



Peer review document for Lithuania

Document prepared for the Lithuania's peer review

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I. Introduction, objective and background information of the peer review exercise in Lithuania

What is a peer-review and the scope of this document?

This document constitutes the last step of the Lithuania's peer review, which is a learning exercise part of the Manumix project.

Peer reviews can take different approaches, as explained by Nauwelaers (2015), from which OECD and EU peers reviews can be highlighted, mostly focused at the national level. In addition peer reviews at the regional level have been pushed in the last years by both the Interreg programme and the Joint Research Centre (S3 Platform), the latter focused on Smart Specialisation Strategies. Some peer reviews are very intense in time and are proposed to answer a narrow question, while others focus on more broad aspects. This is the case of this exercise within the Manumix project.

The objective of a peer review exercise is not transferring good practices from peers, but to enlighten a process of policy learning. It is important not to forget that in regional innovation policies there is not a single recipe or 'one size doesn't fit all' (Tödtling and Tripl, 2005) so the recommendations from peer reviews have to be contextualized in the region after the process has finished.

Generally, three phases can be distinguished in a peer review exercise:

1. Preparation: This phase includes the elaboration of previous material or documentation. This could include a background document, elaborated either by the peered region or by an external expert. The objective of this document is to inform the peers about the policy or issue which will be the focus of the peer review exercise, not to do an analysis or provide with solutions to the peered territory. In addition this phase includes the mobilization of the resources needed for the peer review, which are the persons that will take part in the implementation phase from both the peered and the peers.
2. Implementation: This is the phase in which the analysis of the background documentation from the peers and the interactions among the peered, the peers and the external expert in some cases take place. This phase varies depending of the format of the peer review exercise. It could take a year or a month and of course the result an in-depth analysis resulting from the exercise varies depending of this format. It normally includes meetings among the participants of the peer review, but also workshops are an option for the implementation.
3. Incorporation: This includes the dissemination of the results of the exercise as well as defining the next steps that the peer region will follow after a consequence of the exercise. This document belongs to this third step and provides recommendations to be considered for implementation in the region.

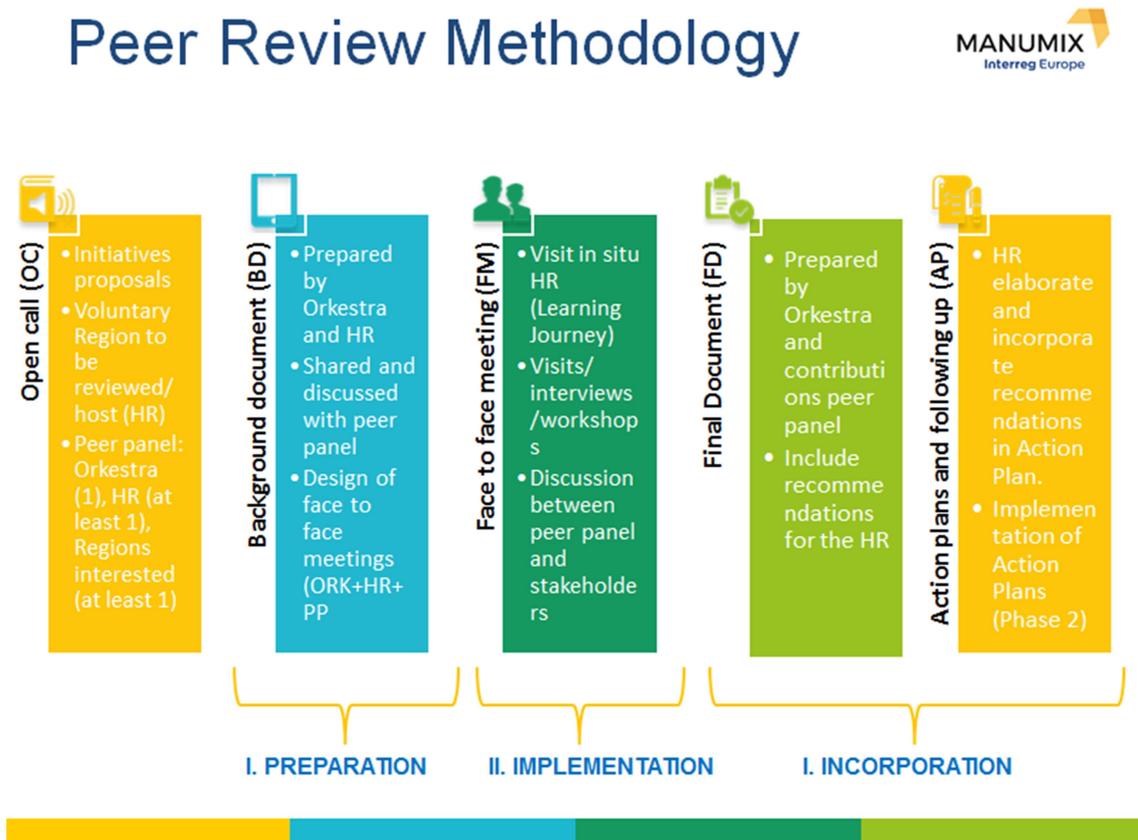
Objective and methodological steps followed in Lithuania's peer review

Following the peer review methodology agreed by the partners of Manumix, and as depicted in Figure 1, the peer review exercise started with an open call to partners in which the partner regions defined a theme in which the peer review exercise should focus and the peer review processes in which they were interested in taking part as peer reviewers.

Concretely, in the case of Lithuania, the region has set as a goal for the peer-review to get recommendations that are useful for the *proper design of innovation policy (proper policy-mix), and, at the same time, developing intervention logic of innovation policy that matched more closely the needs of stakeholders and, in particular, of the beneficiaries*. Lithuanian team that participates in the Manumix project considers this exercise important as Lithuania faces major challenges in formulating appropriate policies for promoting and implementing innovation.

In regards peer partners, the Basque and Welsh regions have been the peer reviewers in Lithuania's peer review exercise, together with the advisory partner Orkestra.

Figure 1. Peer review methodology in Manumix



The peer review process has had three phases:

1. Preparation: a background document was prepared by Orkestra (advisory partner), in collaboration with MOSTA , which served, together with the baseline study document, as the basis of the next step.
2. Implementation: the Basque and Welsh partners and Orkestra analysed the documentation and prepared questions for the face-to-face meeting developed in Lithuania. The face-to-face meeting was carried out in 18th April in Vilnius, Lithuania. The meeting consisted of presentations of each of the instruments included in the Manumix Lithuanian policy mix and the policy mix, and questions and debate around these with peer reviewers. The presentations were made by representatives of responsible institutions of the policy mix (Ministry of Education and Science; Central Project Management Agency; Agency for Science, Innovation and Technology, and Research Council). The peer review group from Welsh and Basque regions were composed of partner members and stakeholders, who together with Orkestra and MOSTA participated in the discussions and the elaboration of the conclusions in the next phase.
3. Incorporation: During this phase, this final document, which incorporates the results of phase 2 has been produced by Orkestra with inputs from the Basque and Welsh reviewers. This report constitutes an input for dissemination in the peered region as well as an input for the action plan that the peered region has to deliver for the Manumix project.

Background information

The background document of the Lithuanian peer review contains more detailed information about the instruments and policy-mix selected by Lithuania for the Manumix project and their design and implementation process. Figure 2 (next page) summarizes their main characteristics.

The background document identifies a range of challenges with regards the design and the management of this mix, which include issues related to a mismatch between the design of the instruments and the specific characteristics of potential beneficiaries, an insufficient inclusion of contextual needs in the policy design and problems regarding the policy formulation process and the managements of the programmes. The peer review aims at providing an input to contributing to the challenges identified.

Figure 2. Main characteristics of Manumix Policy Mix in Lithuania

Policy Instrument / Call for Proposals	Objective	Potential applicants	Eligible activities	Budget	Launch year
Promotion of Activities of Centres of Excellence and Centres for Innovation and Technology Transfer (I)	Encouraging research and education institutions to carry out R&D activities with commercial potential	1) research and higher education institutions	Eligible costs: 1) the cost of acquiring equipment necessary for the execution of R&D activities, 2) costs for the acquisition and / or registration of industrial property rights for the execution of R&D activities, 3) the cost of salaries and travel expenses for R&D personnel engaged in the project. 4) expenses for the lease of fixed assets, purchase and / or rental of short-term assets. 5) R&D, consultancy costs related to the testing of ideas with commercial potential, for further R&D investments.	14,5 M €	2017
Promotion of Activities of Centres of Excellence and Centres for Innovation and Technology Transfer (II)	Encouraging the competence centers to test R&D-based, commercially-promising ideas to create a follow-up investment or other outcome that can be tailored to market deployment	1) research and higher education institutions, 2) university hospitals	Eligible costs: 1) the cost of acquiring equipment necessary for the execution of R&D activities, 2) costs for the acquisition and / or registration of industrial property rights for the execution of R&D activities, 3) the cost of salaries and travel expenses for R&D personnel engaged in the project. 4) expenses for the lease of fixed assets, purchase and / or rental of short-term assets. 5) R&D, consultancy costs related to the testing of ideas with commercial potential, for further R&D investments	11,6 M €	2017
Commercialization of R&D	Helps researchers and students to develop innovative products based on the results of R&D.	1) research and higher education institutions, 2) private entities with research and higher education institutions as stakeholders 3) private entities licensed to use intellectual property created in research and higher education institutions.	Commercialization of R&D results from the 7th to 9th R&D stages (support for the commercialization of ideas of scientists and other researchers / students, emerging young innovative companies).	2 M €	2017
Targeted scientific research in the field of smart specialization (I)	Increase the level of knowledge transfer and technology transfer	1) research and higher education institutions, 2) university hospitals	Research carried out by high-level groups of researchers aimed at developing the results relevant to the economic sectors relevant to the activities of R&D, which could then be commercialized	28,9 M €	2017
Targeted scientific research in the field of smart specialization (II)	Increase the level of knowledge transfer and technology transfer	1) research and higher education institutions, 2) university hospitals	Attracting scientists from abroad to carry out research aimed at developing the results relevant to the economic sectors relevant to the activities of R&D, which could then be commercialized.	14,5 M €	2018
Targeted scientific research in the field of smart specialization (III)	Increase the level of knowledge transfer and technology transfer	1) research and higher education institutions, 2) university hospitals	Parallel labs R&D activities designed to produce results that are relevant to the economic sectors in terms of R&D activities, which could then be commercialized.	1,44 M €	2018

Source: Background document Lithuania (Orkestra, 2018)

II. Innovation policy mix design in Lithuania: insights and recommendations

As the result of the peer review exercise, the peer regions and Orkestra have provided insights and recommendations to respond to some of the challenges identified in the background document and further developed in the face to face meeting. The innovation policy mix of Lithuania respond to several challenges (some common to other contexts), among which we can highlight an insufficient market orientation of universities and research centres (which are mainly oriented to scientific production), the lack of collaboration and interaction between research and businesses and the insufficient R&D business investment. The following insights from the peers are directed to these challenges, which might involve rethinking some of the bases and principles in which the innovation policy mix of Lithuania is based on. Most insights and recommendations address the policy mix level, in terms of the evidences for its design, the rationale behind the policy mix and the coordination of the mix. Some insights specific to some of the individual instruments and more general to the innovation system are also included.

The relevance of creating a balanced innovation system through capabilities development

The innovation system is composed of several subsystems: firms' subsystem, knowledge generation organisations subsystem and policy subsystem, which they interact. It is important that all subsystems develop in order to have a balanced innovation system. In order to have a strong innovation system it is important to have strong subsystems, that is, to have strong innovation capabilities both in universities and knowledge generation centres and in businesses and thus, it is important to have instruments addressed at both dimensions.

Therefore, the main recommendation at this respect is to promote an homogeneous development of scientific and technology organisations and firms, by combining *technology push* with *market pull measures*. This can be done in phases following a roadmap. The interactions between the two subsystems have to be based on critical masses of both dimensions. Thus, it is important that public action makes evolve the two subsystems at the same time. As an example, the Basque Country had a problem of low technological level of business in the 80's and the policymakers consider that a key success factor for the posterior evolution has been that capabilities of research and business grew in a balanced manner. For doing so, it is important to better understand the Advanced Manufacturing sector, to have a further analysis of the Advanced Manufacturing sector, players and actors in the country. This is not only a duty of the Ministry in charge of business and Advanced Manufacturing strategy, but also the Ministry of Education, in charge of promoting university transfer of knowledge so more accurate instruments can be put in place.

Rethinking how to promote knowledge transfer and who are the transfer agents

Behind the rationale of instruments such as 01.2.2-MITA-K-702 COMMERCIALISATION OF R&D there is the idea that universities are beneficiaries and main agents of knowledge transfer. This is a *technology push* view of the knowledge transfer. That implies to have a strong business base with capabilities to absorb the knowledge, which sometimes is not the case in many innovation systems.

Some of the reasons behind a low success ratio of this instrument emerged in its implementation could be the following: universities are not willing to participate in some programmes because of *de minimis rule* or because they are not fully funded. With regards to this rationale, the peers recommend the possibility of rethinking this rationale and thinking of universities not as beneficiaries but as providers of knowledge within the regional innovation systems, which implies putting R&D closer to the market. Moreover, it could be positive to think of other transfer knowledge agents besides the universities to promote knowledge transfer. These ideas could be developed in this way:

- Collaboration between business and research and transfer can equally be promoted by having companies as beneficiaries. It might be possible to develop an instrument for R&D projects in which the firms are the main beneficiaries and they have to subcontract a university or a research organisation as part of the project. In the case of the Basque Country this is the case of the Hazitek programme (See Annex 1. More information on this programme can also be found in the Manumix Baseline Study of Basque Country.) In the more specific case of the Lithuanian instrument “**01.2.2-MITA-K-702 COMMERCIALISATION OF R&D**” for the universities to covered a 100% of their expenses and they feel more motivated to apply to this programme, the beneficiary should be the start-up or the firm. In this case they would subcontract the university paying a 100% of their activity. It is more difficult for a firm like a start-up or a small firm to reach the limit of *de minimis rule* than for a university. Nevertheless, in order to be able to conduct more activities and guarantee the project’s success some changes according the Community Framework should be done, for exzmples by supporting activities considered industrial research and experimental development. Another proposed change could be to consider in-kinds support from universities to the start-ups such as a patent and then be able to perceive the incomes from royalties. It could also be positive, in order to respond to the low application rate of the programme, thinking of a wider range of commercial formulas beyond spin-offs (e.g. joint ventures, licences), as these formulas could be adjusted to the lack of entrepreneurial spirit of certain universities.
- Another approach to promote knowledge transfer is to promote transfer bodies- In Wales for example they have “liasson offices” at universities, and there is an association of these offices.
- The relevance of mixing profiles and thinking on other transfer agents. **Should the university be the only one who do transfer and commercialise activities?** Consultancies and engineering companies can also play a transfer role. Therefore, it could be positive to involve this type of agents in the programmes.

Promoting market orientation in universities and absorptive capacity in businesses

As previously stated, one of the challenges identified in the Lithuanian system is the lack of market orientation of universities, which are mainly focused on conducting basic research and producing and disseminating scientific publications. Likewise, there is a lack of innovation culture and low absorptive capacity of knowledge in the business sector. Recommendations to contribute to tackle both dimensions include:

- Reflect about the possibility of firms influencing in the universities research agenda, so that the research developed is also oriented to the needs of businesses. This could be developed by incorporating firms in the universities governing boards, for example.
- **Incentivise universities for working closer to the market.** A way for achieving this is to condition the universities basic funding to reaching certain goals. This can be done by designing a scoreboard of indicators that include knowledge transfer to firms and the market (i.e. start-ups) (like in the case of the Basque Emaitek + programme, see Box 1). To do so it is necessary to understand their funding model and the programmes in which they are beneficiaries. Currently the funding of universities is determined by: (a) budget of students, depends on the number of students; (b) subsidies by the Ministry linked to the scientific activity – publication of articles. Thus, in order to promote profiles or technicians and not only scientists at universities this could be a first step. In Wales for example one of the criteria for universities is impact (which is the impact of your research in society/businesses?). An example to look at in this line could be the REF system in the United Kingdom¹.

BOX 1: Emaitek Plus: Support Program for the non-economic activity of the Multifocal Technology Centers and Cooperative Research Centers (Basque Country)

Objectives

Support the non-economic activity of the Multifocal Technology Centers and the CICs Cooperative Research Centers of the Basque Science, Technology and Innovation Network, assigning funding through the evaluation and analysis of the results of their activity at a global level through the EMAITEK PLUS program.

Beneficiaries

Technology Centers and Cooperative Research Centers (CICs) of the Basque Science, Technology and Innovation Network

Subsidies (as per year 2017)

An amount of €53,296M, which is divided in two amounts:.

- Technology Centers. €39,438M, which is subdivided as specified below:
 - a) Degree of adaptation to the Results Oriented Center Model, €38,256M.
 - b) Action Plans of the Centers to achieve the objectives of the Scorecard of indicators set for 2020, €1,183M.
- For the Cooperative Research Centers, CICs, €13,857M which is subdivided as follows:
 - c) Degree of adaptation to the Results Oriented Center Model, €13,441M.
 - d) Action Plans of the Centers to achieve the objectives of the Scorecard of indicators set for 2020, €415,710.

Source: SPRI (www.spri.eus)

- **It is necessary to increase the absorptive capabilities of firms in order to make profitable the knowledge generated in universities.** This could be done through funding doctoral thesis in companies (see Bikaintek programme of the Basque Country in Box 2), or small little projects of technology transfer (i.e. 3D simulation; Basque Industry 4.0 programme, see Box 3). For doing so, it is necessary that universities understand which the technological needs of companies are.

¹ <https://www.ref.ac.uk/about/whatref/>

BOX 2: BIKAINTEK: Industrial Doctorates and Doctors' contracting program (Basque Country)

Objectives

a) Doctor and doctor's contracting line. Grants for hiring of people with a doctorate or doctor degree, with dedication to industrial research projects developed by the beneficiary entities in centers of the Basque Autonomous Community, either for its start-up or to reinforce projects already started, and both individually, by the contracted doctors or doctors, as well as within an R & D department or with other staff of the beneficiary entity. The aids must be applied to carry out a substantial increase of the R & D projects or activities that the company has been carrying out, having to justify in its request the need and the incentive effect of the aid.

b) Line of «industrial doctorates». Grants for the training of doctoral candidates and industrial doctorates through the co-financing of the employment contracts of research personnel in training who participate in an industrial research project, of interest to the company, which will be framed his doctoral thesis. The ultimate goal is to promote the labor insertion of researchers in Basque companies from the beginning of their careers, contributing to the employability of researchers and promoting the incorporation of talent in the Basque productive fabric to increase its competitiveness.

Beneficiaries

a) Companies located or that have a productive facility in the Basque Autonomous Community.

b) Agents integrated in the Basque Science, Technology and Innovation Network, in the categories of Cooperative Research Centers, Technological Centers and Business R & D Units.

Eligible activities

a) Hiring people with a doctorate or doctor degree for their dedication to R & D projects developed by the beneficiaries.

b) Training of PhD students and industrial PhD students through the co-financing of employment contracts of research personnel in training who participate in an industrial research project, within the areas of specialization of the PCTI 2020, in which their doctoral thesis will be framed.

Amount

a) Maximum of 50% of eligible costs of projects. Maximum annual amount of the subsidy of € 30,000.

b) Maximum of 50% of eligible costs, with a maximum limit of €26,000 per year. In addition, a maximum of € 6,000 euros for each researcher hired to finance stays in their the training period.

BOX 3: Basque Industry 4.0 programme (Basque Country)

Objective:

To support industrial research and experimental development projects that address technology transfer from "technological suppliers" (such as, for example, the agents of the Basque Science, Technology and Innovation Network) to industrial manufacturing companies, in the field of the EICTs (Electronics, Information and Telecommunication Technologies) applied to Advanced Manufacturing, which have a demonstration effect and therefore allow to accelerate the transfer to the market of the results of the R & D projects in EICTs.

Beneficiaries: Individual manufacturing companies

Projects subject to grants:

Projects must be related to one of the following areas, within the scope of CPSs (Cyber Physical Systems) and advanced materials and processes applied to advanced manufacturing: Cybersecurity and industrial communications; Cloud Computing; Big Data - Advanced Analytics and Business Intelligence; Collaborative robotics; Augmented reality projects; Artificial vision project; Sensor systems; Design and additive manufacturing in metallic and advanced materials (ceramics, composites, etc.); Projects of materials and advanced processes. Projects must be located at a TRL level 5 to 9 (both included), with a minimum total budget of €75,000, 16 months duration.

Elegible costs:

- Hourly-based work time expenses of the "R & D Agent" (for example, the agents in the Basque Science, Technology and Innovation Network), including assistance and consultation at the industrial plant.
- Hourly-based work time expenses of the "implementer" (consulting and engineering firms).
- Costs of acquiring Industrial Property offered by the RVCTI agent.
- Investments and/or expenses on hardware and software.
- Internal personnel costs of the beneficiary company assigned to the project which is given the grant.

Source: SPRI (www.spri.eus)

Coordination of ministries and establishing common goals

Coordination between instruments and more generally among the ministries involved in the innovation policy mix has been addressed as one of the challenges of the innovation policy mix. In regards this, two insights can be highlighted:

- Relevance of “**knowing how is the other side**”. Although the instruments of the policy mix belong to the Ministry of Education and are directed to research related beneficiaries it is important that the Ministry has full knowledge of the situation and the needs of the business sector. Which are its gaps and main needs? Having a deep knowledge of this is relevant to have this information in mind when developing instruments that aim at promoting scientific activity that is not only oriented to scientific production but also has a market orientation.
- **The relevance of having one overarching goal**. Although each of the ministries can have their own goals, it is important to have one overarching goal. For example, in the Basque case there are also three departments and the Presidency area involved in R&D activities promotion, but they also have an overall goal to which have to contribute to.

Specific issues regarding the design of the instruments and the calls and their management

- To work in **adjusting the programmes to the Community Framework** for transferring innovations to the market. To do so it is a key issue to adjust the semantics of the instruments regulation to the ones that the European Commission adopts, in order to make clearer their interpretation.
- **Complement quantitative evaluations with qualitative ones in order to better understand the results and to have a more powerful source of strategic intelligence. In this sense, programme managers are key actors**. Intermediate agents that work on linking these actors with current and potential beneficiaries could be an approach to improve this issue. This could contribute to understand better why some instruments have not been implemented (e.g. low applications) as expected.
- With regards the instrument **01.2.2-LMT-K-718 (I) “Targeted scientific research in the field of smart specialization”**, a specific issue was raised around the low ratio of international patents. A possible way to improve this ratio could be changing the funding system of universities, as in the Basque case. The Basque Government establishes international patents as one of the indicators that condition the basic funding of universities. It is important to find the coherence between the basic funding system for universities and the results that you want to achieve with other innovation instruments.

III. Conclusions and general recommendations

Improving the performance of an innovation system and especially in the field of Advanced Manufacturing involves not only designing instruments for knowledge organisation such as universities, but also to increase the absorptive capabilities of firms and their interrelationship with universities. Therefore, implementing instruments directed to both the technology supply and the demand side of knowledge should be a priority in contexts like the Lithuanian.

Recommendations from this peer review exercise are directed to this direction:

1. Design and implement instruments directed to firms in which subcontracting a university is a criteria for receiving funding.
2. Incentivise universities to conduct research closer to the market by changing organisational behaviour through basic funding
3. Promote other type of knowledge transfer mechanisms with appropriate instruments (intermediate bodies, start-up participation, co-licensing, personnel mobility, etc.)

For doing so it is necessary a closer collaboration among ministries and therefore innovating in the public sector. Qualitative (and quantitative) evaluations could act as a strategic intelligence tool at this respect.

Annex. Programme to support business R&D Hazitek (Basque Country)

Objective:

To support the implementation of Industrial Research Projects or Experimental Development, both of a competitive nature and of a strategic nature, in the business sector of the Basque Autonomous Community, and in the fields of specialization as part of the Euskadi 2020 Science, Technology and Innovation Plan (PCTI).

Beneficiaries:

- Companies: Large Companies or SMEs.
- Groups and associations of companies, regardless of their legal form.
- In the case of projects to launch new companies with a scientific and technological base, the Agents of the Basque Science, Technology and Innovation Network, will also be beneficiaries.

Eligible projects:

- 1) Research and Development projects of a competitive nature

The following typologies of Industrial Research or Experimental Development projects are considered as competitive R & D projects:

- Projects aimed at the development of new products
- Projects aimed at launching new companies with a scientific and technological base.

The projects that intend to access aid for competitive R & D projects must include a coherent set of R&D activities, clearly oriented to the development of original products and superior to those already existing, or clearly oriented to the use or generation of marketable knowledge in order to create new companies that sufficiently combine the following elements:

- Development of activities or trade with products and services that imply a high level of scientific and technological knowledge;
- Development of a high level of R&D&i activities ;
- Use of intellectual property rights, whether generated by the same company or acquired through exclusive licenses, as a key competitive advantage in the business;
- Active participation in the development of the company of highly qualified scientific and technological personnel.

The projects oriented to the improvement of existing products or those in which the developed product does not have a degree of novelty to be considered New Product will not be considered as "projects for the development of new products". Normal, regular or periodic modifications of products, production lines and processes, existing services and other current operations will be excluded from subsidies, even though those modifications may represent improvements to them.

- 2) Industrial research and experimental development projects in strategic sectors

The projects of industrial research and experimental development of a strategic nature contemplated in the Specialization Areas of PCTI will be eligible for subsidies, which encourage public-private collaboration in Technological Research and Development and Innovation, so that they exercise a driving effect on the economy of the Basque Country, favouring the intervention of SMEs and access to the Horizon 2020 Program. The R&D activities will be subsidized, corresponding to projects of industrial research and experimental development of a strategic nature in the areas of specialization framed in the PCTI aimed at creating new useful knowledge to obtain new or better products, processes or services, as well as integrate new technologies of a strategic nature, create new patents and new companies with a scientific-technological basis (NEBTs).

Grant amounts:

- For competitive projects (annual). Total minimum annual budget of €100,000; in the case of cooperation projects, €50,000 per company. Maximum amount of non-refundable subsidy: €250,000 per beneficiary each year
- For strategic projects (multi-annual, up to maximum of 3 years). Up to 40% of the eligible costs for industrial research projects. Up to 25% of the eligible costs for experimental development projects.