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An approach for analyzing public support systems for eco-innovation: Lessons from two German and Swedish regions

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Background and aim

Exploiting environmental problems as business opportunities are current discussions among industrial actors. In this line of thought, eco-innovation[1] is a driving force. Although eco-innovation has potential society-wide benefits, entrepreneurs and companies developing such innovations face particular challenges such as externalities associated with environmental pollution and the innovation process in addition to the often lack of finance, time and human resources. Thus they often need to access external resources including public support to tackle their barriers[2]. In view of the barriers and the opportunities eco-innovation presents, public organizations in several countries have initiatives to support companies and entrepreneurs developing them.

The support activities have been criticised for being generic with no explicit considerations for particular characteristics of eco-innovation with calls for a shift in current support approaches. Critical questions arise relating to how to analyse public support systems for eco-innovation and in which directions they could be changed. Building on a scheme of analysis for technology innovation systems[3], the goal of this paper is to present an approach to analyse public support systems for eco-innovation on a regional level. In addition, preliminary results from the application of this approach in Sweden and Germany are discussed.

The developed methodological approach

The methodological approach consists of six steps. **The first step** is to select the region in focus. This could be based on pre-defined criteria such as to identify "good" practices, high or low innovation index etc. The regional focus is adopted because from practise, those seeking public support are often assisted on a regional basis. In **the second step**, the structure of the public support system and its components is in focus. This system could include business development organizations, financiers, incubators, and universities. The objective in this step is to identify and describe key actors, their relations and networks in the region. Public support can have a general focus, supporting any kinds of innovations or focus only on eco-innovations. These categories should be covered if applicable. **In step 3**, the support function is identified and described. In

[1] Eco-innovation is defined as innovation that causes or intends to cause a significant decrease in environmental impact, while remaining economically viable and in harmony with social welfare.
[2] Hjelm, O., 2011. The World Renewable Energy Congress – Sweden, 8–13 May, 2011, Linköping, Sweden : Volume 10: Policy Issues. Linköping University Electronic Press.
[3] Bergek, A. et al., 2008. Research policy 37, 407-429.

understanding this, the investigation benefit from multi-level perspective thinking [4]. The public support organizations can be located on the regime level and support niche innovations under landscape conditions. This is particular for eco-innovations because of the externalities in environmental pollution and the importance of landscape conditions e.g. regulations in internalizing such externalities. **In step four**, we focus on the eco-innovators. Delimitations have to be made to study eco-innovations in general, particular sub-branches or phase e.g. start-ups, established companies. The target recipients of public support should be assessed to understand how the support they receive relates to their barriers. To make suggestions on how to improve public support, an analysis between current support and company barriers is needed, which is the focus **in step 5**. **In step 6**, gaps identified between the barriers to eco-innovation and the support functions are used to make recommendations. The entire approach is not linear but rather iterative including careful delimitations to make robust recommendations.

Preliminary findings

This approach has been applied in region Skåne in Sweden and is in the early phases of application in Northrhine-Westfalia state in Germany. We focused on business development organizations because their support overlaps with different support organizations which provide an overview of the public support. We selected three business development organizations with a general focus and two focused on eco-innovation. Using an Internet survey with SMEs developing eco-innovations we assessed how the support relates to their barriers. Our findings indicate overlapping support between these general and specific focus organizations to facilitate resource mobilization, knowledge sharing, financing, market exploitation. These supports were through networking, bridging, coaching and channelling support. Gaps were identified between the public support and the needs of firms. Companies receiving financial support rated it high similar to education and training for eco-innovation. Support through networking, advising and information provision was rated as not so useful. Preliminary recommendations for a shift in support point to support based on specific characteristics of eco-innovations and not just "conventional" support for eco-innovators. Bridging support organizations such as universities to eco-innovators on sustainability related issues seems as a promising addition to the activities of business development organizations because of their network and contacts with companies[5].

Concluding remarks

The approach will continue to be applied with deeper studies. Challenges with such cross-country analysis include the fact that various regions are different regarding their public support structure and function and also strategic areas of specialization.

To conclude, this approach helps to capture and elucidate the particularities of public support for eco-innovations because of the systems view and multi-level perspective adopted. The public support organization itself is under pressure from landscape which influences their approaches and strategies. For example many of such cluster organizations are project based which can be

[4] Geels, F.W.et al., 2008. Technology Analysis & Strategic Management 20, 521-536.
[5] Kanda, W. et al., XXV ISPIM Conference on Innovation for sustainable Economy and Society, Dublin, June 8-11, 2014.

terminated. Some are based on membership which requires a sizable number of companies to enable the organization to survive. We synthesize that support for economic activities creating environmental problems are similar to support for companies trying to solve those problems-eco-innovators, which gives a conflicting signal. We suggest a shift in support to include particular characteristics of eco-innovations based on clearly defined and reinforcing roles among components of the public support system.