Stairway to Excellence
Cohesion Policy and the Synergies with the Research and Innovation Funds

Example of Synergies

Promotion of high level international research
(KTU’s Institute of Materials Science)

Lithuania

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Executive Summary

KTU’s Institute of Materials Science benefited from the ERDF project “Fundamental investigation of surface relief and molecular forces influence on the self-organization of nanoparticles and nanofibers” (€423,600). During the project administrative staff participated in training, and new equipment was purchased. As a result of the project research activities, a new device for nanoparticles self-organization was created and patent application for Lithuanian patent office was submitted. Finally, all these international research collaboration activities resulted in a twinning proposal for Horizon 2020 (“Boosting the scientific excellence and innovation capacity in novel Functional Nano-composites of Kaunas University of Technology and its Twinning partners”). Also, another spin-off project - the PARMO project with international partners (e.g. the National Institute for Materials Science of Japan) - is implemented outside the EU.

Type of synergies

- Upstream
- Sequential funding

S&T field targeted by the synergies

- New materials

The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.


1. **INTRODUCTION**

The case presented in the following sections is one of the examples of synergies provided by the ‘Stairway to Excellence’ project in which different sources of funding have been combined to amplify the R&I investments and their impact on the economy and wider society.

As described in the guide ‘Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes’, synergies can be achieved through:

- **Sequential (or successive) funding** that use funds in separate projects built on each other;
- **Parallel funding** that use funds in separate projects complementing each other;
- **Simultaneous/cumulative funding** that brings together Horizon2020 and ESIF funds in the same project aimed at achieving greater impact;
- **Alternative funding** that reorients FP7/Horizon 2020 projects that were positively evaluated, shortlisted, but not funded given the limited budget, towards Structural Funds impact

The combination of sources of funding is used to address two types of activities:

- **Upstream activities** build the appropriate capacities to perform research. They can be capacity building in physical capital (construction or improvement of research infrastructures, purchasing equipment, (including IT equipment and connections, data storage capacities), innovation infrastructures (LivingLabs, FabLabs, Design factories, etc.) and social capital (assistance for building networks, clusters and consortia).
- **Downstream activities** are focussed towards the market and the creation of economic value. They can be applied to research, development and demonstration activities, technology transfer and adoption; technology and innovation audits to identify potential demand for RDI results; proof-of-concept funding; pilot lines for first production; and pre-commercial procurement projects. There can also be activities to support the improvement of the innovation eco-system in a territory.

2. **CONTEXT**

According to KTU’s Institute of Materials Science, the project was very successful and helped the Institute to build research capacity and find solid international partners. During the project administrative staff participated in an innovation management training, a 2-4 weeks research mobility (training) visit was organised for Institute’s researchers in Denmark. Also, new equipment was purchased (devices for work with polymeric materials and for surface characteristics evaluation).

This synergy was not a key aim of the ESIF measure. The main constrains during the ERDF project related to the bureaucratic administration procedures, such as long public procurement procedures in Lithuania.

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3. Implementation

Figure 1 maps the project chronologically, the research activities of the organisation and the type of funding. It aims to give a picture of relations between projects revealing planned or unplanned dependencies (synergies) between projects and their source of funding.

Figure 1: Diagram of chronology of the main projects involved in synergies

**Added value / complementarities created by the synergies**

The project PARMO strengthened the Institute’s research capacity (both human resources and infrastructure). Also, a new technology prototype (a device for nanoparticles self-organization) created which will be used in the later research of the Institute. Finally, partners Syddansk Universitet from Denmark were found. The researchers from Institute of Materials Science had training in Denmark and now the Syddansk Universitet is one of the partners in Horizon Twinning proposal.

**Mechanisms facilitating the synergies**

One of the main goal of the ERDF project was to implement research together with international partners, hence to find or strengthen links with international partners. Hence it is expected that the partnership and research would not stop after the project and will result in further collaboration. One of the forms of collaboration may be the participation in Horizon 2020 projects. So the synergy was not the main goal of EU SF project, but was seen as one of the potential long-term results of the project.

**Main problems encountered in implementing the synergies**

Long public procurement procedures in Lithuania, which extended the research infrastructure procurement process. E.g. purchasing of new equipment took long during the project. As a result a device for nanoparticles self-organization was completed only by the end of 2014. This resulted in a delay for submitting a patent application. This patent application is not submitted yet (May 2015), but the Institute is planning to do it in a near future.

**Suggestions to improve the synergies**

According to the respondent Lithuania is too small to be competitive in all science fields and does not have enough resources to fund all science fields. As a result, Lithuania should focus on the Smart Specialisation priorities. Also, the Smart Specialization documents are written for the specific institutions (e.g. support for laser technology development is focused at Vilnius University). Policy makers should have a broader view and try to integrate all potential performers in the field. Also, successful projects in the fields having high potential should be financed continuously. When the
highly promising field is identified it needs stable and continuous investment to attract researchers and to develop further. It is very difficult to do it without the stable funding.

**Main motivations in implementing the synergies**
During EU SF project partners which are interested in the same field of science were found. Partners were interested in the technologies of the Institute of Materials Science and vice versa. Hence it was decided to continue collaboration and write a proposal for Horizon Twinning project. Also the confidence and skills of the Institute and its researchers were strengthened during the EU SF project. This also encouraged trying to apply for Horizon 2020 project.

**Facilitating mechanisms for the take up of the scientific results**
Not relevant for this case.

**Impact on the regional / national economy**
The project enabled to open the new and potential niche for research in Lithuania. Prototype created during the project will be upgraded and later - commercialised.

Figure 2 aims to position projects according to the activities they cover; from upstream (infrastructures, equipment, research activities) to downstream related activities (innovation, knowledge transfer, access to market).

**Figure 2: Diagram of the complementarities of the funds in the knowledge triangle / flow**

![Diagram of the complementarities of the funds in the knowledge triangle / flow](image)
4. Related Projects

SF Project: „Fundamental investigation of surface relief and molecular forces influence on the self-organization of nanoparticles and nanofibers“ (PARMO)

- **SF funding scheme:** OP for Human Resources Development, measure “Strengthening of researchers skills”, instrument “Promotion of high level international research”.
- **Budget:** €423,627.49
- **Time frame of the SF funded project:** 2013 10 01 – 2015 09 30
- **Main objectives and type of costs covered:** The main objectives of the project is to strengthen the research base (both human resources and infrastructure) and to find or strengthen links with international partners. The type of costs covered are: research equipment, training, consumables, salaries.

FP Project: Proposal “Boosting the scientific excellence and innovation capacity in novel Functional Nanocomposites of Kaunas University of Technology and its Twinning partners“ (FUN)

- **FP funding scheme:** Twinning
- **Main objectives:** The main objective of the project is to implement the high level nanoparticles and nanofibers manipulation research together with international partners. Also the goal is to strengthen the scientific and management qualification and competence of researchers. As a result the project should strengthen the Institute’s research capacity (both human resources and infrastructure) and to find or strengthen links with international partners.

Proposal for LMT Lithuania–Japan scientific collaboration programme “Silver nanoparticles and their cluster self-organization and plasmin properties”

The National Institute for Materials Science of Japan is interested in KTU Institute of Materials science research in nanoparticles self-organization. Researchers from KTU Institute of Materials science visited Japan and prepared a proposal for LMT Lithuania–Japan scientific collaboration programme (The National Institute for Materials Science of Japan prepared similar proposal for Japan Society for the Promotion of Science). The main goal of this project is to attain a more effective photocatalysis. KTU Institute of Materials science is responsible for the self-organization of silver nanoparticles and their properties description. Self-organized silver nanoparticles should produce a more effective photocatalysis. If the project was successful, the Japanese would probably be interested in buying the equipment created by KTU Institute of Materials science and stereoscopic laser equipment created by UAB “Altechna” and “Light Conversion” Ltd.
5. Annex: Details on the Related Projects

SF funded project: "Fundamental investigation of surface relief and molecular forces influence on the self-organization of nanoparticles and nanofibers" (PARMO)

Project title: "Fundamental investigation of surface relief and molecular forces influence on the self-organization of nanoparticles and nanofibers" (PARMO)

Weblink: http://www.esparama.lt/projektas?id=39165&order=&page=&pgrsz=50 (in Lithuanian)

Beneficiary (name of the institution): Kaunas University of Technology

Type of institution: HEI

Budget:
- Total Investment: €423,627.49
- EU contribution: €422,890.68
- Other contributors: €736.81

SF/ESIF funding instrument: VP1-3.1-ŠMM-10-V Promotion of high level international research

Time frame of the project: 2013 10 01 – 2015 09 30

Main project objectives:
The main objective of the project was to implement high level nanoparticles and nanofibers manipulation research together with international partners. Also the goal was to strengthen the scientific and management competences of the researchers. As a result the project should strengthen the Institute’s research capacity (both human resources and infrastructure) and to find or strengthen links with international partners.

Specific goals (expected output)
- 2 trainings about innovation and research management in Tel Aviv and Stanford.
- Training and research about cleanroom technology in Syddansk Universitet.
- To create a new device for nanoparticles self-organization. To participate in trainings for researchers and for administrative staff.

Collaborative work within the project
Two doctoral researchers had two-four weeks training and research activities in Syddansk Universitet (Denmark). During these trainings researchers get acquainted and learned to work with cleanroom technology. This training were need because KTU built a cleanroom in “Santaka” valley. Also staff of Institute of Materials Science had training about innovation and research management. 1 person had training in Tel Aviv University and 2 persons had training in Stanford Research Institute. These training were about successful process of managing research, promoting entrepreneurship and innovation, commercialising products in the market.

Type of costs covered:
The breakdown of the costs, including training, consumables and salaries.
Main Results

- 1 person participated in a training about innovation and research management in Tel Aviv University.
- 2 persons participated in training about innovation and research management in Stanford Research Institute.
- 2 persons participated in 2-4 weeks training and research work with cleanroom technology in Syddansk Universitet (Denmark).
- New technology prototype (a device for nanoparticles self-organization) created and a patent application for Lithuanian patent office was submitted.
- 6 scientific publications were prepared:
- New scientific equipment purchased (a device for work with polymeric materials, a device for surface characteristics evaluation).
Difficulties encountered at the stage of drafting the proposal
The interviewees encountered that the process of project selection was quite complex and difficult. The project selection procedure had a few rounds. The proposal had to be revised several times because of that. As a result, the evaluation process took very long and the Institute could not employ new researchers for this project until the project was awarded with a contract and lost one talented researcher, who was supposed to be employed for this project.

Concerns regarding the evaluation:
There were no concerns regarding the procedure of evaluation.

Difficulties during the implementation of the project
The interviewers specified that public procurement procedures took too long. As a result, a device for nanoparticles self-organization was completed only by the end of 2014. This resulted in a delay for submitting a patent application. This patent application is not submitted yet, but the Institute is planning to do it in a near future.

Facilitating mechanisms during the draft proposal/ implementation
Interviewees identified a number of facilitating mechanisms:

- First, the administration of KTU provided project with the accountant who was responsible for the financial part of the project and was managing the financial paperwork. Also the Innovation and Entrepreneurship Centre of KTU organized the trainings in Tel Aviv and Stanford Research Institute.
- Second, the respondents believed that new and innovative research activities that have not been implemented in Lithuania before could have been the main strength of the proposal to become successful.
- Third, according to respondents, Lithuania is too small to be competitive in all science fields and does not have enough resources to fund all science fields. As a result, Lithuania should stick to Smart Specialisation priorities. Also, the Smart Specialization documents are written for the specific institutions (e.g. support for lasers is planned around the Vilnius University\(^2\)). The policy makers should have a broader view and try to integrate all potential performers in the field. Also, successful project in the perspective fields should be financed continuously. When the perspective field is identified it needs a stable investment to attract researchers and to develop. It is very difficult to do it without stable funding.
- Fourth, SF/ESIF overall are seen as great opportunity to strengthen the research capacities.

\(^2\) NB: this is an opinion of the interviewee, which does not necessarily correspond to the real situation.
**HORIZON 2020 FUNDING: “FUN”**

**Name of the Horizon 2020 Proposal:** “Boosting the scientific excellence and innovation capacity in novel Functional Nano composites of Kaunas University of Technology and its Twinning partners” (FUN)


**Project reference:** n/a

**Beneficiary:** Kaunas University of Technology

**Type of institution:** HEI

**Budget:** Too early to say, the project has not been started and the contract has not been awarded yet.

**FP funding instrument**
- Funding scheme: Twinning
- Subprogram: n/a

**Time frame of the project:** The application was submitted on the 7th of May 2015. The planned time frame of the project is 36 months.

**Main project objectives**

The main idea of twinning projects is to find partners in Europe who work in the same fields and share good practices, learn from each other and to foster long-term relationships. The Institute of Materials Science is expecting to broaden the scope of their research. Also, the Institute is hoping that other research institutions in Europe will use their device for nanoparticles self-organization.

**Specific goals (expected output)**
- Seminars and conferences in Lithuania, Denmark, Germany and Sweden.
- Research activities with project partners in Lithuania, Denmark, Germany and Sweden.
- The Institute researcher’s traineeships in Denmark, Germany and Sweden.
- Researchers from project partner institutions traineeships in Lithuania.

**Collaborative work within the project:**

Project partners:
- Christian-Albrechts-Universität zu Kiel (Germany)
- Syddansk Universitet (Denmark)
- Kungliga Tekniska högskolan (Sweden)

**Type of costs covered:**
- Seminars;
- Conferences;
- Research activities;
- Trips;
- Salaries.

**Main Results (expected)**
- Strengthened capacities of the Institute;
- A device for nanoparticles self-organization will be used by partners from Europe;
- New partners for further research;
- Successful seminars and conferences;
- The scope of their research broadened.

**Difficulties encountered at the stage of proposal drafting**
The interviewees did not encounter any difficulties at the stage of proposal drafting.

**Concerns regarding the evaluation:**
Too early to say, the project has not been evaluated.

**Difficulties during the implementation of the work:**
Too early to say, the project has not been started and the contract has not been awarded yet.

**Facilitating mechanisms during the draft proposal/ project implementation**
The KTU has a contract with a consultancy company, which helps the Institute to prepare the proposal.

**Other push – pull factors that may affect the R&I performers in applying/ being successful in FP calls**
Respondents mentioned that through ERDF projects a lot of infrastructure was upgraded in Lithuania. This enables R&I performers to compete on European level (e.g. the cleanroom was constructed in “Santaka” valley. This room was necessary in order to participate in projects with international partners and in some cases not having a cleanroom prevented Institute of Materials Science to participate in international projects). Furthermore, scientific interest and motivation are very important factors. The NCP’s and Government’s support is secondary factor. It is impossible to force R&I performers to participate in international projects.

**Which were the strengths of the proposal to become successful**
It is not known yet whether the proposal will be successful.

**Suggestions to policy makers to facilitate the participation of national R&I performers in H2020**
According to the interviewee, the key to effective synergies between ESIF and Horizon 2020 and successful participation in Horizon 2020 is systemic strengthening of research capacity in the priority R&D fields. Lithuania is too small to be competitive in all R&D fields and does not have substantial resources to fund all R&D fields. As a result, Lithuania should stick to Smart Specialisation priorities. The policy makers should have a broader view and try to integrate all potential R&D performers in the field. Also, successful projects in the perspective fields should be financed continuously. When the perspective field is identified it needs a stable investment to attract researchers and to develop. It is very difficult to do it without stable funding.

**Advise to R&I performers willing to apply**
It is very important to evaluate the opportunities to write a successful proposal. The competition differs in different Horizon calls. R&I performers in Lithuania should participate in the calls where the competition is lower (e.g. twinning calls, calls SMEs collaborative work with PROs). R&I performer should participate in a high competition call only if it has European level capacities.