

Introduction

Estonia provides an interesting example about the development and implementation of RIS3 strategies. Estonia has been one of the major receivers of European Structural and Investment Funds since these funds first became available for the country. During the ongoing funding period of 2014-2020 we can see that Estonia has experienced some convergence with the stronger regions in the EU with its GDP per capita PPP increased from 75% of the EU average in 2013 to 81% in 2018.¹

Several academic publications and reports have been published which analyse the development and implementation of RIS3 in Estonia. These include Karo *et al.* (2014), Karo and Kattel (2015), Karo *et al.* (2017), Espenberg *et al.* (2018). All these publications not only give an overview about the overall development and implementation of RIS3 but also highlight challenges that the country is facing. These challenges are related to the governance model of the country and how economic and RDI policies have been developed throughout the years.

The current chapter summarises the results of the previous publications from the perspective of the largest local municipality in Estonia – Tallinn City which also functions as the capital and economic centre of the country. In particular, the chapter brings out the main challenges of RIS3 from the city’s perspective together with recommendations.

Overview about the implementation of RIS3 in Estonia

Although smart specialisation is the EU’s regional policy tool, RIS3 processes in Estonia have been led by the national government together with a national perspective. There are several reasons behind it. The first one is related to the Cohesion Policy and how the EU classifies regions. There are three levels of administrative units in the EU based on the size of population. The following table from the Regulation (EC) No 1059/2003 of the European Parliament and of the Council shows how administrative units in the EU are classified.

Level	Minimum population	Maximum population
NUTS 1	3 million	7 million
NUTS 2	800 000	3 million

¹ Based on Eurostat

NUTS 3	150 000	800 000
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Cohesion Policy of the EU targets NUTS 2 level regions, especially the ones where GDP per capita is less than 75% of the EU average. Because of its small population of just over 1.3 million people, Estonia is therefore considered as a single NUTS 2 level region in the EU. In addition, the country was eligible for the highest-level support from the European Structural and Investment Funds.

The second reason is related to the developments in the Estonian regional governance. Till 1993 Estonia followed the Finnish model of single-tier self-governing subnational authorities with elected county councils (Sootla and Kattai 2018). However, since then Estonia has moved towards greater centralisation (*Ibid.*). Nonelected county governments which functioned as extensions of the central government at the county level were abolished with the local municipality reform in 2017 and their functions were divided between the central and local government level. In addition, local municipalities in Estonia are mostly responsible for the provision of public services and less for policy-making. Their exact responsibilities are brought out in the Estonian Local Government Organisation Act. In economic and RDI policy the local municipalities have no role and so far these policy areas have been under the responsibility of the central government.

The processes related to RIS3 (choosing growth areas, policy-making, policy implementation) have mostly been led by the Ministry of Education and Research (MER) and the Ministry of Economic Affairs and Communications (MEAC). The RIS3 growth areas were chosen in two steps. First, a quantitative analysis based on NACE statistics was conducted to find economic activities that have a high concentration of employment, high added value and high export-intensity (Estonian Development Fund 2013; Karo et al. 2017). The process was then given over to Estonian Development Fund to find areas with the greatest potential of collaboration between the local companies and research institutions. **The RIS3 growth areas of Estonia are:**

- 1) Information and communication technology (ICT) horizontally through other sectors - use of ICT in the industry (including automatization and robotics), cybersecurity, software development;
- 2) Health technologies and services - biotechnology, e-health (use of ICT for the development of medical services and products);

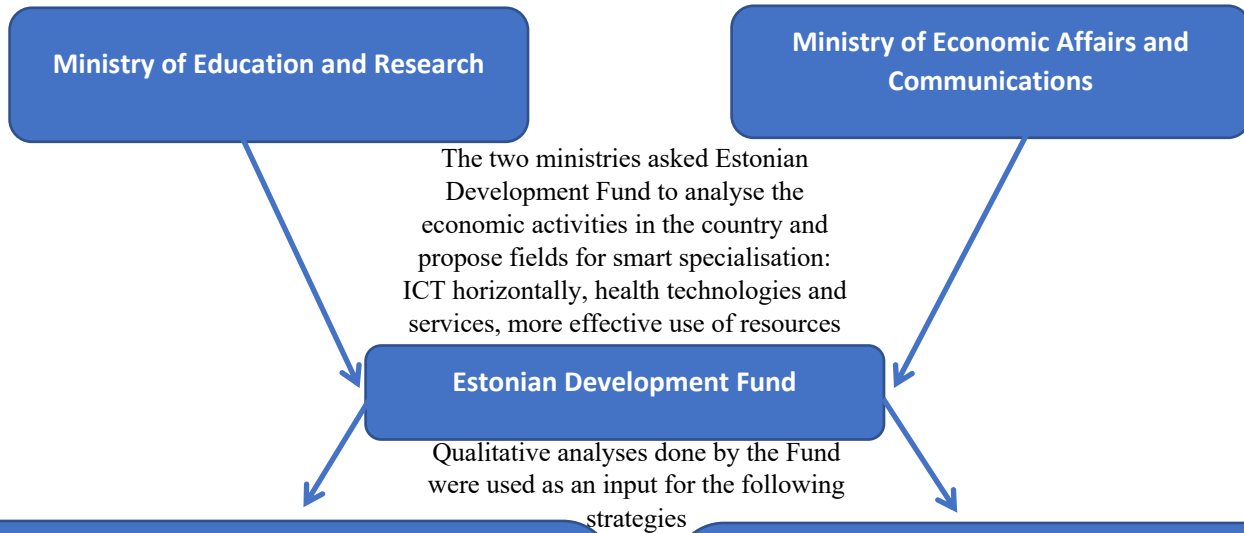
- 3) More effective use of resources - materials science and industry, innovative construction (“smart house”), health-supporting food, chemical industry (more effective use of oil shale).

Estonia does not have a separate RIS3 strategy. The growth areas are integrated into two separate strategies: *Knowledge-based Estonia: Estonian Research and Development and Innovation Strategy 2014-2020* under the Ministry of Education and Research and *Estonian Entrepreneurship Growth Strategy 2014-2020* under the Ministry of Economic Affairs and Communications. Scheme 1 gives an overview about RIS3 in Estonia. Table 1 and Table 2 summarise the main targets of *Estonian Research and Development and Innovation Strategy 2014-2020* and *Estonian Entrepreneurship Growth Strategy 2014-2020* respectively.

The overall aim of the development of RDI is to create favourable conditions for an increase in productivity and in the standard of living, for good-quality education and culture, and for the sustainable development of Estonia.
Investment in research and development: 3% of GDP, incl. private sector RD expenditures: 2% of GDP (2011: 2.41% and 1.52% of GDP, respectively)
10th position (minimum) in the EU Innovation Union Scoreboard (2011: 14th position)
Labour productivity per person employed: 80% of the EU average (2011: 68%)
Sub-objective 1: Research in Estonia is of a high level and diverse
11% of all top-level scientific publications in Estonia are among the top 10% most cited scientific publications worldwide (2008: 7.5%)
Number of new doctorate graduates in an academic year: 300 (2012: 190)
Number of top-level scientific publications per million population: 1600 (2012: 1191)
Sub-objective 2: Research and development (RD) functions in the interests of the Estonian society and economy
Government budget appropriations or outlays on RD (GBAORD) by socio-economic objectives other than GUF: 40% (2011: 30%)
Share of public sector research and development expenditures financed by the private sector: 7% (2011: 3.1%)
Sub-objective 3: RD makes the structure of the economy more knowledge-intensive
Employment in high-tech and medium high-tech manufacturing and in knowledge-intensive services (KIS) as % of total employment: 9% (2010: 6%)
Exports of high technology products as a share of total exports: 15% (2010: 10.4%).
Sub-objective 4: Estonia is active and visible in international RDI cooperation
The success rate of Estonia in EU research and development framework programme Horizon 2020 is reflected in funding received per capita: 100% of the EU average (2011: 87% of the EU average)
Share of national public funding to transnationally coordinated research in total GBAORD is 3% (2010: 1.31%).
Table 1: Main aim, sub-objectives and related indicators of the Estonian Research and Development and Innovation Strategy 2014-2020

General objectives
To increase productivity per employed person to 80% of the EU average
To raise the employment rate in the age group 20–64 to 76%
Sub-objective 1: Estonians are entrepreneurial and enterprises are ambitious
The number of enterprises established three years ago with turnover exceeding 125,000 euros (as the three-year average; source: Business Register): <i>initial level (in 2011) 1150, target level (in 2020) 1600</i>
Number of enterprises with at least 20 employees (source: Statistics Estonia) <i>initial level (in 2011) 3217, target level (in 2020) 4000</i>
Sub-objective 2: Estonian companies manufacture efficiently high added value products and offer innovative services.
The share of private sector expenditure on research and development in GDP (Source: Statistics Estonia): <i>Initial level (2011) 1.52%, target level (2020) 2%</i>
Sales of new to market and new to firm products or services (ratio to total return on sales; source: Statistics Estonia): <i>Initial level (2010) 9.7%, target level (2020) 18%</i>
The ratio of labour productivity per hour worked to the Eurozone average in current prices (Source: OECD) <i>Initial level (2011) 51%, target level (2020) 65%</i>
Sub-objective 3: Estonian companies are active exporters
The share of Estonia in the world trade (source: WTO): <i>Initial level (2011) 0.099%, target level (2020) 0.11%</i>
Number of exporters (source: Statistics Estonia): <i>Initial level (2012) 11 281, target level (2020) 15 700</i>
Unit value index (UVI) (source: Eurostat): <i>Initial level (2011) 130.6, target level (2020) the increase in the value is faster than the EU average</i>
Sub-objective 4: Enterprises value Estonia highly for its business environment
Estonian ranking in the World Economic Forum (WEF) Global Competitiveness Report: <i>Initial level (2012) 34th, target level (2020) 25th.</i>
Estonian ranking in the Doing Business report: <i>Initial level (2012) 21st, target level (2020) 15th.</i>
Table 2: Main objectives, sub-objectives and related indicators of the Estonian Entrepreneurship Growth Strategy 2014-2020

Scheme 1: RIS3 in Estonia



Estonian Research and Development and Innovation Strategy 2014-2020

- Ministry of Education and Research as the one responsible for the implementation
- Estimated cost: 1 353 215 525€, funded by EU structural funds and state budget

Other partners responsible for the implementation:

- Archimedes Foundation;
- Enterprise Estonia;
- Estonian Research Council;
- Estonian Defence Forces;
- ELNET;
- Environment Agency;
- Estonian Academy of Sciences;
- Kredex;
- Other ministries.

Estonian Entrepreneurship Growth Strategy 2014-2020

- Ministry of Economic Affairs and Communications as the one responsible for the implementation
- Estimated cost: 382 350 000€, funded by EU structural funds and state budget

Other partners responsible for the implementation:

- Enterprise Estonia;
- KredEx;
- Environmental Investment Centre;
- Other ministries.

Tallinn Enterprise and Innovation strategy 2014-2018

- Is largely based on the two national strategies;
- The chosen fields of smart specialisation are health technologies, mechatronics, environmental technologies, ICT, creative industries, tourism, transport and logistics, health services, financial services.
- Municipalities in Estonia are not responsible for supporting enterprises – Tallinn City and its activities as a special case in Estonia because it is the largest municipality with 1/3 of the country's population and generates over half of the total GDP.
- The implementation of the strategy is funded by city budget and by different foundations where the city is one of the partners.

Challenges in Estonia related to RIS3

Estonia faces several challenges related to RIS3 development and implementation. These challenges are related to how the governance system and RDI and economic policy have developed throughout the years.

In the EU context RIS3 is a policy tool for Cohesion Policy. As was already mentioned, it mostly targets NUTS 2 level regions. Because of its small size, Estonia is a single NUTS 2 level region which means that RIS3 processes are led by the national government with a national perspective. Although the country is small both in terms of population and territory, there are significant socio-economic differences between the different counties related to deindustrialisation and decrease of population outside of the major cities (Tallinn, Tartu). Such developments would require a policy response which would consider the needs of different counties in the country. In reality, we can see that because of the central implementation together with a national perspective only a couple of funding measures are specifically targeting counties (regional competence centres, county-level development centres). Local municipalities were left out from the selection of RIS3 growth areas and the development of related policy measures. In addition, according to the Local Government Organisation Act the economic development is not the responsibility of local municipalities.

National level has generally struggled with including social partners into RIS3-related activities, including the private sector. The task of proposing the growth areas was given to the Estonian Development Fund which had closer relations with Estonian start-ups, not the manufacturing industry (Karo *et al.* 2017). This in combination with the fact that the RIS3 processes were mostly coordinated by MER which has closer relations with academia has led to situation where RIS3 in Estonia is mostly focussing on the needs of the high-tech sector and academia (Karo and Kattel 2015; Karo *et al.* 2017). As the regional perspective was largely neglected and RIS3 is mostly focussing on high-tech sectors, we can see that most of the RDI funding has ended up in Tartu and especially in Tallinn area.

RIS3 and Tallinn

Although economic development is not the responsibility of local municipalities, we can consider Tallinn City to be an exception. The city has its own Enterprise Department with *ca* 60 employees. Tallinn also developed its own Enterprise and Innovation Strategy for 2014-2018 period. The strategy had three main objectives (see Table 3) and it also chose the priority sectors for Tallinn

City which were largely based on the national RIS3 growth areas. **The priorities for Tallinn City according to the strategy were:**

- 1) Service economy: creative economy, tourism, transport and logistics, health services, financial services;
- 2) Future technologies: health technologies, mechatronics, environmental technologies;
- 3) Information and communication technology horizontally.

If we look at the implementation side of the strategy, we can see that most of the activities found in the strategy were horizontal in nature and help to improve the general business environment such as consultancy and incubation services for enterprises, development of industrial parks, scholarships for students, promotion of the region and organising larger events (e.g Tallinn Entrepreneurship Day). There were a couple of activities that support innovation more directly such as the development and implementation of smart city concept, innovation procurements and providing opportunities for testing new solutions.

Challenges and proposals

The main challenges from the Tallinn City side are related with the lack of cooperation from the state side and funding. As was mentioned before, local municipalities were not included into the RIS3 processes. It is understandable to some extent as before the local municipality reform in 2017 there were 213 municipalities in Estonia with average population of 6349 inhabitants.² However, Tallinn is a special case for several reasons as its population is 1/3 of the total population of Estonia and it generates over half of the Estonian GDP. Because of its context, Tallinn City has enough scale to play a role in the Estonian RDI policy. Tallinn City could function as a testing platform for new technologies. The city has already shown its willingness through its now ended *Enterprise and Innovation Strategy 2014-2018* and different innovation projects where the city has been one of the partners.

However, the participation in these projects has so far been hectic. Most of these projects are funded by the EU which means that the implementation of different ideas is not guaranteed because of the competition for funding. In addition, Tallinn City has so far participated in these projects mostly

² After reform 79 municipalities with average population of 17 152 inhabitants. Ministry of Finance - <https://haldusreform.fin.ee/2018/03/omavalitsuste-ulevaade-haldusreformi-jargselt/>

as a regular project partner and not as the lead partner. This means that the city itself has not acted as the initiator of different projects which has limited its capability to direct innovation. Interestingly, this has been the recommendation from the Estonian Ministry of Finance.

Fulfilling the role of a test platform would require several actions by Tallinn City and the state to improve different capacities and develop suitable funding mechanisms. The city has to improve its capacity to use innovation procurements as a tool to support the development of new solutions. So far it has been underutilized although there are also good examples from Tallinn such as the public transport ticketing system and 3D mapping solution for underground communications. The reasons are related to risk averse culture and lack of knowledge about innovation procurements. **Tallinn City together with other municipalities and the state could address this issue by organising a thorough training programme for officials who deal with procurements during their work. The public sector should also accept failures. At the same time, risks can be reduced if innovation procurements are used for small scale pilots of different solutions. In addition, changes in the procurement regulations might be necessary to encourage the use of innovation procurements.**

Tallinn City also needs improvements in capacities related to project development and implementation. So far, the city has mostly been a project partner and not the lead partner in different EU projects. Although it means less administrative tasks, it also limits the city's possibility to direct the development of new technologies that can be integrated into public services and urban environment. The potential topics could be related to smart city development and sustainable urban environment. As we can expect that during the first couple of years of the 2021-2027 funding period the local funding measures are still under development, it is crucial to have strong local stakeholders who could lead projects with EU funding such as Horizon or Interreg. **Increased cooperation with local universities could increase the capacities related to project development and implementation. The city is already taking steps towards selecting the projects where to participate more thoroughly which will also help to concentrate its financial and human resources for projects with a higher priority.**

Platform approach would also require local policy/financial measures that are developed in close cooperation between Tallinn, other larger municipalities, the state, academia and private sector which can directly support the development and implementation of new

innovations. Good example here is the 6Aika initiative which is a networks of six largest cities in Finland. The cities cooperate with each other, the state and regional councils to support the development and implementation of different smart city solutions. For companies it has given a possibility to test their solutions in a real-life setting. The projects are funded through different EU and local funds. Inclusion of local funds ensures that the execution of projects is not dependent on the availability of EU funding. At the same time, the EU funding can diminish the pressure on the local budget.

All the aforementioned proposals would help to support entrepreneurial discovery process. First, they bring together stakeholders such as the city, the state, academia and private companies to develop financial measures and execute various projects. As the projects would focus on urban issues, the processes would mostly be coordinated by the city government and not the state. We could also expect a closer cooperation with universities and private companies as the city is closer to them than the state.

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