

Report on existing public support programs for innovative SMEs and access modes to Research Infrastructure for innovative SMEs



WP4.1 Existing public support programs for innovative SMEs, needs of further development and political recommendations for supporting founding and financing CAROs

WP4.2 Existing access modes to Research Infrastructure for innovative SMEs

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1. Executive Summary

Interreg sponsored EU project CAROTS (Commercial Analytical Research Organisations Transnational Strategy) project focusses on Commercial Analytical Research Organisations (CAROs) in the field of new materials, nanotech and life science. The aim of the project is to transfer the experience of cooperation between different partners in the development of pharmaceuticals to the area of materials. In the pharmaceutical market CAROs already play an important role in the outsourcing of parts of the research. Understanding “material” broadly, covering all areas from nanoparticles to ultralight materials and steel.

Currently CAROTS project partners are investigating business models that make CAROs succeed, **the available financial support programs for CAROs** and their potential in the material sciences market. We see this as a first step towards improving the conditions for the establishment and operation of CAROs in order to promote further CAROs. This is closely linked with another goal of the project: greater visibility for CAROs in Europe. Believing that better visibility is key for establishing more successful enterprises. CAROTS project also aim at receiving input from existing CAROs as our primary target group on how they could better collaborate in a network to reduce costs and improve their visibility.

CARO is a commercial, academic or other organisation acting as an intermediary between research infrastructures and industrial customers, providing support, consultation, analytical research and measurement services in the field of new materials/ material sciences (including engineering), Life Science/ BioTech, NanoTech and CleanTech on a contractual basis. “Research infrastructure” means facilities, resources and related services that are used by the scientific community to conduct top-level research in their respective fields and covers major scientific equipment or sets of instruments; knowledge based resources such as collections, archives or structures for scientific information; enabling Information and Communications Technology-based infrastructures such as Grid, computing, software and communication, or any other entity of a unique nature essential to achieve excellence in research. Such infrastructures may be “single-sited” or “distributed” (an organised network of resources).

The report describes existing access modes by CAROs to Research Institutions and universities, needs for further development and political recommendations. The report features information on all the partner countries and an analysis of the available access modes as well as recommendations for improvements.

For the purpose of this report, ten CAROTS project partners from eight countries were examined:

- DESY, Deutsches Elektronen-Synchrotron and Helmholtz-Zentrum Geesthacht – *Germany*;
- University of Turku – *Finland*;
- Foundation of Innovative Initiatives – *Poland*;
- Saint Petersburg State University of Economics – *Russia*;
- Lithuanian Innovation Centre – *Lithuania*;
- University of Tartu – *Estonia*;
- Investment and Development Agency of Latvia – *Latvia*;
- The Capital Region of Denmark and Danish Tehnological Institute – *Denmark*.

The information was collected based on desk research and interviews.

Partner involvement:

All partners identified existing programs to support innovative SMEs (CAROs) and programs to help SMEs access RI. Each partner was responsible for its country of origin. There is no formal partner from Sweden in the project's consortium. The lead partner together with WP4 leaders and ESS analyzed the situation in Sweden.

The WP4 was led by Foundation of Innovative Initiatives and Investment and Development Agency of Latvia. These two institutions were responsible for collecting the data, information and report preparation.

Output:

- 1) Report on existing public support programs for innovative SMEs, needs of further development and political recommendations for supporting founding and financing CAROs;
- 2) Report on existing access modes to RI for innovative SME.

Structure of the report

Chapter 2. offers a description of the Existing public support programs for innovative SMEs, followed by the different existing access modes to RI for innovative SMEs in CAROTS partner countries in Chapter 3. Information is provided on the status and background of the public support programs and access modes of each CAROTS partner country, as well as on the available funding and the specific provisions of the programs. In Chapter 4 conclusions are presented, followed by recommendations in the concluding part.

Key findings

In total, more than 40 Existing public support programs for innovative SMEs were identified in CAROTS partner countries. In Denmark, for example, there were no active programs that met the criteria, while Germany and Russia even had 9 different support programs. The amount of support tends to vary considerably depending on the support program, its source of funding and the total amount of support. Support is available from 2 000 to 2,5 million EUR. Significantly fewer programs were identified under Existing access modes to RI for innovative SMEs – 12. Mostly countries have only 1 access mode to RI for innovative SMEs and the most common is Vouchers. The exceptions are in Poland and Finland, which have 4 (Poland) and 2 (Finland) access modes to RI for innovative SMEs. The amount of support available per project varies. It can range from 4 000 EUR to 200 000 EUR.

2. Existing public support programs for innovative SMEs in CAROTS partner countries

The report describes existing programs, needs of further development and political recommendations for supporting founding and financing CAROs based on existing offers by public programs compared to needs of existing and future CAROs.

2.1. Public support programs for innovative SMEs in Denmark

No dedicated programs under this topic in Denmark.

2.2. Public support programs for innovative SMEs in Estonia

No	Name of the program
1.	Start-up grant
2.	Program “Nutikas” - Applied research in smart specialisation growth areas
3.	Prototron 2019
4.	Buildit – Accelerator of Things

2.2.1. Start-up grant

Name of the program: Start-up grant.

Managing organisation: Estonian Center of Support Services (Riigi Tugiteenuste Keskus).

Funding source: European Regional Development Fund according its regulations (incl. hosting country contribution).

Beneficiaries: SME-s operated less than 24 months, with less than 10 employees and less than 80k€ on balance sheet and in sales revenue.

Duration of the program: 31.08.2023.

Duration of projects implemented within the program: 12 months.

Supported activities:

1) Acquisition of tangible fixed assets. The cost of a single object of the tangible fixed assets must be at least 100 EUR and the service life must be at least three years. The seller of the asset must be a legal entity whose area of activity during the past year has been sale of the fixed assets to be acquired.

2) Transport, configuration and installation. The transport, configuration and installation costs related to the tangible fixed asset acquired with the grant.

3) Marketing. For carrying out the marketing activities necessary for carrying out the goals of the project. The seller of the service must be a legal entity whose area of activity during the past year has been sale of the services set out in the quotation. Running marketing costs are not eligible.

4) Acquisition or development of application software. For the acquisition, implementation or development of application software necessary for the main activities (except office software). In case of developing application software, the right of ownership of the intellectual property must remain with the applicant. The seller of the service must be a legal entity whose area of activity during the past year has been sale of services set out in the quotation.

5) Personnel costs. Labour costs arising for the persons employed under an employment contract, or in case of board members, under contract for services or authorisation agreement, maximum 50% of the grant assigned with the decision to satisfy the application.

Total available funding within the program: 8,1 million EUR.

Total remaining funding until the end of the financial period: Not specified.

Total available funding per Project: After consultation in the regional incubation centre and application, the start-ups may receive a grant (with 20 % co-financing) in amount of up to 15 000 EUR.

Co-funding rate: 20%.

Specific regulations/ requirements, if any:

1) The company cannot be older than 2 years, it must be in the Commercial Register, it must not have affiliation to any other company in the same area of activity, it must have less than 10 employees and the preceding-year revenue must not exceed 80 000 EUR. The share of a legal entity in the company must not exceed 25%.

2) The company is obliged to create at least 2 new jobs with pay at least 50% of Estonian annual average salary, the sales revenue must reach 80 000 EUR during the second financial year after the project period.

3) Among a few other activities, the not applicable activities include activities of head offices, management consultancy services, advertising and rental or operational leasing.

Identified bottlenecks of the program: For creation of CAROs the program funding is not large enough, but the program successfully functions as a typical local business incubator program.

Success of the program: No feedback yet because it is being implemented. In order to get information on its success, the information can be requested from responsible officers (Mirjam Jalak or Merit Tints or Jadvi Tõntson).



2.2.2. Program “Nutikas”

Name of the program: Applied research in smart specialisation growth areas.

Managing organisation: Archimedes Foundation, Structural Funds Agency.

Funding source: European Regional Development Fund according to its regulations (incl. hosting country contribution).

Beneficiaries: This program can support all types of enterprises, but the amount of the support is defined by regulations of the European Union. The maximum support for small enterprises (less than 50 employees) is 70 % and 45 % in applied research and product development, respectively. The maximum support for medium size enterprises (50 – 250 employees) is 60 % and 35 % in applied research and product development, respectively. The maximum support for large enterprises (over 250 employees) is 50 % and 25 % in applied research and product development, respectively.

Duration of the program: 31.08.2023.

Duration of projects implemented within the program: 36 months.

Supported activities: Costs related to research, technical information or outsourced or licensed patent services necessary for applied research or product development and commissioned from public R&D institutions. This component has to make up at least 60 % of the eligible costs.

Costs of the use of equipment, infrastructure and other operating costs of the applicant and partner(s) directly linked to the project (e.g. costs of materials, supply) and costs for staff working on the project. These costs may account for up to 40 % of the eligible costs.

Total available funding within the program: 26 million EUR.

Total remaining funding until the end of the financial period: 8.5 million EUR.

Total available funding per Project: The amount of funding per project ranges from 20 000 to 2 million euros. In order to receive funding, the company itself also has to contribute financing, the amount of which depends on the size of the company and whether the support is being sought for commissioning product development or applied research.

Co-funding rate: The maximum support for small enterprises (less than 50 employees) is 70 % and 45 % in applied research and product development, respectively. The maximum support for medium size enterprises (50 – 250 employees) is 60 % and 35 % in applied research and product development, respectively. The maximum support for large enterprises (over 250 employees) is 50 % and 25 % in applied research and product development, respectively.

Specific regulations/ requirements, if any:

1) The funding is intended for a company registered in the Estonian commercial register, for the benefit of which a study or product development project in the smart specialisation growth area will be carried out by a research institution. The company may also involve other business partners in the pool of project participants with which to utilise the new information obtained from an applied study or a product development project.

2) Smart specialisation growth areas are fields of activity where the companies should have above-average development opportunities and where the allocation of resources to R&D would enable them to achieve a competitive advantage: ICT, health technologies and more effective use of resources.

3) Support may be sought for commissioning an applied study or product development project in a smart specialisation growth area from an Estonian R&D institution. This also includes the creation of components for comprehensive systems needed for an applied study. This may also include designing of prototypes at a lab or in an environment simulating the existing systems, as well as pilot

production. This may also include activities aiming to conceptually define, plan or document new products, processes or services.

Identified bottlenecks of the program: According to our best knowledge no applications has been submitted for creation of CAROs. There is risk that CARO type activities (analytical research services) are not valued so high as research projects dedicated to specific applied research or product development as CARO's are not targeted while setting up program.

Success of the program: Very successful: 51 R&D projects have been so far funded with a total sum of >17 million EUR (average project size ~340 000 EUR). The topics have varied from machine learning and infant milk mix development to automatic identification of road surface imperfections and oil shale valorising research.

Accelerator & Startup Boost type funding

2.2.3. Protron

Name of the program: Prototron 2019.

Managing organisation: A fund created by Swedbank, Tallinn Science Park Technopol and Tallinn University of Technology (TalTech).

Funding source: Prototron is a fund created in 2012, which aims to contribute to the birth of new start-ups and world-changing technologies through prototype financing. Finances are raised by founders and partners.

Beneficiaries: Any team with innovative idea or product who qualified for funding through public competition. Applicants may be individuals as well as businesses with projects from all fields, especially: greentech, digitalization of industry, new materials, health-tech and fintech.

Duration of the program: Continuously operating, the next call is closing on October 15, 2019.

Duration of projects implemented within the program: 12 months.

Supported activities: Not restricted, but intended for first idea prototype development.

Total available funding within the program: 80 000 EUR in the Protron autumn call 2019.

Total remaining funding until the end of the financial period: Not specified. Funding is collected for each call from founders and partners.

Total available funding per Project: Up to 35 000 EUR equity free funding and additional mentoring to activities, which are needed to create a functional prototype.

Specific regulations/ requirements, if any:

- 1) When applying, the applicant confirms that if their team enters Prototron program, at least one member of his team participates in mandatory activities of the Prototron program.
- 2) If funding is received from Prototron, the applicant is obliged to provide Prototron with information about further development of their idea, also to inform the public that they have received Prototron's grant.
- 3) Evaluation is based on technological novelty, competence of the team, market potential, international growth potential, thoughtful business concept. Application can be made twice a year (in Spring and Autumn) in call rounds.

Identified bottlenecks of the program: Not designed to support CARO activities. It has too small amount of funding available for creation of analytical research organisation. The program functions as a typical local business incubator program.



Success of the program: 64 teams support since 2012 with the total funding 772 795 EUR. Nearly 19 million EUR has been raised by ALUMNI of the program.

2.2.4. BuildIt – Accelerator of Things

Name of the program: BuildIt – Accelerator of Things.

Managing organisation: SIA "AIFP Buildit Latvia".

Funding source: Private and Institutional Investors.

Beneficiaries: SME-s operated less than 24 months, with less than 10 employees and less than 80 000 EUR on balance sheet and in sales revenue.

Duration of the program: Continuously operating program.

Duration of projects implemented within the program: Depends on project.

Supported activities: Buildit offers an intense program specifically designed for hardware and IoT startups from all over the world. Key areas are: strategies for business idea validation; design thinking; product design and development; product-market fit, sales and marketing; fundraising and legal issues; pitch training.

Total available funding within the program: Depending on success of funds collected.

Total available funding per Project: Pre-seed investment up to 50 000 EUR as a convertible loan; Leading or joining the Seed round with investment up to 250 000 EUR.

Specific regulations/ requirements, if any: Projects within the industries of hardware, IoT, mobility, productivity, smart living, energy, health-tech, etc; must have an MVP or working prototype; scalable business model for a growing market; a team of at least 2 individuals with relevant experience; Worldwide applications welcome (relocation to Riga for the duration of the program required).

Identified bottlenecks of the program: Buildit is not directly foreseen for creation of CAROs. It functions as a typical business incubator program (accelerator type) looking for clients from wider region.

Success of the program: Established in 2014 in Estonia in Tartu and now Buildit has headquarters in Riga, Latvia. It has already had as much as 1500+ applications over its 9 batches and more than 70 startups have already been funded, with founders from 18 different countries of the world. The first exits from Buildit are already starting to roll in.

2.2.5. Overall landscape of support

There are several programs available in Estonia for enterprises: Start-up grants, program "Nutikas" - Applied research in smart specialisation growth areas, and accelerator type of funding like Prototron and Buildit – Accelerator of Things. The first two ones are more suitable for R&D activities and last ones are more like to give a birth to new start-ups. However, none of them is designed to support CARO like activities. The local program landscape is intended to give a boost to very small startups at their initial steps mainly.

Generally the funding available in the programs is rather too small, which means that capitalisation cannot be done only using their support. In our opinion "Nutikas" provides sufficient financial support, but conditions to qualify for it are rather strict and the funds are intended to go to the R&D institution mostly. The other issue is that the programs 1 and 2 are build up on European Structural

Funding (ERDF), which means that all formal regulations of such funding apply to applicants. Such financial instrument is not always flexible enough to satisfy needs of R&D activities carried out by companies i.e. eligibility of costs can be a problem. In our experience conditions for and volume of reporting causes administrative burden. Universities have shown up potential readiness for bigger projects to carry out research bilaterally without any funding support from program to prevent unproductive bureaucracy.

Introduction of program “Nutikas” is a big step forward supporting cooperation between Academia and entrepreneurs. The advantage is that the projects in smart specialization areas are preferentially supported but innovative ideas and excellent concepts outside of it can be financed also.

Estonia has to find sustainable solution how to continue with the program “Nutikas” because presently the funding is ensured from the structural funds until the end of present budget period of European Union, i.e. until 2023. In case of other programs, the one-time-only support measures should be somewhat larger and benefit knowledge intensive companies more.

2.3. Public support programs for innovative SMEs in Finland

No	Name of the program
1.	Teollisuussijoitus TESI Oy/ Tesi Finnish Industry Investment Ltd
2.	Finnish Business Angels Network (FiBAN)
3.	Start Guarantee (Alkutakaus)

2.3.1. Teollisuussijoitus TESI Oy/ Tesi Finnish Industry Investment Ltd

Name of the program: Tesi Finnish Industry Investment Ltd investments programmes.

Managing organisation: Tesi Finnish Industry Investment Ltd.

Funding source: State and also Finnish and international venture capital and private equity investors, pension funds, industrial investors and private investors.

Beneficiaries: Growth companies.

Duration of the programme: On-going activity.

Supported activities:

Venture Capital

Tesi typically participate in series A, B and beyond with a total financing round size of 3 million EUR to 25 million EUR or more (venture capital) We always invest together with private investors, mainly with Finnish and international venture capital funds. Funding is targeted to different sectors, with strategic priorities being ICT, industrial digitalisation, health technologies, bioeconomy and cleantech.

Growth Capital

Tesi invests into companies that are pursuing international growth or expanding their operations in Finland, looks for investment opportunities in mergers and acquisitions. Tesi implements a developed selection process with a dedicated set of criteria including:

- A credible growth plan.
- Skilled management team and the knowhow needed for implementing a value creation plan in the board of directors and with co-investors.
- Net sales typically at least 15 million EUR (ranging up to 300 million EUR).
- A track record of profitable and growing business operations.

Industrial Investments

Industrial investments are mainly focused on financing industrial companies, industrial investments and mergers and acquisitions. Industrial investments are closely aligned with Finland's interests and are used to finance companies with industrial operations as well as investments in new plants, new equipment and expansion projects. Financing packages for M&As are often created to build larger and internationally stronger corporate entities. Typically, Tesi's portfolio companies' in this category have:

- Net sales over 100 million EUR;
- Enjoy strong international growth.

Total available funding within the program:

Tesi's financial commitments typically range between 5 million EUR – 15 million EUR.

Tesi is a minority shareholder, meaning they invest at most half of the total sum invested and they always invest together with private investors.

Total available funding per Project: at most 50 % of the total sum invested, typically between 5 million EUR – 15 million EUR.

Co-funding rate: Tesi is a minority shareholder, meaning they invest at most half of the total sum invested and they always invest together with private investors.

Specific regulations/ requirements, if any: Funding is targeted to different sectors, with strategic priorities being ICT, industrial digitalisation, health technologies, bioeconomy and cleantech. Tesi prioritises Finnish firms or companies operating in Finland, but they may also invest in foreign companies if the capital is used for business development in Finland.

Success of the program:

Tesi Finnish Industry Investment Ltd funding programmes:

- New investments in 2018: 121 million EUR.
- Financial result in 2018: 55 million EUR.
- International capital in Finnish companies in 2018: 123 million EUR.
- Investments under management at the end of 2018: 1,2 billion EUR.

2.3.2. Finnish Business Angels Network (FiBAN)

Name of the program: Finnish Business Angels Network (FiBAN).

Managing organisation: Finnish Business Angels Network (FiBAN).

Funding source: Business angels. Business angel investing refers to the investment made by a private individual in an unlisted potential growth company to which he or she does not have any family ties.

Beneficiaries: startups and growth companies (A target company does not need to be a new business; rather existing companies and companies seeking new growth (restart or start-again) are also generating more and more interest).

Duration of the programme: On-going activity.

Duration of projects implemented within the programme: The target duration for investments is approximately five years, but investors can be involved for as long as 10 years. The average investment period is over eight years.

Supported activities: Angel investing differs significantly from other forms of investment in that business angels usually endeavour to actively influence the success of their investment (compare stock market investing). The investment may be in a form other than money. In fact, according to studies, substantially better results are achieved in a company by investing in sweat equity and network equity rather than simply private equity. In short, one could say that one third of angel investing consists of monetary investment, one third of utilisation of networks and one third of making the investor's sweat equity available to the growth company in question.

Total available funding within the program: During 2010-2017 business angels in Finland have invested at least 202 million EUR in 1 423 startups. 2017 business angels invested 26 million EUR.

Total available funding per Project: Business angels tend to make investment in stages. A typical investment amount is between 10 000 EUR and 50 000 EUR per investor per round; maximum 1 million EUR. Average size of unique investment is 90 000 EUR.

Co-funding rate: A business angel investment is always a minority investment (usually 10-30%), and it is directed at the (pre-)seed, early or later growth stage.

Specific regulations/ requirements, if any: Investors decide to invest only in good companies. In reality, however, only one in ten investments are successful, four in ten yield a return on the capital invested and with respect to the rest, everything is lost.

Identified bottlenecks of the program: If an investor's annual target rate of return for a portfolio is 20%, the estimated duration of the investment five years and the probability of success 10%, a single investment must produce an annual return of 80% to enable the investor to have the resources to make new investment decisions in the future, too. In other words the expected return on investment (EROI) must be 20-fold at the time of the decision.

Success of the program: 1.3 Investors decide to invest only in good companies. In reality, however, only one in ten investments are successful, four in ten yield a return on the capital invested and with respect to the rest, everything is lost.

2.3.3. Start Guarantee (Alkutakaus)

Name of the program: Start Guarantee (alkutakaus).

Managing organisation: Finnvera.

Funding source: Finnvera is a specialised financing company owned by the State of Finland and it is the official Export Credit Agency (ECA) of Finland. The State of Finland owns the entire stock of Finnvera plc.

Start Guarantees are based on an agreement on guarantee arrangements for credit, signed between Finnvera and the banks. This makes it possible to guarantee small loans by sharing the risk with the bank concerned.

Beneficiaries: A Start Guarantee is intended for newly launched enterprises that are owned by private individuals and meet the SME definition applied by the EU. Another criterion is that no more than three years has passed since their entry into the Trade Register.

Duration of the programme: on-going activity.

Supported activities: Finnvera provides financing for the start, growth and internationalisation of enterprises and guarantees against risks arising from exports. Finnvera strengthens the operating potential and competitiveness of Finnish enterprises by offering loans, domestic guarantees, export credit guarantees and other services associated with the financing of exports. The risks included in financing are shared between Finnvera and other providers of financing.

The monitoring of client companies' financial and operational situation is part of Finnvera's risk management. If financial problems are observed, their causes are investigated together with the client and other financiers. This is referred to as "turnaround". If the enterprise's normal development measures do not produce the desired results, it is justified to consult outside professionals. Finnvera's own turnaround experts assist clients in seeking help.

Total available funding within the program: 1.5 Finnvera's guarantee coverage can be at most 80%. However, the total sum of Start Guarantees granted to one enterprise may not exceed 80 000 EUR.

Total remaining funding until the end of the financial period: The funds needed for granting export credits and credits to SMEs are obtained from the financial market. Finnvera has a 11 billion EUR EMTN programme guaranteed by the state of Finland.

Total available funding per Project: The minimum amount for Finnvera's guarantees is 10 000 EUR.

Co-funding rate: Security: special guarantee undertaking lodged by the principal shareholders. It must cover at least 25% of Finnvera's guarantee sum. The minimum amount of the guarantee undertaking is 3 000 EUR and max is 20 000 EUR.

Specific regulations/ requirements, if any: Fees collected on the guarantee: The guarantee commission is 3% p.a. on the guarantee sum. The service fee is 1% of the guarantee amount.

Identified bottlenecks of the program: When using other financing solutions Finnvera primarily requires that the principal shareholders in a limited liability company make an investment in the company's equity. If this is not possible, a personal guarantee will be required. Sole proprietors and general partners in general partnerships and limited partnerships are also otherwise personally liable for the loans of their enterprises.

2.3.4. Overall landscape of support

The Finnish funding landscape is very versatile offering a variety of funding possibilities for both start-ups and mature companies in different industries. In this report we are describing only the most potential national level funding programs that together give a good overview of the national funding landscape. The described funding programs can be utilised by CAROs and potential CAROs for business development covering wide range of sectors. A common feature for all analysed funding programs is that they are on-going long-term activities to support Finnish companies.

The most important funding agency in Finland is Business Finland that funds commercial Research Development and Innovation activities in companies but also in university-business networks. Business Finland has a wide variety of funding programs for start-ups, SMEs and big companies. In the report we are describing only the most potential funding possibilities that can be used for CARO development in Finland.

Finnish Industry Investment Ltd (Tesi) and Finnish Business Angels Network (Fiban) are representing venture capital firms. Finnish Industry Investment is a venture capital investment company which funding is targeted to different sectors, with strategic priorities being ICT, industrial digitalisation, health technologies, bio economy and cleantech. Finnish Business Angels Network is a non-profit association inspiring private start-up investing in different sectors.

Finnvera provides only guarantees for loans for start, growth and internationalisation of companies. Finnvera's goals are increasing the number of starting companies, enabling financing for changes encountered by SMEs, and promotion of company growth, internationalisation and export.

Presented programmes have increased the strategic understanding of participating companies, not only in technology and business options but also with respect to customers, markets and political and societal context. General funding programmes, not restricted by industry seems to serve the Finnish markets well. Also these programmes that have no strict thematic focus seem to reach companies well. Generally, funding mechanisms have been relevant, effective and efficient in achieving their goals.

The funding agencies all have their specific impact models with which they systematically evaluate the impacts of their funding activities. The impact models generally include both direct and indirect business impacts. All the presented funding agencies have a proven track record in the business development and they have been active players in Finland for a long time. Systematic evaluation activities help the funding agencies to constantly develop their funding services to meet the company needs.

The biggest funding organisation, Business Finland, has found out that the most frequently used services for companies receiving their support are (not necessarily in order of importance):

- 1) facilitation of partnering/networking, platform provision,
- 2) promotion assistance, target market and customer identification and engagement, and
- 3) training, mentoring and coaching.

Based on the self-evaluation data of Business Finland the value of specific services to a specific beneficiary depends on their maturity as a company and the phase of development of technology, product or service. Stereotypically, one could say that younger and less-networked companies benefit from a broader spectrum of services, including mentoring, coaching and general networking opportunities, whereas for more mature enterprises the largest value propositions are tailored advice and networking opportunities.

One recent and important improvement in the funding landscape is the launch of innovation vouchers by Business Finland. Business Finland has launched an Innovation voucher that provides a small amount (5000 EUR + VAT) financing to purchase new knowledge and skills like research,

development and investigating work for their business. Own funding contribution by the beneficiary is required. This financial support is targeted to serve as a step board for other forms of Business Finland financing, and can hence be considered as a kind of seed funding.

One possible development need identified by Business Finland is that the focus of funding activities would need to be changed from domestic focus into trans-national focus. Rather than funding only domestic companies and ecosystems, the focus should at least in some funding programmes be leveraged into international setting to foster Finnish companies' role in international ecosystems. In the Finnish landscape there are also some other funding programs (e.g. ELY, Finnvera) have an opportunity to support companies in opening up existing international networks and encourage business connections in international business and innovation ecosystems.

Especially in case of possible funding for CAROs a needed improvement of the overall funding program landscape would be to solve one of the main challenges (according to Business Finland self-evaluation) for the national innovation system: the difference between the scientific agenda of the academic institutions and the business requirements of the companies competing in the market. Product development in the companies requires scientific knowledge and can benefit from cooperation with the academic world. However, from a company point of view it may look like the academic world is too interested in understanding abstract problems instead of understanding the actual business driven needs. Also, the development of a material from its initial discovery to its industrial application may take tens of years. Thus, long span and costly work is required to achieve improved properties for an industrially usable new material which is not fully served by the current funding programs.

It also serves to be acknowledged that most of the programme services and practically all funding possibilities have been proven highly relevant for individual beneficiaries, but it is harder and way more important to reach ecosystem level objectives. Evaluation of this aspect is not fully present in the current landscape and would need some wider impact model so that this could be assessed.

2.4. Public support programs for innovative SMEs in Germany

No	Name of the program
1.	StartUp – Förderung und Finanzierung (Regional Schleswig-Holstein)
2.	Seed- und StartUp-Fonds Schleswig-Holstein II: The way to your own company (Regional Schleswig-Holstein)
3.	Operational Research, Development and Innovation" – BFEI (Regional Schleswig-Holstein)
4.	InnoFounder (Regional Hamburg)
5.	InnoRampUp (Regional Hamburg)
6.	Innovationsstarter Fonds (Regional Hamburg)
7.	EXIST (Federal Programm – more information will follow)

8.	Helmholtz Spin-Off Program (federal program)
9.	The INVEST support programme (federal program)

2.4.1. Start-up scholarship

Name of the program: StartUp – Förderung und Finanzierung.

Managing organisation: WT-SH (Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH).

Funding source: Federal State of Schleswig-Holstein, Chambers of Commerce, Chamber of Handicrafts, Universities.

Beneficiaries: Start-up founders.

Duration of projects implemented within the program: 9 – 12 months.

Supported activities: The scholarship is intended to enable prospective entrepreneurs who have developed a technology-oriented or knowledge-intensive business idea during their studies, research work or in other environments to devote themselves entirely to the start-up idea in the pre-seed phase. The scholarship is intended to introduce the scholarship holders to entrepreneurial independence. During the scholarship period, the business plan is drawn up and the company is founded.

Support is provided for university graduates whose last qualifying university degree (at least Bachelor's degree required) dates back a maximum of ten years.

The start-up scholarship supports individuals and teams of up to three people. Students and individuals with a completed education can be supported as part of a start-up team.

Scholarship holders can expect the following non-refundable benefits:

- Monthly 1 600 EUR (students 800 EUR) over 9 months, with extension up to 12 months possible.
- Up to 200 EUR per team for the lawyer, notary or court costs associated with setting up the business.
- Up to 200 EUR per person for tax consulting costs.
- Up to 5 000 EUR per team as a material cost or investment subsidy (e.g. Prototype construction).
- Special consulting services)In addition to financial support, scholarship holders benefit from support and coaching services offered by the state's start-up supporters and receive a free job for the duration of the scholarship.

Total available funding within the program: 1 million EUR (2016-2019).

Total remaining funding until the end of the financial period: Not specified.

Total available funding per Project: 7 200 EUR – 18 400 EUR.

Specific regulations/ requirements, if any: Company must be founded in Schleswig-Holstein.

Identified bottlenecks of the program: Support is provided for university graduates whose last qualifying university degree (at least Bachelor's degree required) dates back a maximum of ten years.

2.4.2. Seed- und StartUp-Fonds Schleswig-Holstein II: The way to your own company

Name of the program: StartUp – Förderung und Finanzierung.

Managing organisation: WT-SH (Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH).

Funding source: Federal State of Schleswig-Holstein, Chambers of Commerce, Chamber of Handicrafts, Universities.

Beneficiaries: Start-ups.

Duration of projects implemented within the program: 10 years.

Supported activities: Financing young technology and knowledge-driven companies is a challenge. Only a few investors are prepared to bear the risks of an investment in the early phase of the company's development. This is where the Schleswig-Holstein Seed and Start-up Fund comes in: it has a total volume of 16 million EUR and supports start-up projects and young innovative companies with equity capital.

Seed financing

Seed financing enables the realisation of an innovative business idea. Spin-offs from universities, scientific institutions and R&D-strong companies are already supported by the fund in the concept phase.

StartUp financing

StartUp financing is aimed at young, already established companies with an innovative, technology-oriented range of products and services. In particular, the fund provides capital for start-up costs, investments, as well as R&D and market launch costs.

Total available funding within the program: 16 million EUR (until 2022).

Total available funding per Project: Seed-phase: up to 200 000 EUR, and in the Start-Up phase: up to 350 000 EUR.

Specific regulations/ requirements, if any: The fund provides equity capital as seed financing for spin-offs from universities, research institutions and companies with research, development and science-based activities

StartUp financing is available to young, innovative companies that do exist a maximum of 5 years at the time of approval.

Repayment at the end of the 10-year term; optional repayment in installments from the 6th year onwards; possibility of prior redemption against payment of a premium.

A closed financing concept is expected for start-up financing. This may require financing contributions from the house bank or third parties.

The registered office or a permanent establishment of the applicant company must be located in Schleswig-Holstein.

2.4.3 Support programme "Operational Research, Development and Innovation" - BFEI

Name of the program: Operational Research, Development and Innovation" – BFEI.

Managing organisation: WT-SH (Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH).

Funding source: Federal State of Schleswig-Holstein, Chambers of Commerce, Chamber of Handicrafts, Universities.

Beneficiaries: Companies with their registered office or place of business in Schleswig-Holstein. SMEs are given preferential support.

Supported activities: The aim of the funding programme is to support companies in the development and implementation of new ideas, knowledge and technologies into marketable products by reducing the risk for research and development services.

Specificly for new "CAROs", creation of new future-oriented products, processes or services can be funded.

Funding from the ERDF OP is based on the RIS. Priority will be given to projects in the relevant specialisation fields and key technologies. These can be found in the Annex to the Guidelines for the Granting of Grants for the Promotion of Corporate Research, Development and Innovation.

- The innovative approach, the novelty of the project and the competence of the company to carry out the project must be demonstrated.
- The technical and market prospects of the research and development project must be documented.
- The secured overall financing of the project must be presented in a comprehensible manner on the basis of suitable documents.
- The project must serve the commercial economy of Schleswig-Holstein in a sustainable manner. It is to be carried out in Schleswig-Holstein and used there, including the knowledge gained.
- The implementation of the project must be expected to lead to the creation of qualified jobs in the medium to long term.
- The project must not have started yet.

2.4.4. InnoFounder

Name of the program: InnoFounder.

Managing organisation: Hamburgische Investitions- und Förderbank (IFB Hamburg).

Funding source: City of Hamburg.

Beneficiaries: The InnoFounder programme supports founders and start-up teams in the pre-start-up and start-up phase with a flat-rate personal grant. The aim is to prepare and implement promising innovative and knowledge-based start-ups in Hamburg. In particular new digital start-up projects, e.g. from the range of media and content-oriented start-ups, are promoted.

Support is granted to natural persons (teams in the form of partnerships with legal capacity, e.g. GbR) and legal entities, provided that they have not yet commenced business activities or that these have lasted less than one year. Companies already founded must employ fewer than 5 employees



(including active founders) and the annual turnover or annual balance sheet total must not exceed 500 000 EUR.

Duration of projects implemented within the program: 18 months.

Requirements: InnoFounder is aimed at innovative start-ups and companies from all sectors in Hamburg. The focus is on digital innovations. The prerequisite for funding is that the company is not older than one year or that the start-up project has not commenced its business activities for more than one year. The business idea must stand out significantly from the competition, have good prospects of success and be risky due to its novelty. In addition, there must be a convincing team behind the foundation.

Specific regulations/ requirements, if any: The amount of the allowance per person is 2 500 EUR/month for full-time employment. The grant is non-refundable for a maximum period of 18 months. The maximum amount per foundation is 75 000 EUR.

The lump-sum personal grant can be used to finance living expenses and all costs associated with the start-up project. Primarily, teams of founders are to be supported, but the support of individual founders is also possible in principle. A maximum of three persons per founding team will be supported.

2.4.5. InnoRampUp

Name of the program: InnoRampUp.

Managing organisation: Hamburgische Investitions- und Förderbank (IFB Hamburg).

Funding source: City of Hamburg.

Duration of projects implemented within the program: 18 months.

Supported activities: The InnoRampUp funding programme supports technologically innovative start-ups in Hamburg in particular with grants to strengthen the local start-up scene and contribute to the development of promising companies.

Total available funding per Project: up to 150 000 EUR.

Co-funding rate: up to 100% in justified exceptional cases.

Requirements: InnoRampUp is aimed at technologically innovative start-ups and companies from all industries. A start-up to be supported must be younger than two years and have its seat in Hamburg, as well as fulfill the criteria for a small enterprise (less than 50 persons and annual turnover or balance sheet total < 10 million EUR). Prerequisites are a realistic chance of economic success and a convincing team behind the business idea.

Conditions: Innovative projects can be supported with grants of up to 150 000 EUR. InnoRampUp is an expense reimbursement program: We reimburse you for the eligible expenses incurred in implementing your project. The grant can be up to 100% in justified exceptional cases so that all project expenses are reimbursed. In order to improve the liquidity of the funded start-ups, advance payments/discounts can be granted.

Success of the program: Since the launch of InnoRampUp, more than 80 projects have already been supported.

2.4.6. Innovationsstarter Fonds

Name of the program: InnoRampUp.

Managing organisation: Hamburgische Investitions- und Förderbank (IFB Hamburg).

Funding source: City of Hamburg.

Beneficiaries: The innovation starter fund participates in start-ups and provides risk capital.

Supported activities: InnoRampUp is aimed at technologically innovative start-ups and companies from all industries. A start-up to be supported must be younger than two years and have its seat in Hamburg, as well as fulfill the criteria for a small enterprise (less than 50 persons and annual turnover or balance sheet total < 10 million EUR). Prerequisites are a realistic chance of economic success and a convincing team behind the business idea.

Total available funding per Project: Up to 0,6 million EUR can be invested per financing round. In total, a start-up can be financed with up to 1 million EUR.

Co-funding rate: 15% shares at 0,6 million EUR investment total.

Specific regulations/ requirements, if any: The Fund enters into open participations, which may be supplemented by subordinated loans. Up to 0,6 million EUR can be invested per financing round. In total, a start-up can be financed with up to 1 million EUR. The following conditions apply if the Hamburg Innovation Starter Fund is involved without the simultaneous participation of private-sector investors selected by the startup.

- 15% shares at 0.6 million EUR investment total.
- Open participation at nominal value.
- Remaining investment sum as subordinated shareholder loan with conversion option (dilution protection) and interest in line with market and risk conditions (currently 6 % p.a.).

If the innovation starter fund commits itself together with private-sector investors selected by the startup, this is done on the terms of the private investors (pari-passu).

The following criteria must be met:

- Corporation (GmbH, AG, UG);
- Small company (less than 50 employees and annual sales or balance sheet total < 10 million EUR);
- Young company, maximum 5 years old;
- Seat or place of business in Hamburg;
- Innovative business idea.

The Innovationsstarter Fonds Hamburg is not limited to specific sectors. Real start-up financing is just as important as later rounds.

2.4.7. The EXIST Business Start-up Grant

Name of the program: The EXIST Business Start-up Grant.

Managing organisation: Research Centre Jülich GmbH, Project Management Jülich (PtJ).

Funding source: German Federal Ministry for Economic Affairs and Energy.

Beneficiaries:

- Scientists from public, non-profit research institutes/universities.
- University graduates and former academic staff members (up to five years after getting a degree or dropping out).
- Students who have completed at least half of their studies at the time of applying.
- Entrepreneur Teams of up to three people. Teams that are made up of a majority of students are only funded in exceptional cases.
- One of the maximum of three team members may have a qualifying professional education and can be funded as the technical staff or one of the team members may have a degree that is more than five years old.

Duration of the program: Started 15 years ago (ongoing).

Duration of projects implemented within the program: 1 year.

Supported activities: The EXIST-Gründerstipendium supports students, graduates and scientists from universities and non-university research institutions who want to realize their founding idea and translate it into a business plan. The start-up projects should be innovative technology-oriented or knowledge-based projects with significant unique selling propositions and good prospects of economic success.

What do the university, research institute and entrepreneurs have to achieve?

- University or research institute
 - is involved in an Entrepreneurial Network.
 - provides the entrepreneur with a mentor, a workplace and guarantees free use of infrastructure.
 - manages the grant
- The entrepreneurs
 - receives coaching services from the Entrepreneurial Network.
 - participates in a one-day "Entrepreneurial Personality" Seminar.
 - presents a first draft of the business plan after five months.
 - submits the business plan after ten months.
 - takes on the responsibility of making tax and national insurance payments.

Total available funding per Project:

- The grant covers personal living expenses:
 - Entrepreneurs with a doctorate receive 3 000 EUR/month;
 - Graduates with a university degree receive 2 500 EUR/month;
 - Students receive 1 000 EUR/month;

- Child benefit: 150 EUR/month per child.
- Materials and equipment: worth up to 10 000 EUR for solo start-ups (for teams max. 30 000 EUR)
- Coaching: 5 000 EUR

Co-funding rate: 100 %.

2.4.8. Helmholtz Spin-Off Programme

Name of the program: Helmholtz Enterprise.

Managing organisation: Helmholtz Society.

Funding source: German Federal Ministry for Research and Education.

Beneficiaries: Employees of Helmholtz-Centers.

Duration of the program: for 10 years (ongoing).

Duration of projects implemented within the program: Phase 1: 8 Months, Phase 2: 6 Months.

Supported activities:

- Advice from an external panel of experts consisting of spin-off experts such as investors and technology transfer managers.
- Kick-off phone call before the start of the project to develop a plan to meet your individual challenges.
- Close 1:1 support by external spin-off experts for individual challenges (team, business model etc.).
- Participation in external support programs, such as accelerators.
- Expert evaluation in the seventh month with decision on further financing.

Program sequence in two phases:

1) 8 months: 100 000 EUR

- Kick-off telephone call before the project begins.
- Close 1:1 support by external spin-off experts for individual challenges (team, business model etc.).
- Participation in external support programs, such as accelerators.
- Review in seven months with decision on further funding.
- Complete and ready-to-found team Prerequisite for further promotion from the ninth month.

2) 6 months: 100 000 EUR (success-oriented):

- Working in a complete team of founders with CEO competence and preparing the foundation.
- Financing of new externally recruited team members also possible.
- Portrait of the spin-off on our website.

Application:

- Detailed description of the business idea;
- Notification of funding: mid-May or mid-November;
- Project start: Flexible.

Total available funding per Project: Phase 1: 100 000 EUR, Phase 2: 100 000 EUR.

Co-funding rate: Helmholtz Centers contribute with at least 25 % of the costs.

Specific regulations/ requirements, if any:

Requirements

- Alone or in a team, at least 100% personnel capacity in the first phase.
- Application is supported by supervisor* and technology transfer at the center.
- Problem understanding for the "job to get done" of potential customers available
- Presentation to the jury in Berlin on 29.04.20 or 29.10.20
- module catalogue: If you are interested, reserve funds in the application, the jury can make modules as a condition
- 1:1 support: 10 000 EUR are reserved in the application for a coach, who is centrally arranged by the program
- The Centre contributes at least 25% of the project costs.

Success of the program: "In the last 10 years, more than 100 start-up projects have benefited from the initiative. Of these, more than 70 projects have been successfully founded, of which more than 80 percent are still active on the market today".

2.4.9. The INVEST support programme

Name of the program: The INVEST support programme.

Managing organisation: German Federal Ministry for Economic Affairs and Energy.

Funding source: German Federal Ministry for Economic Affairs and Energy.

Beneficiaries: Young SME, Investors (VC, Business Angels).

Duration of projects implemented within the program: flexible.

Supported activities: Investors can apply for a support when intending to invest in a high tech related young business.

Total available funding per Project: min. 2 000 EUR, max 100 000 EUR per investor, per year.

Co-funding rate: 20 % of the total investment plus Exit subsidy (to reduce taxes then investor chooses to exit).

Specific regulations/ requirements, if any: INVEST supports young innovative companies in their search for an investor for the required start-up capital. On the other hand, the support programme motivates private investors - especially business angels - to provide venture capital for these companies at all or more than in the past.

Requirements for start-ups: When applying for INVEST, companies are certified as meeting all the requirements for eligible investor participation. With this certificate and information on INVEST, the

companies can then use it to solicit seed capital from potential investors. Eligible companies can be listed in the INVEST database to be visible to potential investors. The Federal Office of Economics and Export Control (BAFA) also provides companies with an eligibility logo. This enables them to indicate their INVEST eligibility for funding. Requirements are included:

- Not Older Than Seven Years.
- Less Than 50 Employees (Full-Time Equivalents).
- Annual Turnover Or Annual Balance Sheet Total Not Exceeding 10 million EUR.
- A Corporation With Its Head Office In The Eea And At Least One Branch In Germany, Which Is Entered In The Commercial Register, Or A Permanent Establishment, Which Is Entered In The Trade Register.
- Demonstrably Innovative: According To The Commercial Register, The Company Belongs To An Industry Defined As Innovative, Holds A Patent Or Has Received Public Funding For A Research Or Innovation Project In The Two Years Preceding The Application. The Innovativeness Can Also Be Proven By A Separate Short Expert Opinion By A Nominated Independent Expert.
- Is Continuously Economically Active Or Commences Its Business Activities No Later Than One Year After The Conclusion Of The Investment.

Conditions for an eligible investor

For private investors (business angels) who want to invest venture capital in a young company, INVEST reduces the risk of an equity investment. Through the acquisition subsidy the investor acquires the business shares at a lower price, but they remain completely with him. If the company fails (liquidation or insolvency application), the investor does not have to repay the acquisition subsidy. If, after a minimum holding period of three years, the investor sells his shares at a profit, the tax due on the capital gain is refunded in a lump sum with the exit subsidy (25 percent of the profit).

The requirements for classification as an eligible investor are:

- Natural person whose main residence is in the EEA and who is not associated with the company.
- Alternative: Investment via Beteiligungs-GmbH or UG: For the approval of the acquisition subsidy, the investor can also subscribe the shares in the company via a Beteiligungs-GmbH or UG (limited liability) with a maximum of six shareholders. The business purpose of the GmbH/UG must include entering into and holding or selling investments. Other permissible business purposes are asset management and consulting. Beteiligungs-GmbHs or UGs, however, are not entitled to the exit subsidy.
- Acquisition of newly issued shares (no acquisition of existing shares from another shareholder).
- Acquisition for own account and from own money (no credit financing of the shares).
- Duration of participation: at least three years (so-called minimum holding period).
- Investment decision based on a submitted business plan.
- Participation in all opportunities and risks of the company. Liquidation preferences and anti-dilution regulations customary in the market are permissible.
- Shares can also be acquired by means of a convertible loan. In this case, the acquisition grant (on the converted amount) is not paid out until after the conversion.

- Follow-up investments are also eligible, provided that the acquisition of the shares held by the investor has already been supported by the acquisition grant.
- In order to receive the exit subsidy, the investor must be a natural person, must have received the acquisition subsidy when acquiring the shares, must comply with the three-year minimum holding period and may not hold the shares for more than ten years.

Facts and figures Status: 31.12.2018

- 513 million EUR INVEST has mobilised in venture capital since May 2013.
- 6 374 Investments have been approved since May 2013.
- 81 000 EUR, on average, each investor has invested venture capital in a start-up.

2.4.10. Overall landscape of support

The above mentioned programmes give a good overview on how start ups and young innovative companies can receive financial support in Germany. This support can either be in the funding of a start-up or for dedicated R&D projects. Young companies can receive either funding or loans as well as, in some programmes, a contact to third party investors is established who are granted securities by the funding agency in case they decide to invest.

However, there is no existing programme in Germany, which focuses directly on CARO like start-ups or fosters access by CAROs or SMEs . Therefore it would be an improvement to have a programme:

- a) supporting the founding and funding of new CARO start-ups, e.g. in areas where there is a strong need for CAROS who can fill the gap between ARIs and industry or
- b) a porogramme to support exisiting CAROS by funding small projects of industrial research conducted by a CARO in combination with an industrial company (and if necessary a university for further expertise). This would be structured similar to the Swedish VINNOVA programme.

2.5. Public support programs for innovative SMEs in Latvia

No	Name of the program
1.	Business Incubator Program
2.	Accelerator program
3.	Competence centres
4.	Cluster Program
5.	Other programs

2.5.1. Business Incubator Programme

Name of the program: Business Incubator Program.

Managing organisation: Investment and Development Agency of Latvia.

Funding source: European Regional Development Fund.

Beneficiaries: pre-incubation – private persons; incubation – SMEs.

Duration of the program: 31.12.2023.

Duration of projects implemented within the program: Pre-incubation support for up to 6 months is suitable for entrepreneurs who still have only an idea, but the company is not yet established.

Incubation support is suitable for entrepreneurs who already have a clearly defined business idea and the company is not older than 3 years. Incubation services can be used for up to 4 years.

Supported activities:

Pre-incubation offers:

- Assessment of your business idea and its viability.
- Advice on business model improvement.
- Mastering business skills and abilities.
- Coworking room.
- Office equipment necessary for the business.
- Free advice, training and workshops.
- Mentors' advice provided by experienced entrepreneurs and experts.

Incubation - purchase of services required for development of business, for example, accounting, premise lease, design, marketing, technology consultations and prototype development, certification, laboratory costs, etc. LIAA provides the purchase of these services.

Total available funding within the program: 30,8 million EUR that includes establishing and maintaining 15 business incubators.

Total remaining funding until the end of the financial period: Not specified. Calls or new applicants are launched periodically.

Total available funding per Project: In the incubation, the customers may receive a grant (with 50 % co-financing) in amount of up to 10 000 EUR and up to 5 000 EUR to cover the costs of the equipment purchase. The entrepreneur pays for the service in amount of 100 % before receipt of the grant.

Co-funding rate: Pre-incubation – no funding is received, incubation - 50%.

Identified bottlenecks of the program: While it might not be the most attractive program for CAROs, the program successfully functions as a typical business incubator program. A limitation is that the business incubator in Riga is only limited to companies operating in creative industries.

Success of the program: A classic business incubator program with a good regional coverage. By 31.03.2019 the programme has received 2184 applications of which 1614 were approved. The programme has so far reached all the milestone goals and can be considered a successful program.

Until 31st of December, 2023 The program aims to provide grants to 200 companies, support development of 400 companies, increase employment in SMEs by 200 FTE, support 20 companies operating in creative industries, provide non-financial support to 180 beneficiaries and 400 companies.

2.5.2. Accelerator Funds Program

Name of the program: Accelerator Funds Program.

Managing organization: ALTUM (state-owned development finance institution, which offers state aid for various target groups with the help of financial tools (such as loans, credit guarantees, investing in venture capital funds, etc.).

Funding source: European Regional Development Fund, duration of the program: 30.16.2021.

The acceleration program —15 million EUR is allocated to innovative start-up companies for the establishment and development of business ideas, companies and products, with the aim of promoting their growth and competitiveness, especially with regards to projects with a technological and industrial focus.

Funding is available from three acceleration funds, selected in a public procurement:

- BuildIt Latvia.
- Commercial Reactor fund.
- Overkill Ventures.

BuildIt Latvia Accelerator's new intensified program is specifically designed for IoT and hardware startups (supported fields- solutions for IoT and connected industry, software for productivity, smart living, energy, mobility, sharing economy, health-tech).

Commercialization Reactor Fund offers an Acceleration Program for deep-tech startups. The business idea should be science or technology based. It should stem from a cutting-edge research and demonstrate clear technological or scientific novelty. It should be able to serve a basis for development of successful new products, processes and services and a scalable business creation. It should have a clear origin from the Intellectual Property ownership position.

Overkill Ventures will grant pre-seed investments to companies, concurrently enrolling them in a three-month acceleration program. The new companies will be guided by experienced entrepreneurs, investors and industry experts, and the fund management team will help them with business development and attracting investors. The investments will primarily be granted to new companies that work in the fields of work environment efficiency and automation, and have already generated initial market revenue.

The companies receive support in two separate stages - pre-seed and seed money investments:

- Pre-seed money investments, i.e. up to 50 000 EUR per company, are intended for the establishment of companies, consultations and the development, assessment and approval of the product;
- Seed money investments, i.e. up to 250 000 EUR per company, are intended for projects that have successfully completed the acceleration stage, for the development of companies, products and economic activity models.

The Accelerator Fund provides pre-seed and seed investments either in the form of quasi-equity or loans, or also in the form of investments in the equity capital of the company, thereby becoming a shareholder and sharing both risks and revenue.

Funding of 15 million EUR has been allocated by the European Regional Development Fund during the planning period of EU structural funds 2014 – 2020 for the implementation of the accelerator funds program, within the framework of which each accelerator fund will receive 5 million EUR. Additionally, the newly created accelerator funds will attract funds from private investors in the

amount of 20% of the seed money fund, while early-stage pre-seed investments will be fully financed from public funds.

2.5.3. Competence centers

Name of the program: Competence center program.

Managing organisation: Central Finance and Contracting Agency of Latvia.

Duration of the program: 31.12.2022.

The aim of the Competence center program is to increase the competitiveness of enterprises by facilitating research and industrial cooperation in new product and technology development projects.

Duration of the program: 31.12.2022.

The total funding of the program is 64,3 million EUR.

The target group is micro, small, medium and large enterprises that develop products and technologies for smart specialization areas, as well as research and knowledge transfer organizations. Independent organizations are consolidated into one organization and creating a competence center.

Supported activities in competence centers:

- The experimental development and industrial research necessary for the new product and technology development (acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services).
- Commercialization feasibility studies for planned research projects larger than 250 thousand euro (the evaluation and analysis of the potential of a project, which aims at supporting the process of decision-making by objectively and rationally uncovering its strengths and weaknesses, opportunities and threats, as well as identifying the resources required to carry it through and ultimately its prospects for success).
- Industry research project coordination and monitoring of the implementation, including support for the competence center in order to promote entrepreneurs involvement in international research projects, such as Horizon 2020, etc. (project preparation assistance, research project selection and analysis, and more similar activities).

The maximum allowable funding intensity from the total eligible costs of the project is:

For industrial research:

- 70% – for small (micro) and small merchants.
- 60 % – for medium merchants.
- 50 % – for large merchants.

For experimental development:

- 45 % – for small (micro) and small merchants.
- 35 % – for medium merchants.

- 25 % – for large merchants.

For feasibility study:

- 70 % – for small (micro) and small merchants.
- 60 % – for medium merchants.
- 50 % – for large merchants.

Planned studies of the merchants are evaluated and approved by the Competence Centre Project Selection Board. 8 competence centers are created.

Supported areas:

- Knowledge-based bio-economy – innovative solutions in forestry and wood processing.
- Knowledge-based bio-economy – agriculture and food production.
- Biomedicine, medicine, technology, biopharmaceuticals and biotechnology.
- Smart materials, technologies and engineering systems-smart materials.
- Smart materials technology and engineering – modern production technology and engineering.
- Information and communication technologies – engineering (electronics).
- Information and communication technologies – information and communication technologies.
- Smart energy.

2.5.4. Cluster program

Purpose of the cluster program is to promote cooperation between entrepreneurs and research, education and dissemination organizations and other institutions at local and international level, thus enhancing the competitiveness of enterprises by increasing the volume of exports and the share of high added value products and services in exports, as well as formation of innovation and new products.

The projects are implemented by associations and foundations that unite at least 30 SMEs during the implementation of the project. The project applicant forms a cluster, which unites entrepreneurs, research organizations, scientific institutions, educational institutions and other institutions in a joint cooperation network.

Funding intensity is 85%. Available financing for one cluster is 415 000 euros, project implementation lasts for 4 years.

The aid is provided in the form of a grant for:

- measures to promote the visibility, marketing and commercial cooperation of cluster and cluster members, including market research;
- measures promoting cooperation with research and knowledge dissemination organizations, including identification of research, infrastructure and training needs of cluster members;
- measures promoting the transfer of knowledge about innovation and the latest technology for cluster members;



- measures to increase resource efficiency and productivity within a product, service, supply or value chain;
- measures of exchange of experience and information activities.

The total funding of the program: 6,2 million EUR and 14 clusters are created.

Duration of the program: 31.12.2021.

2.5.5. Other programmes

In addition to the support programs described above there are several other programs that offers direct and indirect support to innovative entrepreneurs, for example:

2.5.5.1. Aid for the training of employees

The purpose of the program is to provide support for the improvement of the skills of the employees in order to promote the introduction of technological innovations and increase of labour productivity. Program is co-financed by ERDF and managed by Central Finance and Contracting Agency of Latvia, the total fundinf of the program is 24,9 million EUR.

Projects are implemented by industry associations, which at the request of industry enterprises provide appropriate training.

Eligible sectors – Manufacturing, ICT, accommodation and catering services.

The aid is provided for training in the following areas: Design; Telematics and logistics; Telemechanics and Logistics; Project management; Production engineering and management; Physical sciences; Mathematics and Statistics; Computer science; Engineering and technology; Production and processing; Forestry; Health care services; Hotel and restaurant services; International Transport Organization; Environment protection; Languages.

Aid intensity:

- For small (micro) and small merchants – 70%.
- For medium merchants – 60* %.
- For large merchants – 50* %.
- For large merchants registered in the territory of the Republic of Latvia with a profit after tax of more than 5 million EUR in the last reporting year – 30 *%.

(* The intensity can be increased by 10% if the training is provided to disabled or disadvantaged workers, but not more than 70%).

Duration of the program: 31.12.2023.

2.5.5.2. Seed and Start-Up Venture Capital Program

Program is managed by ALTUM (state-owned development finance institution, which offers state aid for various target groups with the help of financial tool) that has allocated EUR 15 million of ERDF funding to the manager.

- A seed and start-up venture capital ensure a possibility of development to new and innovative enterprises at an early stage of development and with a high growth potential, in which traditional financiers choose to refrain from investing due to high risk.

- Seed and start-up venture capital investments can be made in the equity capital of an enterprise or in the form of quasi-equity.
- An investment can be used for financing both fixed and current assets.
- The companies will receive support in two separate stages - seed and venture money investments:
 - ✓ seed money investments, i.e. up to 250 000 EUR per company.
 - ✓ venture money investments, i.e. up to 2,1 million EUR per company.
- The term of investment is from 4 to 5 years.
- An investor becomes a business partner of an enterprise, providing the enterprise with its experience and knowledge, assisting in jointly reaching the set goals, thus promoting the commercialization potential and growth of the enterprise.
- The seed and start-up venture capital investment are made with an aim to commercialize project technologies to promote the growth of international-scale business.

2.5.6. Overall landscape of support

Even though there is no program that provides support specifically for CAROs type beneficiaries in Latvia, it is possible to receive support via general programs for innovative enterprises.

One of the major programs is Competence center support program with available support 64,3 million EUR.

According to interviews conducted by the Ministry of Economics of Latvia, it is found out that enterprises evaluate the competence center model positively. A very positive aspect is the flexibility of the program – possibility to change the collaboration partners and planned researches. The fact that the program is long term program was the second most important factor mentioned by entrepreneurs (the possibility to receive support to new research or new product development initiatives according to needs without waiting for a call of projects).

In overall the competence center model has been a big step in business cooperation and dialogue on research and technological development needs.

Also the cluster program with 14 created clusters (6,2 million EUR support) has been considered to be a successful one. And there several lessons learned during the implementation of the program:

- Ensuring that cluster members regularly participate in cluster projects and activities and provide financial support for cluster activities is essential for cluster development. Thus, cluster strategies should provide for the involvement of ALL participants in the cluster, not just the activities of some of the most active companies in the cluster;
- It is important to ensure a balance between the number and activity of the businesses involved, education and research institutions, service providers and public authorities;
- Cooperation with research institutions is important and should be given special attention. Cluster members can access relevant information on the latest trends in technology, product innovation and new methods of innovation through the cluster, which for various reasons may otherwise have limited access to this information due to lack of financial and time resources;
- The success of a cluster requires that it can carry out a variety of activities and offer a wide range of services, which requires greater flexibility on the part of the responsible authority.

Overall the support for programs for innovative enterprises can be justified as sufficient, however, the biggest issues lie in other areas:

- 1) sustainability of the funding as all the programs all funded by ESIFs.
- 2) interest from companies and awareness of the need to innovate by developing new technology intensive products.
- 3) collaboration between the clusters, competence centers and business incubators.

2.6. Public support programs for innovative SMEs in Lithuania

No	Name of the program
1.	Inostartas
2.	Eksperimentas
3.	Acceleration Fund

2.6.1. Inostartas

Name of the program: Inostartas. This programme is dedicated for innovative SME who seek to receive support for idea development, product development, or recruitment of researchers and researchers.

Managing organisation: Ministry of the Economy and Innovation together with Agency for Science, Innovation and Technology.

Funding source: European Regional Development Fund.

Beneficiaries: SMEs which are carrying out (or intending to carry) R&D activities.

The SME must be:

- Operating less than 12 months for 1st type activities.
- Operating not less than 12 months for 2nd type of activities.
- Operating not less than 12 months and not more than 36 months for 3rd type of activities.

Duration of the program: 30.09.2020.

Duration of projects implemented within the program: Up to 12 months.

Supported activities:

- Promotion of innovative SMEs creation including R&D activities: formulation of knowledge application concept; validation of concept feasibility; designing and testing of a model; model verification by simulating real conditions; creation of prototype.
- Recruitment of researchers and / or scientists.
- Promotion of innovative SMEs development including R&D activities: demonstration of a prototype; production of a test batch; evaluation of created product; assurance of intellectual property rights of developed prototype.

Total available funding within the program: 4 506 886 EUR.

Total remaining funding until the end of the financial period: Not specified.

Total available funding per Project: up to 76 000 EUR.

Co-funding rate:

	Vilnius, Kaunas, Klaipėda	Other regions
1st activity	70 %	85 %
2nd activity	60 % for micro and small-sized enterprises; 50 % for medium-sized enterprises.	70 % for micro and small-sized enterprises; 60 % for medium-sized enterprises.
3rd activity	65 %	80 %

Specific regulations/ requirements, if any: Inostartas has two different calls at the same time. One is directed to three major cities (Vilnius, Kaunas, Klaipėda) and their districts (2 million EUR value). Another one is dedicated to the rest Lithuanian regions excluding major cities (2,5 million EUR value).

Support is based on *de minimis* regulation.

Identified bottlenecks of the program: The program is more oriented to those companies which already have developed prototypes of products. What might be not quite suitable for young companies without prominent experience in R&D. Also, the funding is granted only after the start-up has successfully completed all activities, so applicants either cannot participate due to lack of own funds or are unwilling to take risks if their activities fail.

Moreover, „Inostartas” has one of the highest co-funding rates among all programs in the country which makes companies to rely a lot on the subsidies which creates less sustainable environment for future self-funding.

However, the size of financial contribution of “Inostartas” is not significant for CAROs, so it could not rely only on this program.

Success of the program: Since 2018.04.30 there were 79 submitted applications out of which 35 were approved. They gained 776 300 EUR of funding. The program aims to provide aid for at least 200 companies, but as the financing period is still ongoing, it is not possible to evaluate the results or an impact of this support measure.

2.6.2. Eksperimentas

Name of the program: Eksperimentas. The program is financing R&D activities for the development of innovative products, services or processes, as well as encouraging the development of enterprises through investment in the design and development of R&D and innovation infrastructures.

Managing organisation: Lithuanian Business Support Agency.

Funding source: European Regional Development Fund.

Beneficiaries: private entities (excluding science and study institutions) and public institutions which carry out R&D activities (excluding science and study institutions) when 1st and / or 2nd activities are carried out.

Partners: private entities and science and study institutions.

Duration of the program: 17.02.2020.

Duration of projects implemented within the program: 36 months if the project includes 2nd activity and 24 months if the project is not including 2nd activity.

Supported activities:

- 1) R&D.
- 2) company's initial investments to develop new or existing R&D and innovation infrastructure which is not publicly available or in clusters.
- 3) certification of new products and technologies, and related activities.

Total available funding within the program: 72 million EUR. The budget is allocated by three thematic areas. 15 million EUR is dedicated to life science, 35 million EUR to smart specialization priorities (excluding health technologies and biotechnologies) and 22 million EUR to regions excluding three major cities.

Total remaining funding until the end of the financial period: This is a very new program, so there are no applications to this moment.

Total available funding per Project: The maximum amount of funding available for a project in major cities is 1,2 million EUR for the 1st activity, 3 million EUR for the 2nd activity and 0,2 million EUR for the 3rd activity.

Co-funding rate:

Maximum amount of possible funding for the 1st activity:

R&D activity	Base funded share	Possible increase in base funded share, up to 80% of eligible costs.			Maximum amount of possible funding depending on beneficiary status		
		Increase for medium-sized enterprises	Increase for micro and small-sized enterprises	Increase for effective collaboration if the conditions of the Article 25 point 6(b) of General block exemption Regulation are met.	Large enterprise	Medium-sized enterprise	Micro and small sized enterprise
Research	50%	+10%	+20%	+15%	65%	75%	80%
Experimental development	25%	+10%	+20%	+15%	40%	50%	60%

Maximum amount of possible funding for the 2nd activity:

Beneficiary status	Maximum amount of funding
Large enterprise	25%
Medium-sized enterprise	35%
Micro and small-sized enterprise	45%

Maximum amount of possible funding for the 3rd activity with *de minimis* application:

Beneficiary status	Maximum amount of funding
Large enterprise	30%
Medium-sized enterprise	50%
Micro and small-sized enterprise	70%

Specific regulations/ requirements, if any: Similarly to „Inostartas“ program, „Eksperimentas“ has two different calls, one being dedicated to regions and another one to major Lithuanian cities. Regional call has lower available funding for activities (up to 0,5 million EUR) and overall budget (22,7 million EUR). Also, the certification activity (3rd) is included only in call for major cities.

Smart specialization priority areas: energy and sustainable environment; agro-innovation and food technologies; new production processes, materials and technologies; inclusive and creative society; smart, clean, integrated (linked) transport and ICT.

Identified bottlenecks of the program: This measure finances high-value R&D and R&D infrastructure projects, so there may not be many applicants who meet all the criteria, including the requirements for financial contribution. This results in limited project flow and low demand from business side.

Success of the program: It is not possible to evaluate the success of the program as there are no applications or results yet.

2.6.3. Acceleration Fund

Name of the program: Acceleration Fund. The program is responsible for four investments funds – „Wise Guys Pre-seed Fund I“, „Wise Guys Seed Fund I“, „70 Ventures Accel“ and „70 Ventures Seed“.

Managing organisation: „Invega“ is responsible for the acceleration fund program. Actual investment funds are held by „Startup Wise Guys“ and „70ventures“ companies.

Funding source: ERDF and private investments.

Beneficiaries: MSEs (micro and small enterprises).

Duration of the program: As long as the funds will last.

Duration of projects implemented within the program: Depends on project.

Supported activities: Early-stage venture capital fund “Wise Guys Pre-seed Fund I” shares business development knowledge with start-ups and subsequently invests in them. Second, early stage “Wise Guys Seed Fund I”, co-invests with early stage start-ups. Pre-seed activities include help to reach out to ideal customers, book meetings with them and get first sales as well as to systemize and automate sales workflow in order to get ready for scaling. Seed activities include help to scale sales team to reach out to maximum of leads and create a predictable sales funnel.

Another early-stage venture capital fund is managed by the “70 Ventures” team. Young entrepreneurs taking advantage of it, in particular, have the opportunity to consult with professionals who will then invest. In later stages of development, companies may benefit from early stage financial support.

Total available funding within the program: 15,6 million EUR (summing all four funds).

Total remaining funding until the end of the financial period: Not specified.

Total available funding per Project: From 10 000 EUR to 300 000 EUR.

Identified bottlenecks of the program: Acceleration funds are not directly connected to CAROs, but rather start-ups in general.

Success of the program: Four new investment funds were launched in the beginning of this year, so there are not measurable results yet. Pre-seed funding is planning to fund around 45 beneficiaries.

2.6.4. Overall landscape of support

Under 1st priority of European Union Funds Investment Action Program there are several financial programmes for different kind of business and science cooperation and innovation support. However, the majority of programs are already closed and there are only a few support schemes for innovative SMEs before the end of 2014-2020 financial period. Programs are being differentiated by the size of R&D project, size of enterprises, their experience and capacity.

Most of the programs closely relate to smart specialization strategy, so the support is narrowed down to 7 specific areas: energy and sustainable environment; health technologies and biotechnologies; agro-innovation and food technologies; new production processes, materials and technologies; inclusive and creative society; smart, clean, integrated (linked) transport and ICT.

There is no specific focus for CARO type of beneficiaries yet, so the funding should be gained via general programmes for innovative SMEs. There is still lack of financial support for large infrastructure scientific projects.

One of the most significant challenges of the current program landscape is the lack of linkages between programs, leading companies at different stages of R&D to commercialization of the final product. Secondly, there is still a lack of focus on business transformation and idea development, which is not done consistently, so the key issue is the flow of good ideas.

The majority of projects implemented are still lacking closer cooperation between science and business. It can be assumed that collaboration is limited by the differently perceived goals and results of R&D activities by business and academia, the over-employment of researchers, the internal bureaucracy of MSEs, and by other systemic reasons that hamper collaboration.

Also, according to business, grant schemes without mentoring services (such as “Inostartas”) do not respond adequately to the needs of young companies.

Recently, there were a few changes to the financial programs. Some of the programs have been changed before the end of 2014-2020 financial period so the funding would be used for the last year in a more efficient way. Most prominent improvements include separate calls for programmes which

are aiming to attract more companies from regions, so there would be more equal competition. The evaluation process of the applications was shortened for some programmes. Previous similar measures to “Eksperimentas” were not attractive to young companies, as priority was given to more advanced innovators with longer experience and greater financial stability. In this regard, the "Eksperimentas" invitation has separate application calls.

In order to encourage start-ups, it would be more appropriate to provide various support services and financial incentives should not be high. More mentoring possibilities should be provided for companies which are only on the very first steps of their bussiness plans.

More emphasis should be placed on optimizing enterprise processes, carrying out primary R&D activities and strengthening the internal capabilities of companies

Currently, there are not many high value added companies in Lithuania, so in order to stimulate the economic shift towards the production of high value added products or services, more attention should be paid to start-ups and the development of new or offshore R&D based companies.

When it comes to capital funds, there should be financing possibilities not only for start-ups, but also for mature innovators, for example, to acquire equipment, or projects with a high commercial potential that are close to the market and have a relatively lower risk.

2.7. Public support programs for innovative SMEs in Poland

No	Name of the program
NATIONALWIDE - POLAND	
1.	Loan for technological innovations
2.	Research and development centres
3.	Legal support for start-ups
4.	Bisnessmax guarantee with subsidy
MALOPOLSKA	
5.	Research and innovation in enterprises
6.	Loan for start-ups
7.	Loan for technological innovations
8.	EU Enterprise Loan - Malopolska

2.7.1. Loan for technological innovations

Name of the program: Loan for technological innovations, Smart Growth.

Managing organisation: Ministry of Economic Development.



Funding source: European Funds.

Beneficiaries: Micro, small or medium-sized enterprises operating in the territory of the Republic of Poland.

Duration of the program: June 2020.

Supported activities:

- Purchase of undeveloped or built-up real estate (including purchase of right of perpetual usufruct).
- Purchase, manufacture, as well as costs of assembly and commissioning of new fixed assets other than specified in previous point, excluding means of transport purchased by an entrepreneur operating in the transport sector.
- Purchase of used fixed assets, as well as costs of assembly and commissioning of used fixed assets other than specified in 1st point, excluding means of transport purchased by an entrepreneur operating in the transport sector.
- Purchase of works and building materials for the construction or extension of buildings, structures or parts thereof.
- Purchase of intangible assets in the form of patents, licenses, know-how and non-patented technical knowledge.
- Covering costs related to the rent or lease of land, buildings and structures or parts thereof, incurred until the date of completion of the technological investment.
- Expenses incurred for studies, expertise, concepts and technical projects carried out by external consultants, necessary to implement the new technology as part of a technological investment.

Total available funding within the program: 422 million EUR.

Total available funding per Project: 1,25 million EUR.

Co-funding rate: from 20 to 70% depending on the region and company size.

Identified bottlenecks of the program: The programme does not cover the cost of setting up the company as well as operational costs.

2.7.2. Research and development centers

Name of the program: Support for investments in enterprises' R&D infrastructure, Smart Growth.

Managing organisation: Ministry of Investment and Development.

Funding source: European Funds.

Beneficiaries: Co-financing will be granted to entrepreneurs for creating or developing investments such as research and development centers.

Duration of the program: ended by 14.10.2019, in 2020 is planned next edition.

Supported activities:

- Investment expenditure.
- Costs of appropriate technical knowledge.
- Consultancy and equivalent services used for the needs of the project.

- Costs of purchasing materials and products directly related to the implementation of the project.

Co-financing is intended to support the creation or development of research and development centers through investments in apparatus, equipment, technologies and other necessary infrastructure that will be used to conduct research and development works for the creation of innovative products and services.

Total available funding within the program: 79,5 million EUR (12 million EUR for projects located in Masovian district, 67,5 million EUR for projects in other districts)

Total available funding per Project: depending on type of help:

- Regional 10% - 70%.
- For development works 25% - 45%.
- De minimis 25% - 45%.

Obtained de minimis aid during the current year and two previous tax years may not exceed the amount equivalent to 200 000 EUR, and in the case of an entrepreneur operating in the road freight transport sector - 100 000 EUR.

Identified bottlenecks of the program: High access criteria to the programme. Lack of direct financial support for employee remuneration, marketing, ect.

Success of the program: R&D status of the company gives advantage in applying for European funds and opportunity to perform research services to industry which are partly funded from European funds (innovation vouchers programmes).

2.7.3. Legal support for start-ups

Name of the program: Legal support for start-ups.

Managing organisation: Polish Agency for Enterprise Development.

Funding source: European Funds.

Beneficiaries: Micro, small or medium-sized enterprises that:

- Do business in Poland for no more than 5 years;
- They achieve operating income no longer than the last 3 years before the date of submission of the application.
- Have a document confirming the investor's interest in starting or continuing the investment process.

Duration of the program: September 2020.

Supported activities:

- Legal support in the implementation of the investment process.
- Legal advice related to the implementation of the procurement process in the field of business operations.
- Legal support regarding negotiations with the vc fund or business angel.
- Legal consultations regarding the conducted activity.



Total available funding within the program: 260 000 EUR.

Total available funding per Project: maximum of 6 000 EUR.

Co-funding rate: No founding from start-up is needed.

Identified bottlenecks of the program: Only legal costs can be covered by the programme.

2.7.4. Businessmax guarantee with subsidy

Name of the program: Businessmax guarantee with subsidy, Smart Growth Operational Program.

Managing organisation: Bank Gospodarstwa Krajowego.

Funding source: European Funds.

Beneficiaries: The entrepreneur submitting the application for a guarantee is:

- Resident.
- Belonging to the SME sector.
- Entitled to de minimis or regional investment aid.
- Meeting the access criteria according to:
 - option 1 - the company implementing the project meets at least 1 out of 16 criteria of an innovative entrepreneur.
 - option 2 - the company implements projects of the nature of ecological innovation with an ecological effect.

Duration of the program: The interest subsidy for the loan covered by the guarantee may be granted to the entrepreneur if the loan was covered by the guarantee by December 31, 2023.

Supported activities: The aim of the project is to support the development of innovative enterprises and increase the innovation potential in the SME sector, including eco-efficient companies.

Total available funding within the program: 328 million EUR.

Total available funding per Project: Maximum guarantee amount – 2,5 million EUR.

Co-funding rate: for a loan covered by the guarantee granted until December 31, 2020, the annual rate for calculating the interest subsidy is 5% and for a loan granted after 1 January 2021, the annual rate for calculating the subsidy to the interest rate on the loan is 3,33%; up to 80% of the loan amount.

2.7.5. Research and innovation in enterprises

Name of the program: Research and development projects of enterprises.

Managing organisation: Marshal's Office of Malopolska Region.

Funding source: European Funds.

Beneficiaries:

- Enterprises, in particular micro, small and medium enterprises.
- Consortia of enterprises with the participation of micro, small and medium enterprises, represented by the leader (beneficiary), which is an enterprise.

- Company consortia with participation:
 - scientific units,
 - universities, including special purpose vehicles of universities,
 - non-governmental organizations,
 - business environment institutions represented by the leader (beneficiary), which is the enterprise.

Duration of the program: Until December 2020.

Supported activities:

- Acquisition of research results or development works, if the purpose of the undertaking is to carry out further research and development works aimed at developing an innovative solution based on R&D works regarding new properties of a given technology or the possibility of its application in new conditions related to the individual needs of a given enterprise.
- Preparation of experimental prototypes.
- Creating demonstration and pilot installations.
- Validation of the given solution.
- Launch of the first production, which includes the scope of experimental development and means the first industrial implementation related to increasing the scale of pilot facilities or to the first of its kind devices and facilities, including the steps following the launch of the pilot line in which the phase is included testing, but not mass production or commercial activities.
- Support for preparing the results of the research phase for use in business operations (as a complementary component of a research project).

Applicant's minimum own contribution:

- ✓ in the case of help for research and development projects, it is determined in accordance with the relevant legal provisions regarding the rules for granting this aid, however, it is not less than:
 - For industrial research - 20%.
 - In the case of experimental development - 40%.
 - In the case of a feasibility study - 30%.

The maximum total co-financing rate for eligible expenses is no more than:

	Micro/Small	Medium	Other
The case of public help for industrial research	70%	60%	50%
The case of public help for experimental development	45%	35%	25%
The case of public help for a feasibility study	70%	60%	50%

II. **help for SMEs to support innovation:** 50% - relates to expenses related to obtaining, validation and defense of patents and other intangible assets (regardless of the type of research and the status of the enterprise).

III. **de minimis aid:** The maximum de minimis aid intensity is 85% of the eligible costs.

Identified bottlenecks of the program: Only support for complex R&D projects which lead to develop new technology or product.

Success of the program: The support for the innovative SME which have their own R&D capacity and are focus on the R&D comertialisation.

2.7.6. Loan for start-ups

Name of the program: The Regional Operational Programme for Małopolskie 20014-2020, Financial instruments for SMEs - early development phase.

Managing organisation: Marshal's Office of Malopolska Region.

Funding source: European Funds.

Beneficiaries: only Applicants with the status of a micro, small or medium enterprise, operating on the market for no longer than 24 months and operating in the Lesser Poland Voivodship, may apply for funding under the competition.

Duration of the program: 2014-2020.

Supported activities:

- Using the results of R&D works or inventions covered by patent protection.
- Utility models protected by protection rights.
- Having an application for patent protection.
- Protection right on a utility model, by introducing new.
- Significantly improved ones on the market in terms of their functiona.
- Functional characteristics of the products (i.e. Goods or services) or processes.

Total available funding within the program: 5 million EUR.

Total available funding per Project: the maximum value of eligible expenses of the project is 2,3 million EUR.

Co-funding rate:

Maximum permitted level of project co-financing

- 55% for micro and small enterprises.
- 45% for medium enterprises.

Applicant's minimum own contribution

- 45% for micro and small enterprises.
- 55% for medium enterprises.

Identified bottlenecks of the program: The company receives support in specially indicated areas of business activieties.

2.7.7. EU Enterprise Loan - Malopolska

Name of the program: An integrated project to support financial instruments in Malopolska.

Managing organisation: Bank Gospodarstwa Krajowego.

Funding source: European Fund (121 million EUR), the State budget (11 million EUR).

Beneficiaries: Micro, Small and Medium Enterprises implementing development projects in the province of Malopolska being both in the START UP phase (operating for no more than 24 months) and those operating on the market for longer (for at least 24 months).

Duration of the program: 2014-2020.

Duration of projects implemented within the program: up to 84 months, including the possibility of granting a grace period in the repayment of capital up to 6 months.

Supported activities:

- Development / expansion of an enterprise, increasing the scale of operations, launching new or improved products / services on the market and leading to an increase in the range of the offer by acquiring new sales markets, including in particular:
 - investments in modern machinery, equipment and production equipment in order to introduce new or improved products or services to the market,
 - developing sales of products and services on the Internet (e-commerce),
 - investments related to the use of information and communication technologies (ICT) in business activities,
 - implementation of solutions enabling reduction of energy costs or more efficient use of raw materials,
- The possibility of financing working capital (goods / raw materials) up to 50% of the Loan amount, but not more than 36 000 EUR, only if it is related to investment activities and further expansion of the enterprise.

Total available funding within the program: 143 million EUR.

Total available funding per Project:

- Micro loan: up to 24 000 EUR, up to 100% of gross expenditure on the project.
- Loan: from 24 000 EUR up to 240 000 EUR, up to 100% of gross expenditure on the project.

Co-funding rate:

- Financing the purchase of undeveloped and built-up land as part of a financed investment is possible up to 10% of the loan.
- Loan funds cannot overlap with financing from other funds, programs, means and instruments of the European Union.
- One enterprise may receive a maximum of two unit loans, including one micro loan and one loan.
- In the case of using interest rates with de minimis support, it is not possible to finance industries or purposes that are excluded from such financing.
- Financing for the purchase of passenger cars must be related to the objectives set out in the program in the amount of up to 24 000 EUR.

Specific regulations/ requirements, if any: the financing excludes:



- Refinancing of investment outlays.
- Refinancing any loans, credits or leasing installments.
- Paying public and legal liabilities.
- Financing expenses not directly related to the investment objective.
- Financing of education, training and vocational training of employees.
- Financing the company's current operations (salaries, rent, maintenance fees, etc.).
- Financing of activities in the field of manufacture, processing or marketing by the manufacturer or importer of: tobacco and tobacco products, alcoholic beverages, pornographic content, in the field of trading in explosives, weapons and ammunition, in the field of games of chance, mutual wagering, slot machines and games on low prize machines, intoxicants, psychotropic substances or precursors.
- Financing of investments for the reduction of greenhouse gas emissions from the list of activities listed in annex i to directive 2003/87 / ec.
- Financing development and renting activities (purchase of premises for rent).

2.7.8. Startup platforms

Name of the program: Startup platforms - Development of start-ups in Eastern Poland.

Managing organisation: Polish Agency for Enterprise Development.

Funding source: European Funds.

Beneficiaries: Every that has an innovation idea who will set up a business in one of the voivodships of Eastern Poland: Lubelskie, Podkarpackie, Podlasie, Świętokrzyskie and Warmian-Masurian.

Duration of the program: 01.2019-11.2022.

Duration of projects implemented within the program: Incubation is intensive work on company development. The first step is to conduct an interview by the incubation manager with representatives of the startup, during which the most important needs are diagnosed. In response to them, appropriate experts and services (including specialist ones) are assigned, tailored to the specifics of the startup and the industry. Thanks to this, the incubation program is individually tailored to the needs of each idea.

Supported activities:

- Help in creating business foundations.
- Specialized services individually tailored to the idea.
- Workshops and training in public speaking of the presentation of your project.
- Mentoring.
- Accounting, tax and legal services.
- Help in creating elements of corporate identification.
- Providing office space for startup development.

Total available funding within the program: 25,8 million EUR.

Total available funding per Project: 12 000 EUR.

Co-funding rate: 100%.

Specific regulations/ requirements, if any: the financing excludes: Support for start-ups is provided by Startup Platforms in the form of incubation services (this support is de minimis aid for the entrepreneur).

The concepts are evaluated by experts of Starter Platforms.

The following aspects will be assessed:

- Concept innovativeness - only product innovations can qualify for incubation.
- Competitive advantages - the concept should have identified advantages over existing products.
- Business potential.
- Qualifications of the team that is to develop the product.

2.7.9. Overall landscape of support

The condition for the development of Polish companies in the SME sector - potential CARO - is constant access to capital resources. These companies should be supported at every level. Their economic capabilities depend on: others employment status, innovation and sectoral competitiveness e.g. deciding on the entry of Polish companies on the single European market.

The financing strategy analysis for SMEs in Poland indicates a clear preference for own funds and ultimately a bank loan as the main sources of financing, while the development of SMEs is largely conditioned by the ease of raising capital for financing current operations, as well as the possibilities of financing investments, including the acquisition of capital-intensive funds' assets.

In Poland there are several programs supporting the development of SMEs, however not for defined in the project as CARO. Common, overarching goals of these programs include:

- Creating conditions that enterprises will be able to grow faster and faster.
- Facilitating access to finance for enterprises.
- Help in protecting intellectual property.
- Increasing the innovation potential.
- Improving employees' qualifications.
- Supporting access to international markets.

The available support is in different forms, such as grants, loans and in some cases, bank security. Support is available through programs managed at national and regional level. SMEs can also benefit from many non-financial assistance measures in the form of business support programs and services.

In Poland, the small and medium-sized enterprises sector plays a very important role in the economy. The fast growth of this sector is one of the elements of reducing unemployment and a source of fast economic growth. For these reasons, existing programs supporting their development, as well as work on ensuring their continuity and extension of the scope of support are so important.

One of the basic barriers to the development of potential CAROs in Poland is the shortage of capital needed to finance investments. Financing business operations only from own capital ensures that financial liquidity is maintained, but it limits and slows down the development of the enterprise, which is a condition of fighting competition. Therefore, the available public programs should be alternative forms of external financing that create development opportunities and a chance to improve management results.

The forms of financing that are having the greatest interest in the initial stage of enterprise development are micro-loans. They provide great opportunities for obtaining cash and goods without having a several years of experience in running a business without the need for bank security which is necessary in the case of a bank loan.

However, further work is necessary to develop financial instruments supporting the development of a company like CARO, especially at the initial stage of development, and by this to eliminate barriers to accessing them to the market.

2.8. Public support programs for innovative SMEs in Russia

No	Name of the program
1.	Start program
2.	Development program
3.	Commercialization program
4.	Internationalization program
5.	Cooperation program
6.	Russian Venture Company
7.	Programs of venture funding for state-owned corporations
8.	Small and Medium Entrepreneurship and Individual Entrepreneurial Initiative Support national project
9.	Regional (municipal) programs to support scientific, technological and innovative development

2.8.1. Start program

Name of the program: Start.

Managing organization: Federal State-Financed Organization "Fund for Support of Small Enterprises in the sphere of Science and Technology" (Innovation Assistance Fund).

Funding source: State Budget of the Russian Federation

Beneficiaries: The program is aimed at new and already existing small innovative enterprises tending to develop and master new product production as well as technologies or services using the results of their own scientific - technological and technological research in the early development stages and with significant potential for commercialization.

Duration of the program: continual.

Support parameters:

	Start-1	Start-2	Start-3	Business Start
Grant	To a maximum of 23 000 EUR	To a maximum of 34 000 EUR	To a maximum of 45 000 EUR	To a maximum of 114 000 EUR
Terms	1 year			
Non-budgetary financing	No need	Not less than 100% of grant sum (investor's resources)	Not less than 50% of grant sum (own or investor's resources)	
Item of expenditure	Conducting R&D			Commercialization of R&D results.

Expected results:

- Intellectual property has been created.
- Marketing of products developed with the grant funds has begun (contracts for the product marketing are to be concluded, sale proceeds from the innovative products are to be collected) - for grantees within "Start-2" competition.
- The company's revenue from the product marketing should amount to at least the amount received by the Fund for all stages of the project - for grantees within the "Start3" competition and "Business Start" program.

Success of the program: In 2018, 3 855 applications were evaluated within "Start" program. In the first phase of the program, 392 projects were supported. The second phase of the program supported 207 projects. Forty-seven projects were supported in the third phase of the program. Efficiency indicators are revealed by means of case method.

2.8.2. Development program

Name of the program: Development.

Managing organization: Federal State-Financed Organization "Fund for Support of Small Enterprises in the sphere of Science and Technology" (Innovation Assistance Fund).

Funding source: State Budget of the Russian Federation.

Beneficiaries: The program is aimed at supporting the companies that already have experience in the development and marketing of their own science-intensive products and plan to develop new products.

Duration of the program: Continual.

Support parameters:

- Grant – to a maximum of 227 millions EUR.
- Terms – to a maximum of 24 months.
- Non-budgetary financing (own or investor's resources) – Not less than 30% of grant sum.

- Item of expenditure – R&D.

Expected results:

- Intellectual property protection while conducting R&D.
- Creating your own production of science-intensive products.
- Increase in the sales volume of innovative products created as a result of the project implementation (annual KPI for 5 years are set when entering into the grant contract).
- Increase in the number of newly created and/or upgraded highly efficient jobs in the project (annual KPI for 5 years are set when entering into the grant contract).

Success of the program: 605 applications were submitted for the third stage of the competition, 164 winners were selected, and 158 contracts were signed in total. 355 applications were submitted for the fourth stage and 80 winners were selected. In 2018, 49 contracts were concluded. Efficiency indicators are revealed by means of case method.

2.8.3. Commercialization program

Name of the program: Commercialization.

Managing organization: Federal State-Financed Organization "Fund for Support of Small Enterprises in the sphere of Science and Technology" (Innovation Assistance Fund).

Funding source: State Budget of the Russian Federation.

Beneficiaries: The program is aimed at the support of the companies that have completed the research and development phase and plan to create or expand the production of innovative products.

Duration of the program: continual.

Support parameters:

- Grant – to a maximum of 227 millions EUR.
- Terms – 12 months (2 stages of 6 months each).
- Non-budgetary financing (own or investor's resources) – Not less than 100% of grant sum.
- Item of expenditure – R&D result commercialization.

Expected results:

- Creating/expansion your own production of science-intensive products.
- Increase in the sales volume of innovative products created as a result of the project implementation (annual KPI for 5 years are set when entering into the grant contract).
- Increase in the number of newly created and/or upgraded highly efficient jobs in the project (annual KPI for 5 years are set when entering into the grant contract).

Success of the program: The number of highly efficient jobs (total from 2014 to 2018) made 8,595. Revenue from the product sale created by the grant (total from 2014 to 2018) made 980 millions EUR. The innovative product share in tTotal revenue made 34,2%.



2.8.4. Internationalization program

Name of the program: Internationalization.

Managing organization: Federal State-Financed Organization "Fund for Support of Small Enterprises in the sphere of Science and Technology" (Innovation Assistance Fund).

Funding source: State Budget of the Russian Federation.

Beneficiaries: The program is aimed at supporting companies implementing joint projects to develop the production of new products with the participation of foreign partners, as well as support companies developing products designed for sale at the foreign markets.

Duration of the program: continual Support parameters:

- Grant – to a maximum of 170 000 EUR.
- Terms – to a maximum of 24 months.
- Non-budgetary financing (own or investor's resources) – Not less than 50% of grant sum.
- Item of expenditure – R&D conducting.

Expected results:

- Intellectual property protection while conducting R&D incl. the markets where product delivery was scheduled in accordance with the project.
- Creating own production of science-intensive products.
- Increase in the sales volume of innovative products created as a result of the project implementation, incl. the products supplied to the foreign markets (annual KPI for 5 years are set when entering into the grant contract).
- Increase in the number of newly created and/or upgraded highly efficient jobs in the project (annual KPI for 5 years are set when entering into the grant contract).

Success of the program: Average annual revenue per company made 940 000 EUR in 2018. Exported product share in total revenue made 25,3%.

2.8.5. Cooperation program

Name of the program: Cooperation.

Managing organization: Federal State-Financed Organization "Fund for Support of Small Enterprises in the sphere of Science and Technology" (Innovation Assistance Fund).

Funding source: State Budget of the Russian Federation.

Beneficiaries: «Cooperation» program is aimed at developing partnerships between small innovative enterprises and industrial partners. The aim of the program is to use the potential of small science-intensive business sector to develop lines of products of medium and large technology enterprises, create new and upgrade existing production facilities based on innovative technologies.

Duration of the program: Continual support.

Parameters:

- Grant – to a maximum of 285 000 EUR.
- Terms – 18-24 months.

- Non-budgetary financing (own or investor's resources) – Not less than 100% of grant sum. Co-financing can be provided by the grantee (at the own expense and/or raised funds) and/or by the industrial partner.
- Item of expenditure – R&D conducting in accordance with the Terms of Reference coordinated with the industrial partner.

Expected results:

- Intellectual property protection while conducting R&D.
- Creating own production of science-intensive products.
- The sales volume of innovative products created as a result of the project implementation should amount to at least the sum of resources received by the Fund (this result must be achieved within 5 years from the date of R&D completion).
- The supply of new science-intensive products created as a result of the R&D implementation to the industrial partner under the terms stipulated in the Agreement between the industrial partner and the grantee.

Success of the program: Increase in the average number of employees in comparison to 2017 made 5,6% Average total revenue per company made 730 000 EUR in 2018.

2.8.6. Russian Venture Company

Name of the program: Russian Venture Company (named after the investor).

Managing organization: Russian Venture Company.

Funding source: Authorized RVC Fund - State Budget of the Russian Federation.

«RVC» invests through venture funds that are set up jointly with private investors. The total number of funds formed by RVC has reached twenty-seven ones (including two funds in foreign jurisdiction); their total sum is 580 millions EUR. RVC's share makes 300 millions EUR.

Beneficiaries: Entrepreneurs in innovative area.

Duration of the program: On a regular basis.

Support parameters:

Funds for young executives (1st time GP):

- Investments of up to 25 % and up to 285 millions EUR, the share of commercial investors is from 50%.

Typical venture funds:

- Investments of up to 30 % and up to 23 millions EUR, the share of commercial investors is from 50 %.

Funds with overseas partners' participation:

- Investments of up to 25 % and up to 23 millions EUR, the share of commercial investors is from 50 %.

Late stage funds:

- Investments of up to 20 % and up to 17 millions EUR, the share of commercial investors is from 30 %;

Corporate funds:

- Investments of up to 10 % and up to 11 millions EUR, the share of commercial investors is from 30 %;

NTI funds:

- Investments of up to 50 % and up to 17 millions EUR, the share of commercial investors is from 30 %.

Expected results: A mature venture market grouping and promoting Russia's technological leadership in priority areas by means of resources pooling and development as well as competencies and initiatives of the state, society, private investors, entrepreneurs and research, expert and educational organizations to create and promote innovative products and technologies.

Success of the program: The number of innovative companies approved for investment by RVC funds reached 188 in 2019 (excluding the withdrawal projects). The total amount of funds approved for investment is 193 millions EUR.

Results of 2018:

- 553 millions EUR - total funds with RVC capital;
- 207 portfolio companies in the RVC capital portfolio;
- 312 millions EUR - RVC share in total funds;
- 205 millions EUR - total approved investments into portfolio companies;
- 27 funds in RVC portfolio;
- \$88.4 million - U.S. exports of portfolio companies of RVC capital funds;
- 81 withdrawals from portfolio companies.

2.8.7. Programs of venture funding for state-owned corporations

Name of the program: Programs of venture funding for state-owned corporations.

Managing organization: ROSTEC, ROSATOM, ROSCOSMOS, United Aircraft Corporation (UAC), United Shipbuilding Corporation (USC).

Funding source: State budgets.

Beneficiaries: Innovative entrepreneurs on the profiles of state corporations.

Duration of the program: on a regular basis Support parameters:

- Funds of profile funding – 5 – 125 millions EUR.
 - Standard venture capital terms (2,5 - 17 millions EUR) depending on the start-up stage.
 - Projects and start-ups must meet the scientific and technical priorities of state corporations.
- Expected results:

- ✓ Increased conversion of research results into innovative results of state corporations to 27% (expert assessment).
- ✓ Increased quality of start-up expertise due to the availability of the profile potential of state corporations.

Success of the program: The program was launched in 2019.

2.8.8. Small and Medium Entrepreneurship and Individual Entrepreneurial Initiative Support national project

Name of the program: Small and Medium Entrepreneurship and Individual Entrepreneurial Initiative Support.

Managing organization: Ministry of Economic Development of the RF.

Funding source: State Budget of the Russian Federation.

Beneficiaries: Small, medium enterprises and sole traders.

Duration of the program: 2018-2024.

Support parameters:

- Provision of a preferential access of SMEs to production areas and facilities in order to create (develop) production and innovative companies, including for the purpose of SMEs' participation in the major customers' procurement, by means of establishing industrial parks, technoparks, including high-tech and agro-industrial production, using public-private partnership mechanisms in 2019-2024 in the RF.
- 113 billions EUR will be a consolidated amount of financial support for SMEs within loans from the subsidy program to credit institutions to compensate for their lost income on loans issued SMEs to implement projects in priority industries at a preferential rate.

Expected results 2024:

- The number of people employed in SMEs is 25 million.
- SME share of GDP is 32,5%.
- The export share of SMEs is 10%.

Success of the program: The program was launched in 2019.

2.8.9. Regional (municipal) programs to support scientific, technological and innovative development

** It is presented as a summary of the results of the investigation of regional programs to support science, technology and innovation.*

Name of the program: Regional (municipal) programs to support scientific, technological and innovative development.

Managing organization: Municipal administrations.

Funding source: Regional budget.

Beneficiaries: Innovative and research enterprises.

Duration of the program: on a regular basis.

Support parameters (vary greatly by regions and municipalities):

- Marketing, energy and lease subsidizing.
- R&D loans subsidizing.
- Innovative projects competitions with monetary prizes for winners;
- Launch pads for start-ups.

- Information support.

Expected results:

- Increasing the number of innovative enterprises in the region.
- Growth in the share of innovation sales of regional enterprises.
- The initiation of small innovative enterprises (start-ups).
- Increased loading of regional technoparks and business incubators.

Success of the program:

- Support for regional small innovative enterprises with insufficient capacity to claim federal or international grants and subsidies (10-20 in the regions);
- Increased loading of regional technoparks and business incubators (7-29%).

2.8.10. Overall landscape of support

80% of the total budget of support programs for innovative SME is consolidated in "Innovation Assistance Fund". 20% of the programs belong to municipal programs, but their funding is limited < 15K euro; they are imported not in R&D financing programs, but in various "innovative project competitions," "marketing support (costs compensation for participation in exhibitions, advertising material printing" payment for business incubators' services, regional technoparks, etc.)

Advantages of "Innovation Assistance Fund" programs:

- Covers all stages of innovative SME development – from pre-seed to exit stage.
- SME funding is built on successive programs, with clear results requirements.
- Consolidation of national experts at the Fund.
- Fund's cooperation with the National Venture Finance Operator (RVC).

Disadvantages of "Innovation Assistance Fund" programs:

- The lack of alternatives, market approach to SME support. That is, if the Fund did not support the project, it is extremely difficult to find an alternative source for support.
- It does not support innovative projects with R&D low-level.
- It does not cover 100% of SME costs, it requires funding (e.g. venture funds, founders' own funds).

3. Existing access modes to RI for innovative SMEs in CAROTS partner countries

The report describes existing access modes by CAROs to Research Institutions and universities, needs for further development and political recommendations. The report features information on all the partner countries and an analysis of the available access modes as well as recommendations for improvements.

3.1. Access modes to RI for innovative SMEs in Denmark

3.1.1. Innobooster

Name of the program: Innobooster.

Managing organisation: Innovation Fund Denmark.

Funding source: The State of Denmark – a public financed fund.

Beneficiaries: Small and medium-sized companies/ Entrepreneurs and start-up companies.

Duration of the program: Ongoing – application submission twice a year.

Duration of projects implemented within the program: Up to two years.

Supported activities:

- Salaries for both new and existing employees.
- Knowledge and services from knowledge providers, Danish as well as foreign (e.g. universities, GTS institutes, contract research institutes, private development companies, etc.).
- Materials and equipment needed for the project.

Total available funding within the program: Ongoing yearly funding from the Danish State.

Total remaining funding until the end of the financial period: Not specified.

Total available funding per Project: 6 700 EUR – 672 000 EUR.

Co-funding rate: No demands for co-funding.

Success of the program: Innovation Fund Denmark creates a framework for entrepreneurs, researchers and businesses so they can develop innovative and viable solutions to society's challenges.

For example, new climate mitigating solutions, healthier food, a more effective health care, cleaner environment, green transport, start-up journeys – and much more.

It is important that the Danish society benefits as much as possible from the money Innovation Fund Denmark invests in research and investment. That is why we prioritize responsibility highly. All projects we invest in have requirements of societal engagement, transparency, education and ethics.

Compared to other investors Innovation Fund Denmark's results do not necessarily need to be seen in share prices or end of year financial results. Innovation Fund Denmark's results must also be evaluated on social welfare improvements, increased societal wealth, jobs, reduction of CO2 emissions, cleaner environment etc.

3.1.2. Overall landscape of support

Inno booster is the only specific support program that CARO's can get support from, but apart from that it is possible to apply for support from the Independent Research Fond Denmark and the Novo Nordisk foundation if you have a specific research initiative that fits into any of their calls. They do not however have any specific calls covering CAROS at the moment, which is why we haven't described the two in the sections above.

The overall programme landscape in Denmark does not give many possibilities of applying for support for CAROs.

To our understanding the landscape of support is very limited in Denmark. Therefore we think that a starting point to improve the possibilities of starting up new CAROS in Denmark would be to encourage the government had a stronger focus on support for this kind of companies.

3.2. Access modes to RI for innovative SMEs in Estonia

3.2.1. Innovation Vouchers

Name of the program: Innovation and development voucher support.

Managing organisation: Enterprise Estonia.

Funding source: ERDF with national co-funding.

Beneficiaries: Small and medium-sized enterprises who have not previously received the innovation or development voucher grant.

Duration of the program: Project activities are eligible until 31st of August 2023.

Duration of projects implemented within the program: Up to 12 months for innovation voucher. Up to 18 months for development voucher.

Supported activities: The program offers 2 types of vouchers: the innovation voucher has a maximum total amount of 4 000 EUR and the development voucher a total value of 20 000 EUR.

80% co-financed INNOVATION VOUCHER - 4 000 EUR

The goal is to create first-time contacts between entrepreneurs and innovation service providers. The innovation voucher enables a small and medium-sized entrepreneur (SME) who is cooperating with a higher education institute, test laboratory, or intellectual property experts, to develop innovative solutions for development obstacles, carry out tests with new materials, gather knowledge on technologies, conduct studies in intellectual property databases etc.

The supported activities include:

- Consulting regarding product or service development.
- Consulting regarding production or technology.
- Conducting product tests and industrial experiments.
- Carrying out feasibility and cost-benefit research.
- Legal protection consultation, tests and registration regarding patents, utility models or industrial design.
- Consulting regarding metrology, standardisation and certification.
- Development and implementation of technological solutions.



Up to 70% co-financed DEVELOPMENT VOUCHER - 20 000 EUR

The goal of the development voucher is to continue and increase cooperation between entrepreneurs and external innovation partners.

- In accordance with the conditions of the measure, outsourcing innovation related services is allowed in the following fields of activity:
 - Consulting regarding product or service development.
 - Consulting regarding production or technology.
 - Conducting product tests and industrial experiments.
 - Carrying out feasibility and cost-benefit research.
 - Legal protection consultation, tests and registration regarding patents, utility models or industrial design.
 - Consulting regarding metrology, standardisation and certification.
 - Development and implementation of technological solutions.
- The staff expenditure of a development employee on the condition that the development employee will work on the project for the company at least 20 hours per week and at a 0,5 workload. The maximum share of eligible expenditure from the entire eligible sum of the grant can be up to 50%. The position of the development employee must be located in Estonia; this employee should have a higher education degree and at least 5-years of working experience in the corresponding field within the last 10 years.
- The cost of materials needed for the implementation of activities on the condition that the maximum share of eligible expenditure from the entire eligible sum of the grant can be up to 20%.

Total available funding within the program: For the innovation voucher: 4 million EUR, for the development voucher 6 million EUR.

Total available funding per Project: Depend on the selected voucher scheme but either up to 4 000 EUR or up to 20 000 EUR.

Co-funding rate: 80% for the innovation voucher and 70% for the development voucher.

Specific regulations/ requirements, if any: Services can only be performed by research organisations in Estonia (either PROs or if private, then those who have received a certain level evaluation) or registered in EU or EEA. To select the service provider, the company must compare process by applying the bid-at-three rule.

Identified bottlenecks of the program: Depending on the previous experience of involved parties, the process can be complicated and difficult. The small amount of money and the need to apply bid-at-three rule (although there are exceptions) limits the interest to pursue this type of support. Additionally, the costs have to be covered by the company first and they will later be reimbursed, however, that might be a significant burden for the company. Overall, a recurring issue is insufficient awareness from companies and researchers about what each of them expect from the process that can limit the interest to either apply or agree to provide the service.

Success of the program: There is no feedback statistics reported on the success of EAS voucher programs.

3.2.2. Overall landscape of support

From the national agency dealing with industry support – Enterprise Estonia – there are only a few programs, which could be beneficial for innovative start-up companies. Most of them are focussed on supporting more established companies:

- The innovation voucher and development voucher are small grants, which are used in R&D facilities only for development purposes – the company does not get any of these funds directly.
- The development program is aimed at more established companies who are guided in the process of developing their own product or service.
- The Norwegian program is intended for very specific sectors and is also meant for already established companies.
- The Product Development grant is intended directly to industry and also needs a few years of successful activities with the company.
- In the case of Eurostars program innovative product development is required together with a foreign partner.

The program “Nutikas” - Applied research in smart specialisation growth areas provides support for applied research and product development. Its funds can be used for support of research carried out at RI (including international ones) through academic partners. The funding available is sufficient for such analytical research if planned into project budget.

The main challenge of the running programs is the sustainability because funding applied comes from European Regional Development Fund, which is guaranteed until 2023. Further funding depends either implementing structural funding of next European Union budget period or providing sustainable support from state budget. Both solutions need political decisions to be made and kept, either successful negotiations with the European Commission on use of structural funding or keeping continuously agreed national budget priorities without sacrificing these to funding of “daily” political needs.

One practical challenge for the companies using the vouchers is the fact that the vouchers can be used only once – even if the funding would sometimes be sufficient for several small R&D orders.

The program “Nutikas” provides sufficient resources for R&D projects, which in turn allows to access RI-s (at least with help of academic partners). In comparison with volume of other programs available, it has been improved overall program landscape already. We are not aware that any of funded projects have used RI’s so far. The voucher programme sums are being increased for the next iteration of the program.

Together with ensuring sustainable funding access conditions and modes to RI’s have to be communicated to enterprises in Baltic Sea Region. It can be addressed more generally by RI’s, but always there will be need for local communication and training. Supporting the companies within our previous Baltic Tram Interreg project showed that background of entrepreneurs is very wide and different. Thus consulting plays important role in order to provide best strategies for SME’s to solve R&D questions with help of RI’s.

Voucher programs should be available for use in multiple smaller R&D order in the same limiting amount of money.

3.3. Access modes to RI for innovative SMEs in Finland

3.3.1. Business Finland Funding Services

Name of the program: Business Finland Funding programmes.

Managing organisation: Business Finland.

Funding source: Business Finland is the Finnish government organization for innovation funding and trade, travel and investment promotion. Founding source is the state budget. In some funding programs Business Finland utilizes also different EU Funds, e.g. ESF and ERDF.

Beneficiaries: Business Finland provides various funding programs both for small and medium-sized enterprises that have the know-how and desire to expand into export markets and for the large companies. Business Finland funding programs are available for companies registered in Finland.

Duration of the programme: On-going activity.

Supported activities:

1.2.1 Funding for research and development:

Business Finland R&D funding enables companies to develop products or services, production methods, and business models. Companies can also test and demonstrate the operation of a new, innovative solution and evaluate the benefits together with the customers.

1.2.1a Research, development and piloting for SMEs and midcaps:

R&D funding enables a company to develop products or services, production methods and business models.

1.2.1b Research, development and piloting for large companies:

R&D funding enables a company to develop new, innovative products or services, production methods and business models. Also large companies can benefit from the R&D funding, when they want to carry out challenging research and development work, which not only improves company's own competitive advantage, but also increases the competence and business opportunities of the SMEs belonging to their network.

Both these programs have two funding levels. First level is a loan for development and piloting. Loan funding from Business Finland is advantageous for companies. At the moment, the interest rate is 1%, and no collateral is required in most cases. If the project fails or its results cannot be commercially exploited, the loan may be partially converted into a grant. For SMEs' and midcap companies' development and piloting projects, Business Finland grants a loan covering 50% or 70% of the project's total costs. As a rule, the loan period is seven or ten years, of which three or five years – even more if necessary – can be amortisation-free. The second level of this programme is grants for research and creation of new knowledge. Business Finland grants are intended for R&D by companies that generates new knowledge and competencies, but not for a finished product or service at this stage. Grants cover up to 50% of the total costs of SME research projects. For international joint projects, the funding can cover up to 65%. The grant for midcap companies is up to 40% of the total cost of the project.

1.2.1c Innovation voucher:

Companies can use the innovation vouchers to purchase new knowledge and skills for their business. The innovation voucher is intended for SMEs engaged in well-established business and who have a new product or service idea with international growth potential and for which the company needs external expertise. The innovation voucher aims to find new business opportunities for businesses to support business growth and encourage new businesses to innovate.

You can use the innovation vouchers to purchase new knowledge and skills for your business. You may use them for purchasing expert services related to innovation activities, for instance, from companies providing innovation services, universities, universities of applied sciences and research organisations. Innovation activities refer to all measures employed by your company to develop products, services or processes, or to acquire new knowledge and competencies required in innovation activities

1.2.1d INTO Funding Service:

The Into funding service is intended for SMEs aiming to enter export markets. Startups can also apply for Into funding. Business Finland offers this funding possibility for companies registered in Finland. With this funding, the company can buy the best possible consultancy services to strengthen its innovation expertise. Companies can also acquire industrial rights or hire an expert from a research organisation or large company on a temporary basis. Into funding provides SMEs with the opportunity to develop a range of innovation competencies.

a) Development of the company's innovation activities with the help of external expertise. For example:

- Initial development of new business, product, and service concepts.
- Training promoting innovation expertise among employees.
- Market research linked to the development of innovation activities.
- Laboratory and office space costs related to innovation know-how.
- Use of data banks.
- Analyses of standards, quality marking, and certification services.
- Advisory services on the exploitation of research results.
- Preparation of an IPR strategy and analyses of acquisition and licensing of IPR rights.

b) Protection and acquisition of intellectual property rights (IPR):

- Applications for and the implementation and extension of patents, licenses and other intellectual property, when these enhance the company's R&D activities.

c) Expert on loan from a large company or research organisation:

- Advisory services on how to obtain completed research results, and how to exploit research results.
- The fixed-term recruitment of an expert from a large company or research organisation: A highly qualified person with a minimum of five years of experience.
- The experts will engage in new research and development work within the enterprise.
- The expert has the right to return to his or her former position.

1.2.2 Funding for cooperation between companies and research organisations:

Business Finland offers funding for joint actions between companies and research organizations, preparation for commercialization of research results and development of radical innovations and creation of new cooperation.

1.2.2a Co-Creation:

Funding for research organizations that aim to work closely with companies on a co-innovation joint project. Especially for the development of new radical innovations and for the creation of new cooperation. Funding available for research organizations and companies that are developing a research idea together. The goal is a joint co-innovation joint project of companies and research. Funding will ensure demand for the research goal and solution model, develop the idea of interest for companies, and build a cooperation network for a possible co-innovation joint project. The network to be built can also be an international in addition to the domestic one.

The funding is applicable when research organizations want to explore and develop a new idea and its potential in collaboration with companies. When creating a new consortium for work and engaging companies in joint development work. The funding can also be used for new ideas that can open significant business opportunities for businesses and enable them to make relevant and scientifically high-quality public research on the subject. Especially for the development of radical innovations and the creation of new national and international cooperation.

1.2.2b Co-Innovation:

The funding is intended for research organizations and companies of all sizes for their joint actions. A joint action may involve several research organizations or groups and several companies. The joint action must include at least one research organization and three companies, of which at least two have applied for funding for their R&D projects from Business Finland. Priority is given to high-quality projects and ecosystems supporting the growth and internationalization of SMEs and midcap companies. When companies and research organizations want to conduct research in close cooperation. The results of a public research project must be widely exploited. The research topics are based on research ideas and needs that are developed jointly by research organizations and companies. Corporate R&D projects are companies' own projects and are implemented in parallel with a public research project as part of a joint action.

1.2.2c New business from research ideas:

Research projects promote the development of the idea while preparing its commercialisation in order to form a new business activity. Calls for research applications are held twice a year: one in the spring and another in the autumn. This funding is aimed at research groups and researchers in research organizations who want to create new business with their research and commercialize their ideas. Funding is also granted to applied research projects.

1.2.3 Young Innovative Company Funding:

With the Young Innovative Company funding Business Finland intends to accelerate the global growth of the most ambitious, rapidly growing start-ups in Finland. The funding can be used for the comprehensive development of business activities. For example, it can be used to strengthen a team, to develop a business model and growth strategy, and to open up new markets. The funding is intended for a start-up company that has been in operation for less than five years, and has proven its business concept, so that it already has paying customers. Business Finland funding can be applied for by companies registered in Finland.

Business Finland can grant Young Innovative Company funding only if the company meets the following preconditions:

Age and size:

- Business Finland must make the funding decision before the company reaches five years of age. The funding will cease, at the latest, when the company has been registered for eight years. (The company's registration date is of crucial importance.)
- The company must be classified as small, and registered in Finland. The number of personnel in a small company is less than 50, and either its maximum annual turnover is 10 million EUR, or its maximum final balance is 10 million EUR.

Ownership and background:

- The company must be independent and administer its own IP rights.
- The company should not continue the operations of another company.
- The company should not be formed through a merger. Exception: The merged companies are less than 5 years old.
- The company should not have distributed profits.

Strong efforts in innovation activities:

- At the application phase, the company must provide a confirmation from an auditor that it has invested at least 10% of all its business costs in research and development, during at least one of the previous three years.

Total available funding within the program:

1.2.1c Innovation Voucher:

The total amount of funding is 5 000 EUR + VAT (6 200 EUR). Innovation Voucher is a de minimis grant which the company does not need to repay. De minimis aid is the amount of business subsidy defined by the European Commission for small development projects. The maximum sum of de minimis aid that can be granted to one company over the current and two previous fiscal years is 200 000 EUR. The company must assess how much de minimis funding it has received in previous years at the application stage. Such aid is granted by a range of public organisations in addition to Business Finland, such as Finnvera and the ELY Centres.

1.2.1d INTO Funding Service:

The funding for an Into project depends on the goals and resources of the company. Funding will cover 50% of the project's overall budget. No upper limit is set for Into projects but Business Finland can provide a maximum of 200 000 EUR for the purchase of expert services. The smallest possible size of project is 30 000 EUR and the minimum grant is 15 000 EUR.

Total available funding per Project: Differences between the funding programs. Please, see above for available information.

Co-funding rate: There are differences between the funding programs. Please, see above for available information.

Specific regulations/ requirements, if any: All funding programs have their specific target groups and criteria for funding. There are differences between the funding programmes. Please, see above for available information.

Success of the program:

1.2 Business Finland is following very closely its impact and effectiveness of the funding programs. Numerous international and Finnish studies show that public R&D funding for businesses increases their own R&D investments. Research findings show that R&D investments substantially improve companies' know-how and networking, resulting in more patents and new products, processes and services. This know-how and new ways of working are reflected in the growth of business turnover, productivity and employment.

Business Finland's funding encourages companies to increase their R&D activities. The results of their funding and expert services are visible in companies as new knowledge and innovations.

3.3.2. Yrityksen kehittämisavustus (Development funding for companies)

Name of the program: Yrityksen kehittämisavustus.

Managing organisation: Centre for Economic Development, Transport and the Environment (ELY).

Funding source: European Regional Development Fund.

Beneficiaries: small and medium-sized enterprises – During year 2016, 88% of supported companies had less than 50 employees and more than half of them were micro size companies.

Duration of the programme: Yrityksen kehittämisavustus is partly financed by Kestävää kasvua ja työtä 2014–2020 Structural funds in Finland.

Supported activities:

- Providing advisory, training and expert services and by granting funding for investment and development projects.
- Common and economical advice by phone and by internet.
- Business skills training for unexperienced entrepreneurs.
- Financing (Yrityksen kehittämisavustus) and help for finding financing.
- Guidance in managing personnel services.
- Information services sorted by industrial field.

The services offered by ELY Centres cover internationalisation of business operations, improvement of business efficiency and management skills, development of technology and innovation, updating of staff skills and training of new employees. ELY Centres may also contribute to the funding of development projects. Funding support is discretionary and depends on the nature of the project.

Total available funding within the program: EAKR, Urban areas tot: 453 million EUR, for goal efficient research, development and innovation total: 252 million EUR.

Total remaining funding until the end of the financial period: EAKR, Urban areas year 2020: 69 million EUR.

Total available funding per Project: Project sizes varied a lot. Year 2016 - 44% of the projects got 10 000 - 50 000 EUR and 25 % projects got 50 000 - 100 000 EUR and 3 % of the projects got over 500 000 EUR.

Co-funding rate: max 50%.

Specific regulations/ requirements, if any: Special attention is paid for internationalization. Financing issue needs to be discussed with the ELY before the project is started.

Success of the program: ELY is main regional development operator in South-West Finland. Their vision is: 'The quality of life is the best in South-West Finland. Prosperous and well-being region is built by co-operation and partnership.' Based on self-evaluation: That fits well with the CAROs way of acting. The focus is in blue growth and industrial modernisation, innovative food chains, and pharma and biotechnology. Operating CARO will be able to support RDI on all of these fields, since materials research is must for results.

3.3.3. Overall landscape of support

The Finnish funding landscape is very versatile offering a variety of funding possibilities for both start-ups and mature companies in different industries. In this report we are describing only the most potential national level funding programs that together give a good overview of the national funding landscape. The described funding programs can be utilised by CAROs and potential CAROs for business development covering wide range of sectors. A common feature for all analysed funding programs is that they are on-going long-term activities to support Finnish companies.

The most important funding agency in Finland is Business Finland that funds commercial Research Development and Innovation activities in companies but also in university-business networks. Business Finland has a wide variety of funding programs for start-ups, SMEs and big companies. In the report we are describing only the most potential funding possibilities that can be used for CARO development in Finland.

ELY Centres are together forming a national level network of 15 ELY Centres, which is responsible for the regional implementation and development task of the central government. ELY Centres have three broad areas of responsibility: Business and industry, labour force, competence and cultural activities; Transport, infrastructure, Environment, and natural resources. ELY centres are main

regional development operators in the regions. For example in South-West Finland the focus of operations are blue growth and industrial modernisation, innovative food chains, and pharma and biotechnology.

Presented programmes have increased the strategic understanding of participating companies, not only in technology and business options but also with respect to customers, markets and political and societal context. General funding programmes, not restricted by industry seems to serve the Finnish markets well. Also these programmes that have no strict thematic focus seem to reach companies well. Generally, funding mechanisms have been relevant, effective and efficient in achieving their goals.

The funding agencies all have their specific impact models with which they systematically evaluate the impacts of their funding activities. The impact models generally include both direct and indirect business impacts. All the presented funding agencies have a proven track record in the business development and they have been active players in Finland for a long time. Systematic evaluation activities help the funding agencies to constantly develop their funding services to meet the company needs.

The biggest funding organisation, Business Finland, has found out that the most frequently used services for companies receiving their support are (not necessarily in order of importance):

1. facilitation of partnering/networking, platform provision.
2. promotion assistance, target market and customer identification and engagement.
3. training, mentoring and coaching.

Based on the self-evaluation data of Business Finland the value of specific services to a specific beneficiary depends on their maturity as a company and the phase of development of technology, product or service. Stereotypically, one could say that younger and less-networked companies benefit from a broader spectrum of services, including mentoring, coaching and general networking opportunities, whereas for more mature enterprises the largest value propositions are tailored advice and networking opportunities.

One recent and important improvement in the funding landscape is the launch of innovation vouchers by Business Finland. Business Finland has launched an Innovation voucher that provides a small amount (5 000 EUR + VAT) financing to purchase new knowledge and skills like research, development and investigating work for their business. Own funding contribution by the beneficiary is required. This financial support is targeted to serve as a step board for other forms of Business Finland financing, and can hence be considered as a kind of seed funding.

One possible development need identified by Business Finland is that the focus of funding activities would need to be changed from domestic focus into trans-national focus. Rather than funding only domestic companies and ecosystems, the focus should at least in some funding programmes be leveraged into international setting to foster Finnish companies' role in international ecosystems. In the Finnish landscape there are also some other funding programs (e.g. ELY, Finnvera) have an opportunity to support companies in opening up existing international networks and encourage business connections in international business and innovation ecosystems.

Especially in case of possible funding for CAROs a needed improvement of the overall funding program landscape would be to solve one of the main challenges (according to Business Finland self-evaluation) for the national innovation system: the difference between the scientific agenda of the academic institutions and the business requirements of the companies competing in the market. Product development in the companies requires scientific knowledge and can benefit from cooperation with the academic world. However, from a company point of view it may look like the academic world is too interested in understanding abstract problems instead of understanding the actual business driven needs. Also, the development of a material from its initial discovery to its

industrial application may take tens of years. Thus, long span and costly work is required to achieve improved properties for an industrially usable new material which is not fully served by the current funding programs.

It also serves to be acknowledged that most of the programme services and practically all funding possibilities have been proven highly relevant for individual beneficiaries, but it is harder and way more important to reach ecosystem level objectives. Evaluation of this aspect is not fully present in the current landscape and would need some wider impact model so that this could be assessed.

3.4. Access modes to RI for innovative SMEs in Germany

3.4.1. The Central Innovation Programme for SMEs (ZIM)

Name of the program: The Central Innovation Programme for SMEs (ZIM).

The Central Innovation Programme for SMEs (ZIM) is a nationwide support programme open to all technologies and industries. The ZIM is intended to strengthen the innovative power and thus the competitiveness of medium-sized companies in the long term. It is intended to contribute to economic growth, in particular by tapping value-added potential and raising the level of application-oriented knowledge.

Small and medium-sized enterprises and research institutions that work with them receive grants for ambitious research and development projects that lead to new products, technical services or improved production processes. The technological innovation content and good market opportunities of the funded R&D projects are essential for approval. The ZIM aims at framework conditions that are suitable for SMEs and is geared to the needs of small and medium-sized enterprises.

The companies can carry out research and development as **individual projects** or as **cooperative projects with research institutions or other companies**. In addition, the management and organisation of innovative company networks are promoted. ZIM also supports international partnerships in both cooperation projects and networks.

The following project-related cost items can be used as a basis for calculating the maximum amount of the grant:

- Personnel costs.
- Costs for:
 - project-related orders to third parties (Amount: max. 25 % of personnel costs).
 - R&D contracts awarded to scientifically qualified third parties and the temporary admission of qualified personnel (only for companies) (Amount: at least 30 % in each case and together a maximum of 70 % of the person-months of the project).
- Other costs (flat-rate supplement related to personnel costs):
 - for companies up to max. 100 %.
 - for research institutions up to a maximum of 85 %.

The amount of eligible costs:

- for companies per sub-project: up to 450 000 EUR.
- for research institutions per sub-project: up to 220 000 EUR.

Co-funding rate:

Company size	National cooperation projects	Cooperation projects with foreign partners
Small-scale enterprises in structurally weak regions (GRW)	55 %	60 %
Small young enterprises	50 %	60 %
Small enterprises	45 %	55 %
Medium-sized enterprises (below 250 employees)	40 %	50 %
Other medium-sized enterprises (below 500 employees)	30 %	40 %
Other medium-sized enterprises (below 1000 employees only in cooperation with an SME)	30 %	40 %

Research institutions are funded at a rate of 100 %.

Success of the program: Running since 2009, strong acceptance by German companies. E.g. in 2015 a total of 3 889 ZIM-Projects were finished.

3.4.2. Overall landscape of support

The ZIM programme offers funding a broad spectrum of activities in applied science either at SMEs alone or in cooperation with other SMEs and research institutions.

However, although it should be eligible to use parts of the funding to access ARIs we have no knowledge that this has happened in the past. It is possible that academic partners of ZIM funded projects have applied for public access to ARIs. But at least at DESY and HZGs facilities, to our knowledge no proprietary beam time has been purchased by companies funded by ZIM.

To raise awareness and to support industrial use of ARIs, ideally by a joint project of either academic groups or CAROs plus SMEs and/or larger companies, a dedicated programme would be useful.

3.5. Access modes to RI for innovative SMEs in Latvia

3.5.1. Innovation Vouchers

Name of the program: Innovation vouchers.

Managing organisation: Investment and Development Agency of Latvia.

Funding source: ERDF.

Beneficiaries: SMEs and large enterprises. Funding is awarded on the basis of de-minimis or Regulation 651/2014, thus also allowing large enterprises to participate.

Duration of the program: 2022 or as long as the funds last.

Duration of projects implemented within the program: Up to 12 months.

Supported activities: The program offers 3 types of vouchers that are worth between 5 000 EUR and 25 000 EUR, depending on the type of voucher.

100% CO-FINANCED GET-TO-KNOW-ME VOUCHER - 5 000 EUR

The supported activities include:

- Feasibility study.
- Industrial research.
- Experimental development, including prototyping.
- Development of a product's industrial design.

UP TO 85% CO-FINANCED CLASSIC VOUCHER - 25 000 EUR

The supported activities include:

- Feasibility study.
- Industrial research which is necessary for the development of new products or technologies.
- Experimental development, including prototyping.
- Development of a product's industrial design.
- Certification and testing services of a new product or technology.
- Registration of industrial property rights for inventions, industrial designs, and topographies of semiconductor products.

45% TALENT CO-FINANCING - UP TO 25 000 EUR

This form of support offers to reimburse 45% of the overall cost incurred by highly qualified and specialized employees, including both salary and paid taxes.

Total available funding within the program: For the classic voucher: 1,6 million EUR. Introductory voucher - 500 000 EUR.

Total available funding per Project: Depend on the selected voucher scheme but either up to 5 000 or up to 25 000 EUR.

Co-funding rate:

Eligible costs	Support according to Regulation No 1407 (<i>de minimis</i>)			Support according to Regulation No Nr.651/2014		
	Micro and small enterprises	Medium sized enterprises	Large enterprises	Micro and small enterprises	Medium sized enterprises	Large enterprises
Feasibility study	85%	85%	85%	70%	60%	50%

Industrial research	85%	85%	85%	70%	60%	50%
Experimental development	85%	85%	85%	45%	35%	25%
Development of industrial design	85%	85%	85%	n/a	n/a	n/a
Registration of IPR	85%	85%	85%	50%	50%	n/a
Certification	85%	85%	85%	n/a	n/a	n/a
Testing	85%	85%	85%	n/a	n/a	n/a
Attraction of highly skilled employees	45%	45%	45%	n/a	n/a	n/a
Introductory voucher	100%	100%	85%	n/a	n/a	n/a

Specific regulations/ requirements, if any: Services can only be performed by research organisations in Latvia (either PROs or if private, then those who have received a certain level evaluation) or registered in EU or EEA. To select the service provider, the company must compare process by applying the bid-at-three rule.

Identified bottlenecks of the program: Depending on the previous experience of involved parties, the process can be complicated and difficult. The small amount of money and the need to apply bid-at-three rule (although there are exceptions) limits the interest to pursue this type of support. Additionally, the costs have to be covered by the company first and they will later be reimbursed, however, that might be a significant burden for the company. Overall, a recurring issue is insufficient awareness from companies and researchers about what each of them expect from the process that can limit the interest to either apply or agree to provide the service.

Success of the program: In September 2018 important changes were introduced – a new type of vouchers, higher co-funding rate, inclusion of large enterprises and a new system for selecting service providers. While there still are shortcomings, this program has gained interest. Before the changes there was only a small number of applications while now around 10 applications per month are processed.

3.5.2. Overall landscape of support

Starting from 2020, a new type of support is available for entrepreneurs “Design Voucher”. Support will be provided to companies that develop a new product or technology and that need the services of a designer to develop a new product, process or strategy for innovation in the company. A total of 250 000 EUR of funding is planned for this purpose, but it will be possible to attract up to 5 000 EUR for one project.

Main challenges/shortcomings in the Innovation vouchers programme:

- Unclear conditions for applying and understanding of what is considered to be a new product (regulations of Minister Cabinet stipulate that innovation should be at the level of

the enterprises, while in the explanatory text of the application, it may be apparent that innovation should be at least at the level of Latvia).

- It is easier to apply for Innovation vouchers program, but the implementation process does not seem so simple for economic operators (a big bureaucracy).
- Contracts between enterprises and PPO are not viewed and assessed equally within the framework of the programme (even if they have only a recommendatory character on the part of the LIAA). Correcting the contract between the enterprise and the PPO (so that the LIAA has no objections).
- The term of execution is a year that cannot be extended. Respectively, there are fields where the program cannot be used.

Necessary improvements to the programme:

- In order for the company to find out the level of innovation and correct understanding of the idea within the program, the possibility to send the idea to LIAA by e-mail should be introduced, where the idea will be reviewed whether it is worth preparing a project application.
- Develop the form of the contract or a list of criteria that are assessed and recommended by the LIAA, in contracts between the company and the PPO. Developing guidelines for companies as: conducting a price survey according to the project application tasks, how to draw up a contract with the PPO so that there are no different areas to be interpreted in the project application and in the contract with the PPO.
- Allow exceptional cases to extend the term of the voucher if it is technically impossible to meet the deadlines.

3.6. Access modes to RI for innovative SMEs in Lithuania

3.6.1. Inočekiai

Name of the program: Inočekiai (Innovation and development voucher support).

Managing organisation: Agency for Science, Innovation and Technology.

Funding source: ERDF.

Beneficiaries: Private entities (excluding science and study institutions) which carry out R&D activities.

Additional criteria for mature innovators:

- they must be operating for more than 1 year, have some experience in carrying out R&D activities and the revenue of the latest financial year must exceed 10 000 EUR.

Additional criteria for beginning innovators:

- they must be operating for less than 1 year or they do not have any experience in carrying out R&D projects and their revenue from last financial year must exceed 3 000 EUR.

Duration of the program: 2020-09-30.

Duration of projects implemented within the program: Up to 12 months.

Supported activities:

1. Vouchers for technical feasibility studies.
2. Vouchers for projects holding a “seal of excellence” label awarded by the European Commission under the SME Instrument under Horizon 2020, but not receiving support under the SME Instrument for phase one activities.
3. Vouchers for R&D projects.

Total available funding within the program: 5 million EUR for all projects.

Total available funding per Project:

	Beginner innovator		Mature innovator	
	when VAT is ineligible to finance	when VAT is eligible to finance	when VAT is ineligible to finance	when VAT is eligible to finance
1st activity	7 305 EUR	7 478 EUR	26 722 EUR	27 354 EUR
2nd activity	71 429 EUR for applicants who have “Seal of Excellence” certificate and VAT is not eligible to finance			
3rd activity	12 801 EUR for research 20 225 EUR for development	13 153 EUR for research 20 845 EUR for development	46 826 EUR for research 73 984 EUR for development	48 114 EUR for research 76 252 EUR for development

Co-funding rate:

Funded activity	Maximum amount of possible funding depending on beneficiary status		
	Large enterprise	Medium-sized enterprise	Micro and small-sized enterprise
Innovative voucher for technical feasibility study	50%	60%	70%
Innovative voucher for research	50%	60%	70%
Innovative voucher for experimental development	25%	35%	45%

Identified bottlenecks of the program: The financing of the "Innovation vouchers" measure was indeed underfunded, so that the new measure "Inočekiai" was significantly increased. The current funding would be adequate, but a significant part of this amount is to cover MSI's administrative costs and other necessary fees. The cost of the result sought is increasing, so in this context funding may be too low for the project promoters, as service and other costs increase.

Success of the program: Since the last call, there were 262 applications of which 119 were confirmed and received 3 million EUR financial support. “Inočekiai” has received applications for more than half of the total amount during short period of time and is, therefore, in high demand.

3.6.2. Overall Landscape Of Support

Together with other programs for business, the overall financial measures are enough and they fulfil the needs of specific target groups.

On the one hand, there is a lack of incentives to participate in “Inočekiai”, on the other hand, there is a lack of continuous mentoring on how to develop your idea, what tools can be used at what stage, etc.

Program Inočekiai is running since 2012 and during that period it was adjusted a few times. The most recent change was in 2018 and it had some major adjustments in its application procedures. Now it has two separate calls for different target groups based on applicants’ experience of cooperation with science institutions and other R&D projects. The call for mature innovators applies higher criteria for greater impact and innovation to select ideas with greater impact.

So far, start-ups have had to compete with seasoned, mature companies for “Inočekiai” support, and this has often prevented young entrepreneurs from accessing product development funds. Renewed facility conditions will also improve access to finance for start-ups and increased single project support will allow mature companies to implement even larger projects and innovative products.

Although the “Inočekiai” measure is a good and successful one, it only allows cooperation between enterprises and research and higher education institutions. Other types of cooperation, such as cooperation between state-owned enterprises and MSI, would be relevant.

3.7. Access modes to RI for innovative SMEs in Poland

3.7.1. Support for enterprises conducting R&D work, called “Szybka ścieżka” (Fast Path)

Name of the program: SGOP 1.1.1 Industrial research and development work conducted by enterprises, Smart Growth.

Managing organisation: Ministry of Economic Development.

Funding source: European Funds.

Beneficiaries:

- Enterprises.
- Enterprise consortia (consisting only of enterprises).
- Consortia of enterprises and scientific units (consisting of max. 3 entities, including at least one enterprise and one scientific unit). The leader is always the enterprise.

Duration of the program: 2014-2020.

Supported activities: Funding is awarded for projects that include industrial research and development. Pre-implementation works may be part of the project.

Total available funding per Project: Total value of eligible costs of the individual project is maximum 50 million EUR:

- 20 million EUR – if the project is mainly based on industrial research.
- 15 million EUR – if the project is mainly based on development works.

- 200 000 EUR for pre-implementation – de minimis (gross value of the aid together with the value of other de minimis aid granted in the period of 3 tax years).
- 2 million EUR – for pre-implementation – consulting services for small and medium enterprises.

Co-funding rate:

Eligible costs	Micro and small enterprises	Medium sized enterprises	Large enterprises	Scientific unit
Industrial research	70-80%	60-75%	50-65%	up to 100% ¹
Development works	45-60%	35-50%	25-40%	up to 100% ¹
Pre-implementation ²	90%	90%	90%	-
Consulting services	50% of pre-implementation	50% of pre-implementation	-	-
Minimum own contribution	20-75%	20-75%	20-75%	0%

¹ If the project is implemented as part of the non-economic activity of the scientific unit.

² The amount of eligible costs for pre-implementation works – cannot be higher than 20% of the total eligible costs of the project.

Identified bottlenecks of the program: Too high assessment criteria in the early stages of the program, resulting in the rejection of many applications. Inability to participate in CARO intermediary organizations' projects.

Success of the program: The implementation of the program has increased the innovativeness of Polish enterprises by using the results of R&D works in conducted business operations.

3.7.2. Pro-innovative services for enterprises

Name of the program: 2.3.1 Pro-innovative IOB services for SME, Smart Growth.

Managing organisation: Ministry of Economic Development.

Funding source: European Funds.

Beneficiaries: Micro, small or medium-sized enterprises.

Duration of the program: 2014-2020.

Supported activities: Co-financing will cover projects related to the purchase of a pro-innovation service supporting the implementation of a product or process innovation of a technological nature in the applicant's enterprise. The service must be provided by business environment institutions accredited by the Ministry of Development. In addition, project implementation costs may cover investments related to the implementation of technological innovation.

Total available funding within the program:

- 70% of eligible costs for entrepreneurs for whom the total amount of aid for pro-innovation services does not exceed 200 000 EUR in any three-year period.



- 50% of eligible costs for other entrepreneurs.
- For other investments up to 70% when it complies with the regional help map.

Identified bottlenecks of the program: Inability to participate in CARO intermediary organizations' projects. Large enterprises are excluded from participation in the program.

The list of scientific units with which the entrepreneur can establish cooperation under the project is limited only to business environment institutions (BEIs) accredited by the Ministry of Entrepreneurship and Technology.

Success of the program: The program has significantly contributed to the increase in the number of pro-innovation services provided to entrepreneurs from the SME sector.

Thanks to the implementation of the project 2.3.1 Pro-innovative IOB services for SME program, many companies have gained the opportunity to implement product or process innovation of a technological nature in their own business.

3.7.3. Innovation vouchers

Name of the program: SGOP 2.3.2 Innovation vouchers for small and medium enterprises, Smart Growth.

Managing organisation: Ministry of Economic Development.

Funding source: European Funds.

Beneficiaries: Micro, small or medium-sized enterprises operating in the territory of the Republic of Poland.

Duration of the program: 2014-2020.

Supported activities: The purchase from the contractor (scientific unit based in the territory of the Republic of Poland) of a service consisting in the development of a new or significantly improved product, service, production technology or new design project.

Total available funding within the program: The maximum grant is 85% of the eligible costs of the project.

Minimum own contribution: 15% of the eligible costs of the project.

Total available funding per Project: The minimum eligible project cost is 14 000 EUR. The maximum eligible project cost is 95 000 EUR.

Identified bottlenecks of the program: Large enterprises are excluded from participation in the program. Inability to participate in CARO intermediary organizations' projects.

Success of the program: The implementation of the program has significantly contributed to providing enterprises with access to pro-innovative services provided by scientific units. As a result of program implementation, many new or significantly improved products, services and technologies have been developed jointly with scientific units.

The program has significantly contributed to the development of cooperation between the scientific and business sectors.

3.7.4. R&D projects for enterprises

Name of the program: ROP 1.2.1 – R&D projects for enterprises, ROP Malopolska.



Managing organisation: Marshal's Office of the Malopolska.

Funding source: European Funds.

Beneficiaries:

- Enterprises (in particular micro, small and medium-sized enterprises).
- Consortia of enterprises with the participation of micro, small and medium enterprises.
- Consortia of enterprises with the participation of scientific units, universities, including special purpose vehicles of universities, non-governmental organizations, and business environment institutions.

Duration of the program: 2014-2020.

Supported activities: Projects related to the implementation of industrial research and experimental development, including demonstration and pilot lines, validation, including the launch of the first production and preparation for the implementation of the results of R&D in business, but not the implementation itself (including acquisition of research results or development works in order to conduct further research and development works, preparation of experimental prototypes, creation of demonstration and pilot installations, validation of a given solution, launching of the first production, which includes experimental development works, support for preparation of the results of the research phase for use in business as complementary research project component).

Total available funding within the program: Support qualified in particular as: aid for research and development projects, de minimis aid, in accordance with the relevant legal provisions regarding the rules for granting this aid, effective as at the date of granting support. In the case of aid for research and development projects, as a rule, no more than:

1. Industrial research:
 - Micro and small enterprises - 70%.
 - Medium enterprises - 60%.
 - Other beneficiaries - 50%.
2. Experimental development works:
 - Micro and small enterprises - 45%.
 - Medium enterprises - 35%.
 - Other beneficiaries - 25%.
3. Feasibility study:
 - Micro and small enterprises - 70%.
 - Medium enterprises - 60%.
 - Other beneficiaries - 50%.

Minimum own contribution:

- In the case of industrial research - 20%.
- For experimental development - 40%.

In the case of a feasibility study - 30% (minimum help for research and development projects - in accordance with the relevant legal provisions regarding the rules for granting this help).

Total available funding per Project: minimum 24 000 EUR, maximum 5,9 million EUR.

Identified bottlenecks of the program: Inability to participate in CARO intermediary organizations' projects.

Success of the program: The implementation of the program has contributed to the increase in innovation of the regional economy, which is mainly expressed in the increase in expenditure on research and development.

3.7.5. Overall landscape of support

The support that Polish entrepreneurs can receive in the field of research and development is implemented mainly through the Smart Growth Operational Programme 2014-2020 (SGOP) and operational programs of individual provinces (in the report, presented on the example of the Operational Program of the Lesser Poland Voivodship - MRPO).

The main support in Poland for the innovation process that companies can use is the Smart Growth Operational Programme. SGOP addresses nearly all of the stages of innovation processes, as it includes support for the implementation of research and development actions from the second up to the ninth level of technological preparedness, and for the implementation of their results. Support is not available for basic research, however enterprises have not reported needs for financing for this stage of actions.

An undeniable strength of the approach used in SGOP lies in the possibility for covering, within a single project, of the costs of industrial research, experimental development work, and of pre-implementation stage actions. Another strong point of the support provided is that it stimulates research actions among enterprises not only directly - through the financing of R&D projects - but also indirectly, for example through supporting investments in R&D infrastructure or accessing services provided by scientific units.

The adoption of grant aid as the main tool for supporting research and implementation actions by enterprises has been validated. Only 3% of the beneficiaries noted, that had they not obtained support they would have implemented their projects in the same scope and timing. The provision of other than grant aid instruments would have resulted in a significant decline in demand for support.

The gaps in SGOP support that were identified among those which are not addressed or are not adequately addressed through SGOP supports are:

- Low cost research projects: the "access threshold" for instruments supporting R&D projects financed through the National Centre for Research and Development (NCRD) was high. The figure of 240 000 EUR for a research project is very high not only for micro enterprises. The one-off so called small project initiative (71 000-190 000 EUR) was well appreciated by the market.
- Projects implemented by enterprises involving actions only at the lower levels of technological preparedness - though the current approach allows for supporting research projects from the second level, however there is also the requirement for conducting experimental development work and for the implementation of the results of the R&D actions within three years after the end of the project.
- Investments in low-cost scientific equipment - SGOP supports investments in R&D infrastructure starting at the minimum eligible costs level of 476 000 EUR. Under the terms of the co-financing provided for research and development projects eligible costs include depreciation charges on research equipment or costs related to its rent or lease.
- Development of R&D human resources - support for the development of competencies in enterprises key from the point of view of up-taking innovation related activities is more limited in the current financial perspective than it had been in the previous period. Under

the terms of R&D projects co-financed under priority axis one, as well as projects involving investments in R&D infrastructure cross-financing does not apply.

- Marketing activities - these are very costly actions connected with the implementation of a new product/service. Under SGOP instruments supporting R&D and the implementation of R&D results the availability of financing for marketing activities has been significantly limited.

The main reasons for not applying for financing by enterprises can be found:

- Non-existence among enterprises of a need for the implementation of such costly projects as envisaged by the donors.
- Own contribution - the relatively high value of the minimum level of eligible costs required under different measures automatically translates into high own contribution requirements.
- Lack of understanding among businesses what constitutes R&D activities - companies equate research and development activities solely with globally relevant groundbreaking innovations, the proverbial "invention of gun powder". Even though they may in fact be involved in R&D activities, having adopted such a narrow understanding, they remain convinced, that SGOP supports remain outside their reach.
- Limited knowledge on support opportunities - knowledge about the scope of support provided by the various institutions implementing SGOP is not universal, businesses flag issues with identifying the operational programmes or specific instruments the support of which they could avail.
- Limited availability of financing for Mazowieckie Voivodship – the financial envelope earmarked for Mazowieckie did not correspond with the economic and research capacities of the Voivodship and was quickly used up.

According to the database of concluded co-financing agreements for instruments covered by the study, 4 404 enterprises received support for conducting R&D activities, of which 85% were SMEs. The share of micro and small companies was comparable - it was 31 and 29% respectively. The medium-sized enterprises sector was slightly less represented - its share was 25%.

In addition to SGOP, there are Regional Operational Programs that also financially support innovation process. It is worth noting that at the regional level, the catalogue of instruments supporting the innovation process is very similar, in terms of scope, to the SGOP offer. Selected voivodships also offer instruments financing the cost of using pro-innovative consultancy services or research services.

When it comes to the support provided by Regional Programs the main areas of the support are very similar as the ones offer in SGOP: acquisition of research results or development works, preparation of experimental prototypes, creating demonstration and pilot installations, validation of a given solution, launching the first production, support the preparation of the results of the research phase for use in business operations.

Supported projects involving industrial research and development or development work must have at least Technology Readiness Levels (TRL) prior to commencing. In addition, they must be compatible with the areas of smart regional specializations, taking into account the mechanism of experimentation.

Starting from 2015, 5 calls for research and development enterprises have already been announced. In the four previous calls for proposals, a total of 168 innovative projects were selected for the grant amount of 112,6 million EUR (data for 2014-2019).

Other national and international sources of support play a smaller role in the financing system of particular stages of the innovation process.

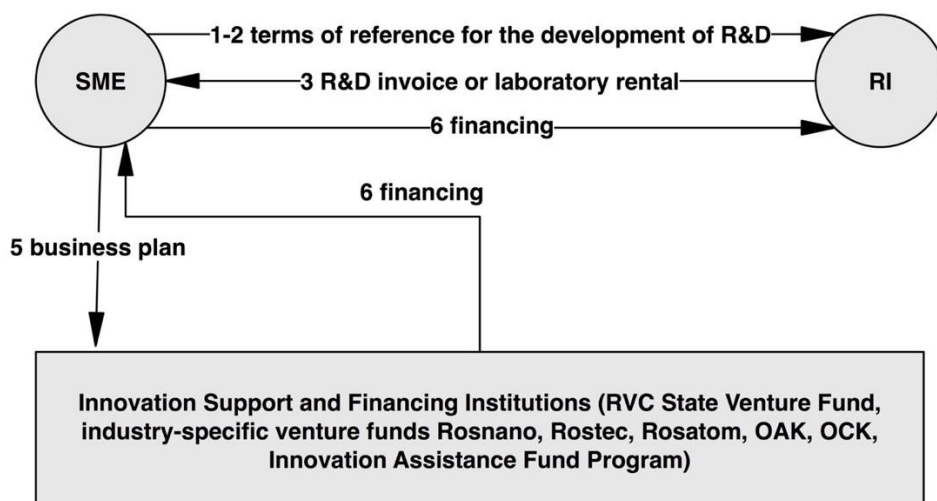
3.8. Access modes to RI for innovative SMEs in Russia

There are **no public and private programs** in Russia that focus on access to RI for innovative SME.

3.8.1. Overall landscape of support

The basic model of innovative SME access to RI is presented in accordance with the diagram in the Figure and with the following algorithm:

1. Innovative SME prepares Terms of Reference for R&D within its idea.
2. A researcher or a laboratory (RI element) are found to conduct research on his own.
3. A bill for R&D conducting or for a laboratory/ equipment rent is received.
4. The bill is included into the Business Plan.
5. The business plan is addressed to the Innovation Support and Financing Institutions (RVC State Venture Fund, industry-specific venture funds Rosnano, Rostec, Rosatom, OAK, OCK, «Innovation Assistance Fund» Programs).
6. After receiving funding R&D services or laboratory rent are paid.



RI information in Russia is consolidated in the database: <https://elementy.ru>.

Model summary:

1. RI is not active, but interested in innovative SME attraction.
2. Innovative SME find the necessary RI resources on their own.
3. Funding for RI and Innovative SME projects has different sources.
4. The ideas to bridge the gap in innovative SME and RI (innovative vouchers, etc.) are being discussed in Russia.

3.9. Access modes to RI for innovative SMEs in Sweden

3.9.1. Industrial pilot projects

Name of the program: Industrial pilot projects for utilisation of large-scale infrastructures for neutron and photon based techniques – 2020.



Managing organisation: Vinnova.

Beneficiaries: Legal entities At least two project partners. Of these, at least one is a Swedish registered company that owns the need. At least one additional project partner must be a different Swedish organisation that contributes with the expertise regarding the neutron- and/or photon based experiment. Swedish also means organisations with an establishment or branch in Sweden.

Supported activities:

A) Preparatory project

The proposal shall be based on a hypothesis regarding how photon or neutron- based technologies can meet the company's needs. The focus can be a broader mapping of relevant analysis opportunities to meet an identified challenge for the company. It can also be a narrower planning study that addresses feasibility issues for preparing a specific experiment.

B) Pilot experiment

The intended project should include an experiment at an already identified experimental station for neutron- or photon-based techniques, as well as adequate results analysis and planning for how the results can be utilized after the project. The call for proposals allows experiments at MAX IV as well as at international large-scale research infrastructures for neutron and photon-based techniques. All types of access for experimental/beam time are allowed and beam time is an eligible cost.

Duration of the program: September 2020.

Duration of projects implemented within the program:

A) Preparatory project

The maximum project period length is 5 months.

B) Pilot experiment

The maximum project period length is 18 months.

Total available funding per Project:

A) Preparatory project

Each project proposal can apply for a maximum grant of 20 000 EUR.

B) Pilot experiment

Each project proposal can apply for a maximum grant of 50 000 EUR.

Specific regulations/ requirements, if any: Through the funding offer, we want to strengthen Swedish skills regarding how industry can use and benefit from large-scale research infrastructures for neutron and photon-based techniques.

Each project proposal should be based on the development needs of at least one Swedish company which is also a project participant.

The work in the project shall aim to verify whether neutron or photon-based technologies are suitable options to meet the challenge or development need of the company beyond what can be achieved using analytical techniques accessible at ordinary laboratory environments.

This is presumed to need supporting expert expertise regarding the neutron- or photon-based technology addressed. The project consortium shall therefore also include at least one additional Swedish participant organization that assists with appropriate expertise related to the technique addressed and implementation of the project plan

The project activities shall aim to adopt new technologies for at least one actively participating company. The offer does therefore not intend additional- or modified experiments to investigate



materials/properties with similar techniques/methods as the company has previously received funding for from Vinnova.

Success of the program:

November 2018 - January 2020: 70 projects and 55 unique companies.

- Some companies are represented in more than one project - in different application areas/ work places and techniques.
- Some projects include consortia of more than one company.

4. Conclusions and Recommendations

Conclusions:

In total more than 50 public support programs for CAROs were identified in 9 CAROTS project partner countries and Sweden. 40 + support instruments were identified under 4.1. section - existing public support programs for innovative SMEs. Significantly fewer - 12 support instruments were identified under 4.2. section - existing access modes to RI for innovative SMEs. The most public support programs for innovative SMEs are available in Germany and Russia. Both countries have 9 different programs. Meanwhile the most access modes to RI for innovative SMEs were identified in Poland – 4. There are countries where support instruments are not available, such as Russia, which does not have public or private programs that focus on access to RI for innovative SMEs, while Denmark does not have any public support programs for innovative SMEs.

In 4.1 section - public support programs for innovative SMEs different types of programs were identified which support founding and financing new or early stage SMEs. These are Startup programs, Incubator programs, Acceleration funds, Venture and Seed funding, Business angels. Most of them support technology innovative SMEs with good prospects of success on the product innovation development.

There are also those programs that do not directly finance the creation and operation of SMEs, but provide the possibility of financing “soft support” in the form of “how to operate the business” trainings, coaching, mentoring, legal support.

As varied as the areas of support are the funding levels. For instance when it comes to incubation process the start-ups in Estonia may receive a grant in amount of up to 15 000 EUR. InnoRampUp supports technologically innovative start-ups in Hamburg up to 150 000 EUR covers the costs of business idea which have a chance of economic success. The programs presented in this chapter cover multiple sectors like Tesi Finnish Industry Investment Ltd investments programmes or are oriented towards specific branches like Buildit – Accelerator of Things.

Although the presented programs refer directly to the broadly understood SME support, it should be said that there is no program that provides direct support for CARO in terms of its founding and financing business activity.

In 4.2. section - existing access modes to RI for innovative SMEs the most typical program is “Innovation Vouchers”. The amount of available support in voucher programs are also similar - from 4 000 EUR to 25 000 EUR. Exceptions are observed in Lithuania and Poland. Mature innovators in Lithuania can receive a voucher for R&D projects in the amount of 48 000 EUR (for research) and 76 000 EUR (for development). It should be emphasized that in Lithuania, applicants who have a “Seal of Excellence” certificate and VAT are not eligible for finance can apply for 71 000 EUR funding in Inočekiai (Innovation and development voucher support) program. There is also such a program in Latvia, where SMEs that have obtained the “Seal of Excellence” certificate in Horizon 2020 program can apply for 50 000 EUR support with 100% intensity and without significant bureaucracy, as it is practically not necessary to fill in any forms and documents to receive funding. Even more funding is available in the Polish Innovation Voucher Program. The maximum eligible project cost is 95 000 EUR.

Although only 1 suitable program is available in the Baltic States and Denmark for innovative SMEs to access RI, Finland has 2 such programs, while, as mentioned above, Poland has 4 such programs. In Finland, support is available through the Finnish Business Finance Services Program, where are 10 different calls for SMEs, including Innovation Vouchers. The other program is Yrityksen kehittämisavustus (Development funding for companies), in which operating SMEs are able to support R&D institutions in the field of blue growth and industrial modernization, innovative food chains, pharma and biotechnology. Total available funding within the programs are mostly not

specified except in the Innovation Vouchers program and the INTO Funding Service where support is intended for SMEs aiming to enter export markets. The smallest possible size of the project is 30 000 EUR and the minimum grant is 15 000 EUR with a maximum of 200 000 EUR.

In countries with voucher support programs, mostly more than one type of voucher is available. Funding in vouchers are available for development and research activities. Supported activities under the Innovation Vouchers programmes mostly are purchase of the contractor for a development of a new product, service, production technology and a new design project. As mentioned before, Innovation Vouchers also supports the research, including preparation of feasibility study, industrial research etc. In other programs, support is also available mainly for projects related to the implementation of industrial research and experimental development.

An interesting situation is in Russia, which does not have public or private programs that focus on access to RI for innovative SMEs. The basic model of innovative SME access to RI is that a researcher or a laboratory founds to conduct research on their own, prepare a bill for R&D conducting, includes the bill into the business plan and addresses it to the Innovation Support and Financing Institutions (RVC State Venture Fund, industry-specific venture funds Rosnano, Rostec, Rosatom, OAK, OCK, «Innovation Assistance Fund» Programs). It is a quite innovative approach to fostering SME collaboration with RI.

Support programs are mainly available until the end of 2020, which is linked to the end of the current Structural Funds planning period, given that the Structural Funds mainly finance these support programs. The exceptions are in Estonia, where the Innovation Voucher Program is available until the end of 2023, and in Latvia, where funding is available until the end of 2022.

Only in few CAROTS project partner countries support is available to CAROs that are not established in a particular country. It may hamper the objective of giving CARO access to support instruments across borders. In countries like Latvia and Lithuania if the SMEs wants to do the research under the policy instrument Innovation Vouchers, they have possibility to acquire research from foreign research institutions (not foreign companies). Similarly, in Danish Innobooster program SMEs can apply for knowledge and services both Danish and foreign (e.g. universities, GTS institutes, contract research institutes, private development companies, etc.). The Central Innovation Programme for SMEs (ZIM) in Germany also supports international partnerships in both cooperation projects and networks. Meanwhile in Business Finland Funding Services it depends on the financing tool and project/company arrangements, but the support needs to stay in Finland.

Recommendations:

1. Develop efficient funding schemes for CAROs access to research institutions and founding and financing CAROs. The availability of support instruments across borders can foster international cooperation by creating new competitive businesses that are able to access available funding. The existing Structural Funds programs have already been set up and at the moment we will not be able to make any editorial changes to make the programs available, adapting them to the needs of the CAROTS project.
2. As a result of the project implementation, leading countries could organize a hackathons and create a support ecosystems with communication events/platforms for collaboration of innovative CAROs and academia, which can bring together representatives of industry and research institutions.
3. Raise awareness and go beyond the borders. The opportunity to use smart immigration to attract foreign workers, which is urgently needed for the development of specific businesses, and the assistance of support organizations in finding and attracting workers;
4. Review existing research institutions which could be used by CAROs across Europe. Large unused opportunities to develop cooperation with research and scientific organizations,



technology transfer centers, involving researchers in business as co-owners, promoting the development of a joint venture with an entrepreneur.

5. Prevent the bureaucratic difficulties in setting up subsidiaries or branches in CAROTS project partner countries to access public support programs for CAROs. As none of the support instruments in CAROTS partner countries are available to CAROs not established in a particular country, changes in policy that complicate establishment of a new business should be considered.