

INNOVATION SIGNALS AND PRIORITIES: A CASE STUDY FROM LEADING ENERGY CLUSTERS IN GERMANY

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Overview

The energy transition is a dominant topic in Germany. The government, policymakers, financial actors, and research and development (R&D) organizations are working together to achieve the desired clean energy transition goal. In this sense, the innovation cluster plays a leading role behind the emerging innovations in the energy sector. An innovation ecosystem comprises various actors such as established companies, research organizations, and universities [1]. However, in recent years, a number of new actors have been spurring the innovative clusters. In this context, it is important to analyze the entire ecosystem to identify the innovation trends and connections between different actors. Over the years the innovation ecosystem has been changed to an open funnel innovation model. Such a model allows a cross-collaborative approach to achieve market and consumer-driven innovation. At this juncture, it is important to analyze the innovation and technology trends coming from not only the start-ups (entrepreneurs) but also from the established actors. The proposed paper will look at the following research questions in detail:

- Who are the major actors driving the energy innovation ecosystem in Germany?
- What are the current technology intervention trends and which step changes and innovation could influence ongoing energy transitions?
- What is the role of unstructured data in innovation trends analysis?

Method

The present work analyses the leading energy clusters in Germany. The proposed methodology is data-driven and relies on different data sources including company databases and cluster website data. The analysis is focusing on the various parameters of energy clusters such as demographic distribution, members, cluster design along with emerging innovative topics in the German energy sector. At the initial stage of the proposed methodology, the data is collected from the Federal cluster platforms [2]. This data set provides the main activities of clusters and their collaborative structure and members count. Further, individual clusters' website data (e.g., unstructured data) is collected using python based web-scraping tool. Finally, data is analyzed to explore insights and innovation activities associated with these clusters.

Results

The primary results of this have shown that energy clusters are concentrated in specific geographical locations in Germany. As illustrated in figure 1a, Baden-Wuerttemberg, Lower Saxony, and Bavaria are the top three regions in the terms of cluster count. Cluster positioning in such regions clearly demonstrates the spill-over effect in the cluster economy [3]. Furthermore, the analysis also shows that majority of energy cluster's activity is aligned with topics such as hydrogen, digital, and storage technologies. Figure 1b shows a network of important topics addressed by the energy clusters in Germany.

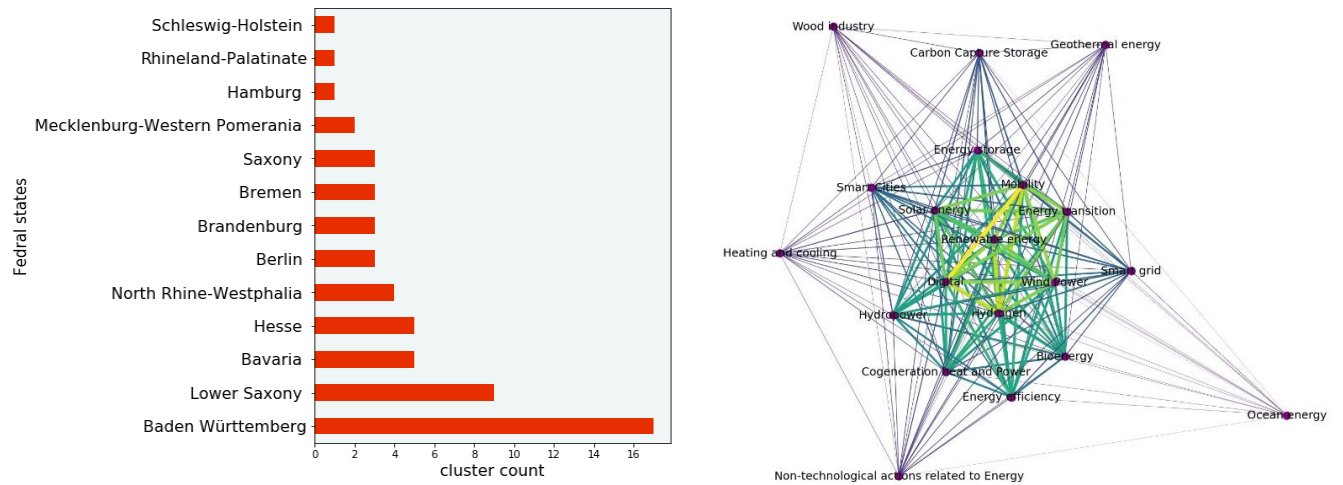


Figure 1: (a) Regional distribution of energy clusters in Germany (b) Network between the cluster topics

Conclusions

Germany has a strong culture of innovation cluster formation. They have a huge impact on the regional economy and invite various actors from businesses and society to participate in open innovation activities. To monitor and understand ongoing cluster initiatives the present work highlights the main innovation activities of energy clusters in Germany. The work has also explored the energy cluster ecosystem architecture, which includes established companies, startups, financial institutions. etc.

References

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