

SLOVENIA

General background

Slovenia is a small, open and export-oriented economy with an estimated population of 2 million people in 2010. Approximately a quarter of the people employed in Slovenia work in manufacturing. The Gross domestic expenditure on R&D in Slovenia has been in constant increase since 2000. Figures for 2008 reveal that the number of researchers per 1,000 workers was over the EU-27 average. The number of scientific publications per million people in Slovenia is above the average recorded in the EU.

The main player in the Slovenian RTDI organisation is the Ministry of Higher Education, Science and Technology which includes the Directorate for Science and Higher Education. Most of the financing actions of the ministry are performed through Slovenian Research agency (ARRS).

Slovenia's strategic priorities are described in the National Research and Development Programme 2006–2010 and the recently adopted RISS. Since more than 15 years several initiatives were launched in order to increase R&D and uptake of R&D in companies. In the period from 1999 to 2004 a total of 17 clusters and later in 2005 4 technology networks were established. However, the clusters and technology networks were formed using a top-down approach and funding was limited both in terms of money and time. Many of the clusters had limited success, not at least due to the short time the clusters received funding. (In some of the clusters where the industry took initiative, like the automotive cluster, the work continued and the clusters continued as non-for-profit organisations).

As from 2006 the Chamber of Commerce took the initiative and started the process of identification of the long-term needs for R&D investments in industry. This was inspired by the European Technology Platforms approach. All together 22 technology platforms and Centres of Excellence were organized, bringing together innovation leaders from industry and research groups from public sectors to discuss jointly technology trends and challenges for different sectors. As a result they developed strategic research agendas and defined priority technology areas for future investment.

A new round of Centre of Excellence were introduced in 2009 and also complemented by Competence Centres. Centres of Excellence focus on basic research and were initiated primarily by PRO, in cooperation with those business R&D units which in the long run see the benefits of basic research in particular area. The Competence Centres are consortiums led by business, combining both basic and applied research with clear focus on their future market opportunities. To complete the set-up, the measure to support the formation of the Development Centres also provides co-financing for R&D projects, but specifically for the so-called "close to the market" research and in particular, the

development of new products, processes and services. The three together represent a significant proportion of public research funding, which is now more focused on selected priorities¹.

This profile contains information about the following policy initiatives:

<i>Policy initiatives</i>	<i>Targeted KETs</i>
<i>Centres of Excellence</i>	Industrial Biotechnology / Nanotechnology / Advanced materials
<i>Competence Centres</i>	Industrial Biotechnology / Advanced manufacturing technologies / Photonics / Micro- and nanoelectronics
<i>Applied Projects</i>	Industrial Biotechnology / Nanotechnologies / Advanced Materials
<i>Clusters and Technology networks (2001-2004) - Example: Automotive Cluster of Slovenia</i>	Advanced manufacturing / Advanced Materials / Nanotechnologies

¹http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/odnosi_z_javnostmi/12.4.11_RISS_ANG_nova_verzija.pdf

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/si/policydocument/policydoc_mig_0004

CENTRES OF EXCELLENCE – ROUND 1 (2005-2009) & ROUND 2 (2009 – 2013)	
Implementing body	<ul style="list-style-type: none"> ○ Ministry of Higher Education, Science and Technology
Targeted KETs	<ul style="list-style-type: none"> ○ Industrial Biotechnology ○ Nanotechnology ○ Advanced materials
General description	<ul style="list-style-type: none"> ○ The Centres of Excellence are seen as a tool, which will enable the concentration of high-quality research in priority areas and horizontally integrate all stages in knowledge development: from basic research to the development of commercial application. They aim at bringing together the critical mass of knowledge and research infrastructure to allow for the potential scientific breakthrough at the international level and enable participation of Slovenian scientists in the international networks of excellence. At the same time they should be concentrated in the areas where strengthening of scientific resources would also result in increased technology transfer and development of new technologies for Slovenian industry. ○ During the financial perspective 2004–2006, a measure supporting the formation of Centres of Excellence was introduced in Slovenian R&D policy. The measure was evaluated as very successful and the 10 supported centres were assessed as a good mechanism of bringing together otherwise relatively small research units. On the basis of scientific evaluation and the evaluation of the socio-economic results of the first round, a new call was prepared for the support of centres of excellence in the period 2009–2013. The basic rationale behind the measure was that the current structure of public financing of R&D does not allow larger research projects, requiring also substantial investment in research infrastructure. This consequently hinders the ability of Slovenian science to generate high-quality results, which could then be transferred to business sector. ○ The measure supports the development and functioning of Centres of Excellence in priority areas as defined by the Resolution on National Research and Development Programme (NRDP) and the work of Slovenian technology platforms (measure Promoting the establishment of Slovene technology platforms). ○ The second round (2009 – 2013) was open to these areas of research : <ul style="list-style-type: none"> ▪ Nano-science and nanotechnology ▪ Biosensors, instrumentation and process control, ▪ Chemistry and biology of proteins, ▪ Low-carbon technologies (hydrogen and lithium batteries), ▪ Non-metallic materials (ceramics), ▪ Plastic materials, ▪ Space science and ▪ Nuclear magnetic resonance studies.
Date of implementation	<ul style="list-style-type: none"> ○ 1st round 2004 -2008 ○ 2nd round 2009-2013
Target group(s)	<ul style="list-style-type: none"> ○ The invitation to tender was open to consortia of research organisations and companies. ○ Co-operation and networking is mandatory.
Overall budget	<ul style="list-style-type: none"> ○ 1st round : Ten centres were financed with a total budget of 15 million Euro for a duration of three years. ○ 2nd round: EUR 77.5 million will be allocated for the period 2009-

	2013
Impact	<ul style="list-style-type: none"> ○ There were 61 applications submitted; 15 were rejected due to failure to meet entrance criteria and 20 were eliminated after the assessment of relevance; 17 applications were assessed as positive and 8 were selected. On average, the selected consortia will receive EUR 9 million. ○ After the first round of Centres of Excellence period the following reasons for lagging behind in competitiveness in Slovenia were identified as: <ul style="list-style-type: none"> ▪ Low private R&D investments ▪ Weak cooperation between companies and knowledge institutions ▪ Weak networking and clustering ▪ Insufficient investment in applied and development research ▪ Dispersed financing – lack of focus. ○ These weaknesses have been taken into account in the second round.
Information sources	<ul style="list-style-type: none"> ○ http://www-f7.ijs.si/en/ ○ http://www.nanocenter.si/en/ ○ http://nin.ijs.si/nano_files/SL_Centre%20of%20Excellence%20in%20Nanotech1.pdf ○ http://www.mvzt.gov.si/nc/en/splosno/cns/news/article/12023/6256/ ○ http://www.mvzt.gov.si/nc/en/splosno/cns/news/article/12023/6256/

COMPETENCE CENTRES	
Implementing body	<ul style="list-style-type: none"> ○ Ministry of Higher Education, Science and Technology
Targeted KETs	<ul style="list-style-type: none"> ○ Biotechnology ○ Advanced manufacturing technologies ○ Photonics ○ Micro- and nanoelectronics
General description	<ul style="list-style-type: none"> ○ The Competence Centres, are consortia led by business, combining both basic and applied research with clear focus on their future market opportunities. The measure complements Centres of Excellence (2009) where predominantly basic research is supported and lead role is given to PRO. ○ The aim of the Competence Centres is strengthening development capability and the use of new technologies for the development of new competitive products, services and processes in the priority areas of technological development. ○ In the projects, the integration of knowledge and competences of companies, and research organisations in certain technological areas is encouraged, namely the areas that show a critical mass of knowledge and capability for development and the use of new technologies. The scheme is considered as state aid. ○ The priority areas of technological development are: <ul style="list-style-type: none"> ▪ User Platforms and Interfaces ▪ Network systems and services ▪ Food and Health Biotechnological research and innovation ▪ Biomedical engineering ▪ Process Technologies ▪ Sustainable Building Industry; ▪ Effective use of energy (smart grids). ○ Support has been granted to 7 Competence Centres: <ul style="list-style-type: none"> ▪ modern process technologies; ▪ systems for effective usage of electricity; ▪ biomedicine, ▪ sustainable construction technologies; ▪ biotechnology in food and health area; ▪ cloud computing; ▪ open communication platform in ICT
Date of implementation	<ul style="list-style-type: none"> ○ 2010 -
Target group(s)	<ul style="list-style-type: none"> ○ Companies ○ SMEs
Overall budget	<ul style="list-style-type: none"> ○ 45.2 Mio Euros ○ 7 CCs were eligible for funding and each of them was awarded €6.4 million.
Impact	<ul style="list-style-type: none"> ○ Competence Centres combines 46 companies, highly focused on new technologies and 16 research institutions.
Information sources	<ul style="list-style-type: none"> ○ http://www.mvzt.gov.si/si/o_ministrstvu/javne_objave/javni_razpisi/?tx_t3javirazpis_ ○ http://cordis.europa.eu/fp7/ict/photonics/docs/clusters/ecm5-vedlin_en.pdf

APPLIED PROJECTS (TEMELJNI IN APLIKATIVNI PROJEKTI)	
Implementing body	<ul style="list-style-type: none"> ○ Ministry of Education, Science and Sport (MESS), since 2004 ○ Ministry of Higher Education, Science and Technology (MHEST). ○ Agency administering: Slovenian Research Agency.
Targeted KETs	<ul style="list-style-type: none"> ○ Industrial Biotechnology ○ Nanotechnologies ○ Advanced Materials
General description	<ul style="list-style-type: none"> ○ Applied projects is an instrument of research system that has a long tradition in Slovenia. ○ It is aimed at acquiring new knowledge that serve concrete users and is a means to stimulate cooperation and transfer of knowledge from research institutions to public administration or to the business sector. ○ Applied projects are directed towards a specific practical aim or objective and serve concrete users. Interested users have to provide co-financing of applied project of up to 25 % of the project. Applied projects are an original investigation undertaken in order to acquire new knowledge and may also include industrial projects. Industrial project is planned research or critical testing to acquire new knowledge with the aim of using that knowledge in the development of new products, processes or services or in the implementation of significant improvements in existing products, processes or services. ○ A Public call for (Basic and) Applied projects is usually published every year. The priorities have varied across years and accordingly, research themes. In the call, issued in 2010 for the projects to be financed in 2011 priority themes included: <ul style="list-style-type: none"> ▪ Genomics, biotechnology for health, quality and safety of food and sustainable development; ▪ Information technologies related to human capital development and social cohesiveness; ▪ New materials (nanomaterials), new production processes and tools; ▪ Energy, especially bio fuels and alternative sources of energy; ▪ Interdisciplinary projects; ▪ Research focused on developmental needs of the business sector; ▪ Research in basic humanities, strengthening Slovenian identity; ▪ Critical assessment of recent history; ▪ Democracy and social development in the context of contemporary Slovenian society.
Date of implementation	<ul style="list-style-type: none"> ○ Since before 1990 and still on-going
Target group(s)	<ul style="list-style-type: none"> ○ Scientists / researchers (as individuals) ○ Higher education institutions research units/centres ○ Other non-profit research organisations (not HEI)
Overall budget	<ul style="list-style-type: none"> ○ The scheme is co-financed by the private sector ○ The overall budget in 2011 was 22.3 million Euros
Impact	<ul style="list-style-type: none"> ○ Review of progress is made on an annual basis. Report template is provide by the Slovenian Research Agency and requires descriptive report on the results of the project, self-assessment of the extent of realisation of the project, scientific achievements based on

	<p>bibliographic record and expert achievements with socio-economic relevance or those that relate to transfer of knowledge and technology.</p> <ul style="list-style-type: none"> ○ An internal evaluation was carried out by the Slovenian Research Agency in 2007 on the basis of the reports, submitted by the project participants. One of the important conclusions of the evaluation was that the applied projects are evaluated by the participating partners from industry as very important. They claim that several projects have resulted in new products/processes. On the negative side, two issues were mentioned: relatively complex administration (both at the application stage as well as during the reporting process) and insufficient resources available on per project basis. ○ During the period 2000-2006, the volume of FTE (full time equivalent) for applied research projects, co-financed by the Slovenian Research Agency, increased from 100 to approx. 170 FTEs. The highest increase in the obtainment of the applied project was in the field of natural sciences. In the year 2000, the total value of approved applied projects was little more than 30 FTE, in 2006 for more than 90 FTE. The same analysis found that more than 82 per cent of the applied projects generated new practical knowledge and information, 78 per cent of the projects report on new scientific knowledge and 70 per cent on increased skills of the R&D personnel.
<p>Information sources</p>	<ul style="list-style-type: none"> ○ http://www.arrs.gov.si/en/progproj/rproj/index.asp

CLUSTERS AND TECHNOLOGY NETWORKS (2001-2004) - EXAMPLE: AUTOMOTIVE CLUSTER OF SLOVENIA	
Implementing body	<ul style="list-style-type: none"> ○ Ministry of Higher Education, Science and Technology
Targeted KETs	<ul style="list-style-type: none"> ○ Advanced manufacturing ○ Advanced Materials ○ Nanotechnologies
General description	<ul style="list-style-type: none"> ○ Automotive Cluster of Slovenia ○ One of the first clusters to be established was the Automotive Cluster, which was formed in 2001. This cluster has played a vital role facilitating the process in forming a strong cluster where the whole value chain is active. The role and set-up of the Automotive Cluster, which is one of the few 'survivors' is presented here. ○ The role of the Automotive Cluster is to facilitate R&D through bringing together the whole Slovenian value-chain in the automotive industry. Building up relations was especially important at the start in 2001 and today, this is a benefit to the sector, both in terms of finding partners for public R&D projects, but even more important, it has created a cluster where personal relations provide easy access to vital information without cost. ○ The automotive cluster has set up working groups, consisting of people from all levels of the value-chain and research organisations. These groups are working on identifying synergies for R&D projects across the value chain and have also been very active in promoting the sector in the market and also politically. The latter has helped to establish funding for R&D projects which is based on what the automotive industry needs in order to increase quality and business excellence. One key aspect has been to identify the key strengths of the industry. Niche areas have been identified and also service innovation was a key aspect to deliver unique full circle products. There has also been a focus on finding generic topics for the future, such as creating products that increase safety and environmental performance in the automotive industry. Again this focus helped to strengthen and integrate this is the whole value chain. ○ One of the major benefits of a strong value-chain is that partners from the value-chain, who are not direct competitors as they are at a different level in the value chain, can join up in R&D projects. This is especially true in R&D projects in advanced manufacturing and advanced materials where the results and technologies can be applied easily across different subsectors. This has increased the willingness to share knowledge. ○ The establishment of a strong value chain has improved the automotive sector greatly. Especially two areas have been improved. The first is that it is easy for the companies to find relevant partners both within the industry, but also academia for national or EU public R&D projects. The second area is the fact that collaboration and knowledge sharing often takes place without the involvement of any type of public initiatives.
Date of implementation	<ul style="list-style-type: none"> ○ 2001-2005, but the Automotive Cluster of Slovenia continued as a non-profit organisation.
Target group(s)	<ul style="list-style-type: none"> ○ Companies ○ Public Research Organisations
Overall budget	<ul style="list-style-type: none"> ○ -

<p>Impact</p>	<ul style="list-style-type: none"> ○ In the period from 1999 to 2004 a total of 17 clusters and later in 2005 4 technology networks were established. The first clusters and technology networks had limited success in achieving industrial deployment and according to the interviewees this is due to the fact that funding was only available for a short time period (four years) and the initiatives were led by the public sector. For some of the clusters this meant that the industry lacked incentives due to a mismatch between industry needs and content of the initiatives. ○ The clusters and technology networks were formed using a top-down approach and funding was limited both in terms of money and time. Active policy support for clusters and networks was cancelled in 2005. Many of the clusters had limited success, not at least due to the short time the clusters received funding. Funding has often been insufficient and irregular and several institutions spend much of their energy on survival instead of on carrying out the tasks they were established for. ○ One of the major successes of the clusters and technology platforms were that several key topics for R&D with market potential were identified by both industry and academia. These topics have been used by the Government to define major strategic areas, which are now used in the latest and largest R&D initiatives in Slovenian history, the Centres of Excellence and Competence Centres.
<p>Information sources</p>	<ul style="list-style-type: none"> ○ http://www.acs-giz.si/ ○ http://www.europe-innova.eu/c/document_library/get_file?folderId=148900&name=DLFE-6119.pdf

Other calls or interesting information

Development Centres

- The call is intended for projects involving development research and development of equipment and infrastructure necessary for growth of companies, their competences and long-term foundations, and allowing technological breakthrough in fields where critical mass of know-how is present in Slovenia
- Support for the establishment of Development Centres by consortium of business firms in a particular area:
 - with a focus on co-financing joint R&D projects,
 - investment in development infrastructure and
 - test production
- Amount of co-financing depends on the firm size (40-60%) and type of activity (R&D projects 60%, production facilities 20%). 17 Development Centres were approved in 2011 for co-financing.
- http://www.mg.gov.si/si/o_ministrstvu/javne_objave/javni_razpisi/?tx_t3javnirazpis_pi1%5Bshow_single%5D=878

Equity line for SMEs

- The aim is providing SMEs and start-ups with additional sources available for their development and growth, and easier and better access to foreign markets. By implementing this concept on the equity financing line, the Government of the Republic of Slovenia seeks to accelerate the development of equity capital market, formation of new venture capital companies, and to increase the volume of venture capital supply for development & innovative enterprises with a potential of fast growth, on the Slovenian market.
- Equity financing instruments will be implemented through a public tender, inviting private venture capital companies, which comply with terms and criteria of the tender, where such companies will acquire the stake of the Republic of Slovenia equalling up to 49 % of their total capital or a minimum of EUR 1 million, respectively. These selected venture capital companies will be able to invest the acquired funds, together with funds provided by private investors, as venture and mezzanine capital in promising, innovative and fast-growing SMEs.
- http://www.podjetniskisklad.si/index.php?option=com_content&view=article&id=121&Itemid=124

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