



**SUCCESSFUL PROJECTS
OF CLUSTER ORGANIZATIONS
IN THE CZECH REPUBLIC**

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Preface

It is not long ago that the word ‘cluster’ was certainly a word not well-known and perhaps somewhat mysterious to some people in the Czech Republic, if not a word completely unknown. There is actually nothing strange about that. The very concept of a cluster in which companies should closely cooperate while competing with each other is strange at first and perhaps even hard to believe for some of us. Yet it is possible. This is evidenced by this catalogue of successful projects implemented by cluster organizations in the Czech Republic. The term ‘cluster’ is not a new concept in the Czech Republic now, and the cluster situation has changed significantly. Owing to the support of the Ministry of Industry and Trade, CzechInvest, individual regions, the Technology Centre of the Czech Academy of Sciences, the National Cluster Association and some other institutions, the innovation network concept has been gradually promoted and the clusters represent important elements of innovative infrastructure and tools for increasing competitiveness and economic development today. The clusters are part of policies and strategic documents at European, national and regional level. Successful clusters are the carriers of remarkable projects. Gradually, Czech clusters are beginning to engage in international networks and projects or creating projects with international reach. It is becoming increasingly clear that the ability of a cluster to implement significant joint projects is an objective measure that distinguishes successful clusters from less successful and unsuccessful clusters. We can say that this ability forms and defines a successful cluster. In spite of the support that the cluster concept receives today and the amount of professional literature published on the subject, a similar publication on the real results of cluster organizations in the Czech Republic has not yet been published. One of our objectives is to fill this gap. The main aim of this publication is to provide inspiration to potential, emerging and functioning clusters and to allow the transfer of good practice, experience and knowledge with the implementation of cluster projects. Our goal is to create the foundation for a system platform – a practical tool for sharing knowledge, experience, ideas and good practice in cluster projects and cluster development. I am glad that there are a growing number of successful clusters, and I would very much like our initiative to contribute to the further development of cluster organizations and their projects and not only in the Central Bohemia Region.

Jaroslava Pokorná Jermanová
Governor of the Central Bohemia Region

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Introduction

Professor Michael E. Porter defines (1998, p. 213)¹ a cluster as 'a geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate.' CzechInvest defines a cluster as 'a geographically concentrated group of independent companies and associated institutions in a particular field that compete but also co-operate with each other and the links of which have the potential to consolidate and increase their competitiveness. The participating companies are competing with each other, but they are also forced to solve a number of similar problems (employee training, access to the same suppliers, cooperation with research and development capacities, insufficient research resources, etc.). By working together in these fields, they can overcome many of their limitations and gain a competitive advantage that is difficult to imitate. This is a versatile partnership of companies, universities and regional institutions, which has a number of benefits for all its members'. The basic principle of cluster business cooperation is to implement joint projects through a cluster organization. It has the legal classification and management to achieve the necessary results of the joint projects of its members.

The European Union Structural Funds, namely programmes managed by the Ministry of Industry and Trade (MIT), have contributed and contribute to the systematic development of the cluster concept in the Czech Republic. The most important financial resource for clusters and cluster initiatives is the Operational Programme Entrepreneurship and Innovations for Competitiveness (OPEIC, 2014–2020), namely the Cooperation – Cluster Programme under the Structural Funds. It was the Operational Programme Enterprise and Innovation (OPEI, 2007–2013) and the Operational Programme Industry and Enterprise (OPIE, 2004–2006) in the national calls announced by other ministries to address education, employment or research infrastructure, etc., as well as into European calls, such as cross-border, interregional and crucial pan-European programmes, such as HORIZON 2020 (The EU Framework Programme for Research and Innovation, 2014–2020) or COSME.

¹ Porter, M. E. (1998): *On Competition, Updated and Expanded Edition*, Boston, Harvard Business Press.

Types of Cluster Projects

Cluster organization projects can be divided into six strategic areas (see Figure 1) according to the activities typically performed by a cluster organization.

Figure 1 - Diagram of strategic areas of projects and cooperation of cluster organizations



Basic activities include the development of a cluster organization, its management and the services provided by it, including **networking** of member companies, mutual understanding, information sharing, business cooperation development, finding of new business opportunities and common interests. Quality projects implemented in this area can be a good inspiration for starting clusters. A key area for joint projects is **research, development and innovation** where companies and universities or research institutions enter into cooperation. The benefit of these projects is the interconnection of the requirements of companies with the competencies of researchers as well as the easier transfer of research results into practice. At other times, the priority issue is the **development of human resources** necessary to ensure the competitiveness of member companies and for further sustainability of a given sector. In many cases, these cluster projects have produced the necessary results for their member companies in the form of graduates prepared for specific jobs and other specialists, especially in technical fields. Another important area of cooperation of companies in a cluster is **marketing** – creating visibility not only of the industry leaders but also of the small and territorially disadvantaged companies. The possibility of appearing in a cluster catalogue or having a representation at a major fair is a great asset to projects with this focus, especially for smaller cluster member companies. **Internationalization** is a crucial area for clusters, which has an extraordinary influence on the development of the entire member base, whether by establishing cooperation with clusters from other countries and mutual learning or by creating the conditions for the new foreign business activities of its members. An important area of cluster companies' cooperation is also **policy influencing** – conducting a dialogue between industry, scientific community and government authorities, and promoting common interests in a variety of areas (conceptual, legislative, economic, etc.). Cluster projects can also intervene in more strategic areas. The implementation of activities by individual clusters differs in practice and depends, for example, on the strategy and objectives of a cluster, the needs of its members, etc.

Project Name: ATOMEX₄ENERGY

Cluster Name/Project Implementer: ATOMEX GROUP

Contact: www.atomex.cz

Cluster Location: Central Bohemia Region, Benešov

Project Objectives:

The project objective was to bring together significant Czech manufacturing, commercial and technical companies with experience in the production and supply of equipment for power engineering, including nuclear engineering, petrochemicals and ecology. The implementation of joint projects was aimed at enhancing the competitiveness of individual cluster members on domestic and foreign markets in cooperation with the research and development and tertiary spheres. The intention was also to create a stronger base for a supply system in which engineering and supply companies provide equipment and construction of domestic and export investment units. The project objective was also to increase the reliability and efficiency of the designed equipment, central data storing and recording and sharing them effectively with all members of the cluster.

A Brief Introduction of the Project and Its Contributions:

The project consists of 8 sub-projects which deal with the development and production of hermetic closures, including the development of special seals for nuclear reactors. To increase the reliability of energy machines and industrial technologies, an inter-company testing laboratory was built. The inter-company testing laboratory at Benešov is shown in Figure 1. Vocational trainings took place and a supplier quality manual for nuclear power plants was prepared. Part of the project was joint marketing support for cluster members, including joint participation in specialized trade shows. Shared infrastructure was built and development in the field of thermal calculations of power equipment was carried out in computational centres equipped with modern technology. To ensure the high output quality of cluster member products, a mobile measuring station was built to perform dimensional inspections of products and parts with high dimensional accuracy requirements. The acquisition of the mobile station also brings substantial savings in the costs of transporting large-scale products to a stationary measuring station. A measurement arm – part of the mobile measuring station in Žďár nad Sázavou facility – is



in Figure 2. The project was implemented in the period of 01/2011–06/2014. A phase of the so-called sustainability period of the project took place until 30 June 2017.

Budget/Costs of the Project and How It Is Financed:

The project was implemented with financial support from the Operational Programme Enterprise and Innovation, the COOPERATION – Clusters, Call II. Total project costs amounted to CZK 42 million, of which 40% were the resources of the cluster members, subsidy amount was 60%. The subsidy actually paid amounted to CZK 21.5 million.

Recommendations and Experience:

The project was implemented in the vast majority of sub-projects in line with the feasibility study. Two projects focusing on the safety of nuclear reactors (hermetic closures, reactor seals) were an exception as they had to be reworked following the disaster at the Fukushima nuclear power plant in Japan, and had to respond to the stricter security parameters for this energy sector. The implementation team had certain problems with additional tenders for equipment, such as inter-company testing laboratories where some items were not recognized by CzechInvest as justified due to non-compliance with the feasibility study. It is therefore advisable to specify very carefully the items of the investment or to ask the subsidy provider to update the feasibility study in the case of a specification change.



Project Name: Nanoprogres

Cluster Name/Project Implementer: Nanoprogress, z. s.

Contact: www.nanoprogress.eu

Cluster Location: Pardubice Region, Pardubice

Project Objectives:

The main objectives of the project were to propose a reproducible methodology for the preparation of ‘coaxial’ nanofibrous structures (core-shell type), to create a one-of-a-kind device for the preparation of coaxial nanofibrous structures and to test the use of these structures in biomedical and other industrial applications.

A Brief Introduction of the Project and Its Contributions:

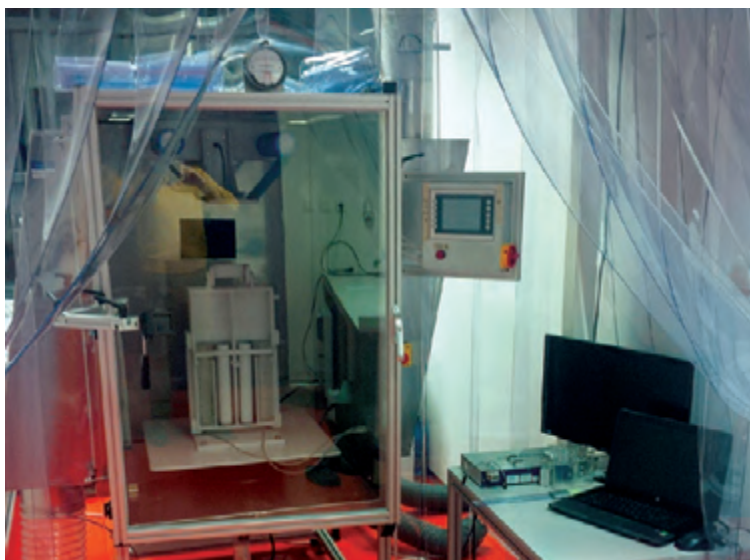
The Nanoprogress Cluster, in cooperation with its members, successfully prepared and implemented a project for the preparation and testing of innovative nanofibrous structures in 2010–2013. The following cluster members participated in the project: Technical University of Liberec; Audacio s.r.o.; Student Science, s.r.o.; Nanopharma, a.s.; Bioinova, s.r.o.; FARMAK MORAVIA, a.s.; CB Bio, s.r.o.; Sintex, a.s.; and KPL invest s.r.o. Within the project, a methodology for the reproducible preparation of core-shell nanofibres was designed and a unique device for coaxial electrostatic spinning of polymer solutions was constructed. One of the devices was also certified for Class A clean rooms (see the Figure). The produced coaxial nanostructures showed a high application potential in the field of biomedicine where their effect to accelerate the regeneration of bone and skin defects was successfully tested, and these functionalized nanostructures also proved to be effective systems for controlled dosing of biologically active substances. The successful implementation of the project and the unique results achieved in November 2015 led to the award by the Ministry of Industry and Trade and CzechInvest for the best business project of the year in the category Development of Company Cooperation – Clusters.

Budget/Costs of the Project and How It Is Financed:

The total costs of the project were CZK 90,860,000, and the project was supported by the Operational Programme Enterprise and Innovation with the amount of CZK 53,607,000 (59% of total costs) under the call Cooperation – Clusters Call I (Managing Authority of the OPEI – the Ministry of Industry and Trade of the Czech Republic), and CZK 37,253,000 (41% of total costs) was financed by the cluster and its members.

Recommendations and Experience:

A consistent and timely preparation of the project proved successful, and we consider it very important to allocate enough time and human resources to this preparation and to implement it in accordance with the specifications that are included in the project documentation. In preparing research project intentions, it is necessary to have an overview of the current events, challenges and trends associated with the project and very often consult these aspects with qualified experts. It is crucial to ensure administrative, financial and legal support either through our own efforts or externally for the successful preparation and implementation of the project. It is absolutely necessary to have a good and regular controlling of the project preparation and its implementation. A management team, steering board and board of directors are predominantly responsible for these purposes. In the course of implementation, the key is to carefully check the outputs submitted by contractual investigators because they often fail to fully meet the required parameters and need to be returned for completion. The preparation and implementation of the project verified the suitability and importance of a cluster model for overcoming barriers between companies, research institutions and universities, for the acquisition of external capital to finance research intentions and the development of innovation and competitiveness of the business sphere.



Project Name: CLUSTER BIOGAS

Cluster Name/Project Implementer: BIOKLASTR, z. s.

Contact: www.bioklastr.cz

Cluster Location: Central Bohemia Region, Červený Újezd

Project Objectives:

The project objective was to build a high-quality research workplace for the development of efficient operation of biogas stations and biogas use.

A Brief Introduction of the Project and Its Contributions:

Main project activities:

1. Creating a professional workplace with special experimental and analytical equipment
2. Optimization and automation of anaerobic digestion process
3. Pre-treatment of raw materials and use of new raw materials for biogas production
4. Increasing the energy efficiency of biogas stations, increasing the environmental contributions and improving the working environment
5. Biogas cleaning for natural gas quality and for use in fuel cells
6. Product development for regional production capacities

The main outputs of the project include a uniquely equipped professional laboratory workplace, expert studies on given topics, and empowerment of professionals. The outputs enabled the cluster and its members to better orient themselves in the industry and its development and to respond quickly to changes in the market. The built laboratory continues to provide biogas stations with a traffic efficiency monitoring service, thus generating its own income for its operation. The CLUSTER Biogas project was implemented in the period of 01/2011–12/2013. Further information is available on the project website: www.klastrbioplyn.cz

Budget/Costs of the Project and How It Is Financed:

The project was supported by the Operational Programme Enterprise and Innovation, and the call Cluster II. The rate of support for the implemented activities was 60%. Total project costs CZK 35,604,000; of which CZK 14,247,000 were member resources. The cluster members contributed to the project implementation with 40% of the total costs.

Recommendations and Experience:

The cluster platform was a great experience for individual members in communication and willingness to cooperate and share mutual expertise. It was the first experience with such a large project and research activity beyond each company's own development for most entities. Experience has shown us that a working cluster is dependent on the active approach of individual members and their willingness to cooperate. The key is a regular and effective communication of the cluster itself. A major problem was the development of the renewable energy sector during the project, especially biogas. The suppression of RES support and the negative image

among the general public also posed problems for the project. Experience has shown us the need to be flexible, to know the market well and to be able to react to its changes.



Project Name: Nanoprogress II.

Cluster Name/Project Implementer: Nanoprogress, z. s.

Contact: www.nanoprogress.eu

Cluster Location: Pardubice Region, Pardubice

Project Objectives:

The main objectives of the project were to accelerate and improve the regeneration of skin and bone tissue defects using coaxial nanofibrous structures and to design and construct a device for the preparation of combined composite nanofibrous structures.

A Brief Introduction of the Project and Its Contributions:

The Nanoprogress cluster together with its members successfully continued in researching nanofibrous structures with another project focused on dental and dermatological applications and combined composite nanostructures from 2012 to 2014. The following cluster members participated in the project: Audacio s.r.o.; CB Bio s.r.o.; Technical University of Liberec, Sintex a.s.; ArtiCell s.r.o, Nanopharma a.s.; CellMagel s.r.o; Eponacell s.r.o; Bioinova s.r.o.; and For Science s.r.o. Skin covers and bone fillings containing coaxial nanofibres with encapsulated growth factors were optimized during the project. Bone fillings were applied to relevant animal models, with the bone defect being restored in its entirety, thereby growing completely new, fully functional bone tissue. In addition, two functional samples of spinning devices using the alternating current (see the Figure) were designed and constructed during the project, which is a worldwide unique technology with significantly higher productivity as compared to standard DC technology. The developed AC spinning devices also enable very efficient sputtering of nanoparticles and microparticles between the produced nanofibres to form composite nanostructures with a wide application potential.

Budget/Costs of the Project and How It Is Financed:

The total costs of the project were CZK 55,686,000 and the project was supported by the Operational Programme Enterprise and Innovation with the amount of CZK 31,184,000 (56% of total costs) under the call Cooperation – Clusters Call II (Managing Authority of the OPEI – the Ministry of Industry and Trade of the Czech Republic), and CZK 24,502,000 (44% of total costs) was financed by the cluster and its members.

Recommendations and Experience:

Consistent and timely preparation of the project proved very successful. In preparing intentions for a research project, it is necessary to have knowledge of the current events, challenges and trends associated with the project. It is crucial to ensure administrative, financial and legal support either through our own efforts or externally for the successful preparation and implementation of the project. It is absolutely necessary to have proper and regular checks of the project preparation and its implementation. A management team, steering board and board of directors are predominantly responsible for these purposes. The management team cooperates on a daily basis and solves the operational tasks associated with the project. The steering committee meets every 14 days or once a month and, in addition to strategic tasks, it monitors the progress of implemented work and the fulfilment of the stated project objectives. The board of directors meets as required, but at least once a month, and controls the achievement of long-term strategic objectives and outputs of the project together with financial performance. In the course of implementation, the key is to carefully check the outputs submitted by contractual investigators because they often fail to fully meet the required parameters and need to be returned for completion.



Project Name: Development of New Purification Procedures of Recombinant Antigens for Functional Tests, Diagnostics and Vaccination

Cluster Name/Project Implementer: CzechBio - asociace biotechnologických společností ČR, z. s. p. o.
(Association of Biotech Companies Czech Republic)

Contact: www.czechbio.org

Cluster Location: Central Bohemia Region, Vestec

Project Objectives:

The objective of the joint research project was to develop new purification procedures of recombinant antigens for functional tests, diagnosis or vaccination.

A Brief Introduction of the Project and Its Contributions:

The objectives of the project were achieved mainly through the purchased device – Shimadzu LC-20AB liquid chromatograph. Purification and partial characterization of all proteins stated below and in the annexes were carried out using this device. This programme was consistently implemented thanks to the high-quality scientific and research cooperation of the cluster members. This cooperation made it possible to prepare sufficient quantities of a number of recombinant proteins with a defined degree of purity during the process. Such proteins include, for example: human fibroblast growth factor FGF2, Cavia porcellus interferon gamma, Bos taurus interferon gamma, Oryctolagus cuniculus interferon gamma, recombinant protein 60 kDa Chaperonin (Cpn) 1, recombinant human CRT protein, recombinant TRAIL (Homo sapiens) protein, recombinant Francisella (FTT) antigens, recombinant scFv antibodies, and other proteins. Synthetic gene sequences were designed for all of the purified proteins or the appropriate cDNA was prepared and the necessary expression vectors were generated to produce the recombinant proteins in the respective expression microorganisms. Specific purification procedures were developed and optimized for individual proteins to achieve the required amounts at the desired degree of purity. Project number 5.1 SPK01/022 was being solved from 1/2010 to 6/2013.

Budget/Costs of the Project and How It Is Financed:

Total costs of the project CZK 6,900,000, of which CZK 2,476,000 was paid by the association from its funds and CZK 4,424,000 was a subsidy from OPEI (measure 5.1 of the COOPERATION – Clusters programme), of which CZK 3,760,400 was covered by Structural Funds and 663,600 CZK from the state budget.

Recommendations and Experience:

As part of the project implementation, a six-party agreement on the use of the investment – liquid chromatograph and co-financing by the recipient was signed and was followed by other joint research projects. The project has already been submitted to the OP EIC/VOUCHER programme, and a project for the European SME Instrument is being prepared together with the Nanoprogres cluster. In these projects, we have learned to treat copyrights and rights to research results carefully and, above all, in advance.



Project Name: ALBAPRO - Algae-Bacteria Operation Processes for Wastewater Treatment and Biomass Production

Cluster Name/Project Implementer: CREA Hydro&Energy, z. s.

Contact: www.creacz.com

Cluster Location: South Moravian Region, Brno

Project Objectives:

The project objective was to verify wastewater treatment using microalgae and bacteria colonies in semi-operational conditions, with subsequent assessment of the biomass produced for biogas production.

A Brief Introduction of the Project and Its Contributions:

Laboratory-tested procedures in the target industries (paper and food industry, municipal wastewater treatment plants) were verified during the solution. The project was developed from January 2013 until December 2014. The project consortium was represented by partners Papiertechnische Stiftung (PTS, Project Coordinator), Hamburg Technical University (TUHH), CELABOR, CREA Hydro&Energy, z.s. and AQUA PROCON s.r.o. The achieved results of the project were used for the long-term operation and optimization of a pilot wastewater treatment unit from the food industry and municipal waste water using symbiotic microalgae and bacteria colonies. It is clear from the results that the technology utilizing microalgae and bacteria is suitable for wastewater treatment of the given waste water under the given conditions. Achieved pollution elimination efficiencies are comparable to those achieved by conventional medium-sized conventional mechanical and biological wastewater treatment plants. Besides publishing activity (article in an impacted magazine, articles in collections), the output of the project was a functional sample. The CREA Hydro&Energy, z.s. cluster is a holder of the European Cluster Excellence Initiative Gold Label Certificate.

Budget/Costs of the Project and How It Is Financed:

The project budget of the Czech partner was CZK 6,180,000. The project was implemented under the ERA-NET/CORNET programme. The participation of the Czech partner in the research activities was supported by the Operational Programme Enterprise and Innovation (Cooperation-Cluster programme, Managing Authority of the OPEI – the Ministry of Industry and Trade).

Recommendations and Experience:

When preparing the draft project, attention was paid to the draft and the consortium agreement. These two documents were crucial for a successful project solution.



Project Name: Testing and Experimental Centre of the Czech Pellets Cluster

Cluster Name/Project Implementer: Czech Pellets Cluster – Česká peleta, z. s. p. o.

Contact: www.ceska-peleta.cz/

Cluster Location: Central Bohemia Region, Dobřichovice

Project Objectives:

The main objective of the project is the implementation of a multifunctional cluster centre that responds to the needs of cluster members and external companies and individuals.

A Brief Introduction of the Project and Its Contributions:

Professional courses, demonstrations, professional qualification exams, fuel and heat source testing, verification of product compliance with standards, and scientific and research and innovation activities take place in the centre. The cluster centre (see the picture) was equipped and gradually completed by a shared infrastructure consisting of measuring and testing instruments, heat sources of various types, control elements, related networks and distribution systems, and service heating technology. The purpose of the cluster centre's joint project is to move the entire industry to a higher technological level, to move it to the level of Western technology, and to provide competitive advantages to cluster members. There are several fully equipped connection points with regulation, extractor hood and hot water circuit. Fully functional heating and power technology, represented by several types of solid fuel (mainly pellets and wood) stoves and boilers, heat pumps and solar thermal or photovoltaic systems are installed in the centre. There is also a lecture and training room in the cluster centre. This environment offers boilers and stoves manufacturers the opportunity to innovate their own products, make adjustments and prepare them for certification and compliance with standards. Heating companies can undergo training, courses and examinations in professional qualifications or for checks and inspections of heat sources. Another option is to perform circular and calibration tests or to share measuring instruments for the comprehensive certification of cluster members' products. The project is still under way and generates revenue for other cluster activities. The cluster centre is rebuilt almost every year according to the current needs of cluster members and legislative and technological development in the energy sector.

Budget/Costs of the Project and How It Is Financed:

Existing project costs are estimated to be CZK 2.5 million and the project is partly supported by the Operational Programme Enterprise and Innovation with the amount of CZK 1 million (40% of total costs) under the Cooperation – Clusters – Shared Infrastructure call, another CZK 1 million (40% of total costs) is financed by the cluster and its members and the remaining CZK 500,000 (20% of total costs) is financed by suppliers and producers of heating technology mostly in the form of loans. The project is still under way.

Recommendations and Experience:

Monitoring domestic and European legislation and trends and responding flexibly to the requirements of companies have proved successful during the implementation of the project, and we have obtained several authorizations as the first in the Czech Republic. It is necessary to provide a qualified network of co-workers and to engage in an effective promotion of the cluster centre offer and its results for the successful implementation of the project. Speed, economic efficiency and responsiveness to changes in external conditions are crucial when implementing the project. Pandering to the requirements of companies that prefer marketing to technical skill and quality has not proved successful. Problems have arisen during the project implementation as a result of being the first in doing some activities at home which are the classic 'labour pains' of innovative organizations. Patience, a good team of co-workers, and a manager with a vision who is able to finish the project are the only defence.



Project Name: Trigeneration

Cluster Name/Project Implementer: NÁRODNÍ ENERGETICKÝ KLASTR, z. s. (NATIONAL ENERGY CLUSTER)

Contact: www.energy-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The project objective was to verify the possibility of using technology in industrial premises for technological sampling, which are mostly constant during the day, month and year. Cold sampling with these parameters provides a great opportunity for using cogeneration production (combined heat and power production), the efficiency of which is considerably dependent on the uniformity of electricity consumption and, in particular, heat throughout the year.

A Brief Introduction of the Project and Its Contributions:

The development of experimental equipment for the production of electric energy, heat and cold and its subsequent use in a test operation stimulating standard conditions was a project of collective research. The cluster initiated the creation of an experimental workplace in the Zubří cluster facility for this purpose. The project is based on the installation of BOOMEL NATGAS cogeneration unit with the capacity of 180 kWe burning natural gas, with the produced electricity being consumed directly on the premises by the SBU PLASTICS customer belonging to the BRANO Group. Another product is thermal energy which is accumulated in the storage tank so that the operation is maximally effective. In addition, production is environmentally friendly. The accumulated thermal energy is gradually consumed throughout the day in an absorption cooler that transforms the thermal energy into cold, which is reused by the customer, based on a chemical process. The cold is used to cool plastic presses. The project was implemented in the period from 1 August 2009 to 31 July 2012.

Budget/Costs of the Project and How It Is Financed:

The total costs of this investment were CZK 6,981,000 without VAT. NEC received a subsidy from the Operational Programme Enterprise and Innovation (Cluster programme) in the amount of 60%, i.e. approx. CZK 4,190,000. The remaining part was funded by extraordinary membership fees.

Recommendations and Experience:

In implementing the purchase of this technology- and investment-demanding unit, the cluster fell behind as compared to the original schedule which led to the need to make a substantial change in the project – merging the stages from the original six to three. The test operation of the device did not produce the expected efficiencies due to the specific requirements of production technology. By installing the water purification and treatment system, the economic performance of the unit operation was improved. Currently, the trigeneration operation is bringing positive economic results in the form of sales of electricity and cold supply and revenues for electricity generation in the form of a green cogeneration bonus even after taking into account the costs of operating the unit.



Project Name: Czech-German Innovation Day in the STAR Region

Cluster Name/Project Implementer: STAR Research & Innovation Cluster, z. ú.

Contact: www.star-cluster.cz

Cluster Location: Central Bohemia Region, Dolní Břežany

Project Objectives:

Implementation of the Czech-German Innovation Day in the STAR Region for sharing experience in technology transfer.

A Brief Introduction of the Project and Its Contributions:

Under the auspices of the Czech Ambassador to Germany and the German Ambassador to the Czech Republic, the ‘Czech-German Innovation Day in the STAR Region’ took place in the STAR¹ region on 21 November 2016. The conference was held at the premises of the ELI Beamlines Laser Centre (see the picture) in Dolní Břežany in the Central Bohemia Region. The main theme of the event was to share experience in the field of technology transfer from scientific institutions to industrial enterprises. The issue of synergy effects of investment in science and research for the development of the region was discussed. Speakers from leading German research organizations – Fraunhofer Institut and Max Planck Institute - took part in the event. A representative of the Berlin-Brandenburg region presented the potential of grouping research institutes, universities and companies into clusters. Part of the event was a panel discussion of representatives from Czech industry and the subsequent networking of the conference participants. Clustering is a widely used form of cooperation between the research community and industry in Germany and it is also financially supported by the public sector. The main benefit of the event was the sharing of German experience that can be applied in the STAR region. The event will be followed by the introduction of research institutions and companies from the STAR region in field-oriented events in Germany. Partners of the event: Central Bohemia Region, CzechInvest, Confederation of Industry of the Czech Republic, ELI Beamlines, HiLASE, Czech-German Chamber of Commerce and Industry, SIC, UnicreditBank. *1Note: STAR (Science and Technology Advanced Region) – a region on the axis of the municipalities of Dolní Břežany – Vestec – Zlatníky Hodkovice, which develops around the major research centres ELI Beamlines, HiLASE and BIOCEV in the Central Bohemia Region.*

Budget/Costs of the Project and How It Is Financed:

The event was sponsored by the Central Bohemia Region and CzechInvest.

Recommendations and Experience:

The cluster will continue to organize similar events and innovation days to support the growing interest of the application sphere in research and development outcomes of academic institutions in the STAR region, networking and cooperation in the development and implementation of joint projects.



Project Name: Research and Innovation Centre

Cluster Name/Project Implementer: NÁRODNÍ DŘEVAŘSKÝ KLASTR, z. s.
(NATIONAL WOOD PROCESSING CLUSTER)

Contact: www.wood-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The main objective of the project was to build a research facility for the long-term monitoring and evaluation of physical and technical properties of structures and indoor environment of the entire building under real external conditions.

A Brief Introduction of the Project and Its Contributions:

The Research and Innovation Centre was built on the premises of the Technical University of Ostrava based on light wood prefabrication and symbolizes the interconnection of science, research and education with the innovative tasks of the cluster and its members. The project of building the facility was subsequently extended by the intelligent building management system with the possibility of its further testing. The building has three basic functions: it is used for long-term research and monitoring of the building, as a unique teaching aid built on a 1:1 scale for the needs of students and teachers of secondary schools and universities, and as a training centre for training both the professional and non-professional public in the field of building structures and wooden structures. The project was implemented in the period from 1 January 2011 to 31 December 2012. Project website: www.vyzkumneinovacnicentrum.cz

Budget/Costs of the Project and How It Is Financed:

The total costs of building and equipping the facility were CZK 8,339,000 without VAT. The funds were partly covered by a grant of CZK 5 million from the Operational Programme Enterprise and Innovation, programme Training Centres. The remaining part up to the total costs was funded by extraordinary membership fees.

Recommendations and Experience:

When preparing a business plan, it is necessary to plan a schedule for the project implementation with sufficient time reserve, considering the possible extension of expected deadlines needed for issuance of approving opinions and permits of the relevant state authorities or statements in compliance with valid Czech legislation (building permit, felling permit) and force majeure circumstances (weather changes). During the implementation of the project, these reasons caused changes in the work schedule in the business plan and subsequently a change of procedure in a decision to award subsidies.



Project Name: MOBILITY 3D

Cluster Name/Project Implementer: EWIC (Energetic and Water Innovation Cluster) and HTI Cluster (Hi-Tech Innovation Cluster)

Contact: www.ewic.eu, www.hticcluster.eu

Cluster Location: EWIC – Central Bohemia Region, Kolín; HTI – Pardubice Region, Pardubice

Project Objectives:

The aim of the project is to develop sustainable urban mobility in 3 dimensions/areas: 1. regional development (competitiveness and employment); 2. innovative and scientific and technological development (low-carbon technologies, ICT solutions for setting and optimizing processes); 3. environmental sustainability (low-emission urban and suburban mobility with a forward-looking transition to zero-emission mobility - by 2018). The presented project was prepared as an innovative commercial basis for other follow-up projects (transport of handicapped persons/low-emission transport of consignments and supplies).

A Brief Introduction of the Project and Its Contributions:

The main partners and implementers of the Mobility 3D project, the EWIC (technical part) and HTI (operation and marketing) clusters, are based on two main project partners - the Faculty of Electrical Engineering and Informatics of the University of Pardubice (development and optimization of IT systems) and the Secondary Automotive School Holic (technical solutions for CNG and electric vehicles and recharging/filling stations). The project activities include the development and innovation of management processes and ICT systems, the introduction of low carbon technologies and marketing. The main output of the project is a functional business plan consisting in the operation of taxis and contracting transport by purchased low-emission vehicles and controlled by an intelligent management and planning system. This output of the project generates income for other cluster activities. The second output of the project is a functional basis for the further development of 'clean' mobility in the form of electric vehicles (solutions in followed-up projects). Project preparation: 01-06/2016, project implementation: 07-11/2016, pilot operation/commercial phase: Kolín from 11/2016, Pardubice from 12/2016. The project commercialization and PR include, among other things, the website <http://www.taxigt.cz/> and Facebook pages <https://www.facebook.com/taxiGT.Kolin/> and <https://www.facebook.com/taxiGT.Pardubice/>. Project outputs confirm the validity of the proposed business model. The project commercial success enables both clusters to move in the area of excellence and provides them with valuable experience for other innovative projects. Without these outputs, the development of both clusters would be slower (higher reliance on external resources, lack of necessary references). Motivating members and R&D



institutions for other projects would be more demanding. Success in the preparation, implementation and completion of the project and the launch of a full commercial phase confirmed that partners are more interested in innovation in faster and commercially-prepared projects, which is very important for the initial selection of projects, especially for emerging or developing innovation platforms.

Budget/Costs of the Project and How It Is Financed:

CZK 18 million (80% loans + 20% own sources). The project will be followed by further development projects (Mobility Plus and eCargo). The total budget of these expansion projects is CZK 36 million (the envisaged resources from the OP EIC/IROP subsidies amount to CZK 18 million).

Recommendations and Experience:

The original project was built on clean, zero-emission technology, which proved to be difficult to realize due to a long commercialization period. Dividing the original project into more independent projects (currently 3), starting with the commercially most dynamic plan, and not developing our own systems in the first stage but buying ready-made partial solutions proved successful. Not everything needs to be developed, and certainly not at the beginning.

Project Name: Disintegration Apparatus

Cluster Name/Project Implementer: Plastikářský klastr, z. s.
(Plastics Cluster)

Contact: www.plastr.cz

Cluster Location: Zlín Region, Zlín

Project Objectives:

The priority objective of the project was the development of technology for the processing of heterogeneous plastic wastes and their modification into a form that can be used for filling plastics.

A Brief Introduction of the Project and Its Contributions:

The output of the project was a pilot semi-operational 'Disintegration Apparatus' in the first phase, the testing and verification of which was followed by installing the production equipment (see the picture) in the testing operation at the cluster 'Centre for Modelling of Plastic Products'. This high-speed mill, which was originally developed for grinding mixed plastic waste, provides very fine milling. Milling inorganic waste (e.g. slate) or organic waste (e.g. bran) was also successfully tested when verifying the operating parameters. The machine operates at a speed range of 800-8500 rpm. The performance depends on the properties of milled waste. For example, it is approx. 300 kg/hour for milling cable waste. Of course, possible applications of obtained secondary raw materials in the processing of modified plastics developed simultaneously thanks to the equipment obtained. The project was implemented from 2014 to 2015. At present, the technology is the subject of intellectual property protection. The project was solved at the Plastics Cluster ('Plastr') which was founded in February 2006 and is thus one of the first clusters established in the Czech Republic. The cluster was awarded the Bronze Label of the European Cluster Excellence Initiative (ECEI). It was included in the category of excellent clusters as part of the evaluation of Czech clusters. It is a member of EuPC, the European Plastics Converters.

Budget/Costs of the Project and How It Is Financed:

The total costs of installed semi-operational and operational apparatus amounted to CZK 5,674,000. The costs were paid by Plastr member companies and by subsidies from the Operational Programme Enterprise and Innovation (OPEI – Cooperation – Clusters) which accounted for approximately 60% of the eligible costs. The total eligible costs of the project were CZK 4,718,000.

Recommendations and Experience:

The project described is a characteristic project for clusters with a horizontal structure. Plastr is one of these and its member companies are mostly plastics converters, so they can compete with each other. That is why we need to look for activities that will not collide with a block of competition between companies to meet the motto of Plastr: 'Plastr is an association of those who know each other, and even though they might compete, they want to cooperate because they know they will benefit from it!'



This recommendation was fulfilled by the fact that the companies producing waste have acquired unique technology for their refining and thus new markets; on the contrary, the companies that can process the appreciated waste have acquired new secondary raw materials. Interesting experience is also the interdisciplinary focus of the new technology as plastics processors were given the opportunity to use the new apparatus for the so-called NF (natural fillers) production, whether of organic or inorganic origin, which not only contributes to the reduction of material costs in the processing of plastics, but it also has positive environmental impacts.

Project Name: Support of Science, Research and Innovation for the Development of Industrial Safety in the Czech Republic

Cluster Name/Project Implementer: Bezpečnostně technologický klastr, z. s.
(Safety & Security Technology Cluster)

Contact: www.btklastr.cz

Cluster Location: Moravian-Silesian Region, Ostrava

Project Objectives:

The project objective was to build a mobile measuring station (measuring vehicle) which allows measuring the occurrence and value of imissions in order to identify imission (emission) sources in relation to the safety and hygiene of industry in the Moravian-Silesian Region. In the next part of the project, the aim was to develop a method for assessment of psychological stress at work in the context of development of this issue in the EU and existing needs in the Czech Republic. The aim of the activity was to create a system (programme and instruments) to measure the psychological stress of persons at exposed workplaces and to subsequently assess occupational and non-occupational impacts on this stress. Other important objectives included training in which cluster members were trained in the issue of industrial process hazards with a risk of explosive atmosphere, and the construction of the Expert Centre.

A Brief Introduction of the Project and Its Outputs:

The project was divided into three parts: 1) research and development (construction of a mobile measuring station to measure imission concentrations and construction of an expert workplace to evaluate psychophysiological stress in the working process); 2) training of the cluster members; and 3) construction of the Expert Centre. The output of the project was a mobile measuring laboratory which currently provides measurements of imission concentrations in an accredited mode for the state administration and private entities and which is also used for educational activities and enlightenment in the field of air pollution by local furnaces. The so-called Expert Centre was built as part of the project, providing risk prevention services and expertise for protecting the health and life of people, as well as property protection, legal and legislative services or the development of expert opinions, statements and expert reports in all areas of safety. Another output was the establishment of an expert workplace for assessing the psychological (physical) stress at work that will enable the cluster members and non-members to identify critical points of stress at work and to take appropriate measures based on them.

Budget/Costs of the Project and How It Is Financed:

The project was implemented from the Operational Programme Enterprise and Innovation (OPEI) from 1 February 2011 to 30 June 2013. The total budget of the project was CZK 19 million and a subsidy rate of 60% of eligible project costs. The co-funding of the project was shared by all cluster members; the research and development of cluster infrastructure especially by the VŠB – Technical University of Ostrava; VVUÚ, a.s.; Technické služby ochrany ovzduší Ostrava spol. s r. o. (Technical Services of Air Protection Ostrava); Centrum dopravního výzkumu, v. v. i. (Transport Research Centre); ENVIFORM, a.s.; RSBP spol. s r. o.; and others.

Recommendations and Experience:

When implementing the project, good cooperation and communication of all cluster members involved in the research team is important. Careful preparation of tenders is also very important; entrusting professionals with them in case of a large contract is advisable. It is necessary to meet the deadlines and the material content of



the project mentioned in the Feasibility Study and, last but not least, to actively communicate with the project manager of the subsidy provider. Pre-financing of the project is a pitfall in the implementation of ex-post funded projects.

Project Name: Study of Optimization of the Utility Properties of Textile Products Intended for Wellness & Spas

Cluster Name/Project Implementer: CLUTEX – klastr technické textilie, z. s. (Technical Textile Cluster)

Contact: www.clutex.cz

Cluster Location: Liberec Region, Liberec

Project Objectives:

The project objective was research and development in the field of utility properties of textiles for special applications. It was mainly the DRY in WET user comfort for wellness & spa. The main objective was to define the range of required properties to meet user comfort and to find optimum material composition with the possibility of using it in special binding of multi-warp loop fabrics.

A Brief Introduction of the Project and Its Contributions:

The main requirement for the investigator was to find available materials and the possibility of using technologies mainly in cluster member companies. The project implementation took place in the period from 2009 to 2011, using the professional potential of cluster members under the leadership of a team from the Faculty of Textile Engineering TU Liberec. The importance of the project lies not only in the solution of the project but also in the rapid implementation of its results not only in the production of special 2D fabric but also its subsequent use in new ready-made designs for wellness & spa clothing and market implementation. The resulting special fabric is protected by a utility model for the Czech Republic and the Germany. Clothes for children from this special fabric were awarded the QZ brand which demonstrates product health and suitability for children less than three years old.

Budget/Costs of the Project and How It Is Financed:

The total costs of the project were CZK 605,000. A subsidy from the Operational Programme Enterprise and Innovation (OPEI) of 60% of the eligible costs was provided for the project implementation.

Recommendations and Experience:

The solution and the implementation of the project showed the possibility of cooperation of research organizations and production companies within the cluster, from the idea to the final product. Based on licensing agreements, the fabric is produced in a cluster member company under the PROWELL protected name, and the main customers are other member companies with appropriate ready-made equipment.



Project Name: Support of Security Research for BTKlastr

Cluster Name/Project Implementer: Bezpečnostně technologický klastr, z. s.
(Safety & Security Technology Cluster)

Contact: www.btklastr.cz

Cluster Location: Moravian-Silesian Region, Ostrava

Project Objectives:

The project objective was to provide a comprehensive solution for the further development and long-term sustainability of BTKlastr, to increase the protection and safety of industrial plants, especially in the mechanical engineering sector, but also for critical infrastructure/European critical infrastructure elements, and to improve the security of record keeping and guarding of CI/ECI elements to increase the operational security of the Czech Republic and selected EU system and management units.

A Brief Introduction of the Project and Its Outputs:

The project was divided into three main parts: 1) building of the infrastructure for industrial research, development and innovation; 2) collective research and development; 3) internationalization and education. The output of the project investment was the construction of a Central Supervision, Alarm and Training Centre, a laboratory for testing and research of security locks and a technical platform for the research, development and operation of technical and information support system for the protection of critical infrastructure/European critical infrastructure. The Central Supervision, Alarm and Training Centre (CSATC) is a comprehensive research infrastructure that, in addition to research activities, provides specific outsourcing operational services to business entities, as well as training and education activities. New equipment for research, development and testing of new security technologies for guarding an industrial facility were purchased. At the same time, educational and training capacities (educational and training surveillance and alarm centre, training centre for security specialists – the Security Academy) are concentrated at the CSATC. As part of building the Security Lock Testing and Research Laboratory, the existing testing centre was retrofitted with state-of-the-art technologies for measuring, testing and researching the latest materials and security locking systems. The Critical Infrastructure/European Critical Infrastructure Technical and Information Support (CI/ECI) subproject dealt with the development of a new ICT monitoring system for the record keeping and protection of CI/ECI elements. Application software with a framework functional platform (ICT monitoring system) was developed in the form of a functional model. The R&D part of the project consisted of researching and developing a security technology integration system, critical infrastructure/European critical infrastructure technical and information support system and developing a new security lock with fire protection which was subsequently patented by the Industrial Property Office. The training of BTKlastr employees was also carried out and the Cluster Internationalization Strategy was prepared.

Budget/Costs of the Project and How It Is Financed:

The project was implemented from the Operational Programme Enterprise and Innovation (OPEI) from 1 January 2013 to 31 December 2014. The total project budget was CZK 69.5 million, and the investment amounted to CZK 20.5 million, the costs of industrial research and experimental development amounted to CZK 47 million, and the costs of internationalization and education amounted to CZK 2 million. The subsidy rate was 60% for industrial research, infrastructure and soft cluster development activities, and 45% for experimental development. Several cluster members cooperated on the project, it was mainly co-financed by NAM system, a. s., K2 atmitec s. r. o., and HOBES, spol. s r. o.



Recommendations and Experience:

Good cooperation, communication and coordination of activities is important when implementing the project; regular monthly meetings of individual project teams and coordination of their activities proved successful. It is also crucial to carefully prepare tenders and comply with the legislation and methodology of the subsidy provider. It is advisable to entrust professionals with this issue in case of large contracts. It is important to balance the material and financial content of the project during its preparation. Pre-financing of the project is a pitfall in the implementation of ex-post funded projects.

Project Name: Development of Cotton Warp Printing Technology for Textile Production with Original Patterns

Cluster Name/Project Implementer: CLUTEX – klastr technické textilie, z. s. (Technical Textile Cluster)

Contact: www.clutex.cz

Cluster Location: Liberec Region, Liberec

Project Objectives:

The project objective was the innovation of fabric pattern technology.

A Brief Introduction of the Project and Its Contributions:

Part of the project was also a subproject of pattern design for printing of cotton warps and pattern designs of jacquard fabrics. The patterning takes place in two phases – printing the cotton warp and then making jacquard fabric with another (or the same) pattern using the appropriate jacquard binding. When weaving a printed warp, blurred contours and a specific jacquard binding pattern are created on the fabric. The output is an original pattern with unrepeatable effects. Ten students from the Department of Design were involved in the project through one of the investigators – the Faculty of Textile Engineering TU Liberec. The output was about 30 designs in paper form, each of them being presented in three forms: 1. a pattern design for warp printing (designation P₁); 2. a patten design for jacquard fabric (designation T₁); 3. a final pattern that simulates alignment of the printed pattern with jacquard pattern (designation D₁). Two selected patterns were then tested in semi-operation of the pattern author. A great contribution of this part of the larger project solution was the mentioned involvement of the students and their connection with the industrial designer of selected patterns. It was one of the first steps of long-term cooperation not only between the cluster and the Faculty of Textile Engineering, but also between the Faculty and industrial partners within the cluster. The project was implemented from April to August 2014.

Budget/Costs of the Subproject and How It Is Financed:

The costs of the subproject were CZK 160,000; a subsidy of about 50% was provided for the implementation of the subproject under the ‘Cooperation – Clusters’ programme of the Operational Programme Enterprise and Innovation (OPEI).

Recommendations and Experience:

The experience with this project implementation validated the way it was started – cooperation with a university guarantees not only the expected highly qualified project solution, but also the possibility of involving students through the assignment of bachelor thesis or dissertation topics. It is possible to obtain completely original views on the assignment especially in the field of design, and the students have the opportunity to become acquainted with the entire process of design realization.



Project Name: Mobile Diagnostic Laboratory

Cluster Name/Project Implementer: NÁRODNÍ ENERGETICKÝ KLASTR, z. s. (NATIONAL ENERGY CLUSTER)

Contact: www.energy-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The project objective was to create a mobile diagnostic laboratory which would deal mainly with research in the area of renewable and secondary energy sources, the energy demand of equipment and diagnostics of combustion and gasification processes.

A Brief Introduction of the Project and Its Contributions:

The mobile diagnostic laboratory is the first joint project of the National Energy Cluster in history. This project was created in cooperation with the VŠB-TUO Energy Research Centre. Specific laboratory equipment for emission measurement of small and large energy sources located in the cluster's mobile laboratory (Mercedes Sprinter) was purchased. This laboratory is equipped with apparatus for continuous measurement of CO, NOX, SO₂ and TOC gaseous emissions, including equipment for collecting and adjusting the measured gas sample. In addition, the laboratory is equipped with analysers for measuring greenhouse gas emissions – CO₂, CH₄ and N₂O. The main focus of the project was to promote synergies between the energy sector and the industrial sector and to support the education for energy savings. The project was implemented in the period from 1 August 2009 to 31 July 2012.

Budget/Costs of the Project and How It Is Financed:

The total costs of acquisition of this investment amounted to CZK 6,750,000 without VAT. The cluster received a 60% subsidy from the Operational Programme Enterprise and Innovation (Cluster programme). Mercedes Sprinter was funded from the cluster's own sources.

Recommendations and Experience:

The main problem that occurred during the implementation of the project was the purchase of the Mercedes Sprinter. Since the vehicle was not an eligible expenditure for the project, the cluster had to secure its own means for the purchase, including the rebuilding of cargo space, in the amount of CZK 895,326 without VAT. This caused a delay in the planned project implementation schedule. It was necessary to request the subsidy provider to alter the schedule, but it did not affect the implementation of the planned activities and the fulfilment of the binding project indicators.



Project Name: Own Practice Centre

Cluster Name/Project Implementer: NÁRODNÍ DŘEVAŘSKÝ KLASTR, z. s.
(NATIONAL WOOD PROCESSING CLUSTER)

Contact: www.wood-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The main project objective was to extend and improve practical education with an emphasis on the needs of wood processing companies in the region.

A Brief Introduction of the Project and Its Contributions:

The significance and scope of practical teaching in the field of wood processing has been increasing sharply and, for this reason, cluster practice centres were established at three secondary schools in Ostrava, Hranice and Bystřice pod Hostýnem, which were equipped with material and modern wood treatment and processing equipment. Based on meetings and discussions among representatives of companies, schools and the cluster, a database of tasks for the students of each school was created. The tasks were focused on the development of students' professional qualifications, their skills and their ability to act independently so as to maximally meet the needs of a job provider. Before the end of the project implementation, an exhibition of students' work results took place at the Hranice Chateau, where the best processed wooden products were awarded. The project was implemented in the period from 1 September 2014 to 31 July 2015.

Budget/Costs of the Project and How It Is Financed:

The costs of the project implementation were CZK 6,990,000 and were fully covered by the Education for Competitiveness Operational Programme.

Recommendations and Experience:

The project implementation was difficult in terms of organizing individual planned key activities of the project, communication with partners and other cooperating parties. It was necessary to adapt the education to the students' schooling, the work possibilities of the teachers and the representatives of individual companies and the project schedule.



Project Name: World in Motion

Cluster Name/Project Implementer: Moravskoslezský automobilový klastr, z. s.
(Moravian-Silesian Automotive Cluster c. a.)

Contact: www.autoklastr.cz

Cluster Location: Moravian-Silesian Region, Ostrava

Project Objectives:

The project objective was to provide a complete methodical and practical support for the extension of the polytechnic education elements in pre-school facilities. In order to achieve the stated objective, a) a course for increasing the teaching skills and effective pedagogical work of teachers of kindergartens and primary schools; b) a module supplementary educational programme in polytechnic education with methodological support and effective fulfilment of the objectives of the framework educational programme; and c) traineeships and attendance, including the possibility of active participation of teachers in the educational process in pre-school facilities with the support of polytechnic education in the Czech Republic and abroad were implemented.

A Brief Introduction of the Project and Its Contributions:

The World in Motion project responds to the needs of preschool educators and offers complete methodological and practical support for the extension of polytechnic education elements in pre-school facilities. Directly following real, everyday situations, it fulfils the framework the educational programme for preschool education in the areas of Child and Their Psyche, Child and the World, Child and Society. In the Child and the World section, one of the outputs is the World in Motion module, divided into modules for movement on land, in air, and in water. These modules included the creation of a Kit4Kids wooden polytechnic kit. It develops the polytechnic thinking and manual skills of children aged 4 years and older. It allows creating transportation models in individual modules (cars, ships, and aircraft) according to the instructions or according to their own imagination. The Kit4Kids polytechnic kit is of constant interest even after the end of the project. Companies with a developed CSR culture buy the kit for kindergartens.

Budget/Costs of the Project and How It Is Financed:

The project was implemented with financial support from the Operational Programme Education for Competitiveness, Priority Axis 7.1. (OP EC, 2007–2013, programme in charge of the Ministry of Education, Youth and Sports). The total eligible costs of the project were CZK 2,132,000; the subsidy amount reached 100%.

Recommendations and Experience:

The project implementation encountered problems with unclear quoted sources in publications, especially images, such as a car or a boat. The cluster decided to prepare the project in cooperation with VŠB-TUO that would have a long-term positive influence on the development of polytechnic education at the kindergarten level. We succeeded in achieving the stated objective by close cooperation with university educators and



selected kindergartens that piloted the project. During the project implementation, the close cooperation of technicians with kindergarten methodologists that resulted in the development and implementation of the wooden polytechnic kit proved successful. The uniqueness of this kit is emphasized by not only the interest of kindergartens, but also the design model. The experience from this project implementation shows that it is possible to successfully stimulate creative technical thinking of children in kindergartens on the basis of cooperation between the cluster and educational institutions and universities.

Project Name: Energy Partnership

Cluster Name/Project Implementer: NÁRODNÍ ENERGETICKÝ KLASTR, z. s.
(NATIONAL ENERGY CLUSTER)

Contact: www.energy-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The main project objective was to promote cooperation and to create partnerships in the field of energy between universities (VŠB-TUO, Brno University of Technology) and members of the National Energy Cluster. The partnership was supported by the creation of a system of regular professional practices and short internships, interactive seminars, workshops, information materials and conferences with international participation.

A Brief Introduction of the Project and Its Contributions:

The target group of the project consisted of university students, academics and other education, research and development workers active in the field of energy. University students were involved in the project primarily by preparing their competency profiles, participating in interactive seminars, workshops and then in professional practice. They tried teamwork in groups for activities related to energy saving and energy use. The opportunity to try work directly on projects under the supervision of professional employees from companies was a great motivation for students. They also attended training courses, conferences and roundtables where they received valuable information and contacts from their potential employers' sphere. The system of trainings tailored to the target group is considered innovative and effective. Specific outputs in the form of joint projects of teamwork in the field are very few, which is due to the excessive isolation of institutions and technical disciplines, the lack of concepts of field development and the small experience of its participants in the creation of cooperation networks. This kind of cooperation allows for mutual communication and transfer of information from schools into practice and vice versa. The project was implemented in the period from 1 June 2012 to 31 May 2014.

Budget/Costs of the Project and How It Is Financed:

Total project costs amounted to CZK 20,231,000 and were fully financed from the Operational Programme Education for Competitiveness. NEC with the following partners was the beneficiary of the subsidy: VŠB-TUO, Brno University of Technology and Silesian Mechatronics.

Recommendations and Experience:

The project implementation was difficult in terms of organizing planned individual key activities of the project, communication with partners and other cooperating parties. 60 workers and lecturers were involved in the project, so proper coordination and preparation of the project team meetings was needed. Each of the key activities included several other sub-activities, creating a large number of seminars, workshops, courses with a large target group. Education had to be adapted to students' schooling, teachers' work possibilities, the production programme of cooperating companies, and the project schedule. During the project implementation,



14 tenders were held for the purchase of hardware, software, training courses, collections, etc., which required a thorough preparation of the tender dossier and the evaluation of individual tenders. The project was managed by an experienced project team which solved situations and problems at an operational level.

Project Name: AUTO ACADEMY

Cluster Name/Project Implementer: Moravskoslezský automobilový klastr, z. s.
(Moravian-Silesian Automotive Cluster c. a.)

Contact: www.autoklastr.cz

Cluster Location: Moravian-Silesian Region, Ostrava

Project Objectives:

The project objective was to improve the conditions for the teaching of technical disciplines and to develop key competencies of secondary school students through 4 learning modules (Lean Processes, Logistics, Leadership and Project Management) so that their integration into the working process was as simple as possible.

A Brief Introduction of the Project and Its Contributions:

The project not only improved the conditions for teaching technical disciplines, but also increased the qualifications of students and, last but not least, educators. The objective was mainly achieved through the following activities:

- Educating and coaching teachers directly by experts from practice
- Creating module programmes to support teaching, including their pilot verification
- Innovative approach to creating student materials
- Acquiring innovative aids and case studies
- Organizing excursions in partner companies

Project partners – Higher Vocational School, Vocational School and Secondary Training School, Kopřivnice, contributory organization; Vocational School and Secondary Training School of Business and Services, Jablunkov, Školní 416, contributory organization.

Budget/Costs of the Project and How It Is Financed:

The project was implemented with support from the Operational Programme Education for Competitiveness, Priority Axis 1 (OP EC, 2007–2013, programme in charge of the Ministry of Education, Youth and Sports). The total costs of the project were CZK 3,963,000; the subsidy amounted to 89.5% of the total costs.

Recommendations and Experience:

Close contact with selected secondary schools and leading automotive suppliers proved successful, which made it possible to precisely define the weaknesses in the knowledge of secondary school graduates. The project utilized the ‘an expert teaches a teacher and the teacher teaches a student’ approach which was implemented in practice by educating and coaching teachers directly by experts from experience, creating module programmes to support teaching, including their pilot verification, innovative approach to creating student materials and acquiring innovative aids and case studies. Positive experience was in the cooperation with secondary schools and their teachers. The novelty was that individual teachers developed textbooks for their school according to the electronic version of teaching materials. The project demonstrated the importance of the cluster organization that helped to overcome barriers between companies and secondary schools. The project supported cooperation between consulting companies, companies and secondary schools in the fields of innovation, leadership, project management, logistics and lean processes.



Project Name: e-Laboratory

Cluster Name/Project Implementer: CzechBio – asociace biotechnologických společností ČR, z. s. p. o.
(Association of Biotech Companies Czech Republic)

Contact: www.czechbio.org

Cluster Location: Central Bohemia Region, Vestec

Project Objectives:

Creating an e-Laboratory Internet database application.

A Brief Introduction of the Project and Its Contributions:

As part of the project, an Internet database application was created on the existing website with the logging of cluster members and users outside the CzechBio cluster with these modules: ‘Virtual Library’ with the possibility of full-text searching in the title and contents of all documents and creation of output report with summary of the most searched keywords and documents; ‘Devices and Services Exchange’ above the database of the offered devices and services with description, provider contacts, availability calendar and price for the cluster members and non-members. The database is supplemented by category searching in three levels of a hierarchical tree by entering the demand and requesting a deadline reservation. The menu dialog allows authorized users to insert and edit new items. Other modules are conceptually ready for implementation: ‘Job Supply and Demand’, ‘Supply and Demand of Joint Research Topics, Especially within the Framework of European and National R&D&I Support Programmes’. Users are assigned access rights by their category (cluster member/non-member, payer/non-payer, provider/user). Work with the e-Laboratory may be charged depending on the required service and user profile. The application is accessible from the cluster website: <http://www.czechbio.org/>

Budget/Costs of the Project and How It Is Financed:

CzechBio allocated CZK 100,000 to the basic development and test operation of the application from its budget.

Recommendations and Experience:

A user needs only a web browser (Explorer, Chrome, Opera, Firefox). A web server needs PHP module and SQL server. The system is open for further extension. The user interface is prepared in English language mutation and can be localized to Czech as needed.



Project Name: Comprehensive Telecommunication Solution

Cluster Name/Project Implementer: **NÁRODNÍ DŘEVAŘSKÝ KLASTR, z. s.**
(NATIONAL WOOD PROCESSING CLUSTER)

Contact: www.wood-cluster.cz

Cluster Location: Moravian-Silesian Region, Ostrava-Poruba

Project Objectives:

The project objective is to provide the cluster members with an advantageous purchase of telecommunication services.

A Brief Introduction of the Project and Its Contributions:

The National Wood Processing Cluster offers its members the possibility to purchase telecommunication services under substantially more favourable conditions than if they purchased the commodities themselves. Thanks to this project we have managed to get exclusive mobile and data plans. The result of the project is a framework contract that can be used by all members, partners and the cluster itself. Some mobile and data plans account for up to tens of per cent of savings of current prices. Apart from cost savings, the project managed to get extra care and support for the operator's customers. Currently, hundreds of mobile numbers are involved in the project, which makes us an important partner for the operator. The cluster has been implementing the project since 1 January 2008.

Budget/Costs of the Project and How It Is Financed:

The project implementation is solved in the framework of ensuring the operation and the usual agenda of the cluster. The project does not have its own costs.

Recommendations and Experience:

Mobile numbers of cluster members, as well as cooperating companies and their family members who can benefit from above-standard customer support and save up to 50% of costs have been gradually involved in the project. To maximize cost optimization, the private network mobile number set needs to be constantly updated and expanded. Organizing and implementing projects to bring cost savings to our members is one of the basic ideas of a cluster as an organization. Implementing joint purchases of different commodities and needs is currently very popular, and they bring enormous cost savings globally, which is why we would like to make further joint purchases in the future. The incentives for implementation include the joint purchase of office supplies, work equipment, energy, office equipment and more.



Project Name: Presentation of Czech Biotechnology

Cluster Name/Project Implementer: CzechBio - asociace biotechnologických společností ČR, z. s. p. o.
(Association of Biotech Companies Czech Republic)

Contact: www.czechbio.org

Cluster Location: Central Bohemia Region, Vestec

Project Objectives:

The objective of the joint participation of the CzechBio cluster in key biotechnology events is to acquire business partners and strengthen the knowledge of Czech biotechnology in the world.

A Brief Introduction of the Project and Its Contributions:

Since its foundation in 2008, CzechBio has been participating as an exhibitor at the world's largest and most prestigious BIO INTERNATIONAL CONVENTION in the United States. This event is regularly included in the list of the so-called 'Czech official participations' supported by the Ministry of Industry and Trade of the Czech Republic on a CzechBio proposal. The selection of Czech official participations in foreign trade fairs is carried out in accordance with the current Export Strategy of the Czech Republic for the period from 2012 to 2020. Active CzechBio presentations at international events: 2008 BIO INTERNATIONAL CONVENTION San Diego, 2009 BIO INTERNATIONAL CONVENTION Atlanta, 2010 BIO ASIA IDERABAD INDIA, 2010 BIO INTERNATIONAL CONVENTION Chicago 2010 BIO EUROPE MUNICH, 2011 BIO EUROPE MILANO, 2011 BIO CHINA PEKING, 2011 BIO INTERNATIONAL CONVENTION Washington, 2011 CPHI FRANKFURT, 2011 BIO FORUM LODZ, 2011 CPHI FRANKFURT, 2011 TECHNOLOGY DAYS CZECH REP., CZECHINVEST QUANG ZHOU, CHINA, 2011 TECHNOLOGY DAYS CZECH REP., CHICAGO, 2012 BIO FORUM BRNO, 2012 BIO INTERNATIONAL CONVENTION Boston, 2012 BIO CHINA SHANGHAI, 2012 POLUTEC LYON, 2013 BIO INTERNATIONAL CONVENTION Chicago, 2013 BIOTECH ČESKÉ BUDĚJOVICE (Oct 2013), 2014 BIO INTERNATIONAL CONVENTION San Diego, 2014 British Business days, Brno, 2015 Czech French Business days, 2015 BIO INTERNATIONAL CONVENTION Philadelphia, 2016 BIO INTERNATIONAL CONVENTION San Francisco, 2017 BIO INTERNATIONAL CONVENTION San Diego. The exceptional status of the Bio International Convention is evidenced by data from the last year (2016). The event was attended by over 1,800 exhibitors from the fields of biofuel, bioinformatics, biology, bio-production and bioprocessing, cell biology, chemistry, clinical studies, cloud computing, drug delivery, development and new drugs, genomics and genetics, medical materials and diagnostics, nanotechnology, personalized medicine, drug control, stem cells, therapeutics and vaccines. Hundreds of presentations of companies dominating biotechnological innovation, the world's best experts have hundreds of lectures in 18 sections. The number of bilateral trade negotiations increases every year, reaching 37,500 last year which represented an increase of 23% as compared to 2015. Every year the Ministry of Industry and Trade announces a selection procedure, the representatives of CzechInvest, the Ministry of Industry and Trade and CzechBio are in the commission.

Budget/Costs of the Project and How It Is Financed:

The Ministry of Industry and Trade pays the following for the Czech official participation at a foreign trade fair in the category of 'common exhibition': the exhibition space, the exhibition construction, the graphical concept of the exhibition, common areas in the exhibition, insurance, Wi-Fi for Internet connection and accompanying promotion. The exhibitor pays a registration fee (CZK 18,000 in 2017), the share of energy consumption in common areas, transport and accommodation of participants. CzechBio's participation costs are eligible expenditures for approved projects (formerly OPEI, now OP EIC/Cooperation); CzechBio's participation is 50 to 30%, which is then divided among the participating member companies.



Recommendations and Experience:

The Czech Republic was perceived as a country supporting innovative business sectors. Biotechnology and biomedicine, represented by CzechBio, is one of the world's most dynamic and most promising which has been proven by the fact that even the recent financial crisis did not hinder the growth of the biotech sector. CzechBio member companies have regularly been participating in this prestigious world event for the last ten years.

Project Name: Cluster Presentation at STYL Brno

Cluster Name/Project Implementer: CLUTEX – klastr technické textilie, z. s. (Technical Textile Cluster)

Contact: www.clutex.cz

Cluster Location: Liberec Region, Liberec

Project Objectives:

Ensuring the cluster presentation at the STYL Brno trade fair.

A Brief Introduction of the Project and Its Contributions:

The project is one of the first CLUTEX cluster projects. At a time when there was very little information about clusters in the Czech Republic and, on the contrary, a sufficient amount of negative information about the textile industry, the cluster members decided to combine the fulfilment of several objectives into one event. In February 2007, less than a year after the official establishment of the cluster, an exhibition was held at the STYL Trade Fair in Brno on an area of 3,000 meters, where a press conference on ‘Clusters in the Czech Republic’ could be attended, as well as several specialized seminars, parts of the exhibition devoted to individual types of technical textiles and individual stands of the cluster members. With the help of marketing experts at the Brno Fairs, the cluster and hence the Czech textile received attention in the press, radio and television. It was a breakthrough in the information so far – the public gained an idea of clusters and their possible contribution to events in the Czech Republic, some incorrect information about the state of Czech textiles at that time was corrected and it was obvious that Czech textile was alive, the newly created cluster had enough strength and ideas for the future and the cluster members were rewarded for their courage to fight not only for themselves but also for Czech textile and its further development.

Budget/Costs of the Project and How It Is Financed:

The total costs of the event exceeded CZK 3.5 million; a subsidy under the ‘Clusters’ programme of the Operational Programme Industry and Entrepreneurship (OPIE) was 75% of the eligible expenditures.

Recommendations and Experience:

The experience of this large event showed other clusters in the Czech Republic that it was possible to work together, CLUTEX Cluster and its members that they did not have to worry about a pre-financing of beneficial events. This conclusion was apparently also encouraging for the cluster and its members for the next ten years of activities so far. The cluster activities are now focused mainly on research and innovation, the cluster is positively evaluated not only in the Czech Republic but also abroad as a reliable partner in international projects.



Project Name: Introduction of ENplus Certification for Wood Pellets

Cluster Name/Project Implementer: Czech Pellets Cluster – Česká peleta, z. s. p. o.

Contact: www.ceska-peleta.cz

Cluster Location: Central Bohemia Region, Dobřichovice

Project Objectives:

The main project objective was the implementation of the international certification system ENplus in the Czech Republic, the introduction and promotion of this quality mark, including localization of international quality standards for shaped biofuels.

A Brief Introduction of the Project and Its Contributions:

Through the project, the cluster introduced the international ENplus quality mark, making the Czech Republic the first country of the former Eastern Bloc, which is registered to license high-quality pellets. The cluster members gained access to Western markets and have increased their exports by more than 200% since 2012. The cluster supports and extends the ENplus certification system in the Czech Republic and Slovakia and locates the standards for shaped biofuels. The ENplus certification guarantees the quality of wood pellets to protect all involved. A customer is guaranteed that the pellet complies with international standards and is delivered accordingly. Retailers are confident that they will deliver quality pellets. The pellet manufacturer may retrospectively submit a sample of production for any period surveyed to any inspector. And boiler and stove manufacturers can protect themselves against complaints when their boilers do not meet the promised parameters or are damaged due to the use of poor quality pellets. The certification means higher quality, not higher price. It does not have any extra costs for manufacturers or retailers. On the contrary, customers can choose between competing manufacturers who all guarantee the same quality of pellets. The project is self-financing and generates revenue for other cluster activities.

Budget/Costs of the Project and How It Is Financed:

This is an on-going project with a year-on-year budget. The budget reached CZK 280,000 in the first year (2012); it rose to 700,000 in 2016. The project is funded by the cluster, its members, fuel manufacturers and retailers, and foreign partners.

Recommendations and Experience:

When implementing the project, clear conditions and a transparent environment from the start proved successful. It was effective to be strict and not to provide certification without fully meeting all conditions in fundamental questions. It was necessary to provide international support and convince key market players to join the project for the successful project implementation. When implementing the project, it is crucial to strictly adhere to the rules and to be able to justify our own actions even to Western European partners. When implementing the project, it was not effective to wait for funding from public support, the situation developed too dynamically, and it was necessary to respond quickly to changes and market demands. During the implementation of the project, there were problems with fraudulent fuel suppliers and dealers, which are independently being solved continuously and systematically or within the global network of ENplus certification bodies.



Project Name: Founding of THE CZECH INDUSTRY COMPANY LIMITED Established in Hanoi (Vietnam)

Cluster Name/Project Implementer: Klast českých nábytkářů, družstvo (Cluster of Czech Cabinet Makers)

Contact: www.furniturecluster.cz

Cluster Location: South Moravian Region, Brno

Project Objectives:

The project objective was for Czech furniture makers to penetrate the supply-customer relations networks and the Southeast Asian markets with the main focus on Vietnam. The 'Asian' block is an integral part of the future comprehensive internationalization strategy of the Cluster of Czech Cabinet Makers, next to the 'European' block of international activities.

A Brief Introduction of the Project and Its Contributions:

THE CZECH INDUSTRY COMPANY LIMITED is a Czech cluster initiative founded by the Cluster of Czech Cabinet Makers and other Czech furniture companies in Vietnam at the end of 2014. Its main objective is to support the export of Czech cabinet makers to Vietnam and the ASEAN countries and to support the import of components for the furniture industry from Vietnam to the Czech Republic. The establishment of CIC in Vietnam is a culmination of a two-year project, 'Internationalization of CCCM in Southeast Asia', which was subsidized by the OPEI and was implemented in cooperation with Ministry of Industry and Trade of the Czech Republic and CzechInvest. The specific CIC business activities and entry to the Southeast Asian markets are consulted with another partner of the project, CzechTrade, particularly with the directors of the CzechTrade branches in Vietnam and China. Further business cooperation is agreed on with CzechTrade in Ho Chi Minh City where CIC is interested in realizing a correspondent branch. CIC is exceptional in that it is: the first cluster and purely Czech initiative of cabinet makers outside the EU which was founded in Vietnam by more Czech companies; CIC partners are 10 small and medium-sized Czech companies from the furniture industry; the company's capital is USD 1,430,000; the company is established in Vietnam as a fully foreign Czech entity without Vietnamese partners. Company address: Czech Industry Company Ltd., Hoang Linh Building, A2B Block, Duy Tan, Street, Dich Vong ward, Cau Giay district, Hanoi city. CIC office: Czech Industry Company Ltd., HNCC creative city, 14 tầng, 1 Lương Yên, Bạch Đằng, Hai Bà Trưng, Hà Nội.



Budget/Costs of the Project and How It Is Financed:

Total project costs were CZK 2,829,000. The project was co-financed by the Operational Programme Enterprise and Innovation: OPEI Clusters – Call II, registration number: 5.1 SPK02/027, project name: Cluster of Czech Cabinet Makers III. The subsidy rate was 50% of the eligible costs. The amount of the subsidy was CZK 1,414,500.

Recommendations and Experience:

CCCM, as the only cluster in the Czech Republic within the activities for establishing international cooperation, has implemented and established a foreign cluster initiative in Vietnam that works as a bridge to transfer technology, products and services to the ASEAN countries and back to the Czech Republic for Czech cabinet makers. The cluster initiative as a Vietnamese entity can be a member of ASEAN countries' associations and clusters and can thus fully focus on the development of the cluster internationalization activities in Southeast Asia. CCCM actively engages in Vietnam and helps the CCCM members and non-members to establish contacts, mediate negotiations, translate materials for exhibitions and meetings, issue visas, import goods, and take delivery at the customs office.



Project Name: AdPack

Cluster Name/Project Implementer: Nanoprogress, z. s.

Contact: www.nanoprogress.eu

Cluster Location: Pardubice Region, Pardubice

Project Objectives:

The main objective of the project is to strengthen cross-border cooperation and internationalization of SMEs across Europe and to support their entry to third markets. The most important specific objectives include a definition of relevant third markets, a promotion of SME visibility on a global scale, a preparation of a common internationalization strategy and an establishment of the European Strategic Cluster Partnership (ESCP) in the emerging smart packaging industry.

A Brief Introduction of the Project and Its Contributions:

The Nanoprogress cluster together with Packbridge, BNPT, InovCluster and Plastiwin clusters successfully won the international AdPack project in 2015. The project partners combine a variety of specific competencies to strengthen and innovate the value chain of the packaging industry. The intersectoral approach covers the areas of food, nanotechnology, plasma technology, new plastic materials and packaging industries. The project will establish a European Strategic Cluster Partnership that defines framework and mechanisms for cooperation and appropriate services to cluster members to reinforce innovation and promote their internationalization. The main contribution of the project is the development of international cooperation, the mapping of internationalization needs of small and medium-sized enterprises, the preparation of market analyses and the establishment of initial contacts for the development of cross-border trade in third countries. In addition to this project, Nanoprogress together with BNPT and other partners, also received funding from the COSME programme to improve cluster management by introducing a cluster excellence concept with a total budget of EUR 213,294 (CZK 5,763,000) where part of this cluster-reserved budget is EUR 43,367 (CZK 1,171,000).

Budget/Costs of the Project and How It Is Financed:

The total costs of this project are EUR 243,323 (CZK 6,574,000) where cluster costs represent EUR 41,212 (CZK 1,114,000), with 75% of these costs (CZK 835,000) being covered by the COSME programme under the COS-CLUSTER-2014-3-03 call, where the European Commission grants subsidy support, and 25% (CZK 278,000) is financed from the cluster's own sources.

Recommendations and Experience:

In preparing this project intention, it was crucial to have general knowledge of the cluster and other policies of the European Union, and to select suitable partners in a consortium with a good geographic coverage and focus in areas that do not compete with the cluster's focus but are complementary to achieve the best possible sustainable cooperation between partners and, in the case of cluster organizations, between their



companies and research institutions. Compared to domestic projects, the administrative burden associated with the preparation and implementation of this project was significantly lower and controlling it was easier. Control was conducted by the lead partner of the consortium. The project preparation and implementation verified that the European Strategic Cluster Partnerships were the ideal platform for strengthening cross-border inter-cluster cooperation, addressing the needs of SMEs, developing innovation in the European space and promoting entry to third, non-European markets.

Project Name: CluStrat, Boosting Innovation through New Cluster Concepts in Support of Emerging Issues and Cross-Sectoral Themes

Project Implementer: National Cluster Association

Contact: www.nca.cz

Cluster Location: Moravian-Silesian Region, Ostrava

Project Objectives:

The objective of the CluStrat project was to identify the gaps in perception and readiness for the European Union's social challenges (e.g. demographic changes, sustainable development, green economy), and then to open the innovative potential of individual countries to address them.

A Brief Introduction of the Project and Its Contributions:

A limited call for strategic projects was announced in the Operational Programme Transnational Cooperation Central Europe (OP CE) in mid-2010. The CluStrat project won the Innovation Facilitation across Central Europe priority and the Steinbeis-Europe-Zentrum (Steinbeis Innovation GmbH), a consulting company of the State Ministry for Finance and Economic Affairs of Baden-Württemberg, became its lead partner. The project was implemented between October 2011 and November 2014. The National Cluster Association (NCA) covering the development of cluster organizations at the national level and Business Development Agency of Karlovy Vary Region (BDA) in tandem with the Karlovy Vary Region (non-financial partner) representing the regional level were selected as the project partners for the Czech Republic. Overall, 17 financial partners from all eight Central European countries participated in the project. The other six associate partners were involved as observers in the project (the consortium of the project and other information can be found at www.clustrat.eu). Due to the defined project objectives, its main tools included a strategic dialogue with representatives of the public and business sphere at regional, national and international levels and expert workshops where the results of each project stage were discussed. These included a mapping of emerging fields (active aging, sustainable mobility, and green economy) in partner regions, a survey of the level of development and support of cross-sector themes (internationalization, gender in innovation, and knowledge and technology transfer) and recommendations on appropriate measures to improve innovation support policy through cluster concepts of each partner country. As part of the pilot NCA actions, the cluster concept was transferred to sectors where clusters had not yet been initiated in the Czech Republic. The first pilot action targeted the social economy sector. The result was an establishment of the cluster organization SINEC – Cluster of Social Innovations and Enterprises in the Moravian-Silesian Region. The second pilot action launched a cluster initiative in the Vysočina Region focusing on the protection and management of water, land and landscapes for sustainable agriculture. The third pilot NCA action was creating conditions for networking in the field of new concepts of zero-energy buildings.

Budget/Costs of the Project and How It Is Financed:

The budget for the project activities was EUR 3.7 million (of which EUR 2.9 million from ERDF), which is about CZK 100 million (of which approx. CZK 78 million from ERDF). The NCA budget was EUR 206,000, which is about CZK 5.5 million. Given the need for co-financing of 15% of its budget, NCA concluded a credit agreement with UniCredit Bank to pre-finance the project due to the long payment periods by the managing authority.

Recommendations and Experience:

The CluStrat project enabled the launch of innovative projects using the so-called emerging fields and cross-sector themes to address the major issues which the society faces. The project results are a great inspiration for cluster cooperation across Europe. The CluStrat project is presented as an example of this cooperation in the European Commission publication 'Smart Guide to Cluster Policy'.

Project Name: Main R&D Topics of the Glass Industry for the National Policy of Research, Development and Innovation of the Czech Republic for 2016–2020

Cluster Name/Project Implementer: Czech Art of Glass – Czech and Moravian Glass Cluster

Contact: www.CzechArtOfGlass.com/klastr

Cluster Location: Central Bohemia Region, Přebram

Project Objectives:

Definition of main R&D topics of the glass industry for the National Policy of Research, Development and Innovation of the Czech Republic for 2016–2020.

A Brief Introduction of the Project and Its Contributions:

The mapping, creation and evaluation of the main R&D topics across the glass industry was aimed at bringing the interests and possibilities of glassworks and R&D workplaces closer together, and subsequently evaluating the research to promote the main topics in the grant calls of grant providers, namely the Czech Technology Agency, the Czech Science Foundation and the Czech Academy of Sciences, where glass research projects had minimum representation. The central tool of the study was a questionnaire survey and a personal discussion of the topics and interests of glassworks. The main topics were successfully implemented in the National Policy for Research, Development and Innovation of the Czech Republic for 2016-2020. The project partner was the Office of the Government of the Czech Republic; University of Chemistry and Technology Prague; Tomas Bata University Zlín, Faculty of Multimedia Communications; Secondary School of Applied Arts Valašské Meziříčí; University of Pardubice, Faculty of Chemical Technology. Outputs: National Policy of Science, Research and Innovation for 2016-2020. The research was carried out by the cluster in the period from 08/2015 to 06/2016. The contribution of the project includes greater interconnection of the cluster and glassworks and cluster shareholders, among others and a greater degree of unification of interests and possibilities of glassworks and R&D workplaces. The expected contribution in the following calls of Czech subsidy providers is the occurrence of defined main R&D topics focused on the glass industry. The long-term contribution is the increased awareness of the glass industry with the mentioned subsidy providers and the state sphere thanks to pushing through topics relevant to the glass industry at the Office of the Government of the Czech Republic.

Budget/Costs of the Project and How It Is Financed:

Project implementation expenditures were reimbursed from the cluster's own sources. Partner organizations were involved in the analysis and evaluation of the questionnaire survey, i.e. non-financially.



Recommendations and Experience:

The mapping, creation and analysis of the main topics of the glass industry is the cornerstone of the development of R&D for us, we can imagine that a similar project with positive contributions can be realized also in other industries or sectors of the national economy. The project implementation took less than a year, and it was adequate time due to the complexity of communication with dozens of glassworks and R&D workplaces. The questionnaire was designed and prepared correctly, so there were not any changes or confusion in the collection and processing of the data. To develop similar projects, we would recommend using electronic (electronic questionnaire) communication and individual meetings with target group representatives, as well as a sufficient amount of time to collect and analyse data.

My example of a cluster project. My experience and notes on good practice:

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