cluster initiative was again to provide a platform for regional networking, collaboration and knowledge exchange and, by implication, to act as animateur (Morgan, 2013). In this way, more and more RIS actors became engaged in the new growth path. Again, the success in attracting funds from the EU-level can be attributed to strong governance capacities in terms of interaction among RIS actors and their ability to develop common expectations as well as in terms of aligning regional development strategies to incentives provided at higher spatial scales.

Simultaneously, the organisational support structure became more advanced. MU built up a research centre for digital media (MEDEA), financed partly with EU structural funds with the aim to further strengthening research and education in collaborative media and to enhance knowledge exchange with local firms. This points at the need for institutional and organisational change and the importance of absorptive capacity and bargaining power of regional policy actors to stimulate and support new path development.

“The initiative came from the policy side: ‘Let us focus on what could be the future in Malmö and in Scania?’ (...) It was a very clever initiative by civil servants, who had the ability to look a bit in the future and take this initiative. It did not come from the business side, but it was easy for them to come on board.” (Former CEO of Media Evolution City)

By 2011, the new growth path gained additional momentum. The regional government and Malmö Municipality further strengthened the organisational support structure by establishing a large business park for new media companies, named Media Evolution City (MEC), which opened in 2012 and hosts today around 100 companies.

The cluster initiative, renamed to Media Evolution (ME), has grown steadily in terms of member organisations. Initially financed by public funds, it became gradually more self-supporting and increasingly reliant on membership fees. Over time, private sector engagement in the cluster initiative increased both in financial and in managerial matters, and the influence by local and regional policy makers decreased. Today, the cluster initiative has reached 360 member organisations, which reflects both the success of the initiative and the dynamic development of this new growth path. Over the years, Scania established itself as reference point for new media companies in Sweden, and more and more businesses locate their offices close to the new business district.

“Starting from zero, Malmö has become the hottest place for mobile communication in Sweden (...). That is why we moved to Malmö, because we wanted to be close to what is happening.” (CEO of a new media firm)

4.3 The role of policy in the emergence of the biogas industry

The biogas industry constitutes another dynamic new growth path in Scania (Martin and Coenen, 2015). Scania possesses the largest number of biogas plants as well as the highest production of biogas (20% of the country’s overall production) among all Swedish counties (Energimyndigheten, 2015). The industry covers the entire value chain and includes feedstock producers such as farmers and industrial food processors, utilities and energy companies (i.e. actors dealing with the transport, treatment, distribution and retail of biogas). Transportation companies running the local public transport on biogas buses are today the main consumers of the regionally produced biogas. Altogether, about 40 companies can be identified as part of the value chain (Ericsson et al., 2013), the majority of which are large

and medium sized energy, water, waste management and transportation companies (of which many are publicly or public-privately owned) that have become active in the biogas business. Diversification processes of existing firms have thus formed the main mechanism of new path development.

Early phase of new path development

Scania provided favourable physical and industrial preconditions for new path development around biogas. Due to a regional stronghold in agriculture and food industries, local actors had accumulated competences in biogas related activities such as the exploitation of residuals stemming from food processing and agriculture. Some municipalities had an early interest in expanding the biogas production at water treatment plants into producing biogas from food waste. Moreover, Scania is comparatively densely populated, resulting in additional organic waste both in terms of household garbage and sewage water. Finally, a natural gas grid along the west coast of Scania provides an important distribution infrastructure for biogas.

Crucial for turning these regional preconditions into a new growth path was the so-called Climate Investment Programme (KLIMP), launched in the early 2000s by the Swedish Environmental Protection Agency. KLIMP was a national policy programme targeting increased energy efficiency and a reduction of greenhouse gas emissions in Sweden. It invited local authorities to apply for funding (seven years) for technical projects in form of public-private partnerships, to achieve environmental benefits within their municipalities. Biogas turned out to match the aims of the programme very well and biogas projects all over Sweden received funding. Municipalities in Scania were standing out with their (at this time yet largely independent) applications and received in total almost half of the overall KLIMP funding. This points at the influence of supra-regional policies on the development of new regional industrial growth paths (Dawley, 2014; Dawley et al., 2015; Simmie, 2012). Scania's success in attracting national funding does not only reflect good physical preconditions, but has also to be ascribed to the local actors' governance capacities to react to the call, that is to exploit their existing intra-regional relationships to turn old expertise into something new and to develop a common interest for new development areas.

“The experience that I have from biogas at that time, in the beginning of the 90s, was that it was done locally due to some very few persons' personal involvement and enthusiasm (...). And then came this KLIMP. And that was where a lot of biogas

projects got supported by the KLIMP money, then there was also an economic support to do these things.” (Professor in biotechnology, LTH)

During that time, research organisations in the region increasingly started to deal with biogas, adapting parts of their activities to the emerging growth path. In 2000, the Faculty of Engineering (LTH) at Lund University in collaboration with local farmers started a pilot plant on biogas production from crop residuals. This research facility was established based on national funds as well as co-funding from the host municipality and aimed at bringing scientists “out to the farm”. It can be seen as important for building up governance capacities in terms of new personal networks, mutual trust and common knowledge among RIS actors.

“A number of PhD students in biotechnology have worked on that plant, sitting now in strategic positions within the regional biogas community. It [the plant] has generated knowledge and new connections.” (Professor in biotechnology, LTH)

The next step in new path development was the establishment of the regional network association Biogas Syd, founded in 2005/2006 by a bottom-up initiative of public and private biogas actors who felt the need for a better coordination of their activities. While the association was initially financed through membership fees, the regional government soon got involved and provided basic funding. Biogas Syd played the role as animateur (Morgan, 2013) by bringing together public and private actors and facilitating knowledge exchange. It also reflects strong governance capacities of RIS actors to engage in continuous interaction and align interests and expectations.

“It was the biogas actors in the region who felt that they needed an organisation that collected all the questions and pushed them. The initial actors were waste management companies, energy companies, universities and some municipalities.” (Project coordinator, stakeholder association)

Further path evolution

The next key instant in new path development took place in 2007, when the regional government announced a new development goal for public transportation in Scania, namely that all public transport should be fossil free in 2020. Among several possible technologies, the regional public transport organisation (Skånetrafiken) decided to invest in biogas as key technology. Important for this choice was the fact that the required energy should be produced locally to achieve a direct environmental effect in the region. Also in light of the

increasing technological expertise in Scania, biogas was regarded to have the highest potential. This political decision was crucial as it created a local market for regionally produced biogas. As the formal capacity related to public transport is tied to the region and as significant financial resources are assigned to it, the regional government could act both as a regulator and as purchaser (Morgan, 2013) and create legitimacy for new path development in biogas.

“That Skånetrafiken has gone out and said that they want to have it fossil-free - that has affected the market in Skåne in a very positive way” (Project coordinator, stakeholder association).

In 2010, the County Administrative Board set up a climate goal for the region, particularly addressing biogas. The proclaimed aim was to cover at least 10% of the region’s total energy demand with biogas by 2020 (Region Skåne, 2013). A roadmap was worked out by Biogas Syd and the regional government, in collaboration with a reference group consisting of universities, research institutes and companies in the region. Again, it was crucial that the region had the formal capacity to decide on issues regarding regional economic development. Moreover, strong governance capacities were important to organise collective processes and to develop a shared roadmap for future development.

“The entire roadmap ... that it is political and concrete – that gives it a weight. (...) It is good that policy here at the regional level is unanimous in this, all along the line. Here in Scania the politicians say that they are prepared to work on this long-term” (Project coordinator, stakeholder association).

New path development has been a rather smooth process and encountered hardly any resistance. Diverse RIS actors, including universities, research centres, firms, support organisations and policy makers, have been promoting biogas in a joint effort (Region Skåne, 2015b). However, the growth path still faces challenges regarding future growth. National policy influences appear more recently to be constraining for further development. After KLIMP terminated, a lack of long-term incentives at the national level make regional actors become hesitant to undertake major investments (Region Skåne, 2015b).

“A lot of people are interested, a lot of people make plans, but they are slow to implement it. The big companies here [...] have made big plans for very big biogas plants, but they are slowing down, they are waiting and they are not investing” (Professor in biotechnology, LTH)

Recently, the regional government has commissioned researchers to investigate possibilities of setting up regional subsidies to overcome constraints set by the national level.

4.4. Discussion

The different roles that policy has played can partly be ascribed to industry specific differences in the needs and demands for policy support (Martin et al., 2011). However, as our framework brings to light, they can also be seen as consequence of varying policy capacities of RIS, spanning both formal and governance capacities. With regard to formal capacities, it is reasonable to argue that the degree of political autonomy has a major effect on the extent to which policy actors can influence new path development, and which actions they can take. Moreover, we highlighted financial resources as crucial aspect of formal capacities. Even though the county of Scania has the political autonomy to decide on regional development, funding is generally limited, and particularly in the case of new media. Consequently, policy actors put emphasis on support for networking (taking the role as animateur), which requires relatively little financial commitment. In the case of biogas, the financial ceiling has been higher, since public transport is one of the core responsibilities of Swedish counties. Accordingly, policy had more scope for action: it could act as animateur, but also as regulator and purchaser. These latter roles imply a greater possibility to provide long-run legitimacy, which is in line with insights regarding the role of policy in shaping innovation in specific technological fields (Hekkert et al., 2007; Martin and Coenen, 2015). In addition, governance capacities have been crucial in both cases. They appear to be important throughout the entire path development process and have co-evolved with the two paths. Policy actors were capable of changing the existing organisational and institutional RIS setting. In this regard, our analysis reveals the need for precedent institutional change, enabled through strong governance capacities that have been build up over time.

We also observe close interrelationships between formal and governance capacities, in that the latter are decisive for making use of the former: While formal capacities set the scope of action for regional authorities, strong interaction between policy makers and other RIS stakeholders are crucial for the formation of common expectations for identifying new

growth areas and to implement effective policy actions. Closely related, the alignment of regional policy initiatives with policies at higher spatial scales proved to be a key factor. As financial resources were limited, opportunities for new path development were highly dependent on funding from higher spatial scales. The ability of regional actors to successfully apply for and make use of supra-regional funding also points at strong governance capacities. While such alignment also requires some degree of political autonomy, both cases (particularly new media) indicate that strong governance capacities can potentially compensate for lacking financial resources.

Assuming policy capacities to be strong in some regions also implies that they can be weak in other regions, pointing more at constraining factors for collective action at the regional level. Table 1 illustrates different possible constellations of policy capacities. Moreover, it points out the previously identified relationships between different policy roles and capacities (Morgan, 2013). We consider the role of the animateur as being closely linked to governance capacities, as it refers to interactions between RIS actors and does not require major financial resources. The roles of the producer, purchaser and regulator require stronger formal capacities.

Table 1: Potential for new path development based on policy capacities of RIS

		Governance capacities (define the scope to act as animateur)	
		strong	weak
Formal capacities (define the scope to act as producer, purchaser and regulator)	strong	<p>High potential</p> <ul style="list-style-type: none"> - Political autonomy exists; financial resources define which role policy can play - Collective action fosters common expectations, development of regional expertise, inducement of institutional and organizational change - High potential to make use of formal capacities and connect to supra-regional policies 	<p>Limited potential</p> <ul style="list-style-type: none"> - Political autonomy and possibly also financial resources are available - Lacking collective action hinders institutional and organizational change - Limited potential to make use of formal capacities and to connect to/align with supra-regional policies
	weak	<p>Limited potential</p> <ul style="list-style-type: none"> - Lacking political autonomy and financial resources; path development in control of higher administrative levels - Collective action exists, but institutional and organizational change impeded due to lacking formal frame; expected not to lead to continuous and long-term policy actions (i.e. lack of financial means to induce organizational change, risk that collective action ‘dries up’ in the long run) 	<p>Low potential</p> <ul style="list-style-type: none"> - Lacking political autonomy and financial resources; path development in control of higher administrative levels - Lacking collective action hinders institutional and organizational change

Source: own draft

5 Conclusions

The paper ties up to the current debate on how new regional industrial growth paths emerge and develop over time, and stresses the role that policy can play in this process. We reviewed existing work on the role of policy for new path development and developed an analytical framework drawing on RIS and regional capacity building. We applied the framework to analyse the emergence of two new growth paths in southern Sweden. The question how policy makers and other RIS stakeholders interplay to identify opportunities (both internal and external to the region) and harness them for new path development has been central to our analysis.

The RIS perspective, complemented by insights from the literature on regional governance and capacity building, allows us highlighting the institutional and policy dimension of RIS, which has hardly been addressed in the literature so far. The notion of policy capacities

provides a new framework to analyse the role of policy in new path development. Our findings are in line with recent work that stresses the importance of a multi-level as well as multi-actor perspective on new path development (Dawley, 2014; Dawley et al., 2015; Martin and Coenen, 2015; Simmie, 2012). Furthermore, they support one of the core arguments of EEG, namely that new path development does not occur randomly and unconnected from existing regional preconditions, but is contingent upon pre-existing competences and industrial arrangements in a region (Boschma and Frenken, 2006, 2011; Martin, 2010; Neffke et al., 2011). Moreover, we find a close relationship between Morgan's (2013) roles of the state and policy capacities.

We discussed the potential of different constellations of policy capacities in RIS to bring about new path development, which is line with previous contributions pointing out that RIS require different, place specific policy interventions (Asheim et al., 2016; Isaksen and Trippel, 2016). However, our paper also challenges some of the arguments made in the literature on RIS and new path development. Though thick and diversified RIS are usually argued to offer favourable conditions for new path development, industrial and organisational diversity is neither a necessary nor a sufficient condition for such processes. Without strong policy capacities, regional actors will not be able to implement new development strategies and induce regional organisational and institutional change, which will impede new path development. Thus, even thick and diversified RIS can become trapped into path extension (and potentially path exhaustion) if they lack essential policy capacities to transform the regional knowledge and support infrastructure. Likewise, organizationally thick and specialized RIS as well as organisationally thin RIS, which have little scope for local knowledge recombination based on related variety, are not doomed to fail in new path development. If endowed with strong formal and governance capacities, even regions with little related variety can be successful in developing new growth paths, as they are able to effectively implement policy actions to overcome RIS deficiencies, for instance by implementing change in the knowledge and support infrastructure, by breaking up inefficient institutions, and by creating a shared vision among local stakeholders.

Our findings open up new questions for research on the role of policy in new regional industrial path development. The empirical analysis dealt with new path development in a thick and diversified RIS with strong policy capacities. What remains unexplored are new path development processes in RIS with weak formal and/or governance capacities. This leads to the question to what extent policies on higher spatial scales can compensate for a

lack of regional policy capacities, or more interestingly, how regional policy capacities can be actively built up and maintained, calling for a deeper understanding of policy processes (Borrás and Edquist, 2015). Moreover, there is room for a closer investigation of the role of policy capacities in different phases of path evolution. Our findings point to the need to create common expectations between actors in the initial phase of path development, followed by more formalized policy actions such as building up an organisational support structure. This would suggest the importance of policy for institutional change in early phases of path development, whereas institutional continuity becomes increasingly important once a path has gained growth momentum. Even though significant contributions have recently been made on the role of institutions for regional economic evolution (see for instance Boschma and Capone, 2015; Zukauskaitė and Moodysson, 2016), there is still scope for better understanding how regional industrial paths and institutions co-evolve and influence one another.

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