

Implementation Plan 2016-2019 for achieving the objectives of the Estonian Research and Development and Innovation Strategy 2014-2020 “Knowledge-based Estonia”

Approved
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1. Introduction

This Implementation Plan 2016-2019 for attaining the objectives of the Estonian Research and Development and Innovation Strategy 2014-2020 “Knowledge-based Estonia”¹(hereinafter "Implementation Plan" or "IP") has been drawn up pursuant to Government Regulation of 13 December 2005 No. 302 („Types of strategic development plans, and procedures for drafting, revising, implementing and evaluating them, and for reporting thereon”) which provides that sectoral development plans are implemented in accordance with their Implementation Plans submitted by the responsible minister to the Government of the Republic within three months of adopting the sectoral development plan. The Implementation Plan for 2014-2017 was adopted with Government Regulation No. 377 of 3 September 2014. This IP is the second Implementation Plan for implementing the objectives, measures and activities set out in the RDI Strategy 2014-2020 "Knowledge-based Estonia" and it applies to activities over the period 2016-2019.

Further, the IP addresses activities aimed at supporting the objectives of the European Research Area (ERA). ERA is one of the cornerstones of the EU flagship initiative Innovation Union and an essential component of the Europe 2020 strategy with focus on maximising the potential of European research systems, fostering innovation, strengthening the research and technological capacity of Member States as well as their competitiveness and capability to solve major social problems.

The Estonian Space Action Plan 2016-2020 is adopted as Annex 3 to the Implementation Plan. Annex 1 (List of Items on Estonian Research Infrastructures Roadmap) and Annex 2 (Strategic Framework for Estonia's Participation in EU Research, Development and Innovation Partnerships) to the Implementation Plan were adopted in 2014 and 2015, respectively.

Strategy objectives

The RDI strategy addresses the challenges faced by Estonia as regards the organisation of RDI, business, economic competitiveness, the public sector, and development of the RDI policy. The strategy is aimed at supporting the sustainable development of the community through research, development and innovation. This advances the objectives of Estonia's long-range development strategies.

The **overall goal** of the development of RDI is to create favourable conditions for improving productivity and the standard of living as well as for high-quality education and culture, and the longevity and development of Estonia. The sub-goals of the RDI strategy include:

¹ Approval of the Estonian Research and Development and Innovation Strategy 2014-2020 “Knowledge-based Estonia” – Riigi Teataja III, 29 January 2014, 2.

1. **Research in Estonia is of a high level and diverse.** It is internationally competitive and visible, and covers the main fields of higher education and culture. The network of research institutions operates efficiently. The infrastructure is modern. A new generation of researchers and innovators is ensured. Estonia is an attractive place for research and development, and a researcher career is popular.
2. **Research and development (RD) is carried out in the interests of the Estonian society and economy.** It is based on the needs of the society and economy, and prioritises research applications. Research institutions are motivated to undertake applied research and pursue productive cooperation with businesses and government authorities. The state acts wisely when commissioning applied research and development. The organisation of research carried out for socio-economic purposes is efficient.
3. **RD makes the structure of the economy more knowledge-intensive.** RDI investments selected and managed by using the smart specialisation method encourage the growth fields to develop faster than expected. The share of knowledge-intensive business in the economy and the added value of exports will increase significantly.
4. **Estonia is active and visible in international RDI cooperation.** Cross-border cooperation helps tackle challenges faced by Estonia and the entire world. Estonia acts as a partner in the initiatives of the European Research Area (incl. in the joint programming of research), European innovation partnerships, initiatives by the Baltic and Nordic common area, and international research infrastructures. Businesses have access to the latest RDI results across the world as well as access to cooperation opportunities and infrastructure.

2. Implementation of measures

The strategy is implemented according to this Implementation Plan (IP) which details, broken down by years and sponsors, the specific activities and their cost over four (1+3) years. The implementation of the RDI strategy must ensure the coordinated development and capacity building of the Estonian RDI system given the state's budget strategy, the 2014-2020 Operational Plan for using structural funds, and other national action plans. Further, implementation must take into account the strategies and development plans for spheres, which are linked to over partly overlap the RDI strategy. Resource planning takes into account the existing economic situation and the latest economic forecast. The measures envisaged in the IP are intended to be used as input for the State Budget Strategy (SBS) via the development plans for the ministries' government areas.

The detailed list of activities, sponsors and resources envisaged for each ministry's government area are set out in a table annexed hereto.

The sources of financing include expenditure on supporting RDI as envisaged in the budgets of various ministries. The IP recognises activities financed from tax revenue, the EU Structural Funds² and other foreign aid.

² The RDI activities of the Ministry of Education and Research are financed from the budgets for measures 4.1 "Enhancing Estonian RD sector's international competitiveness and participating in pan-European research initiatives" and 4.2 "Increasing the local socio-economic impact of the RDI system and smart

The objectives of the RDI strategy are advanced using four measures:

1. Measure: "Ensuring the high level and diversity of research".
2. Measure: "Increasing the social and economic benefit of RD".
3. Measure: "Smart specialisation is the basis for RDI changing the structure of economy".
4. Measure: "Increasing the participation and visibility of Estonia in international RDI cooperation".

1. Measure "Ensuring the high level and diversity of research".

To attain the objectives, we need to:

- increase the competitiveness of Estonia's RD activities and ensure diversity across the main areas of research;
- ensure the research is funded on the basis of quality, and create the preconditions for improving the efficiency of the RDI system;
- increase the stability of research funding and the balance between baseline financing of research institutions and competitive research grants in order to achieve the sustainability of the RDI system and the realisation of the established capacity;
- ensure a new generation of researchers and engineers, incl. pay more attention to systematic development of Doctoral studies;
- support the establishment of a sustainable community of researchers and businesses, and support the development of an attractive environment for RDI and technological innovation;
- develop an attractive and modern working environment for research.

Activities:

— **Institutional Development Program for Research and Development Institutions and Higher Education Institutions (ASTRA); action 4.1.1. financed from the Structural Funds**, Regulation adopted on 8 April 2015;

The Institutional Development Program supports the development of responsibility areas of research and development institutions, structural changes, focusing on strategic core activities, and structuring of the institutional network; the responsibility of research institutions for their performance will be increased. Doctoral schools will be supported to ensure a new generation of researchers and engineers. The development of services of universities, RD institutions and institutions of professional higher education will be supported to expand business cooperation (opening of research infrastructure for businesses, improving of applied research capacity).

specialisation for developing growth areas (ICT + health + resources)" of priority area 4 "Enterprise with growth capacity and the supporting research and development activities" of the Cohesion Policy Funds.

— **Implementation of main instruments of RD, incl. baseline financing and research grants**

The purpose of this activity is to implement the main financing instruments of RD (baseline financing, institutional and personal research grants, grants for maintenance and sustainable development of infrastructure, etc.) and increase their volume in line with temporary investments from Structural Funds in order to achieve the sustainability of the RDI system and the realisation of the established capacity. The synergy of various financing instruments and the balanced development of the RDI system will be ensured. The activity provides financing for the following instruments:

- baseline financing of research institutions;
- institutional and personal research grants and maintenance of infrastructure;
- operating costs of national RD institutions;
- operating subsidy for the Estonian Research Council (ERC) (incl. for international cooperation projects, payment of preparatory support to the authors of high-quality Horizon 2020 applications, etc.);
- operating subsidy for the Estonian Academy of Sciences (EAS) (incl. financing of research professors);
- other activities and expenses (foreign aid from Norway and the EEA, expenses made on account of other revenue of national RD institutions, student loans, indirect expenses).

— **Supporting centres of excellence to improve the international competitiveness and excellence of research sector; action 4.1.4. financed from the Structural Funds; Regulation adopted on 8 April 2015;**

The activity supports research centres of excellence to advance world-class research.

— **Promoting research and research education in the community; incl. "Conditions for granting TeaMe+ support"; action 4.1.5. financed from the Structural Funds; adopted with Minister's Directive of 25 September 2015;**

This activity includes operating subsidies for the Science Centre AHHA, provision of national research awards, implementation of a call for tenders for promoting science, and provision of awards of national research competitions (national research competition for students, national research competition for university students, national inventor's competition for students, competition for pedagogical research, science promotion award, supporting of cooperation partners). The Estonian Research Council implements the programme "Promoting science" (TeaMe+) which supports TV broadcasts, promoting career opportunities in the field of natural and exact sciences (NES), improvement of scientific literature, coordination of activities of the Research and Technology Pact, etc. An open call for proposals "Teeme+" will be prepared and implemented to support systematic series of events and activities which promote science, and the involvement of businesses in promoting science and NES.

— **Supporting research collections**

The activity provides consistent support for the preservation, updating, digitalisation and accessibility of data archives and research collections, which are essential in terms of science and culture.

— **Supporting of research infrastructures of national importance based on the roadmap; action 4.1.2. financed from the Structural Funds;** Regulation adopted on 24 July 2015

The objective is to ensure a systematic infrastructure, incl. development of digital infrastructure, and plan investments in research infrastructures of national importance based on a periodically updated action plan and in accordance with quality criteria applicable to acceding international infrastructures. The activity supports participation in the European Strategy Forum on Research Infrastructures (ESFRI) and other international research infrastructures. State budget funds are used to provide operating subsidies for the Information Technology Foundation for Education (HITSA)/Estonian Education and Research Network (EENet).

2. Measure "Increasing the social and economic benefits of RDI"

The RD activities of ministries are managed in accordance with the requirements set out in the Research and Development Organisation Act (RDOA)³ which provides, among other things, for the functions of all ministries in the field of RD:

- organisation of the required research and development in their areas of government and the financing thereof;
- drafting sectoral research and development programmes and organising their implementation and drafting the research and development programmes of their area of government and organising their implementation;
- justification and determination of the funds required for financing research and development in their area of government upon preparation of the draft budget for the area of government, and approval of the budgets of such research and development institutions to the extent of the amounts allocated for research and development in the area of government in the state budget.

The RDI strategy provides that each ministry has appointed a sponsor for coordinating RD activities who participates in the development of the Implementation Plan of the strategy and mediates information related to RD in the context of the state budget planning process and preparing overviews and reports. Further, the objective of the RDI strategy is to implement measures for increasing the ministries' responsibilities and capabilities in the field of RD, incl. establish forms of inter-ministerial cooperation for complementary funding and improved organisation of RD within the government areas in view of the principle that the ministry responsible for the specific sphere bears the primary responsibility for RD that is financed for socio-economic purposes.

Furthermore, the RDI strategy provides that the Research and Development Council (RDC) will annually review the Implementation Plan of the strategy before submitting it for approval to the Government of the Republic, evaluate strategy implementation in the preceding year, and make recommendations for future action. In that context, on an annual basis, the RDC addresses:

- activities for supporting the growth areas of smart specialisation;

³ [Research and Development Organisation Act](#), § 13 (1) – *Riigi Teataja* I 1997, 30, 471.

- RD related to attaining socio-economic goals in the ministries.

Pursuant to the RDI strategy, an Implementation Plan is drawn up in the course of planning the State Budget Strategy (SBS) where the ministries list in their SBS requests the planned activities designed for developing RD and growth areas (in accordance with the Classification of Functions of Government (COFOG)). One of the objectives of implementing the strategy, in coordination with the ministries and Statistics Estonia, is to review the procedure for calculating and classifying RDI expenditure to obtain a more accurate and systematic overview of the incurred expenses in accordance with the GBAORD (government budget appropriations or outlays for research and development) methodology.⁴ Likewise, for managing the RDI system, the government needs to systematically plan and monitor the RD carried out in the responsibility areas of the ministries and the financing thereof.

Activities:

— **Implementation of national programmes "Estonian Language and Cultural Memory II" and "Estonian Language Technology"**

The goal is to support advanced research in the field of Estonian language, history and culture, the development of language technology solutions, and foster their broad implementation.

— **Supporting of core infrastructures and making them accessible to external users**

Activities are implemented under the measure for supporting core infrastructures.

— **Acquiring licences for research databases and supporting research libraries**

The activity supports the acquisition of publications, joint procurement of electronic research databases, follow-up configuration of national publications for research purposes, and development and operation of the combined catalogue of libraries (ESTER).

— **Enhancing the RD capabilities of public authorities (RITA); „Enhancing sectoral research and development“**, the criteria for awarding support under **action 4.2.1. financed from the Structural Funds** have been adopted by a Minister's Directive of 31 December 2015

The purpose of the activity is to increase the ministries' responsibilities and capabilities in the field of RD as regards the management of applied research and using such research for solving socio-economic problems; establish forms of inter-ministerial cooperation for complementary funding and improved organisation of RD within the government areas in view of the principle that the ministry responsible for the specific sphere bears the primary responsibility for RD that is financed for socio-economic purposes.

Within this activity, the development of the Estonian Research Portal (ERP) is continued (development of new modules and further development of existing ones, development of

⁴ According to the agreement reached with Statistics Estonia, the methodology will be applied starting with the collection of data for 2016.

new interfaces and services, and improving cohesion between ERP and other information systems). RITA supports the creation of research counsellors' positions in ministries.

3. Measure: "Smart specialisation is the basis for RDI changing the structure of economy".

According to the analysis coordinated by the Development Fund and conducted in cooperation with businesses and research institutions,⁵ the growth areas of smart specialisation are:

1. Information and communication technology (ICT) horizontally across other sectors⁶
2. Health technology and services⁷
3. More effective use of resources⁸

The said growth areas of smart specialisation are supported through the activities under Measure 3 of the strategy. However, the objectives of smart specialisation may be furthered by other measures, incl. horizontal measures.

The strategic framework of smart specialisation is outlined in Chapter 5.2 of the RDI strategy which states that the more detailed description of the strategy management, monitoring and coordination system and the division of functions are presented in the Implementation Plans of the RDI strategy and enterprise growth strategy.

For leading the development of growth areas of smart specialisation, a Steering Committee has been set up under Directive No. 14-004 of 10 February 2014 of the Minister of Economic Affairs and Communications which is composed of representatives from the ministries, the Government Office, Universities Estonia, and businesses. The task of the Steering Committee is to monitor progress towards the goals of smart specialisation, and where necessary, propose changes in strategy measures and activities to the ministries, the Innovation Policy Committee and the Research Policy Committee, or initiate the adjustment of strategies.

Activities:

— **Supporting applied research in the growth fields of smart specialisation; action 4.2.3. financed from the Structural Funds; Regulation adopted on 21 August 2015**

Activities for supporting applied research in the growth fields of smart specialisation are carried out in cooperation between the Archimedes Foundation and the Estonian Research Council. Further, the program activities of smart specialisation are developed and implemented (so-called NUTIPRO measure for supporting the participation of major

⁵ Estonian Development Fund, „Smart specialisation – Qualitative Analysis”, 20 February 2013, http://www.arengufond.ee/upload/Editor/Publikatsioonid/Nutikas%20spetsialiseerumine%2020_02_2013.pdf.

⁶ For example, the use of ICT in industry (incl. automation and robotics), cybersecurity, software development.

⁷ For example, biotechnology, e-health (use of IT for developing medical services and products).

⁸ For example, materials science and industry, innovative construction, i.e. smart house concept, functional foods, chemical industry (more effective use of oil shale).

projects in the call for proposals „*Teaming for Excellence*“ under the EU framework programme Horizon 2020, etc.).

— **Specialised scholarships in higher education in the growth fields of smart specialisation**; the criteria for awarding support under **action 4.2.2. financed from the Structural Funds** have been adopted by a Minister's Directive of 24 November 2015
The aim is to support the increase - and the creation of a new generation - of researchers and engineers in growth fields.

4. Measure "Increasing the participation and visibility of Estonia in international RDI cooperation"

Actions necessary for implementing the activities:

- support Estonia's participation in the initiatives of the European Research Area, incl. in the joint planning of research activities and in research programmes, in accordance with the ministries' priorities and Estonia's socio-economic objectives;
- enhance Estonia's possibilities for research cooperation in the Nordic and Baltic regions;
- support the access of Estonian researchers and engineers to international research infrastructures, and - through the action plan of the European Strategy Forum on Research Infrastructures (ESFRI) - participate in the creation of research infrastructures which are essential for Estonia.

Estonia is a small country with limited resources meaning that we cannot be involved in all activities, and so we need to make a selection. The selection is made on the basis of the "Strategic framework for Estonia's participation in the research, development and innovation partnerships of the European Union"⁹ adopted by Government Regulation No. 61 of 5 February 2015. The strategic framework determines the principles of state participation in partnerships, describes the decision-making process for selecting, and outlines the breakdown of functions between the various parties.

Activities:

— **Supporting internationalisation, mobility and a new generation in research and higher education, action 4.1.3. „Supporting internationalisation, mobility and a new generation in research and higher education through the Dora Plus programme" financed from the Structural Funds**; the criteria for awarding support under have been adopted by Minister's Directive of 9 December 2015; „Supporting internationalisation, mobility and a new generation in research and higher education through the Mobilitas Plus programme"; the criteria for awarding support under have been adopted by Minister's Directive of 30 December 2015.

The aim is to ensure, by way of inter-ministerial cooperation, Estonia's participation in the initiatives of the European Research Area (incl. in the joint programming of research,

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https://www.hm.ee/sites/default/files/eesti_el_tai_partnerlustes_osalemise_strateegilise_raamistiku_eelnou.pdf

European innovation partnerships, initiatives by the Baltic and Nordic common area), and the accessibility of Estonian RD programmes for international cooperation based on mutual benefit, and develop the possibilities for cooperation with researchers and research institutions of third countries. Possibilities will be analysed. Preference will be given to cooperation platforms which have been introduced on EU level for supporting research cooperation with third countries. . International promotion of Estonian research and the marketing activities „Research in Estonia“ and „Study in Estonia“ will be continued. Supporting of Doctoral studies provided by universities in cooperation with businesses will continue.

— **Supporting international cooperation agreements and membership fees of international research organisations**

The aim is to make it possible for Estonian businesses and RD institutions to get high-tech contracts through participation in international research infrastructures (incl. the European Organization for Nuclear Research, the European Space Agency, the research centre European Spallation Source (ESS), the international experimental thermal nuclear reactor (ITER), MAX-LAB, etc.).

3. National Roadmap for Implementing the European Research Area

Introduction

The European Research Area (ERA) is one of the cornerstones of the EU flagship initiative Innovation Union and an essential component of the Europe 2020 strategy. It focuses on maximising the potential of European research systems, fostering innovation, strengthening the research and technological capacity of Member States as well as their competitiveness and capability to solve major social problems. In 2015, the EU Competitiveness Council adopted conclusions on the ERA Roadmap 2015-2020 which included a proposal that the Member States should implement the ERA Roadmap by using relevant measures in their national specific action plans or broader RDI strategies by mid-2016¹⁰.

Some other Member States (e.g. Germany) have developed a specific ERA strategy and action plan, but doing so is not appropriate in Estonia. We have a valid RDI strategy and Operational Programme for EU Structural Funds, which have been drawn up building on the strategic trends and documents of the EU. Hence, the achievement of objectives set out in Estonia's strategic documents essentially means that Estonia contributes to the building of the ERA. The stronger the Estonian research system, the more Estonia can contribute to Europe's economic growth and competitiveness.

To detail Estonia's contribution to ERA Roadmap tasks, we will address these aspects of the Estonian RD strategy more thoroughly by describing these in the Implementation Plan of the strategy, monitoring their implementation and addressing these in a separate chapter in reports concerning the relevant period of the RD strategy. The major objectives of the RDI strategy will be addressed in the action plan of the Government of the Republic and their implementation in the report on the Government's work plan.

This chapter of the Implementation Plan of the RDI strategy highlights the measures envisaged in the RDI strategy and the Operational Programme for Structural Funds (because the strategy activities are partially financed from the EU Structural Funds), which either directly or indirectly contribute to the implementation of the ERA Roadmap's priorities. The ERA Implementation Plan will be renewed in the same cycle with the Implementation Plan of the RDI strategy, and the monitoring of the ERA National Roadmap will take place in line with monitoring the Implementation Plan of the RDI strategy by devoting a separate chapter to it. The Research and Development Council (RDC) will discuss and the Government of the Republic will approve the ERA National Roadmap concurrently with the Implementation Plan of the RDI strategy.

¹⁰ <http://data.consilium.europa.eu/doc/document/ST-8975-2015-INIT/et/pdf>

The ERA priorities were identified in the Communication on strengthening ERA partnerships issued by the Competitiveness Council in 2012. Consequently, the ERA Roadmap identifies a limited number of priorities that have the greatest impact on European research and innovation. Due to the differences in national RD systems, each Member State will determine the suitable approach for implementing the ERA priorities. At the end of 2015, the European Research Area and Innovation Committee (ERAC) provided the core indicators for monitoring the implementation of the ERA Roadmap.¹¹ For national monitoring, the ERA indicators will be combined with available indicators that best characterise our system's development, and synchronised with the monitoring cycles of the ERA Roadmap (once every two years).

Priorities of the European Research Area:

1. Effective national research systems
2. Optimal transnational cooperation and competition (jointly addressing grand challenges and effective investment in research infrastructures)
3. An open labour market for researchers
4. Gender equality and gender mainstreaming in research
5. Optimal circulation, accessibility and transfer of scientific knowledge
6. International cooperation

The following table brings out activities in the RDI strategy, which conform to ERA priorities. A lot of measures listed in the RDI strategy are interrelated. The most important activities have been listed for each ERA priority.

Table 1. ERA priorities, objectives, indicators and measures/activities in RDI strategy

Priority 1. Effective national research systems	
Objective	A national RD system that has an appropriate structure and functions effectively. Consistent monitoring and evaluation of research and innovation policies in making political choices as well as implementation decisions; taking into account the best practices of other countries and the EU in identifying shortcomings and success factors; increasing efficiency and effectiveness on national as well as European level. Achievement of tasks set out in the RDI strategy. Enhance the excellence and efficiency of the RDI system. Increasing the level of financing of public sector RD to 1% of GDP. Improve cooperation between enterprises and RD institutions, and between ministries and RD institutions.
Indicators	<ul style="list-style-type: none"> • Composite indicator based on the Research Excellence Indicator developed by JRC (components: Highly cited publications; PCT patents; ERC grants; MSC actions).

¹¹ The ERA operational programmes of Member States should contain indicators, incl. their start levels.

	<ul style="list-style-type: none"> • Level of investment in public sector RD. Base level 2014: 0.81% of GDP; target: achieve and maintain a level of 1% of GDP. • Number of high-level articles per million inhabitants (<i>Eurostat; Thompson Reuters Web of Science</i>). Base level 2014: 1551; target for 2020: 1600. • Share of the expenditure of the public sector RD financed by the private sector. Base level 2014: 4%; target for 2020: 7%.
<p>Activity in RDI Strategy and support measures in the Operational Programme for EU Structural Funds</p>	<p>1. Support the development of the areas of responsibility of institutions of higher education and research and development institutions, also their structural changes, focussing on fundamental strategic activities and the reorganisation of the network of institutions; increase the responsibility of research institutions for the effectiveness of their activities. (RDI Strategy, p. 1.1.) Support measures: Institutional Development Program for Research and Development Institutions and Higher Education Institutions (ASTRA); EU Structural Funds.</p> <p>2. Ensure an increase in the volume of the main funding instruments of RD (baseline financing, institutional and personal research grants, grants for maintenance and sustainable development of infrastructure, etc.) in line with temporary investments from Structural Funds to achieve the sustainability of the RDI system and the realisation of the established capacity. The requested synergy of different financing instruments and the balanced development of the RDI system will be ensured. (RDI Strategy, p. 1.2.) Support measures: Increase the stability of research funding and, to this end, increase the baseline financing of research institutions with the aim of achieving an equal distribution between baseline financing and competitive research grants (action plan 2015-2019 of the Government of the Republic). Making proposals for the State Budget Strategy to ensure that RD is financed according to the objectives set out in the RDI strategy.</p> <p>3. Support research centres of excellence to advance world-class research. Support research grant applicants - who achieve very good results in top-level international competitions (European Research Council (ERC), European Molecular Biology Organization (EMBO)) but who do not receive a positive financing decision - in carrying out their planned research in Estonia.(RDI Strategy, p. 1.3. and 1.4) Support measures: EU Structural Funds' measures "Supporting centres of excellence" and "Supporting internationalisation, mobility and a new generation of researchers in the research and higher education through the Mobilitas Plus programme".</p> <p>4. Reinforce, with the help of EU Structural Funds and activities financed from the state budget, the capacity of Estonian research institutions to</p>

	<p>participate in forms of cooperation based on quality competition, incl. in the programme Horizon 2020. (RDI Strategy, p. 1.5.)</p> <p>Support measures: EU Structural Funds' measures "Supporting internationalisation, mobility and a new generation of researchers in research and higher education through the Mobilitas Plus programme", and measures from the state budget funded from Estonian tax revenue. Support for preparing ERC applications. Further development of RDI support structures and RDI support activities: the setting of priorities, development of networks.</p> <p>5. Take measures to increase the responsibility and capacity of ministries in the field of research and development. Create forms of inter-ministerial cooperation for additional funding and the better organisation of research and development in areas of government, proceeding from the principle that the main responsibility for the RD financed for socio-economic purposes lays on the ministry in charge of the field. (RDI Strategy, p. 2.12.)</p> <p>Support measures: EU Structural Funds' activity "<i>Enhancing sectoral research and development</i>" (RITA), plus the expenditure of ministries on sectoral RD.</p> <p>6. RDI, which forms the basis for changing the economic structure, is based on smart specialisation (RDI Strategy, p. 3.1-3.6).</p> <p>Support measures: The sub-measure „Supporting applied research in growth areas of smart specialisation“ of the EU Structural Funds' measure "Increasing the local socio-economic impact of the RDI system and smart specialisation for developing growth areas" supports research which is aimed at gaining new knowledge and skills. It results in new or improved products, production processes or services. The sub-measure "Specialised scholarships in higher education in the growth areas of smart specialisation" motivates students to pursue full-time studies in areas that the businesses and the government consider as having potential (growth areas of smart specialisation), and helps to ensure the required number of researchers and specialists.</p>
Priority 2. Optimal transnational cooperation and competition	
Objective	<p>Increase participation in the joint programming of research activities and the ensuing initiatives (e.g. joint programming initiatives).</p> <p>Set national priorities that are in line with the priorities of the European Strategy Forum on Research Infrastructures.</p>
Indicators	<ul style="list-style-type: none"> • National GBAORD allocated to Europe-wide, bilateral or multilateral transnational public R&D programmes per researcher in the public sector. Base level 2014: 976.7 • Availability of national roadmaps with identified ESFRI projects and corresponding investment needs. Estonia has the corresponding

	roadmap in place - adopted by the Government of the Republic in 2014.
Activity in RDI Strategy and support measures in the Operational Programme for EU Structural Funds	<p>1. Ensure in inter-ministerial cooperation the participation of Estonia in initiatives of the European Research Area, coordinate between ministries the participation of Estonia in research programmes of the Member States implemented for socio-economic objectives. (RDI Strategy, p. 4.1) Support measures: The activity is supported by the programme for enhancing the RD capacity of public authorities (RITA), and the Mobilitas Plus programme for supporting internationalisation, mobility and a new generation of researchers in research and higher education sector (EU Structural Funds). Also, from the international cooperation grants of the Estonian Research Council and the ministries (support from the Estonian state budget funded from tax revenue).</p> <p>2. Ensure systematic development of infrastructure, incl. digital infrastructure. Plan investments in research infrastructure of national importance on the basis of a regularly updated action plan, in accordance with the quality conditions established in links with international infrastructures. Create opportunities for Estonian enterprises and research and development institutions for receiving high-technology orders through the participation in international research infrastructures. (RDI Strategy, p. 1.12 and 4.6. Plus support activities 1.11, 2.3, 4.2.) Support measures: The activity is supported from the measure "Supporting of research infrastructures of national importance based on the roadmap" (EU Structural Funds).</p>
Priority 3. An open labour market for researchers	
Objective	Use open, transparent and performance-based recruitment methods for research-related positions. Make Estonia more attractive as a host country of research, development, innovation and higher education.
Indicator	<ul style="list-style-type: none"> Open recruitment: researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector per year. Base level to be specified.
Activity in RDI Strategy and support measures in the Operational Programme for EU Structural Funds	<p>1. Develop a career model which supports cooperation with enterprises and individual development opportunities, encourages occupational mobility, incl. in the entrepreneurial sector, and motivates young people to choose the profession of a researcher or an engineer. Support the openness of competitions for academic positions to foreign researchers. Monitor that equal opportunities, incl. gender balance, be ensured when filling positions, allocating grants and forming decision-making bodies. (RDI strategy p. 1.6). Support measures: Supporting national legal framework; recruitment and personnel policy of RD institutions and participation of the Estonian Research Council and RD institutions in the EURAXESS network. EU</p>

	<p>Structural Funds support the activities through regulations as well as financially through Mobilitas Plus programme that supports internationalisation, mobility and a new generation in research, and Dora Plus programme that supports internationalisation, mobility and a new generation in higher education.</p>
	<p>2. Continue shaping, in inter-ministerial cooperation, a smart and flexible talent management and migration policy, and policy supporting the adaptation of new immigrants, which would increase the attractiveness of Estonia as a target country for research and study. Increase researcher mobility, incl. from enterprises, and ensure integrated financing of the research groups led by top researchers who have come to or are already in Estonia (RDI Strategy p. 1.8 and 1.9).</p> <p>Support measures: Continue developing the supporting national legal framework (e.g. Aliens Act that supports the objectives, transposition of the Student and Researcher Mobility Directive, visa regulations, Research and Development Organisation Act, Universities Act). Other support measures contributing to the activity are the adaptation programme activities, recruitment and personnel policy of RD institutions, participation in the EURAXESS network, ensuring equal opportunities when filling positions, allocating grants and forming decision-making bodies, and EU Structural Funds' measures, such as Mobilitas Plus and Dora Plus.</p>
Priority 4. Gender equality and gender mainstreaming in research	
Objective	Reduce gender inequality in research institutions and decision-making bodies and better integrate the gender dimension in the RD policy, programmes and projects.
Indicator	<ul style="list-style-type: none"> • Proportion of women A grade in Higher Education Sector. There are no official data yet; the European Commission will specify the definition of the indicator.
Activity in RDI Strategy	<p>Monitor that equal opportunities, incl. gender balance, be ensured when filling positions, allocating grants and forming decision-making bodies (RDI Strategy, p. 1.6)</p> <p>Support measures: Policies and activities in ministries, research institutions, universities and funding organisations:</p> <ul style="list-style-type: none"> • Respecting the good legislative practice, incl. assessing the impact of legislative drafting on gender equality. • Recognising the principles of gender equality in policy-making and preparation and implementation of RDI support measures. • Promoting gender equality in RD institutions by means of structural changes, incl. in the development of recruiting and personnel policy. • Creating equal opportunities in decision-making and assessment

	bodies to achieve a gender-balanced composition. Recognising the gender aspect in substantive research (ETAG) - the gender aspect is recognised in evaluations and, for example, gender equality experts are involved where necessary.
Priority 5. Optimal circulation, accessibility and transfer of scientific knowledge	
Objective	Fully implement the knowledge transfer policy at the national level to maximise the dissemination, acceptance and use of research results. The organisations conducting and financing research should make knowledge transfer cross-cutting by integrating it into their daily routines. Promote open access to research publications.
Indicator	<ul style="list-style-type: none"> • Percentage of product or process innovative firms collaborating with higher education institutions or with public research institutions for their innovation activities. • The proportion of Open Access papers (Gold and Green OA only) per country.
Activity in RDI Strategy and support measures in the Operational Programme for EU Structural Funds	<p>1. Review the motivation system related to commercialisation in universities, linking it with the main objectives and the financing of universities. Increase the professionalism and impact of commercialisation and reinforce links with other participants in the innovation system. Continue the development of competence in the field of knowledge transfer, incl. the training and bringing in of experts, the development of the organisation and quality of knowledge transfer and the extension of the international contact network. Promote increasing awareness of intellectual property among researchers, students as well as the non-academic staff of universities. Support enterprises in the development of products and services of high added value in cooperation with universities and RD institutions, incl. continuing, also in traditional economic sectors, to increase added value through RD and improve the strategic development capacity of enterprises. Encourage raising more money from the private sector for financing universities. (RDI Strategy, p. 2.4, 2.7, 2.9. Plus support activities 2.6 and 2.2.)</p> <p>Support measures: The activity is supported from the EU Structural Funds' measures „Supporting applied research in growth areas of smart specialisation“, and “The Institutional Development Program for Research and Development Institutions and Higher Education Institutions” (ASTRA). The study of Intellectual property rights financed from “The Programme for Monitoring Research and Innovation Policy” (TIPS), will contribute to increasing awareness of intellectual property (monitoring area 1).</p> <p>2. Encourage open access to public-financed research results and research data. Support extensions to databases in research institutions and research libraries, and ensure access to the most important research databases. Support consistently the preservation, expansion, digitisation</p>

	<p>and availability of data archives and research collections that are important for research and culture. Continue the development of central research information systems and services with the objective of making these convenient for foreign users (incl. state authorities and enterprises) and to allow fast access to research topics, performers and results. (RDI Strategy, p. 2.11, 1.11. Plus support activity 2.10.)</p> <p>Support measures: Development of necessary regulations and support infrastructures - the main instruments for financing research provide the requirement of open access to research publications (at least Green Open Access). Activities are supported in the framework of acquiring licences for research databases and supporting research libraries and collections.</p>
Priority 6. International cooperation	
Objective	Develop and implement strategic approaches and activities required for international cooperation in the field of research, technology and innovation.
Indicator	<ul style="list-style-type: none"> • International scientific co-publications per thousand researchers (FTE) in the public sector. • Share of foreign researchers in the total number of researchers; the share of researchers from third countries. Base level: 2014 – 5.5% of foreign researchers, 2.5% from third countries.
Activity in RDI strategy and support measures in the Operational Programme for EU Structural Funds	<p>Develop cooperation opportunities with third country researchers and research institutions. Enhance the international communication of achievements by Estonian research and researchers as well as the innovation activities of enterprises. Ensure in inter-ministerial cooperation the participation of Estonia in initiatives of the European Research Area, incl. in the joint programming of research, European innovation partnerships, and initiatives of the common area of the Baltic and Nordic countries. (RDI Strategy p. 4.4, 4.5, 4.1)</p> <p>Support measures: The activity is supported by the EU Structural funds under measures "Internationalisation of research and higher education", Mobilitas Plus (programme for supporting mobility and a new generation), and in the framework of funding international cooperation by the Estonian Research Council.</p>

4. Division of functions

The RDI strategy is closely linked to the "Estonian Entrepreneurship Growth Strategy 2014-2020" which means that one should pay attention to a clear division of functions between those strategies on planning and implementation levels. In the Ministry of Economic Affairs and Communications (MEAC) and the Ministry of Education and Research (MER), the division of functions in the field of RDI is based on the approach that, according to the Government of the Republic Act, the Research and Development Organisation Act and the Statutes of the Ministries, both ministries steer activities within

the responsibility areas of their institutions. On the implementation level, the responsibilities are broken down between the major target groups as follows:

- The MEAC is responsible for supporting businesses and innovation (incl. development of new products and services of businesses, supporting access to capital) (implemented by Enterprise Estonia, KredEx, Estonian Development Fund).
- The MER is responsible for supporting universities and national and public research institutions, ensuring the excellence of RD, and managing international RD cooperation (implemented by Estonian Research Council, Archimedes).
- Both ministries are responsible for support cooperation between businesses and research institutions in accordance with the above division of functions. Inter-ministerial cooperation required for attaining the objectives of the RDI strategy and the Entrepreneurship Growth Strategy is ensured by means of the Steering Committee for Smart Specialisation and the existing coordination bodies (incl. Research and Development Council, Research Policy Committee, Innovation Policy Committee, Sectoral Committee for Structural Funds) which monitor the use of money allocated from the state budget and Structural Funds to ensure the launching and compatibility of activities envisaged in the strategies and their conformity with the principles set out in the strategies.

4. Revision of the Implementation Plan

Each year (save for the first year of strategy implementation), the MER and the MEAC submit a joint report on implementing the RDI strategy and its Implementation Plan. Each year, the tables of the Implementation Plan will be adjusted in accordance with the latest economic forecast from the Ministry of Finance, the draft State Budget Act for the following year, and the State Budget Strategy. Policy documents necessary for attaining the objectives of the RDI strategy may be adopted as annexes to the Implementation Plan.

5. Annexes to the Implementation Plan

1. List of Items on Estonian Research Infrastructures Roadmap(adopted by Government Regulation No. 377 of 3 September 2014), https://www.hm.ee/sites/default/files/teekaardi_objektide_loend_03.09.2014.pdf
2. Strategic framework for Estonia's participation in the research, development and innovation partnerships of the European Union" (adopted by Government Regulation No. 61 of 5 February 2015), https://www.hm.ee/sites/default/files/eesti_el_tai_partnerlustes_osalemise_strateegilise_raamistiku_eelnou.pdf
3. Estonian Space Action Plan 2016-2020