Baltic Science Network

Connecting through Science

Participation in ERA and Baltic Sea RDI Initiatives and Activities: Analysis and Policy Implications for Widening Participation of Strong and Moderate Innovators

Kadri Ukrainski, Erkki Karo,
Margit Kirs, Hanna Kanep

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Institutional affiliation of the author	University of Tartu & Tallinn University of Technology

Project in brief

Baltic Science Network (BSN) serves as a forum for higher education, science and research cooperation in the Baltic Sea Region (BSR).

BSN is a policy network gathering relevant transnational, national and regional policy actors from the BSR countries. The Network is a springboard for targeted multilateral activities in the frame of research and innovation excellence, mobility of scientists and expanded participation. These joint activities are modelled with an overall aim to ensure that the BSR remains a hub of cutting-edge scientific solutions with the capacity to exploit the region's full innovation and scientific potential. The activities are modelled as examples of best practice, which form the basis of the policy recommendations drafted by the Network.

The platform is tailored to provide advice on how to enhance a macro-regional dimension in higher education, science and research cooperation. Recommendations jointly formulated by the Network members address the European, national and regional policy-making levels.

BSN is a flagship of the EU Strategy for the Baltic Sea Region under the Policy Area Education, Research and Employability, as well as one of two cornerstones of the Science, Research and Innovation Agenda of the Council of the Baltic Sea States.

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DISCLAIMER

This working paper is based on input from stakeholders and BSN partners and does not necessarily reflect the views of all participating Member States and organisations.

Executive Summary

This study focuses on three major topics:

1. The set-up, governance and funding of instruments supporting RDI policies in BSR by answering the following quesions:

- *What are the existing RDI cooperation oriented instruments and programmes used in BSR countries, are they designed internally and coordinated as part of broader policy mixes?*
- *Which instruments and programmes have had wider impact on RDI cooperation in BSR and more broadly?*

2. The mapping of existing RDI cooperation patterns and networks in BSR and the analysis of factors holding back their development by answering the following questions:

- *What countries and types of institutions are most actively cooperating within the ERA and BSR instruments? What is the role of different institutions, enterprises?*
- *What factors are hindering and supporting the widening in ERA and BSR activities?*

3. The analysis and recommendations for developing novel cooperation-enchancing policy instruments in BSR by focusing on the following questions:

- *What new programmes are needed to encourage RDI partnerships in BSR?*
- *What instruments could improve the participation capabilities of moderate innovators?*
- *What kinds of instrument designs and managerial practices may be best suited?*

We find that policy challenges to enhancing research, development and innovation (RDI) cooperation in the Baltic Sea Region (BSR) are manifold:

1. The relatively lower functional proximity (reflected in the existence of common interests, both substantive and financial, regarding RDI cooperation in specific RDI fields e.g. food, health, energy, transport, environment, civil security, safety, maritime affairs, science and education, culture), compared to physical and relational proximity, among many BSR countries and regions implies that not all RDI challenges and actions will be of common interests to all regional actors.
2. BSR cooperation is already influenced by a vast, complex and partly overlapping system of different institutions, policies, instruments and RDI networks. For example, while instruments such as those connected to EUSBSR and BONUS focus on the Baltic Sea as a key object of research and cooperation, in other initiatives BSR acts as a place or platform for cooperation (eligible territory), which will be driven not so much by functional proximity but by political and policy imperatives. At the same time, global and EU-level drivers of RDI might supersede further functional proximity in the region and, thus, challenge or compete with the regional and national interests and priorities. Differences in actual RDI capabilities of different countries or regions may also lead to different interests regarding RDI cooperation: more developed regions may be interested in building collective critical mass for global competitiveness whereas less developed regions may be interested in intra-regional convergence and catching-up effects.

3. A number of studies highlight that the EU-level strategy-making processes may have been an additional driver for transnational cooperation in BSR (especially in some thematic areas such as the environmental and maritime issues). The increased role of the EU in the region may have had a twofold effect by supporting the creation of a more dynamic multi-level governance model while also creating and further intensifying the coordination problems between different organisations and government levels in BSR. The "policy mixes" co-created by the EU, BSR, regional and national policies and initiatives are implemented by scientists and innovators and interpreted and used in different ways and for different purposes. Thus, the perceptions and actions of scientists and innovators working in this multi-level arena of RDI policies are crucial in determining the actual content and implementation of strategies and policies.
4. Different levels of RDI funding, but also the high dependence of some countries on European Structural and Investment Funds (ESIF) and the impact of the recent financial crisis and subsequent austerity trends have created the threat that especially (but not only) the moderate-innovator countries may be undercutting their basic RDI capabilities (and funding) that are necessary preconditions for functional proximity-driven RDI cooperation. Given these differences in the importance of foreign and especially EU funding mechansims for RDI, a crucial issue in analysing the effectiveness of transational-cooperation-oriented RDI policy instruments and the overall policy mix is whether the locational proximity of a specific region (BSR) is complemented by relational and functional proximity.

In BSR as a whole, the majority of RDI investments are made by Sweden, Denmark and Finland. Poland and three German BSR states are contributing equally, but less than the former three countries. While the financial capacity of Baltic States is rather marginal, the participation levels (participations, funding shares etc.) of the Baltic States in different BSR (but also EU) cooperation programmes are much larger compared to the financial capabilities of their innovation systems. The magnitude of EU funds has grown for the BSR region as a whole, and this trend is observable also in areas that can be considered core topics of BSR (environment, energy, maritime research etc.). Widening instruments have become less relevant for the whole BSR region, but ERA-NETs, for example, have gained in importance compared to the period of 2007-2013.

As many BSR countries are small, the integration patterns vs isolation patterns in transnational cooperation are highly relevant. In this study, we use the segregation indexes and their dynamics to assess whether the BSR, but especially the EU13 countries of the region, have achieved wider integration within the European Research Area (ERA) and the BSR science cooperation (which they are aiming for) or not. We conclude that while EU13 has managed to gain relatively more funding from FP, this has not necessarily increased the integration of these countries within ERA; similarily the concentration (and not wider integration) is visible for the whole BSR. These results are confirmed also across most thematic instruments. We can argue that the BSR group is having higher isolation compared to the EU13, suggesting that for the moderate innovators, cooperation with other EU13 members remains wider in the Horizon 2020 framework. Alternatively, we can argue that

thematic (functional) proximity within BSR is more concentrated in H2020 projects. Those two claims further highlight the need to discuss the policy tensions of small countries in wider vs deeper integration in the EU.

The thematic cooperation patterns showing the growing segregation of thematically important fields elaborates the challenge for BSR in developing closer functional proximity within BSR. The threat that global drivers will supersede thematic cooperation based on BSR interests (energy, health, transportation, security) seems not to be realised in H2020. Based on our results, we can argue that the tension between the financial incentives of thematic cooperation via H2020 on one hand and the broader integration to the thematic knowledge base on the other hand seems to be solved in favour of the former incentive. The internal BSR cooperation within the H2020 instruments has also not grown, as the values of isolation indexes are increasing between FP7 and H2020.

A more detailed view on cooperation patterns within the frameworks of different instruments brings us to the conclusion that most of the moderate-innovator countries in BSR are operating quite well according to the logic of decentralised collaboration, but most of the instruments, growingly also on the regional level (INTERREG, BONUS, STRING – aimed at strengthening the meta-regional funding spaces) and inter-organisational networks (NOVA, BOVA cooperation) are operating in the integrated mode. As discussed above, ERA and BSR cooperation increasingly entails the instruments, where financial commitments backed by national funding are needed (e.g. Joint Programming Initiatives (JPI), PCP etc.) requiring a greater willingness and capacity to invest in transnational cooperation. Moderate innovators need to increase their contributions in this field to enter these cooperation activities or, alternatively, they need to catch up even more in FP9. The inter-organisational-level BSR cooperations contribute to the institutional richness of the region, but on the other hand, considering the limited capabilities of the few actors in moderate innovators, the integration potential of those networks is under-utilised. As moderate innovators increasingly engage in the activities of EU-wide networks, there can be a danger in weakening inter-organisational BSR cooperation forms in the future.

Well-known and widely discussed cooperation barriers for moderate innovators – insufficient R&D investments in EU13 countries, lack of sustainable and functional synergies between national research systems and EU research foci, but also insufficient access to existing networks and limited experiences with project applications and management – also found support in our study. We found that while achieving higher funding levels in the context of low success rates of H2020 instruments, the substantive importance and content of projects may become secondary next to "gaming" the rules of different funds, which will be detrimental to functional cooperation as well as research progress in the longer term. Regarding the logics of putting together transnational research consortia, the geographical coherence or logic of projects does not matter for application success as much as the applicability and diffusion of research results. For moderate innovators, this has created an additional challenge of finding appropriate industry-/market-partners, and while SMEs and public-sector organisations can be found locally, collaboration with larger industry actors often takes place transnationally. While this may be beneficial for ERA-wide knowledge and

technology diffusion and networking, finding such partners internationally tends to be an additional barrier for the EU13 research groups and especially for new entrants to the transnational cooperation arena.

Regarding the EU13 focused policy goal of "spreading excellence, widening participation" in ERA, most researchers seem to interpret these measures as political tools that partly contradict the "normal" ways of transnational cooperation that are predominantly based on scientific excellence, international reputation and long-term network building. Of course, researchers living under strong financial pressures and constraints are willing to accommodate their behaviour with such funding mechanisms, but they also recognise that this may not be a sustainable way forward if sufficient basic RDI capabilities are lacking both in academia and market. This seems to be especially crucial for the EU13 countries that would often need stronger investment into infrastructure and basic research capabilities than soft mechanisms of network building, such as COST, Twinning etc. The same seems to apply to EU's PPP and P2P schemes and similar joint initiatives where top-up funding is needed. Thus, the effectiveness of these measures for EU13 seems to depend to a large extent on the strategic choices and commitments by policy makers: researchers are likely to follow, but not lead, such choices, as entrance to existing networks requires significant policy-level commitment and financial commitments. Overall, while such soft instruments are necessary for networks building and sustaining ERA, these are not the primary needs of EU13 countries that would need to first invest into their own basic RDI capabilities and allow the RDI systems to mature.

Analysts and policy-makers have brought out several key lessons, best practices and instruments which can be suggested to all, but especially moderate-innovator countries, to improve their participation in H2020, namely concentrate more on functional proximity creation; juste retour of finances should not be the goal. As all research areas cannot be addressed simultaneously, a selective and strategic approach to participation is seen as superior demanding clear national strategic plans and appropriate alignment of EU and national objectives, and synergetic use of ESIF is needed to build advantages. As the instruments have grown in complexity, better communication of national research and policy circles with EU counterparts is needed, and for achieving better results, joint efforts of BSR countries in creating visibility but also shaping the design of these policies would probably lead to greater success (based on the Mediterranean cooperation example).

While the specific policy instruments for increasing transnational cooperation (we suggest a list of policy interventions for EC, national governments, but also organisations) may differ in their rationales, intervention logics, institutional set-ups, scale and scope, we deploy an analytical framework of Verdung joining the regulatory instruments (the sticks), economic and financial instruments (the carrots) and informative instruments (the sermons) for bringing out the individual instruments, which if jointly used are "nudging" the incentives of agents (researchers, etrepreneurs, etc.) to increased transnational cooperation. We suggest using two types of transnational RDI cooperation policies – at first policies that can speed up bottom-up transnational cooperation initiatives and, second, policies that try to initiate and steer new types and forms of transnational RDI cooperation either in new domains (of

research, societal challenges) and/or between new partners (from different regions, economies etc.). These policies often depart from territorial and/or relational proximity and try to increase functional proximity through policy interventions.

1. The "speeding-up" policies could provide additional leverage to tackle common BSN challenges, especially as BSN has already established several incentives/funding schemes for fostering transnational research and innovation in the region and cooperation in the specific areas of scientific excellence, but also supporing the further utilisation of R&I infrastructure and mobility. As specific incentive mechanisms, we can propose the creation of a common service area by virtual service centres, shared service centres, but also the BSR 2nd best funding facility for the project proposals that receive very good evaluations but fail to receive the funding from two-phase programmes of H2020 (e.g. ERC, SME, Teaming) while being highly relevant for the region as a whole. The criteria, the selection committee, the institutional set-up, etc. could be worked out at the level of BSN.

2. In the case of top-down policies aimed at wider BSR challenges, where the mere reliance on bottom-up initiatives for cooperation may be insufficient, the creation of BSR societal-challenges initiatives (e.g. in environment, energy, health) is required: either joint grants or coordinated policy initiatives with national and regional divisions of labour, i.e. different but complementary (as agreed and coordinated) RDI focuses and types of funded activities in different countries or regions of BSR. The creation of the BSR breakthrough accelerator allowing RDI grants for cooperative exploratory and/or high-risk and high-return projects in new upcoming interdisciplinary fields, such as cyber security, big data, smart cities, bioeconomy, etc., where cooperation at the level of BSR would be essential to create critical mass to compete globally (could again be jointly organised grants with common pot or topic-level coordination of different national policy initiatives and instruments); creation of BSR as a "common service area" to engage different actors in common diffusion- or application-oriented activities.

The developments in the aforementioned areas would potentially promote BSR as a role model in advancements of specific (niche) research areas and building the specific institutional capacities and scientific excellence.