Swedish Innovation and Smart Specialisation Governance in the Baltic Sea Region´s Context:

Towards an Enhanced Macro-Regional Science-Business Cooperation

Baltic TRAM in Brief:

The Baltic TRAM project offers companies free access to state-of-the-art analytical research facilities across the Baltic Sea Region, providing technical and scientific expertise to help solve challenges associated with developing new products or services.

The overall objective is to boost innovation, secure the implementation of smart specialisation strategies, and encourage entrepreneurship by supporting small and medium size enterprises, thus contributing to the regional effort of making the Baltic Sea Region innovative, sustainable and competitive.

To achieve this, Baltic TRAM also feeds into the transnational research and innovation agenda. It performs benchmarking analysis on national roadmaps for research infrastructures and smart specialisation strategies, and provides recommendations to policy makers.

Baltic TRAM builds on the findings of Science Link, an initiative which received EU project funding 2012-2014. Science Link is currently operated as a network.

The purpose of Science Link is to encourage innovation and entrepreneurship in the Baltic Sea Region, to strengthen the region's competitiveness in a global context. It supports industrial research with synchrotron radiation and neutrons at research facilities in northern Europe. The aim is to create awareness of the possibilities offered at research facilities in the region and to show how research and development at these sites can contribute to innovation within European industry.

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The project runs from March 2016 until the beginning of 2019.

Baltic TRAM website: www.baltic-tram.eu

Disclaimer: Views presented in this research paper do not necessarily reflect those of Council of the Baltic Sea States (CBSS). Hence, Zane Šime, Communication and Research Coordinator of the CBSS Secretariat, as the author is exclusively responsible for the content of the research paper.

Table of Contents

Abbreviations

BSR	Baltic Sea Region
CBSS	Council of the Baltic Sea States
ESFRI	European Strategy Forum on Research Infrastructures
ESIF	European Structural and Investment Funds
EU	European Union
MVA	Medicon Valley Alliance
OECD	Organisation for Economic Co-operation and Development
RIS3	Research and Innovation strategy for Smart Specialisation
R&D	Research & Development

Introduction

In August 2017, Centrum Balticum Foundation published the BSR Policy Briefing 4/2017 *National innovation and smart specialisation governance in the Baltic Sea region - Laying grounds for an enhanced macro-regional science-business cooperation* (Mickus et al., 2017), highlighting the smart specialisation areas strongly represented in such Baltic Sea Region (BSR) countries as Denmark, Estonia, Finland, Latvia, Lithuania and Poland. This smart specialisation mapping exercise was concluded by identifying **health sector** (and **bio technologies** in particular), **digital growth** via focus on **information and communication technologies** and **sustainable energy,** as being widely represented smart specialisation areas.

The outlined BSR Policy Briefing serves as a point of departure for further exploration of country specific trends in view of developing the BSR-wide mapping exercise.

The country-specific part of Sweden presented in the subsequent chapters of this research paper outlines whether there are any commonalities traceable with the overall BSR context. These might either reconfirm the previously outlined smart specialisation areas as being widely represented across the BSR, or be areas where Sweden has chosen to advance its niche expertise in other domains.

First, national policy-making is outlined to set the overall context of the current innovation and smart specialisation governance in Sweden. Next, it is complemented by remarks on the national-level thinking on the research infrastructures. A regionally focused section highlights how Region Skåne is advancing its smart specialisation with specific illustrative examples of science-business cooperation dynamics. Finally, the concluding part of the research paper offers reflections on how the Swedish case fits in the previously examined BSR-wide patterns of widely shared smart specialisation priorities.

Before getting down to details, it should be noted that this country-specific section prepared during the Baltic TRAM mapping exercise is also of importance in terms of shedding more light on the governance structures and initiatives supporting Sweden´s outstanding innovation performance, as depicted by the European Innovation Scoreboards of 2016 and 2017 (Hollanders & Es-Sadki, 2017; Hollanders, Es-Sadki, & Kanerva, 2016).

National Smart Specialisation and Innovation Governance

The first key document defining innovation governance in Sweden is the **National Innovation Strategy** which sets out a vision to be reached by 2020. This document is closely aligned with the guidelines of the European Union (EU) and Organisation for Economic Co-operation and Development (OECD) (Government Offices of Sweden, 2012, pp. 5, 9 - 11).

The Strategy is supported by the **Research and Innovation Bill** which is prepared on a four-year basis, stating the budget and specific agenda for research. The currently implemented Bill is titled "**Collaborating for knowledge – for society's challenges and strengthened competitiveness**".

It presents an overall ten-year perspective, but introduces in more specific terms its support measures for the 2017-2020 time frame (Government Offices of Sweden, 2017). The other pivotal document stating the allocation of research and development (R&D) expenditure is the

Energy Research Bill. Both of these documents revolve around the following research priorities "**climate**, **health** and **life sciences**, as well as **digitalisation**" (Dahlstrand, Jacob, & Sprutacz, 2017, p. 9). The key managing authorities responsible for the research and innovation (R&I) policies are **VINNOVA**, the **Swedish Energy Agency** and the **Swedish Research Council** (Dahlstrand, Jacob, & Sprutacz, 2017, p. 8).

The main institutions responsible for smart specialisation in Sweden are the **Swedish Agency for Economic and Regional Growth** (Tillväxtverket) and the **National Innovation Council** (Dahlstrand et al., 2017, p. 6), as a high-level forum chaired by the Prime Minister (Government Offices of Sweden, n.d.).

The Council has defined **digitalisation**, **life sciences** and **environment**, as well as **climate technology**, as crucial areas in order to effectively address the societal challenges (Dahlstrand et al., 2017, p. 6). Thus, bearing in mind the earlier discussed research priorities, it can be concluded that smart specialisation in Sweden goes hand in hand with the selected niche advancement for the research excellence. Moreover, this chain of complementarities is further advanced by the Swedish Research Council´s thinking on the national research focus areas. These also serve as a springboard for enhanced international outreach, be it among the Nordic countries, globally or in alignment with the European level policy and funding frameworks in view of the overall advancement of the European Research Area (Swedish Research Council, 2016, p. 18).

The **National Council for Innovation and Quality in the Public Sector** is another notable forum influencing the national thinking on innovation governance. It is tasked to support and stimulate innovation and change in public services in view of the needs of citizens and businesses (Government Offices of Sweden, 2012, p. 42).

The Context of RIS3 and Research Infrastructures in Sweden

The Swedish national European Strategy Forum on Research Infrastructures (ESFRI) roadmap is the **Swedish Research Council´s Guide to Infrastructures 2012**. The document expresses willingness to offer research infrastructures for the needs of businesses, including incorporation of business´ needs in the initial planning of the research infrastructures (Swedish Research Council, 2012, p. 14).

Thus, the Swedish ESFRI roadmap with its acknowledgement of the need to build closer ties between research and business communities follows the guidelines set out in the National Innovation Strategy (Government Offices of Sweden, 2012, p. 28). This intention is further mirrored in the Swedish priorities defined for the European Structural and Investment Funds (ESIF) allocation. Among prioritised areas, the support for competitiveness, knowledge and innovation is ensured "in order to strengthen the interaction between research and industry" (European Commission, 2016, p. 2). This short outline highlights the focused way applied over the last years in terms of harmonising various policy documents, their implementation structures and funding allocation.

Moreover, this well coordinated landscape bears relevance, since the Roadmap also recognises that there are scarce resources allocated by the European Commission to the construction of new research infrastructures. Therefore earmarking of the European funding for the construction and operation of the infrastructures should be explored in more depth (Swedish Research Council, 2012, p. 19). It should also be added that in the Swedish context it has been recognised that the funding aspect has grown in importance over the last years due to the steady rise of infrastructure costs which are expected to increase further in the future (Swedish Research Council, 2016, p. 23).

The ESFRI roadmap highlights importance of hosting nationally and internationally relevant research infrastructures, which is based on several motivations.

Firstly, the Roadmap – just like other publications dedicated to the national research advancement (Swedish Research Council, 2016, p. 13) – explains that international cooperation is relevant for the Swedish scientists to ensure access to the most advanced research tools. Secondly, such notable research infrastructures help to attract highly skilled personnel to the country (Swedish Research Council, 2012, p. 17). The ESFRI roadmap favours expanding close cooperation from the Nordic format, to a wider one encompassing other countries of the BSR, through such initiatives as the **Baltic Science Link** (Swedish Research Council, 2012, pp. 19 - 20), the Baltic TRAM predecessor.

Regarding the transnational clusters, Sweden participates in the **BSR Innovation Express**. In the framework of the **European Cluster Excellence Initiative**, there are two certified Bronze Label clusters "NetPort Science Park AB" and "Paper Province", and one Golden Label cluster called "Future Position X" to be mentioned.[1] As the European Cluster Excellence Initiative´s offered information shows, southern Sweden´s regions host a number of dynamically evolving clusters.

Regional Dimension

Bearing in mind the national level exemplary innovation performance, it is also worth examining the driving forces behind the Swedish leading regions in more detail, and Region Skåne serves a great example. At this point, the earlier acknowledgement of the OECD should be reinforced that "Skåne has distinguished itself as one of the most innovative regions in the OECD" (OECD, 2012, p. 14).

The Baltic TRAM mapping exercise takes into consideration also the earlier analysis prepared on the basis of consultations among Region Skåne and VINNOVA. Following the Baltic TRAM open call logic, it is worth noting the earlier extensive reflections provided in the analysis of Skåne´s specific context that "customers have to be participants in the value creating process" (Eriksson et al., 2010, p. 23). In order to advance this line of thinking, Skåne is interested in ensuring more availability of research capabilities in terms of allocating sufficient resources for guiding an industry entity throughout its exploration process of the research facilities.

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[1] The number of certified clusters in each of the categories provided in this research paper might differ from the latest information in the European Cluster Excellence Initiative´s data base. Therefore, the readers are encouraged to consult https://www.cluster-analysis.org/ for the most up-to-date information.

Preferably, such a process should allow the specific industry entity to discover the full research potential of the research facility in terms of advancing its produced product or offered services.

Bearing in mind the earlier-discussed Baltic TRAM being a successor of Baltic Science Link – a flagship of the EU Strategy for the Baltic Sea Region – in a macro-regional sense Skåne´s partnership in both networks is also an example of keeping the momentum going for a niche-type science-business cooperation model.

The suggestion in the earlier cited 2010 study to remain on the crest of a wave of the exploration process (Eriksson et al., 2010, p. 88) should be outlined in the context of Skåne´s partnership in both networks. Such affiliation allows to sustain the learning process, ensuring that the initial lessons learned during Baltic Science Link are elaborated in more detail during Baltic TRAM.

However, the science-business cooperation model developed in Baltic Science Link and Baltic TRAM frameworks are far from being the only industry-research sector partnerships, since there are a number of cluster initiatives developed in parallel in order to find effective solutions for closer cooperation between research facilities and businesses. Furthermore, the VINNOVA study also highlights the important role played by the **life sciences** and **healthcare sectors** in advancing the innovation performance in Skåne (Eriksson et al., 2010, p. 60). It serves as an example of how the nationally-defined smart specialisation and research areas are furthered also in the regional setting. In addition, another area where Skåne demonstrates its support to the nationally-set priorities are the **digitalisation**-related activities, such as media evolution and connected technologies.

Skåne examples of RIS3-related activities

Sustainable Business Hub
A network dedicated to strengthening the competitiveness and exports in the region´s cleantech companies, thus contribution to the advancement of smart specialisation in **climate**-friendly solutions. The Sustainable Business Hub brings together Swedish cleantech companies with potential customers by arranging activities and creating meeting places in the field of environmental engineering. It focuses in particular on small and medium-sized companies.

Sustainable Business Hub helps companies to find sources of financing, provides coaching for development initiatives and identifies business partners. Foreign players are provided with information about and contacts with the Swedish environmental engineering market. Sustainable Business Hub also offers training in the fields of business development and export development.

Its members include E.ON, Alfa Laval, Cardo and Läckeby/Pura. The cluster also collaborates with universities, local authorities, national authorities, embassies and the Swedish Trade Council, with the aim of strengthening environmental engineering companies. The operation receives financing in the first instance from the European Regional Development Fund, Region Skåne and the members' service charges.

Medicon Valley Alliance

Medicon Valley Alliance (MVA) is a non-profit member organisation in the Danish-Swedish life science cluster Medicon Valley. MVA's 250 members represent the region's triple helix, and include universities, hospitals, human life science businesses, regional governments and service suppliers. Through its transnational activities, the Alliance endeavours to increase the attractiveness and competitiveness of Medicon Valley. The Alliance constitutes the entry point to Medicon Valley for overseas stakeholders.

In terms of the key actors in the region, the **Skåne Research and Innovation Council** (FIRS) leads the work with the **International Innovation Strategy** defined for the time frame 2012 – 2020. This strategy also serves as the regional RIS3.

One way how to highlight the added value of Skåne´s engagement in Baltic TRAM from the national-level perspective is that the project facilitates the search for new ways to provide some countermeasures to the overall decrease of the business enterprise sector´s proportion of domestic R&D expenditure in Sweden (Monaco et al., 2016, p. 15).

However, so as not to give an overall gloomy impression it should be pointed out that the public sector expenditure on R&D in Sweden provides a contrastingly promising trends of increased investments (Monaco et al., 2016, p. 16). Consequently, Baltic TRAM open call offers an opportunity to showcase to the businesses the value of research-based product advancement, to attract further interest in solutions offered by research facilities to the business sector, thus offering new insights in the value of increased allocation of funding for sustained research-intensity.

Likewise, Skåne´s engagement in Baltic TRAM serves as one of the practical examples of implementing the guidance enshrined in the region´s **International Innovation Strategy** in terms of elaborating "faster and closer models for cooperation between industry and the academic world" due to the acknowledgement that "there has been a shortage of effective ways of working together with companies" (Skåne Research and Innovation Council, 2011, p. 8). The forthcoming Baltic TRAM publications dedicated to the analysis of cases processed during the Baltic TRAM open call, will shed more light on whether the project has highlighted new solutions appreciated by the business side.

Conclusion

Having looked at the Swedish smart specialisation in the wider context of the earlier-mapped and strongly represented smart specialisation areas chosen by other countries, a number of commonalities can be identified.

Namely, both on the national and the regional level, as shown by the specific case of Region Skåne, the **health sector** is a smart specialisation area shared both by Sweden and Estonia, Finland, Lithuania, Poland and Southern Denmark (Mickus et al., 2017, p. 30). Furthermore, sustainability is a common thematic thread, where Skåne is facilitating a vibrant cooperation

among **cleantech** companies, while **sustainable energy** is also prioritised by Estonia, Latvia, Lithuania, Poland and Southern Denmark (Mickus et al., 2017, p. 30).

Last but not least, as in the earlier analysed national case studies, Sweden has also put **digitalisation** high on its smart specialisation and research advancement agendas.

In terms of the noted relevant sources of reference, Sweden, similarly to Finland and Denmark, recognises the value of the findings and guidance prepared under the helm of such multilateral forums as the Nordic Council of Ministers, the EU and the OECD (Mickus et al., 2017, p. 30). Such common points of reference are of importance also in terms of the forthcoming elaboration of Baltic TRAM´s work in the context of the **CBSS Baltic 2030 Action Plan**´s (CBSS Secretariat, 2017) implementation. Baltic TRAM serves as one of the driving forces behind the BSR-wide advancement of the **Sustainable Development Goal 9 "Industry, Innovation and Infrastructure"**.

Thus, the overall conclusion of this brief analysis is that Sweden shares several strong smart specialisation commonalities with other BSR countries. The nuances of these similarities in the specific science-business cooperation context remain to be explored in the recently-started second phase of Baltic TRAM implementation, when more elaborate analysis will be presented to the wider audiences regarding the results of the Baltic TRAM open calls.

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