

integrity in
scientific research

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SLOVENIAN RESEARCH AGENCY

Slovenian Research Agency
Annual report for 2013

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Basic data

Slovenian Research Agency (hereinafter: the Agency) performs professional, developmental and executive tasks related to the implementation of the Resolution on the National Research and Development Programme 2011–2020 in addition to other activities to promote research.

The Agency is a legal person governed by public law covered by the provisions of acts and other regulations applying to public agencies, unless the provisions of the Research and Development Act determine otherwise. In accordance with Article 2 of the Decision establishing the Slovenian Research Agency, the Agency performs legal transactions within its activities independently, with all the rights and obligations and in its own name and for its own account. The Agency was established by the Republic of Slovenia with the Resolution on the establishment of the Slovenian Research Agency to permanently perform the tasks of general interest established by law in order to ensure sustainable, professional and independent deciding on the selection of programmes and projects financed from the national budget and other sources of financing.

Tasks

- Deciding on the selection of research and infrastructure programmes and projects based on independent and internationally comparable verification with regard to methodology and criteria, and ensuring financing;
- Monitoring the relevance, innovation, efficiency and quality of performance as well as the competitiveness and professionalism of the work of legal and natural persons that the Agency provides with financial assets or other forms of incentives;
- Monitoring and controlling the implementation of programmes and projects;
- Caring for the implementation of the Young Researchers and other programmes;
- Promoting international cooperation;
- Maintaining databases defined by the Research and Development Act and other regulations used to plan the policy, implement research and development activities as well as used for statistical purposes. In addition, it monitors the situation in research and development and their promotion;
- Obtaining additional funds for the implementation of the Resolution on the National Research and Development Programme 2011–2020;
- Taking part in planning the national research policy;
- Integrating, within its activities and powers, with the agency in the field of technological development;
- Providing the ministry responsible for science with the annual work programmes, financial plans, annual reports and reports on periodical self-evaluations of the quality of work, in accordance with the regulations;
- Promoting links between research institutes and users and Slovene science at the national and international level.

Mission

The purpose of the Agency's activities is to promote the development of basic research in Slovenia at the international level in compliance with the needs of the society.

With the implementation of the objectives set, the Agency significantly contributes to the development of the knowledge-based society and thus to social progress, cultural development and environmental protection. The development supported by the Agency helps to create new jobs, higher value-added economy, the welfare of the state and better quality of life in Slovenia.

Values

Stability of financing and concern for research infrastructure

Scientific research is crucial for the future of Slovenia and requires stable financing of the founders' obligations, research and infrastructure programmes and other research infrastructure.

Excellence and competition

In co-financing, the Agency is focused on generation of new knowledge. Quality is determined in an international review process on a competitive basis.

Relevance and applied research

When financing, it is important for the Agency to focus on research that is initiated by economic and societal needs and that are of socio-economic and cultural relevance.

International orientation

The Agency bases its work on the standards of the international scientific community and actively supports cooperation with other countries in the research field.

Equality of treatment and gender equality

The Agency deals with male and female researchers in accordance with the same standards and does not discriminate between individual disciplines or academic positions of the applicants. Equal treatment of men and women is built into all the procedures of the Agency.

Transparency

The Agency applies methods in all procedures so as to avoid the conflict of interests and therefore it publishes its methodologies, assessment and decision-making procedures, and uses protective measures in all its procedures as well as keeps them up to date.

Independence

Creativity and scientific research require independence. Within its independent legal status, the Agency provides this freedom and protects scientific research against direct influence of lobbies.

Ethical standards and integrity

The Agency is committed to ensure, within the scope of its powers, the implementation of internationally adopted practices of integrity in science and ethical standards.

The Agency endeavours to act in compliance with the principles of integrity defined in the Berlin declaration, signed in May 2013 by the agencies that participated in the Global Research Council.

Leadership

Research funding agencies must lead by example in the responsible management of research programs.

Promotion

Research funding agencies should encourage institutions to develop and implement policies and systems to promote integrity in all aspects of the research enterprise.

Education

Research funding agencies should promote continual training in research integrity, and develop initiatives to educate all researchers and students on the importance of research integrity.

Transparent Processes

Research funding agencies should, within the scope of their mandate, publish policies and procedures to promote research integrity and to address allegations of research misconduct.

Response to Allegations of Misconduct

During any investigation of misconduct, research funding agencies should support a process that values accountability, timeliness and fairness.

Conditions for Research Support

Research funding agencies should incorporate integrity in research as a condition for obtaining and maintaining funding by researchers and institutions.

International Cooperation

Research funding agencies will work cooperatively with partners to support and facilitate research integrity worldwide.



Integrity, Crisis of values, science and economy

Integrity in society, science and the economy was discussed by **Franci Demšar, Phd**, Director of the Slovenian Research Agency, **Miro Cerar, Phd**, professor at the Faculty of Law, University of Ljubljana and **Samo Hribar Milič, MSc**, President of the Chamber of Commerce and Industry of Slovenia. The discussion was held at the Chamber of Commerce and Industry of Slovenia and moderated by **Goran Novković**.

What is integrity?

Miro Cerar:

Integrity is a collective term for a group of complementary values, or virtues of an individual. In a manner of speaking, it is a fundamental honesty in the positive sense of the word, being one with what you think, without resorting to lies, cheating or manipulation. Integrity also means trying to be objective, which is especially important in expert or scientific endeavours, an ability to evaluate and describe people, events etc. In law, integrity means that, as a legal professional, you are bound by the rule of law and the conventions of the legal profession, performing one's work responsibly and striving to stay within the boundaries of the constitution and laws as fairly as possible. It is a multi-faceted concept which manifests itself in different ways, in the basic sense it means a fundamental human objectiveness and honesty to others.

Franci Demšar:

Integrity is a human value which follows a similar distribution pattern as all other values; there are honest individual, less honest individuals, and a few highly dishonest individuals. In his book, Slovenian Honesty (Slovenska poštenost), Anton Trstenjak writes that this trait is characteristic of Slovenians and that it was an important value in the past. The standards of integrity gradually declined in the period following the World War I. The main reason for this was that the society of the time had different standards, there was less regulation than previously in the Austro-Hungarian Monarchy, and Trstenjak pointed out a link specifically between honesty and order.

Hribar Milič:

Honesty is a personal trait, meaning that we act in accordance with our environment's expectations. Expectations are the result of established norms, which have been either prescribed or taught. In this context,

we examine how integrity is manifested in individual segments. I believe we are currently facing a serious problem, since in Slovenia we are falling short of expectations regarding integrity on various levels, including the level of personal conduct.

In your opinion, what are the key reasons for the crisis of values?

Miro Cerar:

The reasons are manifold. We have gone from one extreme to the other, which is a common phenomenon when a society undergoes a radical change. We founded an independent country, transitioned from the authoritative to the democratic model, from socialism to capitalism, we went from one type of managing resources to another. These shifts were so radical that many individuals were flown far off-course.

On the one hand, we began to see ourselves only through our rights, and forgot about our obligations. We chose to follow the model where the meaning of success is solely to achieve material gain or establish a leading position in the shortest amount of time possible. All these superficial and in many ways

empty values have taken over among the social elites in particular, resulting in many individuals gradually losing sight of the true values which make up the ethical foundation of society.

Hribar Milič:

The new system brought a redistribution of national wealth. Because of the failure of key elements, there was a great deal of appropriation of wealth, while at the same time there was a great deal of unfair activity on other levels, as well. All of this, in my opinion, has led to the perception that there is much more corruption in Slovenia than in other countries. I believe that the main reason we perceive such a great deal of corruption surrounding us is that we have inefficient protection mechanisms for sanctioning unfair, unlawful and non-transparent practices involving the appropriation of formerly national or state wealth.

"We founded an independent country, transitioned from the authoritative to the democratic model, from socialism to capitalism, we went from one type of managing resources to another. These shifts were so radical that many individuals were flown far off-course."

Miro Cerar





What about the moral values in general society, disregarding the social elites?

Miro Cerar:

There are virtues and weaknesses in each of us. It is our environment and our personal endeavours that determine whether we will be sucked into the vortex of the dark side or manage to follow the path of virtue, even at the risk of the road being winding and rocky. As a nation, Slovenians have failed the test of values in recent years. We have largely modelled our actions after poor practices. Without a doubt, a large portion of responsibility falls upon the shoulders of those in positions of power, as that is where responsibility is the greatest by the very nature of things. However, society as a whole has been overly naïve and passive, since we as citizens have failed to detect the plundering of our nation and other harmful practices. Although we did not actively partake in the plundering ourselves, we are still guilty of being too uncritical, looking the other way, or sticking our heads in the sand. Today we cannot see that such attitudes inevitably lead to evil winning over good. With a lack of active, responsible citizenship, we will all inevitably face some degree of shock therapy which will wake us from our slumber. Today's crisis is a therapeutic warning about the circumstances we have found ourselves in. The crisis is thus just a painful reminder and a challenge to finally

do something, to change our course and begin making steps in the right direction.

What are the principles of integrity in science?

Franci Demšar:

In recent centuries, science has held an important role, as practically everything around us is the result of its great ascension. Very early on, it laid down very specific, high standards. When the first scientific journal, *Philosophical Transactions of the Royal Society of London*, was published in 1667, two high standards were set for publication. It was required that each article contain a section describing the methods or materials used, and a reference section. In 1731, the *Medical Essays and Observations* was first published, which introduced peer reviewers, that is the first independent control of the selection process of scientific publications. The key elements and principles of integrity in science were then broken down to reliability, objectivity, independence from the provider of funding where research was commissioned by pharmaceutical or oil companies, and independence from ideology and politics, which is extremely important in humanities research. Scientific publications are still bound by the principles of openness, accessibility and fairness. Researchers are required to care for the laboratory animals, the environment

and natural heritage. These fundamental elements apply to the entire world. Violations of these principles occur everywhere, however, and Slovenia is no exception.

Specifically, what is the role of the Slovenian Research Agency in terms of regulation?

Franci Demšar:

One of the Agency's roles is to promote integrity and raise awareness. It has to set standards for itself and respect them, ensuring that the institution is able to operate transparently. We want to create the mechanisms which will allow us to take action in cases of gross violation of ethical standards. Currently preparations are underway to introduce amendments to the Research and Development Act.

I proposed an article, which I hope will be included, and reads something like this: if there is suspicion that a gross violation of ethical standards has been committed, the Agency shall appoint a committee, which

can, in extreme cases, ban a researcher from bidding at our tendering procedures for a period of one to five years, in addition to full

legal protection. At the same time, we are introducing a code of ethical practice as a reference document.

What is the Chamber of Commerce and Industry doing in respect of violations corporate integrity and ethics?

Hribar Milič:

First and foremost, it promotes good business practices. When considering contenders for the Slovenian Chamber of Commerce and Industry's innovation award, as well as regional awards, we always look out for any failures to meet the company's obligations vis-à-vis its employees, the state and business partners. Promoting lawful and fair business practices goes a long way. At the same time, we are very actively working on implementing changes to certain laws, which can increase legal security. While even today we have laws which allow us to sanction unfair, unlawful practices, however nothing happens, whether it involves bankruptcy or financial operations. Especially recently we have been working together on these changes, which will allow faster (in the case of bankruptcy and compulsory settlement) as well as more responsible processes, which will protect the creditors. With the code of ethical practices and through promotion of best business practices which we are preparing together with some other institutions, we want to set

*"One of the Agency's roles is to promote integrity and raise awareness."
Franci Demšar*



"We will need to find real incentive to restore people's will, to unleash their creativity once again, to be daring and courageous rather than disconnected, as they are now."

Miro Cerar

Science and Technology (NENT) proposed the introduction of a scientific commitment where researchers commit to working in the interest of advancing humanity and sustainable development, to be respectful to animals and the environment, and that their findings will not be based on ideological, religious or ethnic bias.

up the moral framework which will place a greater emphasis on the importance of ethical and moral conduct.

What is your experience with international codes of integrity in research, and how do you draw upon them?

Franci Demšar:

Integrity in research is one of the main topics of discussion among research agencies. For example, last May there was a meeting of all world research agencies in Washington, and one of the topics was integrity in research. A number of principles were adopted, including those we have already mentioned, namely that the state, or agency, must establish a mechanism for sanctioning violations. I believe that the code of research integrity, which will be supplemented and adopted in Slovenia, can provide a good baseline. For example, the Norwegian National Committee for Research Ethics in

In your opinion, what is essential for increasing the moral standards in Slovenia, politics, science and other segments of society?

Miro Cerar:

In my opinion, it is impossible to point out one single social subsystem as essential. If we want to overcome the crisis, we have to steer all the subsystems in the right direction. This includes the level of education and training, which we know is very important, as well as the level of operation of state and other institutions. All of our society's subsystems have been infected with the potent crisis virus, so we cannot overcome it by treating just one or a limited number of subsystems. Slovenia cannot be saved only by the government or justice system, or the economy, health care, education etc. We have to steer all these in the right direction and look for solutions in parallel, within each of these areas. It is

essential that the origin of the crisis is in the marked decline of ethical values. If we do not work together to overcome this dimension, if we do not begin to act and live in fairness, free of lies and deceit, then we cannot hope to overcome the crisis in the longer term.

What are the key institutions which should ensure positive change? Perhaps we should leave politics out of the question in this instance.

Miro Cerar:

Politics is very difficult to ignore, as it is so pervasive. In Slovenia especially, it is particularly ingrained in society. As a society, we are actually politicized to the point of it being pathological. It would seem that in this case, politics is at the core of the change, which must then pass into other parts of society. I believe that change must also take place clearly on the level of the rule of law. Thinking back to the last elections, the political campaigning devoted more than half its time to the question whether those taking political office have the necessary credibility, integrity and ethical

background. This suggests that society has become more sensitized to the issue of justice. And the question of justice is basically also a question of the rule of law. And our society has unfortunately become markedly unjust. Many social imbalances have reached levels beyond all reason. The people are now aware of this, they are feeling it and for many it has resulted in the worst possible scenario: they have become resigned, unmotivated, apathetic. They see no point in action, as they no longer trust the institutions and see no way to move things in the right direction. This is the worst possible outcome we can find ourselves in. We will need to find real incentive to restore people's will, to unleash their creativity once again, to be daring and courageous rather than disconnected, as they are now. The state of mind is generally at a truly low point at this moment in time. We have to believe in change, as it is most certainly coming. I always say that in a way, we are condemned to optimism, but we will need to do a great deal more than we have been doing in order to achieve tangible results. And that is the challenge we face.



Research pleases me.

Selestina Gorgieva

Selestina Gorgieva is a young researcher employed at the Faculty of Mechanical Engineering, University of Maribor. She graduated in Macedonia and came to Slovenia through student exchange within the CEEPUS Programme. Initially, she cooperated with the faculty within an international research and development project EraNet MANUNET – NANOWELL (*Nanostructured functional and active textiles for well-being*), and in 2009 she became a young researcher mentored by Assoc. Prof. Dr. Vanja Kokol and co-mentored by Prof. Dr. Janez Štrancar from the 'Jožef Stefan' Institute. Selestina Gorgieva graduated from textile engineering whereas her research work has been focused on the field of the functionalization of textile polymers for medical purposes. She is planning to finish her doctoral studies in 2014 and wishes to maintain contact with Macedonia through research work.



'My scientific research area is relatively new with great potential for further development. The introduction of new procedures of the manufacture of differently morphologically structured and functionalised biomaterials makes a significant contribution to basic science and represents potential for applied development in medicine and pharmacy.'

The topic of her doctoral thesis is the preparation and analysis of coating for materials applied for medical implants used with the abdominal wall regeneration in the case of hernia. These are materials of polypropylene mesh, which, she says, do not provide sufficient biocompatibility with the organism due to their inertia and the occurrence of adhesion with the adjacent tissue and increased possibility of infection and of negative responses of the immune system after implantation. Her research shows that the use of polypropylene mesh would be more suitable if treated with adequately structured biopolymers emulating the natural extracellular environment of cells. In her research, gelatine, which is a protein produced by the hydrolysis of collagen, is used as a biopolymer. Collagen is the building block of approximately 90% of extracellular matrix of organs and tissues. This research focuses on the production of differently formulated and structured composites and the analysis of their effect on cellular behaviour.

In research work, Selestina Gorgieva cooperates with two internationally recognized companies active in the field of biomedicine. Dipromed s.r.l., an Italian company,

jects Era Net MATERA-plus: ANTIMICROBIAL PEPTIDES and MNT-era.net: n-POSSCOG. She cooperates with the University of Turin.

Selestina Gorgieva understands scientific ethics in particular in the light of the publication of true, valid and reproducible results that are not an end in themselves but need to be useful for further research. Some results published in scientific journals are irreproducible and as such useless. *"Science and in particular the field of biomaterials is being developed so fast that it is difficult to promptly establish what is right and what is not. Therefore, it is very important that the mistakes are not repeated."* She believes that science should be more open to changes although they would mean a completely different understanding of established scientific knowledge.

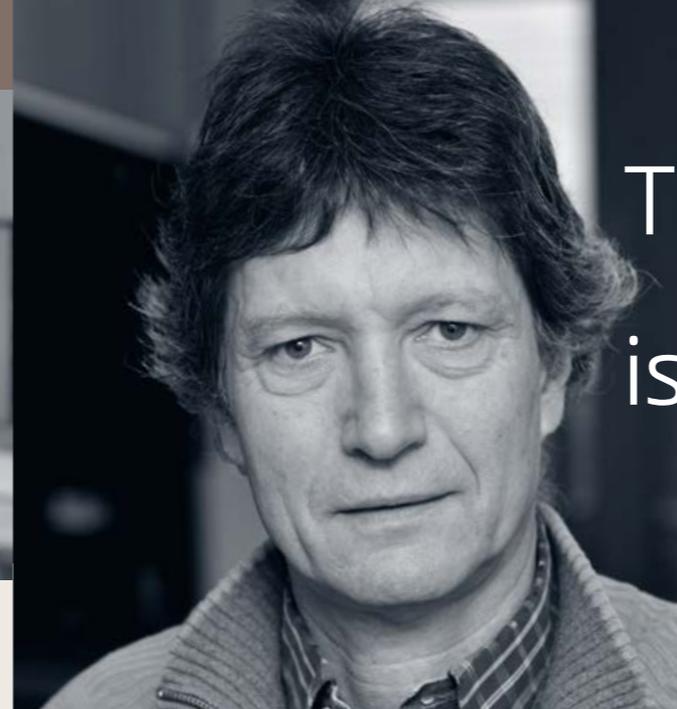
With regard to experiments on animals she says that they are a necessary intermediate phase when verifying the use of biomaterials being the subject of her research. Although for the time being she only verifies

is engaged in the manufacture of surgical mesh implants and Educell d.o.o., a Slovenian company, develops cell therapies and tissue engineering. *"Also at the global scope, this area of work is currently in the phase of intensive development; however, the commercialisation of tissue engineering products is still in the initial phase due to the specificity of this field."* She adds that this is an extremely interesting field and the cooperation with the two companies manufacturing medical materials enables her to simultaneously identify deficiencies and to introduce improvements.

A young researcher Selestina Gorgieva is a co-author of six original articles on biomaterials, a chapter in the book Biomaterials applications for nanomedicine (Rijeka: InTech, 2011) and numerous papers at international conferences. At the conference of the European Society for Biomaterials organized in Madrid in 2013, her paper was awarded the Rudolf Cimdin Scholarship. She is a member of the Textile Chemistry programme group and within the NAMASTE centre of excellence she cooperates with a research group working on advanced materials. She is also involved in international research pro-

„Experiments using animals should be as humane as possible.“

the results in vitro she emphasises that the research aiming at improving the quality of human life and also having to involve in vivo animal studies should strive to be as humane as possible.



The absence of fairness, is the absence of progress.

„The human society had to agree on the conditions under which it can function and fairness is undoubtedly one of them.“

Prof. Marko Mikuž, PhD

Marko Mikuž is an experimental physicist, an expert in particle physics. He has been active in this field for more than thirty years and connected to the execution of experiments within the European Organization for Nuclear Research (CERN). He teaches at the Faculty of Mathematics and Physics of University of Ljubljana, and is the head of the Department for Experimental Particle Physics at the 'Jožef Stefan' Institute. Dr. Mikuž leads a group of Slovene researchers who are a part of the international research consortium and the ATLAS particle physics experiment. The consortium involves 3,000 researchers from thirty-eight countries. This is one of the largest group projects in the field of physical research. The Slovene researchers have been a part of the consortium since 1996.

The ATLAS experiments are carried out in a Large Hadron Collider (LHC) or accelerator located in Geneva. In the tunnel ring of 27 km circumference subatomic particles, protons, travel in opposite directions. The particle collisions emit high energy and thus reproduce the physical circumstances created immediately after the big bang enabling to learn about the basic forces that shaped our universe from its creation.

The Collider has four detectors with the ATLAS and CMS being the largest and most complex. They enable the identification of the decays of various particles taking place upon the collision of protons. The research using the detectors within the LHC

accelerator led to the discovery of the so called Higgs boson, an elementary particle initially theorised and announced in 1964 by Scottish physicist Peter W. Higgs and Belgian physicists Robert Brout and François Englert. It is a particle also contained in the standard model; however, experimentally its existence was not proven. The particle quickly decays and this is why the scientists prove its existence on a basis of the analysis of products generated upon its decay. This involves a very rigorous analysis since only some of potential decays are adequate to be detected. Based on the mathematical analyses of the first set of measurements that lasted for three years the existence of the Higgs particle was confirmed in June 2012. François Englert and Peter W. Higgs won the 2013 Nobel Prize for Physics for the discovery of a mechanism that contributes to the mass of elementary particles and that announced the Higgs boson.

A Slovene group of researchers within the ATLAS consortium that represents an important part in the process of the research and discovery of the Higgs boson was mainly active in the construction of silicon microstrip detectors. It is 63 square metres of position-sensitive chips that detect charged particles flying from the point of collision. As Dr. Mikuž explains, at least two of three decay methods significantly depend on the work of this detector. In addition, the Slovene team made the systems with diamond detectors that protect the detector from the proton beam. In order to process the data, a computing centre was set up and with relatively

A Slovene group within the ATLAS collaboration also contributed to the discovery of Higgs boson:

Vladimir Cindro, Maksym Deliyergiyev, Irena Dolenc, Andrej Filipčič, Andrej Gorišek, Jona Jan Javoršek, Borut Paul Kerševan, Gregor Kramberger, Boštjan Maček, Igor Mandić, Erik Margan, Liza Mijović, Marko Mikuž, Aleš Svetek, Matevž Tadel, Andrii Tykhonov, Marko Zavrtnik, Dejan Žontar.

modest resources they managed to set up computer capacities that processed 2% of the data burden of the entire collaboration. The second set of measurements is planned in 2015 and will also take three years.

With the research so far performed in the CERN laboratory, numerous technological breakthroughs have been achieved also outside physics. The development of the World Wide Web is for example also connected to

„If a man from 20 years ago woke up today, he would definitely be amazed by the accessibility of everything.“

the Large Hadron Collider and numerous diagnostic and therapeutic techniques in medicine are based on the laws of physics or the tools used for physical research. Among the most famous are certainly the examinations of body by means of computed tomography with its beginnings in the 70s of the previous century, and a newer technique using magnetic resonance imaging. New insights and major technological advances are related to a high concentration of committed researchers and adequate financial support. The technological shift of the last

decades enabled the progress that according to Dr. Mikuž offers more possibilities on the one hand and exacerbates the needs on the other.

Dr. Marko Mikuž says that cutting corners to get to the final result in a demanding analysis such as the isolation of a signal from the decomposition of the Higgs boson can be extremely dangerous. The ATLAS group applies numerous mechanisms to avoid biased analyses. In his opinion, it is the duty of researchers to monitor the analyses and report on potential inadequacies at various levels. As he says, the principles of fairness are also breached in science; however, fabricated results are quickly exposed to verification and not least, to time. He also adds the Abraham Lincoln's quote: *"you can fool all the people some of the time and some of the people all the time, but you cannot fool all the people all the time."*

In 1989, Tim Berners-Lee, a British scientist at CERN, invented the World Wide Web that revolutionized communication options. Initially, the World Wide Web served as a tool for the exchange of documents between the participants in large consortiums in the field of particle physics.



I always wish to act
in the role
of a constructive critic.

Prof. Simona Kustec Lipicer, Phd

Simona Kustec Lipicer is a researcher at the Centre for Political Science Research operating in various fields of political sciences. She is employed at the Faculty of Social Sciences, Department of Policy Analysis and Public Administration. In her thematically broad research work, monitoring and evaluating of public policies, studying of election campaigns, electoral behaviour and choices are intertwined. Once in a while she gets carried away to the analyses of sports policies. Lately she has been interested in analysing the topical patterns of political culture and trust, mostly through international projects. As a member of numerous organisations and a participant in projects, she has been engaged in domestic and international scientific research. Among other things, she is also a member of the Council for Quality and Evaluation within the Ministry of Education, Science and Sport, and of the Committee for Women in Sports within the Olympic Committee of Slovenia – Association of Sports Federations.

One of the most prominent research projects run by Dr. Kustec Lipicer is a targeted research project titled Effective state support for the citizens' sport activity. The Faculty of Social Sciences and the Institute for Economic Research took part in the project that combined the field of sports and policies. Sport was defined as an important leisure activity which in terms of health has a positive impact on the people's quality of

life. Because of its broad social significance and the status of public interest, the field of sports is, to some extent, regulated by the state through the measures based on adequate policies. One of the key questions posed by the researchers was how sufficiently the needs of various groups of citizens in their engagement in sports were taken into consideration in the policies drafted and implemented so far. The research findings showed that the public interest in sports is, through financial and other measures, predominantly associated with the support provided to sports infrastructure and elite sports; however it is less responsive to the promotion and satisfaction of broader needs in recreational sport activity of various groups of citizens.

'In the monitoring of public interest, our research identified considerable imbalances. It opened the questions of integrity, the transparency of political action as well as the needs for a repeated broader and clearer reflection on the public interest and its consistent implementation. The contracting authority was provided with concrete proposals concerning the fields that in the future would be reasonable to emphasise when the state intervenes in the field of sports. We had the opportunity to respond to the needs in practice by applying our academic-based knowledge.'

Dr. Simona Kustec Lipicer deals with sports in another interesting role. She is a national expert in sports policy, in particular in an-

ti-doping policies in the European Union. As she says, doping is only one of the fields of sports where the external regulation of national authorities has proven to be necessary to solve the problems that the field of sports has not managed to resolve so far. General global regulation is provided by the World Anti-Doping Agency, WADA, that adopted the Anti-Doping Code whereas at the national level, these problems are addressed by the National Anti-Doping Commission composed of some members of national and sports authorities. Although in practice various types of control are exercised in the field of doping, Dr. Simona Kustec Lipicer emphasises in particular the importance of preventive measures implemented with timely information and awareness raising.

The common threads of the content of the research work of Dr. Simona Kustec Lipicer always touch upon the critical evaluation of the ethical dimensions and values in the functioning of the state. Currently, within the questions of the state regulation the notion of governance has been frequently discussed where the representatives of the state and civil society in order to monitor the joint problem solving and search for a consensus between different interests are mutually connected. In this respect the regulations of the state should be increasingly based on the so called soft legislation and measures. The importance of responsibility

and transparency are especially emphasised. *'Transparency as one of the methods of horizontal control requires adequate control and in particular accuracy and integrity. Moreover pure intentions concerning the common welfare where nobody would gain ground over others without clearly planned inputs and rules should be in practice.'*

Dr. Simona Kustec Lipicer uses good practices based on her experience in the international environment. She recently completed a programme of pedagogical and research mobility at the University of Jyväskylä in Finland. She notes that instead of working formalism the relationships in their working environment is characterised by the support among colleagues, constructive and deep critical exchange of ideas and assessments based on a high level of mutual respect and trust. The forms of control and regular work evaluation are less formalised, and the achieved work results are recognisable in domestic and international environment. Dr. Simona Kustec Lipicer is in favour of a healthy competitive environment in science as well as in other fields of human activities that she believes to bring results in a long run only with committed and hard work. She highly appreciates Slovene research environment and stresses that especially in social sciences that mainly generate results important for national development, adequate discussions should be promoted and domestic scientific achievements should be more appreciated.



Assoc. Prof. Friderik Klampfer, Phd

Friderik Klampfer is a philosopher employed at the Faculty of Arts, University of Maribor, as a lecturer of ethics and political and social philosophy. He has been lately interested in the questions of moral responsibility that were traditionally limited to criminal law and medicine, and are currently spreading quickly also into the environmental and social policy. As a critical philosopher sensitive to social injustice he occasionally deals with the rights of the discriminated and socially disadvantaged in the context of contemporary social situation marked by the decomposition of the welfare state. He points out that the traditionally disadvantaged groups (women, the Roma, foreigners, homosexuals) are being joined by young people, the victims of intergenerational injustice. His thinking is based on the idea of intergenerational justice that sees the current generations as the guardians of the interests of the future generations and which to his mind is not carried out correctly. During the last term, Dr. Klampfer was a member of the Commission for Women in Science and he also takes part in public debates focusing on the erased, access to biomedical assistance with regard to the insemination of single women, euthanasia etc. These and other topics are dealt with in his monograph *Price of Life* where he seeks to re-establish the role of professional philosophers and the importance of philosophical reflection in contemporary bioethical discussions. 'Abortion and the right of a doctor to conscientious objection with regard to it,



„The problem of philosophy is that it has glorious past, increasingly modest present and far from certain future, which is contrary to other scientific disciplines.“

artificial insemination, surrogate motherhood, therapeutic and reproductive cloning, genetic engineering, donation and sale of organs, euthanasia and medical assisted suicide, AIDS, ethical dilemmas regarding vaccination, fair distribution of increasingly scarce health resources, social responsibility of pharmaceutical companies and the responsibility of people to environment are among the most popular topics in bioethics.' According to Dr. Klampfer, the issues of genetic engineering in the context of the improvement and enrichment of human nature and the prolongation of human life as well as the dilemmas of the reproductive ethics and in particular its role in demographic policies will mark the future of bioethics and medical ethics respectively. 'As regards legislation, ever louder demands for the enactment of the euthanasia will at least for some time remain in the foreground.' He fears that valid philosophical questions and the doubts concerning the offered solutions to social problems are pushed aside whereas their place is taken by simplified answers and pragmatic solutions.

'The problem of philosophy is that it has glorious past, increasingly modest present and far from certain future, which is contrary to other scientific disciplines.'

According to Dr. Klampfer, the set of traditional philosophical topics has been reduced. The field of ethics is frequently seized by other disciplines, in Slovenia mainly by



Honest people do not enjoy a good reputation.

medicine, law and theology. 'It seems to me that philosophers are pushed to the side even where they could contribute with their knowledge, for example in bioethical commissions or expert committees for drafting legislation in the fields with distinctly moral dimensions.' He sees a philosopher in the public debate as someone who clarifies and defines key concepts, makes a moral diagnosis i.e. recognises and compares conflicting moral values, norms and principles and who finally evaluates the proposed solutions in terms of their ethical and broader social costs.

He says that the sense of community has degraded due to widespread dominance of market rules, consumerism, competition and disappearing solidarity with those who are weaker. In his opinion we are too tolerant to unfairness so that we easily forgive especially in the case of more influential and networked individuals from whom we expect personal gain. He has noticed that the phenomena of moral hypocrisy and double standards have spread: 'On the one hand we are strongly criticizing grey economy and on the other hand we gladly pay less to the craftsman for a service with no invoice issued.'

Dr. Klampfer believes that in our micro and macro environment there are numerous small encouragements to cheat. ***Honest people do not enjoy a good reputation that would serve as a kind of external stimu-***

lation whereas the dishonest all too often manage to avoid sanctions. Dr. Klampfer has noticed such a system among students since those who are successful in their studies due to minor or major fraud are frequently admired. Frequently, discomfort and bad conscience are the only sanctions for the infringement of the rules. On the other hand, the feeling that we have done the right thing remains the only reason and prize for fair treatment but this is losing its importance since people easily justify minor fraud by making it trivial or by blaming others.

'Research shows that each of us has an inner brake preventing from big fraud, but on the other hand we easily find excuses for a small fraud. However, it is a fact that we all do a little bit of cheating which is the root of many major social problems, from corruption to environmental degradation.'

According to Dr. Klampfer, neither the scientific community is immune to various forms of unfairness. As he says market rules and unhealthy competition invaded the field of science long ago, which can particularly be observed when competing for scarce research resources. In addition, there is an increasing expectation that the invested funds will yield profitable patents and innovation. 'We are witnessing the hyper-production and publication of articles that nobody has the time to read and we opportunistically succumb to the currently fashionable research themes and trends whereas there is a lack of institutional and financial support for commercially less attractive but to a wider community more useful research in social sciences and humanities.'



Gender inequality is a problem of the whole society.

Assoc. Prof. Maja Remškar, Phd

Dr. Maja Remškar is one of the most prominent researchers at the 'Jožef Stefan' Institute. Her professional activities are distinguished by a comprehensive scientific approach and pioneering in the field of the research of nanomaterials in nanotechnology for which she received the Zois Award in 2001 and the Pregl Award in 2009. From the beginning of her career, as a physicist and electron microscopist she has been mainly researching nanoparticles and discovering their utility values for industrial purposes. She strongly advocates their safe use and warns of potential harmful consequences that nanotechnology brings. Since 2006, she has been running a public dialogue with regard to safety in nanotechnology and with the same degree of criticality she, furthermore, advocates equivalent status of women in science.

„Nanotechnology is equated with the new industrial revolution. In many fields, the application of nanotechnology will be positive, yet we need to use it wisely not to do more harm than good.“

Nanoparticles are aggregates of material smaller than 100 nanometres that are extremely chemically active due to their small size. They can be found almost everywhere, for example in the combustion of diesel fuels and biomass, smoking, grinding and even in food. Cosmetic industry is one of the first fields where these materials started to be used due to their aesthetic and anti-bacterial

effects. *‘Silver is the most dangerous among currently used materials in cosmetics. It affects the nervous system and formation of blood clots, it penetrates into the brains and dissolves the membrane of red blood cell; however on the market it is present in creams, various gels and antibacterial preparation’.* As Dr. Remškar says, the regulations of the European Union in this field have already become more stringent since the market is flooded with products containing nanomaterials whereas their effects on human health have been insufficiently researched.

Unfortunately, many other fields where nanoparticles can be introduced into the organism have not yet been regulated. Dr. Maja Remškar draws attention in particular to the adverse effects of particles released in industrial production, when using fossil fuels and combusting biomass. In cooperation with the Chemical Office of the Republic of Slovenia and the European project Nanoforce, she raises public awareness of harmful consequences of fireworks and other explosive substances. *‘Fireworks substantially pollute the environment. According to the Slovenian Environment Agency, the limit values of concentration of particulate matter in the air significantly exceeds from 20 December to 15 January. Also the sparkles parents use to enhance the spirit of holidays are very harmful.’* Out of consideration for the environment she was the initiator of the purchase of a nanoparticle detector. In Slovenia, there are currently three such detectors that support the measurements

for example in hospitals, industrial plants, in traffic etc. Dr. Maja Remškar recommends that also the Slovenian Environment Agency introduces the measurements of nanoparticles in the atmosphere following the example of developed countries.

Upon the recommendation by the Faculty of Physics, Dr. Maja Remškar attended the International Congress of Women Physicists in 2002 that was organised by the International Union of Pure and Applied Physics (IUPAP). *‘We discussed why in the past twenty years the absolute number of female physicists decreased and the direction of research became highly abstract. With expansion, many scientific fields such as biology, chemistry and medicine have become much more feminised than physics. Physics also spread but the number of women physicists has remained low. Women from various countries reported on similar obstacles experienced in the career pathway of female scientists. Women are enabled to get up the educational ladder to a doctorate level, however, when trying to get a permanent employment in science, a ruthless fight begins where they usually quit due to the concurrent care for children.’* In Slovenia where the share of women with doctorates increases the situation is similar however there are not many found in senior positions in the scientific hierarchy. *‘Wom-*

en scientists who manage to get a job in scientific research after a doctorate struggle to get through to the highest positions in the discipline where they could make effective decisions about the direction of research and the allocation of research money. Due to motherhood, the top of the career ladder is slightly delayed, which is detrimental to their chances to reach executive positions already taken by their male colleagues of the same age. Therefore, systemic measures and the consideration of academic age are necessary.’

In last eight years, Dr. Maja Remškar was a member of the Committee for women in science within the Ministry of education, science and Sport which firmly pursues the elimination of gender discrimination. At the end of 2013, the Committee published a monograph *Women in science, women for science: Scientific perspective of women in Slovenia and the factors of change*. The book contains the views of women and men researchers in various fields that shed light on the situation of women in Slovene scientific sphere. The chapter ‘Measured obstacles on the career pathway of women in science and engineering’ was prepared on the basis of a survey on discrimination in science with 1100 respondents, women and men doctors of science.

‘One of the questions was whether they ever experienced gender discrimination. Almost a half of women and 15 % of men answered that they had witnessed gender discrimination of women.’



Main indicators of scientific excellence

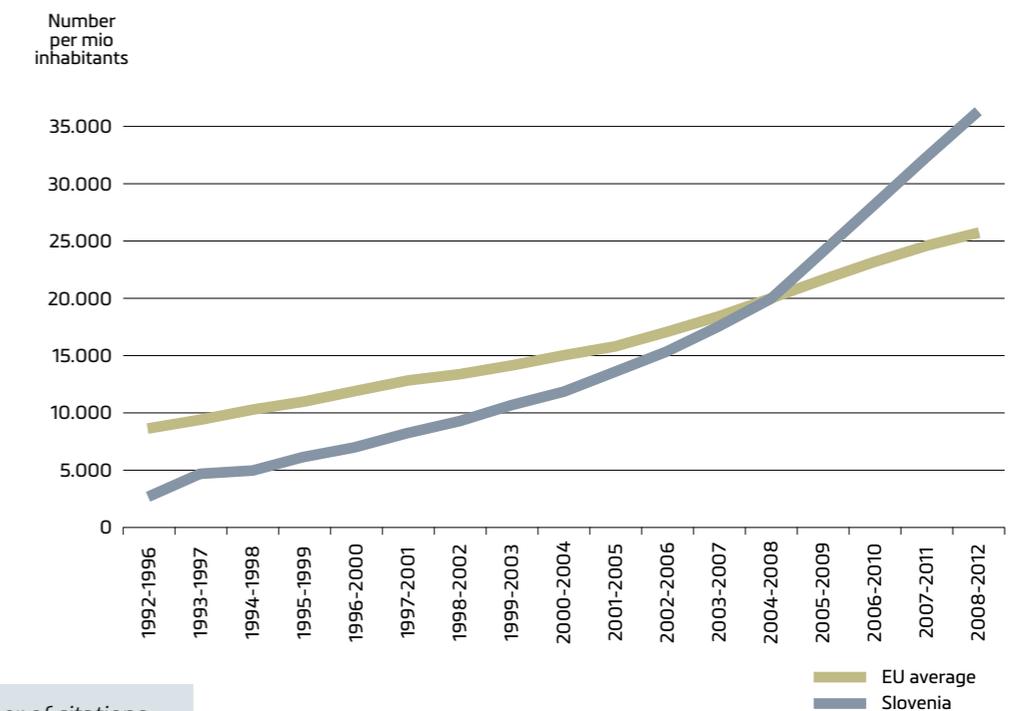
Scientific research can only lead to new knowledge when characterised by scientific excellence. Unlike the majority of human activities where a positive result is the aggregate of the work performed, quality is put in the first place in science. Consequently, our objectives need to be ambitious: Nobel Prize and other prestigious prizes, a larger number of projects approved by the European Research Council (ERC), high rankings of our universities internationally, publications in the most important scientific journals, high visibility of the best research works etc. The objectives are realistic because of the improved culture of scientific publishing in international scientific literature.

Citations

The data for Slovenia indicate that the growth of citations per million of population is above the average of the European Union Member States, and it has been significantly

higher since 2003. In the period from 2005 to 2009, Slovenia exceeded the EU average with regard to the number of citations per million of population.

Movement of the number of citations (1992 to 2012)



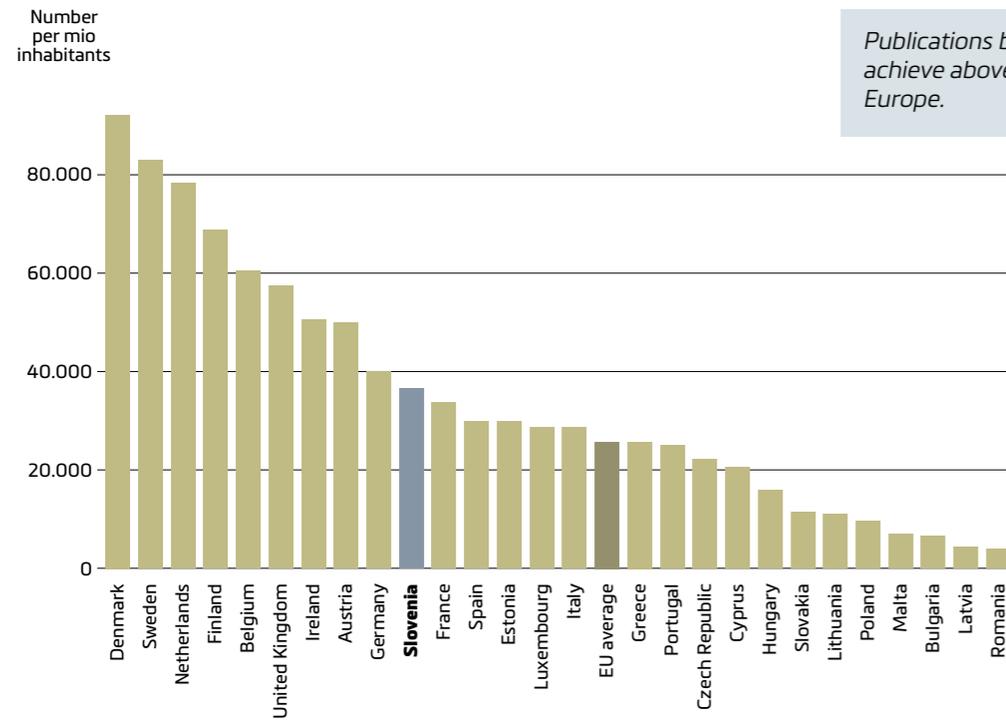
Movement of the number of citations per million of population shows increasing quality of Slovene publications in the last 10 years.

Source: Web of Science

According to the number of citations per million of population, Slovenia comes tenth with 36,177 citations and compared to the previous 5-year period, it increased the number of citations by 6,739 and advanced

by one place. In the same period, Denmark is the country with most citations per million of population and is followed by Sweden, the Netherlands and Finland.

Number of citations for the EU Member States (2008-2012)



Publications by Slovene researchers achieve above-average citations in Europe.

Source: Web of Science

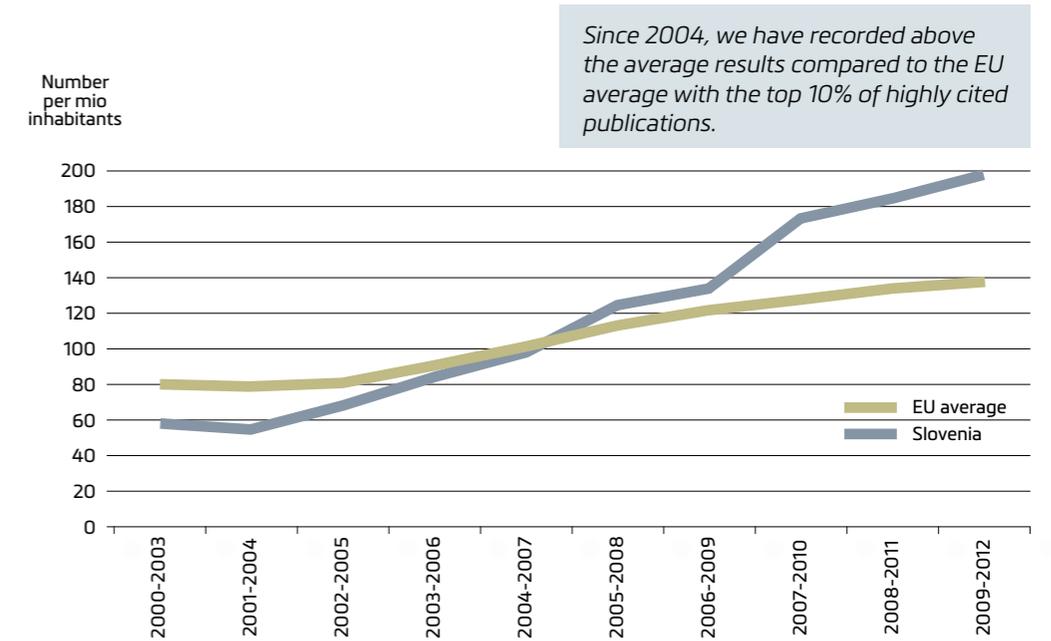
Highly cited scientific publications

TOP 10% MOST-CITED – scientific publications that are classified within the top 10% of highly cited publications in a particular research field worldwide based on the number of citations.

The established bibliometric indicator used for international comparison is the number of publications of researchers in a particular country, which are ranked among the 10% of

highly cited publications globally as a share (in %) in the structure of all publications in co-authorship of researchers of a particular country. Based on the data for Slovenia for 2009, the value of this bibliometric indicator is 9.85%. This includes the publications in journals indexed in the Scopus bibliographic database. The citation window covers the year of publication, namely 2009, and three subsequent years.

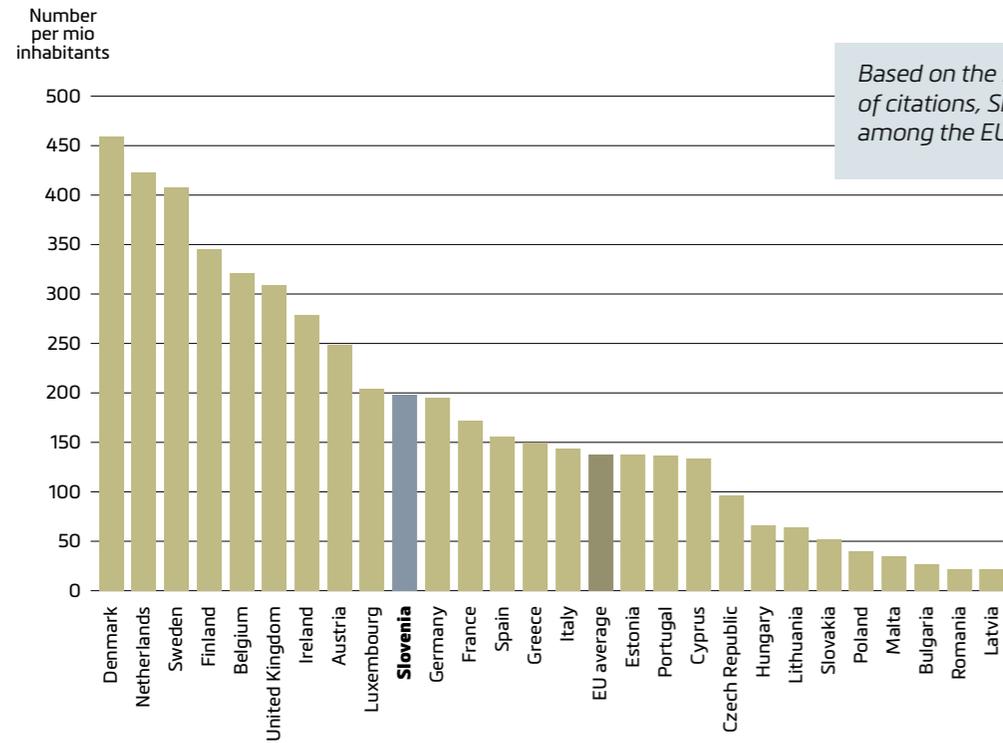
Movement of the number of publications within the top 10% highly cited



Since 2004, we have recorded above the average results compared to the EU average with the top 10% of highly cited publications.

Source: Science Metrix, 2013

Number of publications within the top 10% highly cited in the EU Member States in 2009



Based on the number of the top 10% of citations, Slovenia is ranked tenth among the EU Member States.

Source: Science Metrix, 2013

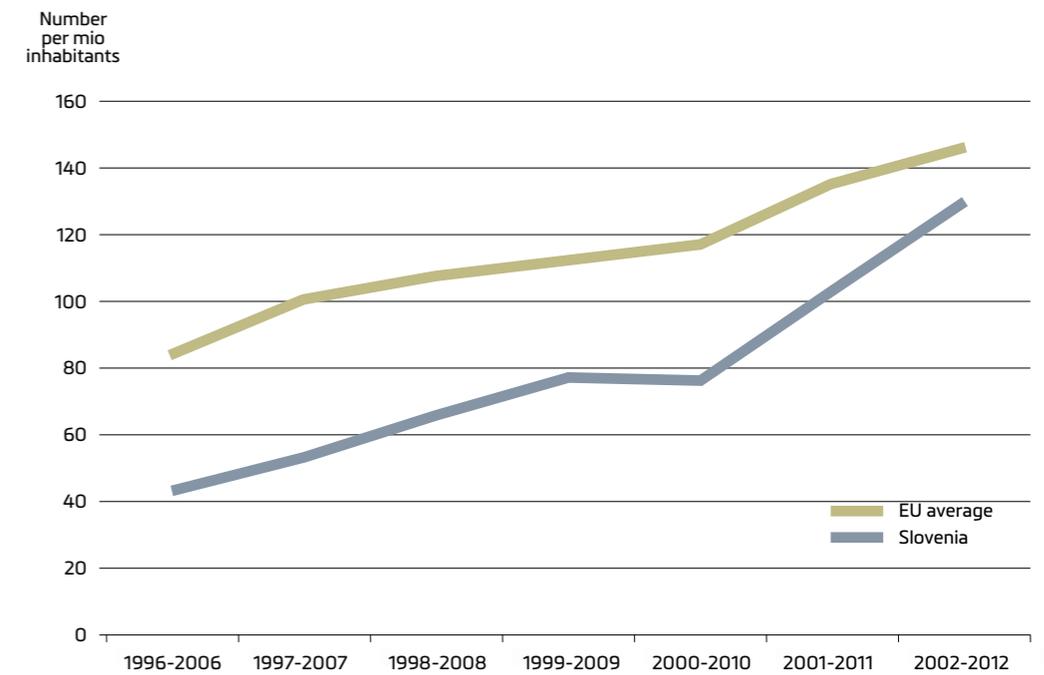
TOP 1% HIGHLY CITED – scientific publications that are classified within the top percentage of most cited publications in a particular research field worldwide based on the number of citations.

The established bibliometric indicator used for international comparison is the number of publications of researchers in a particular country who are ranked among the 1% of most cited publications worldwide as a share (in %) in the structure of all publications in co-authorship of

researchers of a particular country. The global average equals 1%. The country exceeding 1% of highly cited publications within its total scientific publications is above the global average and when it is below 1%, it indicates various levels of lagging behind the global average. Based on the data for Slovenia for the period 2002–2012, the value of this bibliometric indicator is 0.95%. The timeframe of the data extraction is eleven years. This includes publications in journals indexed in the Web of Science bibliographic databases. The necessary number of citations and the classification among the highly cited publications depend on the year of an article publication and the research area.

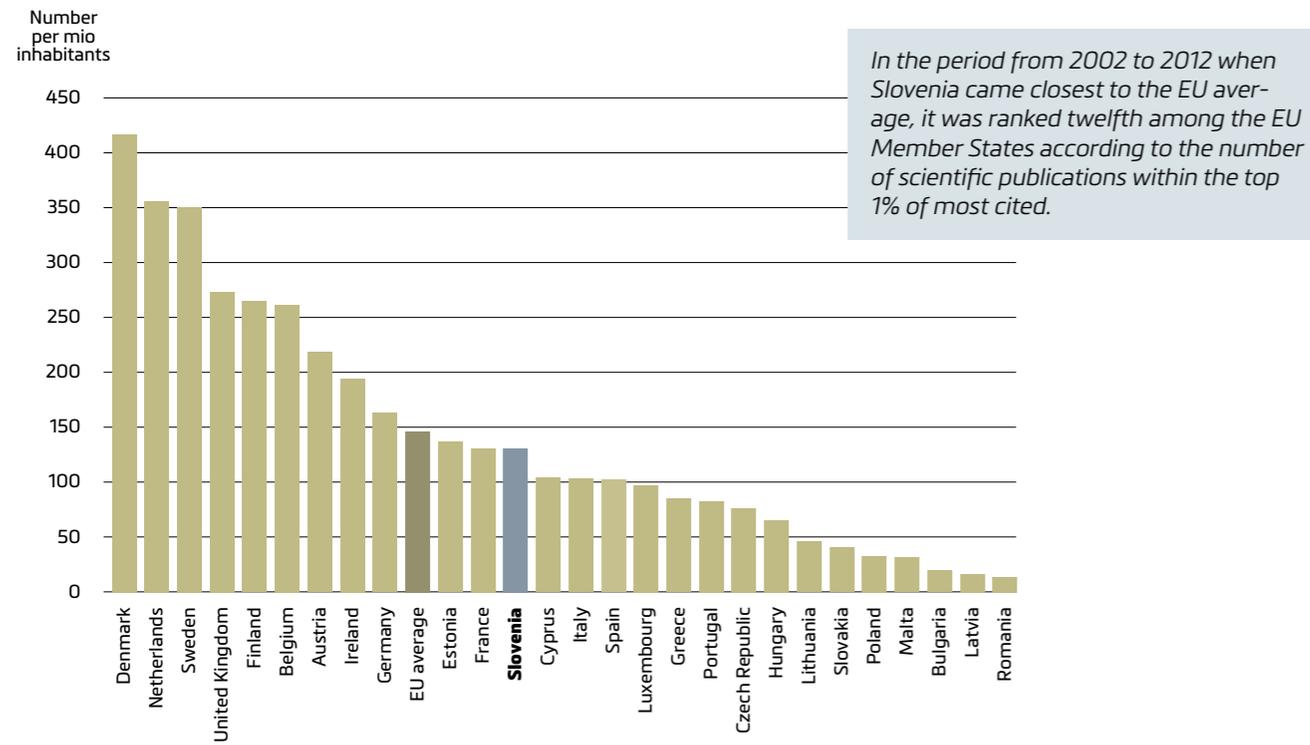
It is quite realistic to expect that the European average of the 1% highly cited scientific publications will also be reached in the coming years.

Movement of the number of scientific publications within the top 1% of highly cited



Source: Web of Science

Number of scientific publications within the top 1% highly cited of the EU Member States (2002-2012)



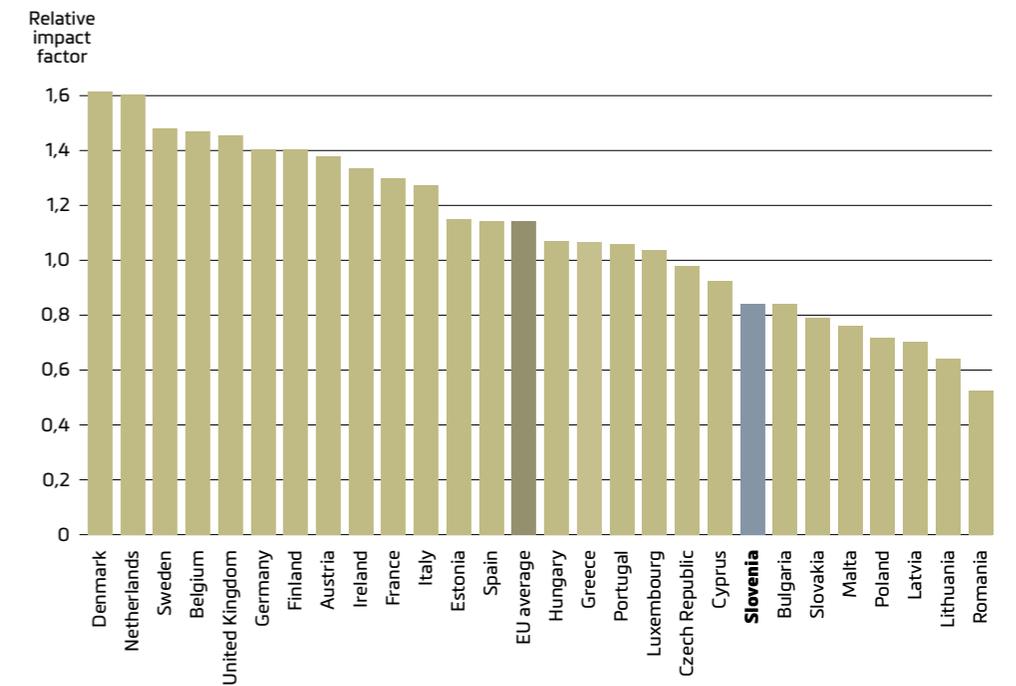
Source: Essential Science Indicators, ISI Web of Knowledge, 2007-2013

Relative impact factor

The relative impact factor is a standard international bibliometric indicator measuring the ratio between the received citations and the number of publications in a particular country according to the worldwide average impact factor in a particular scientific field.

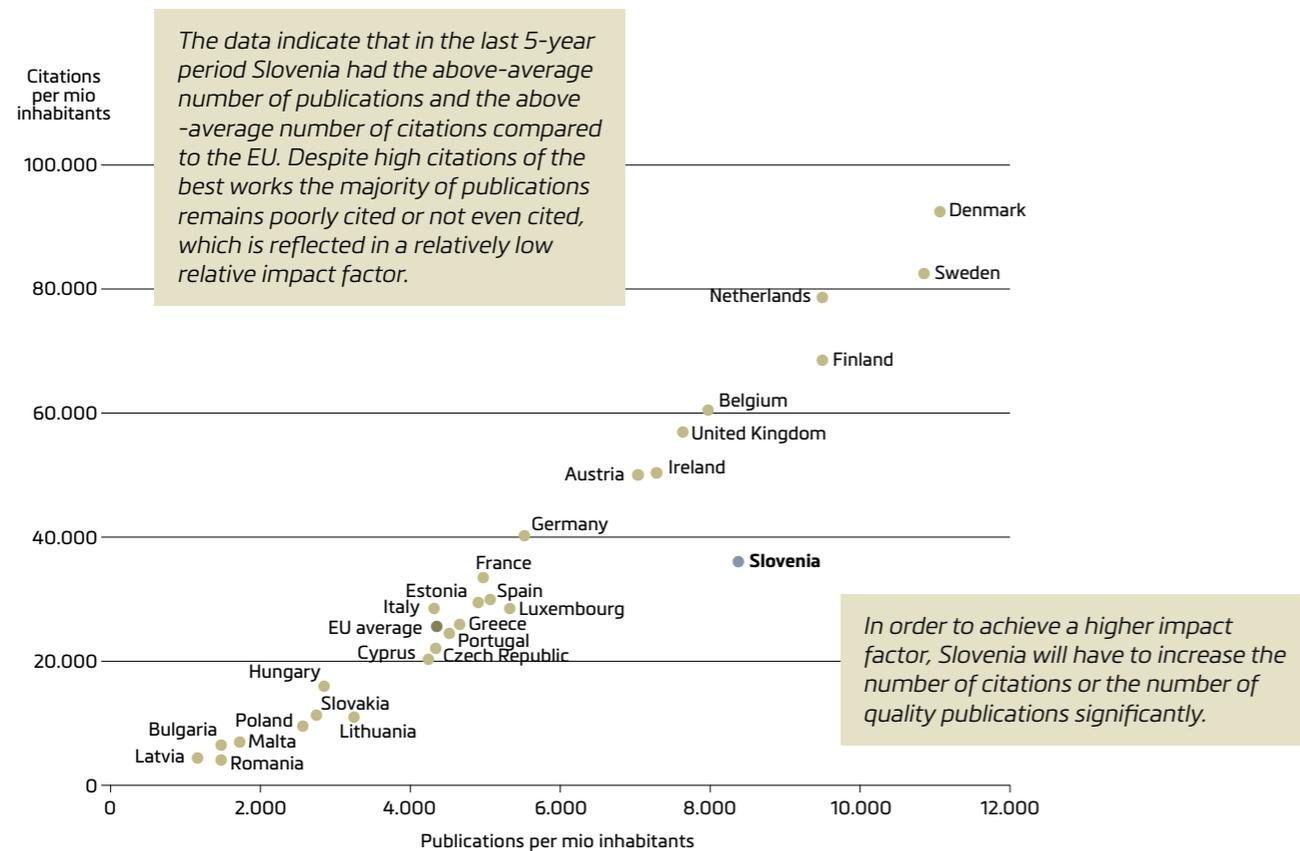
Among the EU Member States, Slovenia is ranked twentieth based on the relative impact factor. The value of this indicator is still below the EU average despite the above-average growth of the relative impact factor.

Relative impact factor for the EU Member States (2008-2012)



Source: Web of Science

Publications and citations by EU Member State (2008-2012)



Source: Web of Science

To commit to the quality of scientific publications, the Agency applies the following mechanisms:

- In its methodology, higher scores are allocated for citations than for the number of publications: the A2 assessment that measures citations has double weight in the total score of a researcher compared to the A1 assessment measuring the volume of publications.
- It introduced the criterion of scientific excellence measured on the basis of the publications in the most important scientific journals:

A² quantitative assessment – exceptional achievements in the evaluation period of five years.

A¹ quantitative assessment – very quality achievements in the evaluation period of five years.

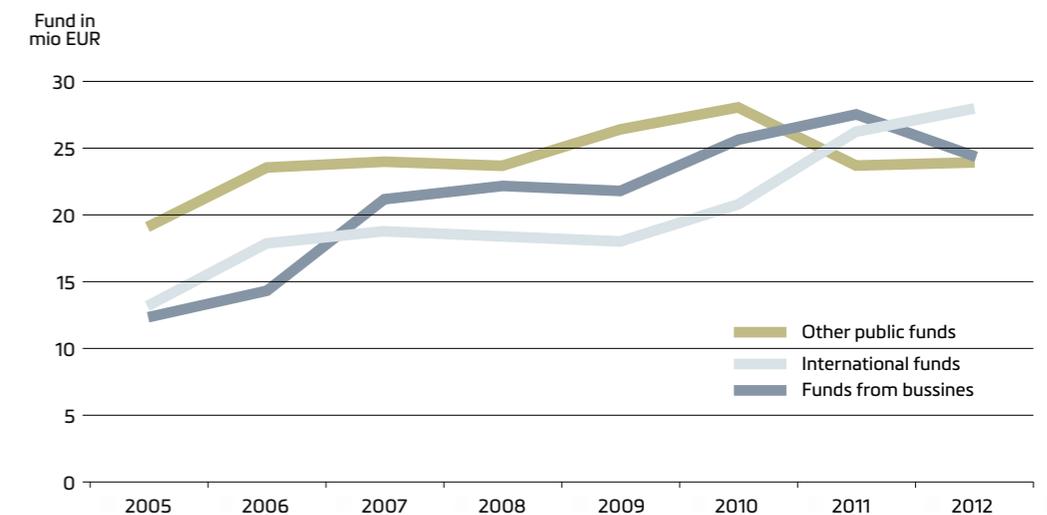
The A¹ in A² quantitative assessments are the criteria for granting scientific titles, the criteria applied when composing projects and programme groups. In 2014, two thirds of the members of the programme groups for all disciplines need to meet either the condition – A¹ is more than 25 or A² more than 0.

Funds from outside the Agency

Research is embedded into our living space and its broader objective is to contribute to cultural development, environment protection, the development of knowledge-based society, social progress, the creation of new jobs and better quality of life. The transfer of knowledge is carried out at two levels. The first is the transfer of knowledge between professors and students whereas the second is facilitated between research organisations, economy and broader society. The cooperation between economy and science is very intensive in Slovenia and indicates constant growth fully comparable with

the EU. In 2011, economic entities provided public universities with EUR 27 million with regard to research development projects. In 2012, a drop of EUR 3.0 million can be identified in the intensity of cooperation. It is interesting to know that high quality research is carried out in Slovene companies. Among some first tens of research organisations with a large number of frequently cited publications there are numerous companies. A thorough overview reveals these are the articles that are usually the result of cooperation between companies and public research organisations.

Movement of funds provided to the public sector from outside the Agency



Source: Eurostat

By amending the legislation, the Agency wishes to enable stable financing of (mainly) public research institutes by interested ministries, and to strengthen the relationship between research organisations and the ministries.

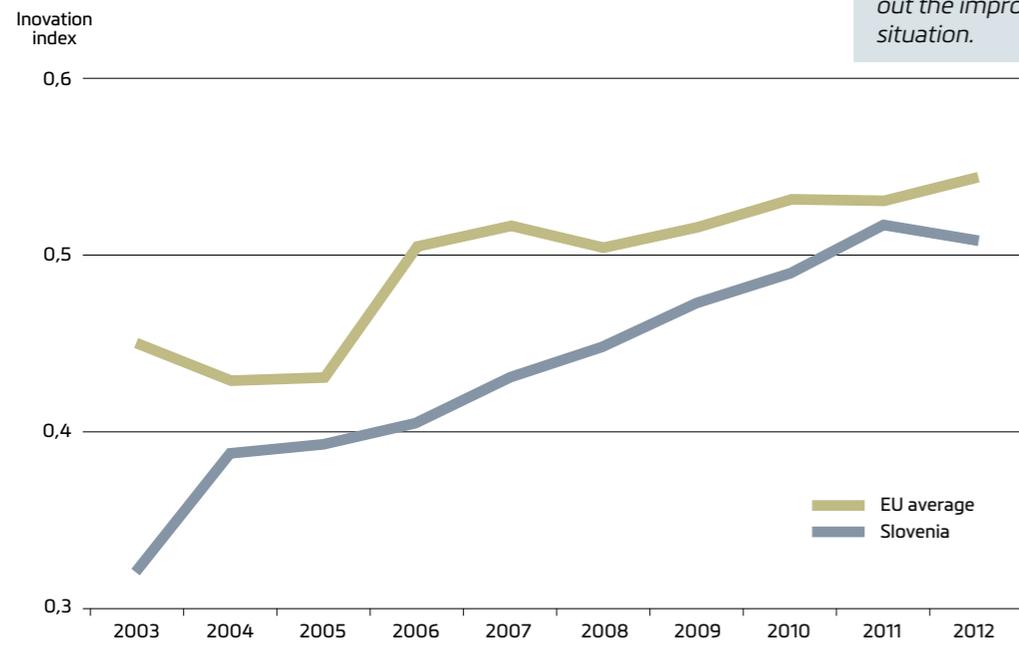
Innovation index

The Innovation Union Scoreboard provides a comparative assessment of the innovation performance of individual countries. It is a composite indicator building on data for more than twenty indicators covering the educational structure, openness and excellence of the research system, financing, support to investment, cooperation and entrepreneurship and on the intellectual assets.

The Member States are placed into the four country groups, with the innovation leaders representing the first group. Based on the above mentioned indicators Slovenia is classified into the second group, of the so called innovation followers, where it is the leading one in innovation growth together with Estonia.

The Agency has been striving to stop the trend of decreasing the intensity of cooperation between the economy and science observed in 2012 to return to successful growth of the last decade. This of course will not be possible without the improvement of the economic situation.

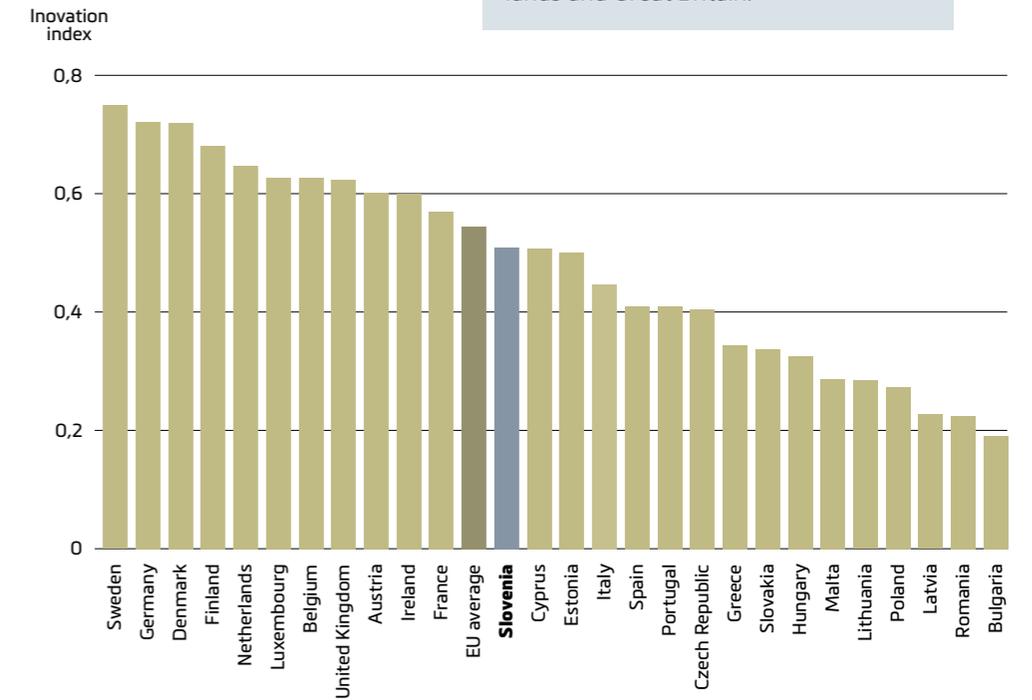
Innovation index in 2012



Source: Innovation Union Scoreboard

Innovation index for the EU Member States in 2012

Based on the data of the Innovation Union Scoreboard, Slovenia is in the group of innovation followers together with Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxemburg, the Netherlands and Great Britain.



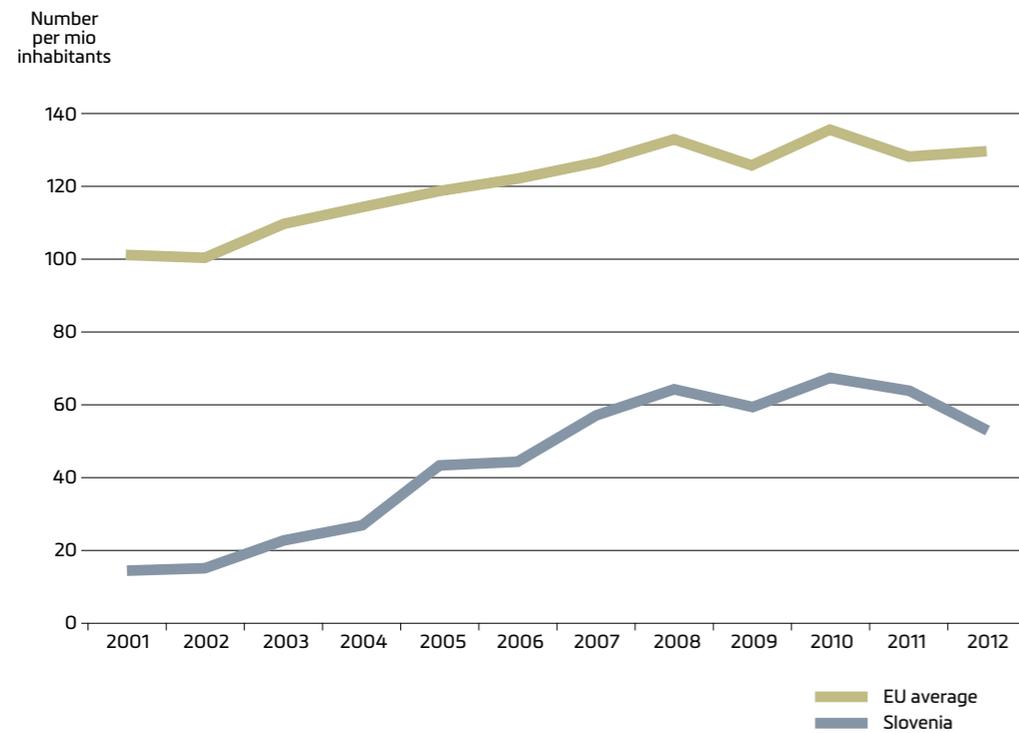
Source: Innovation Union Scoreboard

Patent applications filed with the European Patent Office (EPO)

The western countries have been successfully developed with regard to the number of patent applications filed with the European Patent Office, similarly to publications, citations and relative impact

factor. With respect to the number of patent applications filed with the EPO per million of population, Slovenia comes after the most developed countries.

Movement of the number of patent applications filed with the EPO

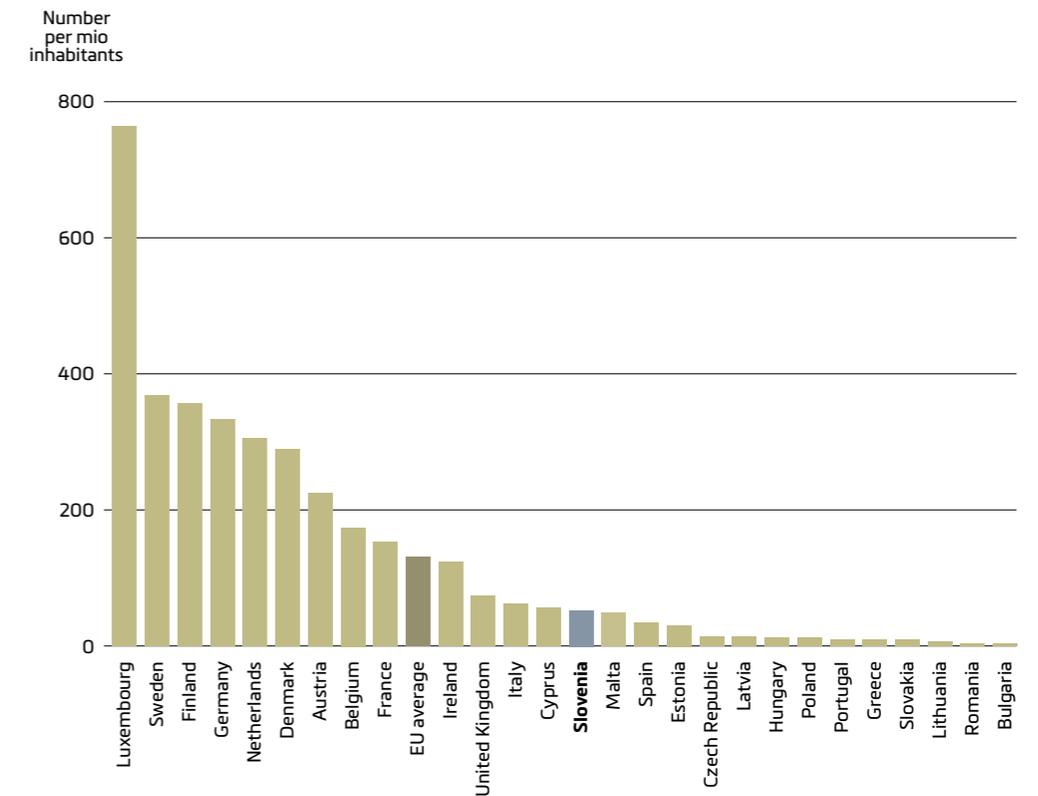


Source: European Patent Office

With respect to the number of patent applications filed with the EPO per million of population in 2012, Slovenia is ranked fourteenth with 53.2 applications, which is still far below the value of the EU average.

Recently, the list of countries ranked highest has not changed significantly. The top countries are: Luxemburg, Sweden, Finland, Germany, the Netherlands, Denmark, Austria, Belgium and France.

Number of patent applications filed with the EPO in 2012



Source: European Patent Office

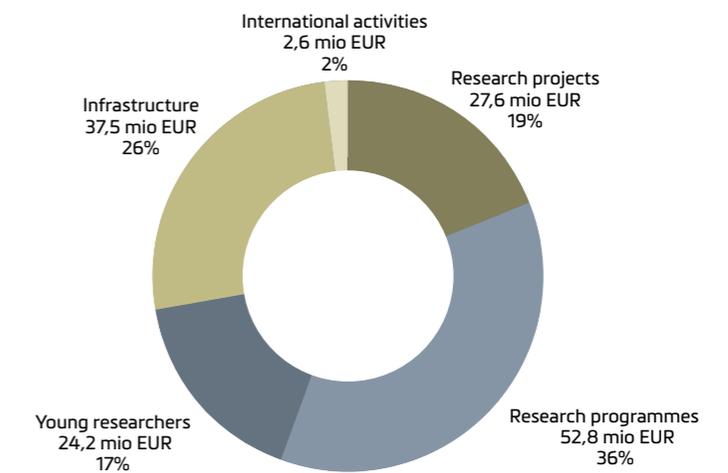
A detailed overview of international analysis is published on the Agency's website:
<http://arrs-www-tmp.arrs.si/sl/finan/>

Structure of financing



Allocation of the Agency's funds 2013

EUR 144.7 mio



Co-financing of research projects includes co-financing of basic, applied and postdoctoral projects, the projects of the complimentary scheme and the ESF (European Science Foundation), and targeted research projects.

Co-financing of research programmes means long-term financing of research expected to be topical and useful over an extended period of time.

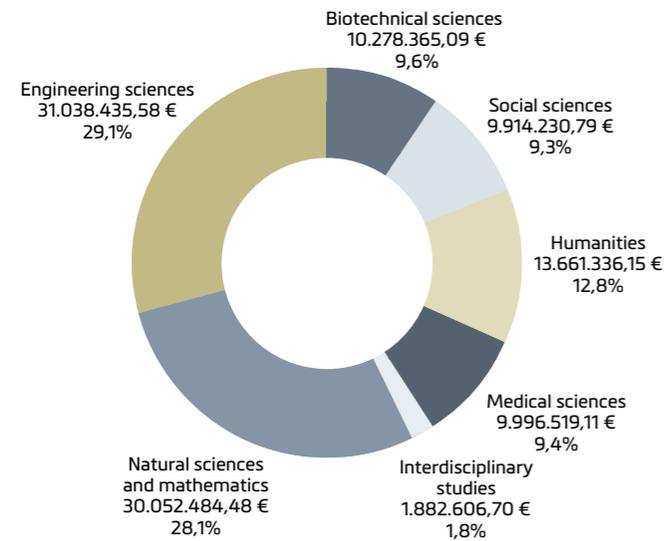
Co-financing of young researchers is the financing of postgraduate studies and research training.

Co-financing of research infrastructure includes the co-financing of founding obligations and infrastructural programmes

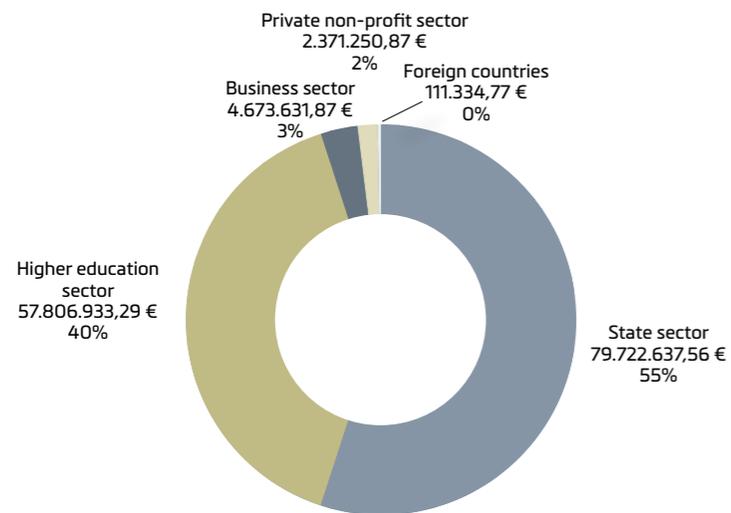
as a part of institutional financing, and COBISS, IZUM, other library and information activities and infrastructure, foreign periodicals, databases, scientific and popular scientific publications.

Co-financing of international activities includes the programmes of international scientific cooperation that were co-financed in the amount of EUR 262,578 (more than 32% less than in 2012), bilateral cooperation EUR 927,870 (5% less than in 2012), the EU Framework Programme EUR 418,500 (53% more than in 2012) and the promotion of international cooperation within the European Union EUR 999,861 (30% less than in 2012).

Allocation of funds by scientific discipline¹



Allocation of funds by sector of activity

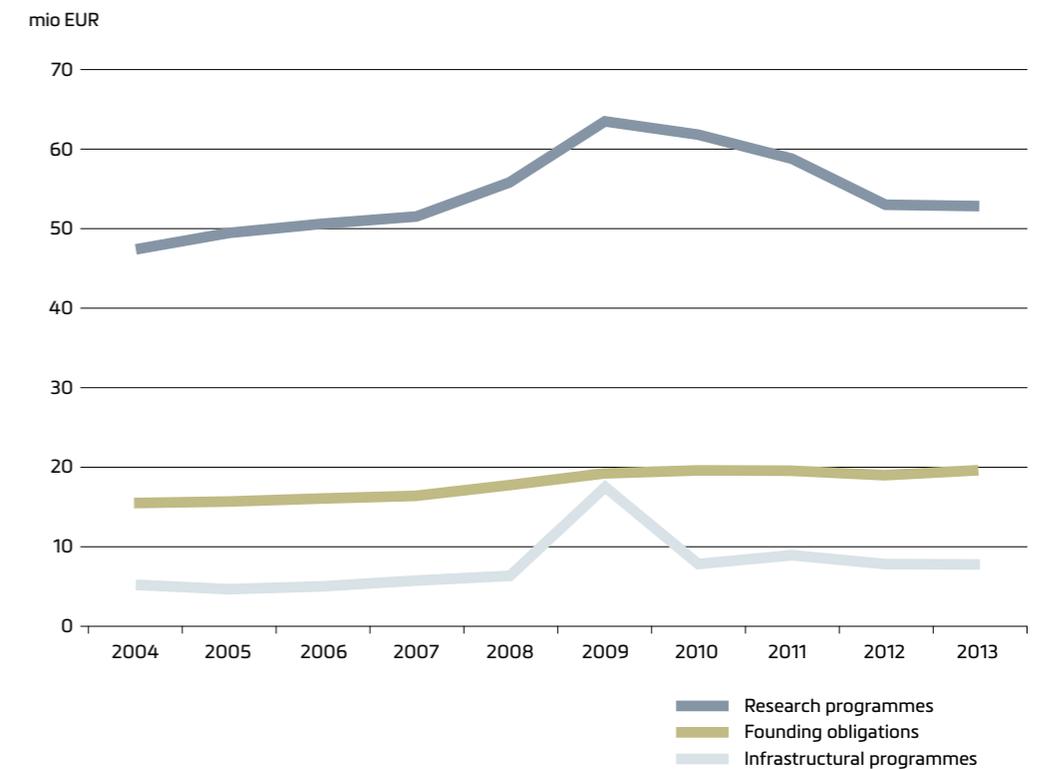


¹ Funds for founding obligations, infrastructural programmes and similar that cannot be classified by discipline are not taken into consideration.

Institutional financing

RESEARCH PROGRAMMES: EUR 52.8 mio
FOUNDING OBLIGATIONS: EUR 19.5 mio
INFRASTRUCTURAL PROGRAMMES: EUR 7.8 mio

Movement of funds for research programmes, founding obligations and infrastructural programmes



Research programmes, infrastructural programmes and founding obligations represent the stable part of the financial support to research activities.

In 2013, the Agency paid EUR 52,796,523 to co-finance research programmes. It equalled 36.5% of the Agency's total budget or 2 percentage points more than in the previous year. In 2013, funds were provided to 289 research programmes, namely 60 programmes in the field of natural sciences and

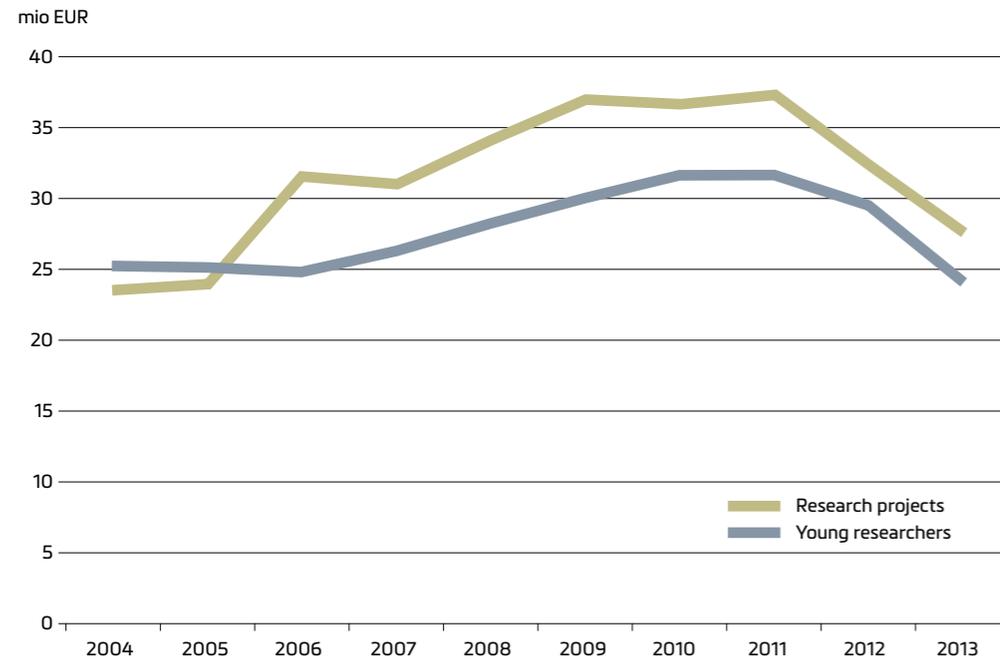
mathematics, 88 programmes in the field of engineering, 34 programmes in the field of medicine, 20 programmes in biotechnical sciences, 45 programmes in social sciences and 42 programmes in humanities.

EUR 19,513,830 was allocated to founding obligations (more than 2% more than in 2012), and EUR 7,759,672 to infrastructural programmes (more than 1% less than in 2012).

Competitive financing

RESEARCH PROJECTS: EUR 27.6 mio
 YOUNG RESEARCHERS: EUR 24.2 mio

Movement of funds for research projects and young researchers



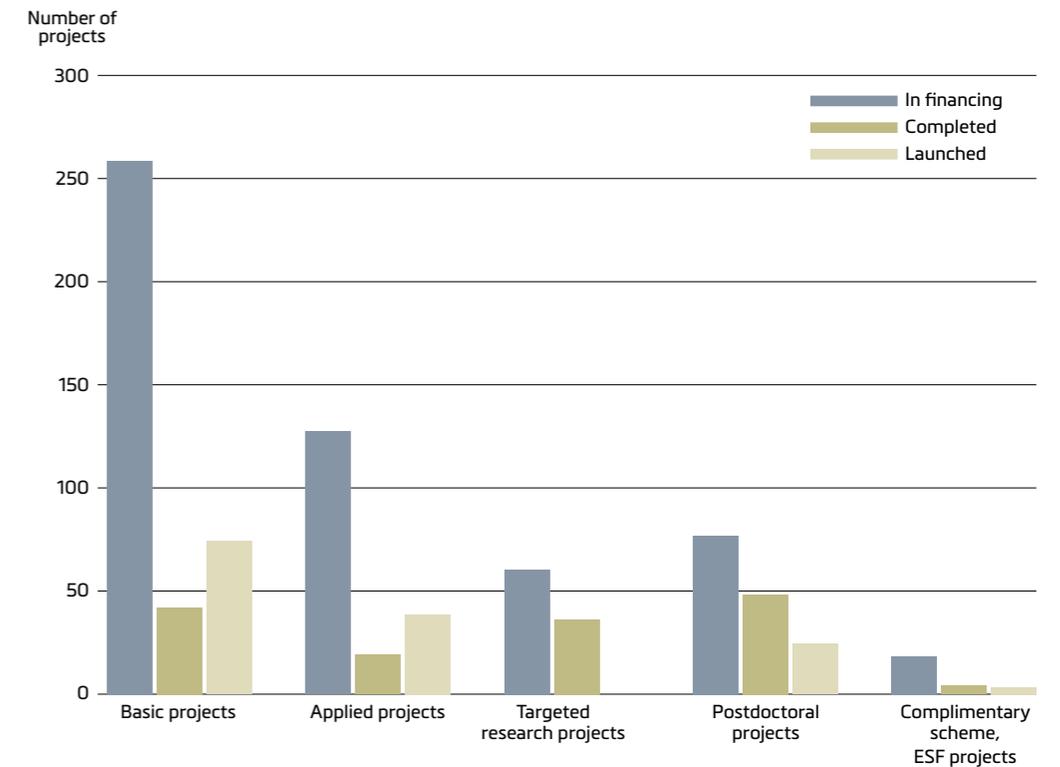
In 2013, the funds allocated by the Agency to co-finance research projects amounted to EUR 27,633,335, which equalled 19% of the total budget of the Agency. This was by EUR 4.8 million less than in 2012; however, compared to the previous year, the share of the Agency's budget was by almost two percentage points lower. The projects in natural sciences and mathematics were provided with total of EUR 5,576,784 (more than 13% less than in 2012), the engineering projects EUR 7,109,761 (15% less than in 2012), the projects in the field of medicine EUR 3,183,906 (almost 16% less than in 2012), the projects in biotechnical sciences EUR 3,338,069 (9% less than in 2012), the projects in social sciences EUR 2,638,776

(23% less than in 2012), the projects in humanities EUR 4,609,040 (almost 17% less than in 2012), and the interdisciplinary projects EUR 1,471,673 (almost 6% less than in 2012).

In 2013, the funds allocated by the Agency to co-finance the training of young researchers amounted to EUR 24,151,000, which equalled 16.7% of the total budget of the Agency. This was by EUR 5.5 million less than in 2012. Compared to the previous year, the share of the Agency's budget was by more than two and a half percentage points lower. The training programme was attended by 1293 young researchers in 2013.

BASIC PROJECTS: EUR 15,651,856
 APPLIED PROJECTS: EUR 8,091,585
 TARGETED RESEARCH PROJECTS: EUR 856,224
 POSTDOCTORAL PROJECTS: EUR 1,783,802
 COMPLIMENTARY SCHEME, ESF PROJECTS: EUR 1.2 mio

Financed, completed and started projects in 2013



In 2013, the Agency co-financed 259 basic research projects with the funds from the national budget totalling EUR 15,651,856, which was more than EUR 2.0 million or 12% less than in 2012. This involved 42 completed basic research projects whereas 74 basic research projects were started and received funds in 2013.

127 applied projects were co-financed in 2013 and received EUR 8,091,585, implying 14-percent decrease compared to the previous year. 19 projects were completed and 38 new applied research projects were allocated funds.

Young doctors and researchers who earned their PhD up to 10 years ago were holders of 72 projects. Two of them were completed in 2013, and 35 new projects became involved in funding.

Co-financing of the CRP projects 'Competitiveness of Slovenia 2006-2013' (Konkurenčnost Slovenije 2006-2013) and 'Securing Food for Tomorrow' ('Zagotovimo. si hrano za jutri') received EUR 856,224 in 2013, representing a 27-percent drop compared to 2012. In 2013, 60 projects were financed (2 in the field of natural sciences and mathematics, 2 in engineering, 48 in biotechnical sciences, 7 in social sciences

and 2 interdisciplinary projects) and 36 projects were completed.

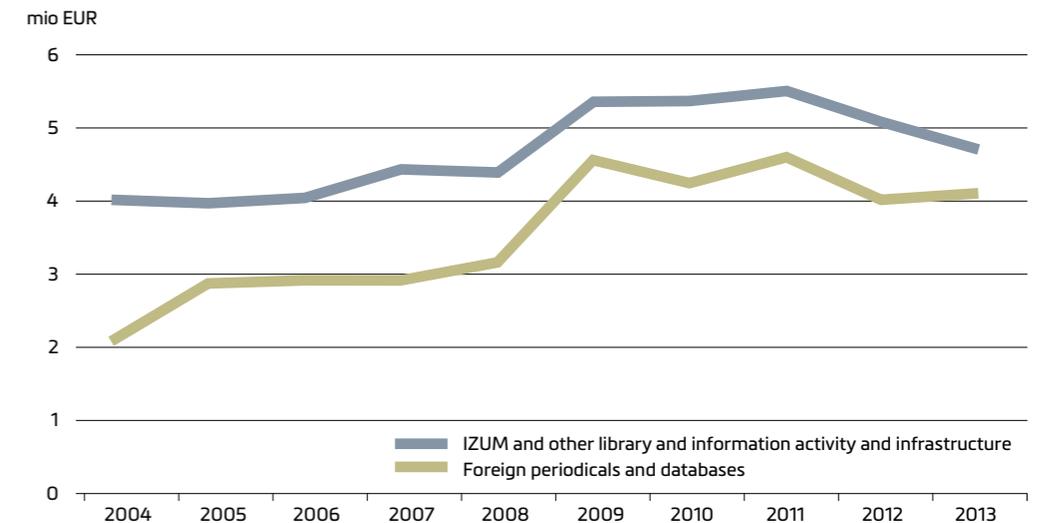
The funds available to finance postdoctoral projects decreased for 30%. In 2013, EUR 1,783,802 was used to finance these projects, the funds were allocated to total of 77 projects of which 48 were completed and 24 postdoctoral projects started.

EUR 1,249,869 was provided in 2013 to co-finance international projects which were proposed and adopted within the EUROCORES and ECRP of the European Science Foundation (ESF) based on the international peer review and the projects of the so called complimentary schemes (the projects of applicants from Slovenia with a positive assessment in the international peer review within the tenders of the European Research (ERC) or in the EUROCORES and ECRP programmes of the ESF; however, they were not selected to be co-financed). 18 research projects were financed (6 in natural sciences and mathematics, 1 in engineering, 5 in social sciences and 6 in humanities). In 2013, financing of three projects started (2 in natural sciences and mathematics and 1 in humanities), whereas 2 projects in social sciences and 2 in humanities were completed.

Other infrastructure

IZUM and other library and information activity and infrastructure: EUR 4.7 mio
FOREIGN PERIODICALS AND DATABASES: EUR 4.1 million

Movement of funds provided to the IZUM, foreign periodicals and the database



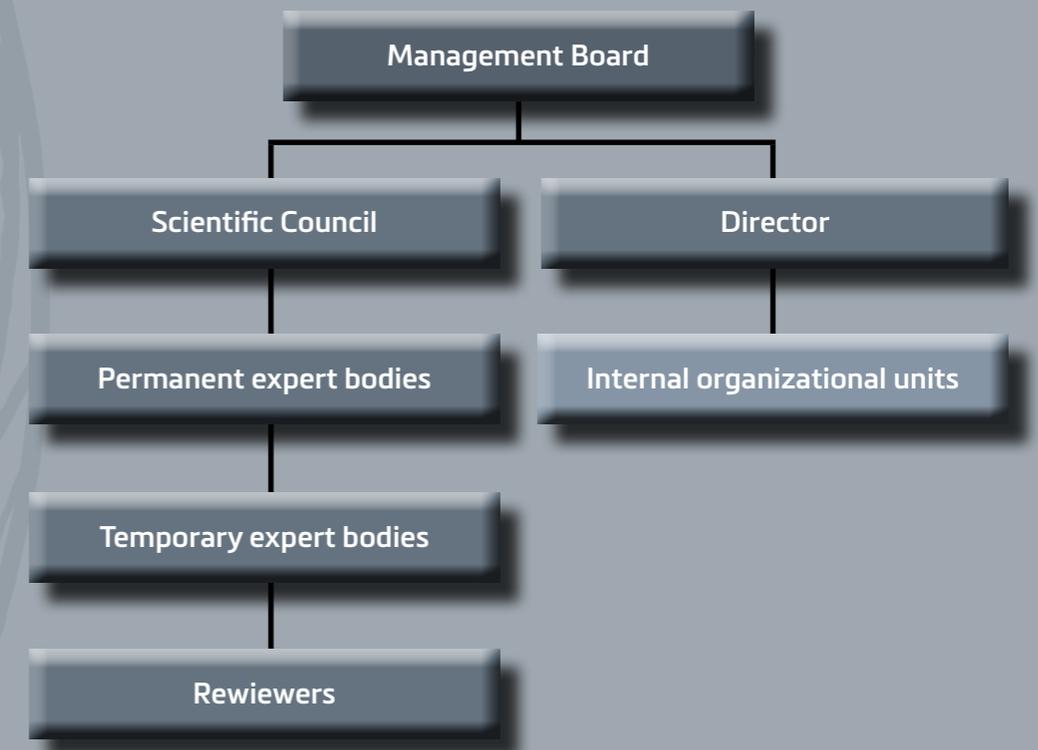
The IZUM (Institute of Information Science) performs the tasks of the information service for research activities, education and culture in addition to the tasks of library and information service within the national bibliographic system. By co-financing the activities of the IZUM Public Institute, the Agency provides conditions for the development and operation of the library and information system and the information system on research activity, SICRIS, and the conditions to access relevant foreign information services and databases. The Agency co-finances the purchase of foreign scientific literature and electronic access to the latest databases in the world in order to ensure the necessary inflow and accessibility of foreign scientific and professional information to meet the needs

of research, educational and development activities. Literature is publicly accessible in all libraries of research organisations and via the COBISS system. The IZUM and other library and information activities and infrastructure were allocated EUR 4,713,437 (more than 7% less than in 2012) whereas foreign periodicals and databases were provided with EUR 4,105,562 EUR (more than 2% more than in 2012). In 2013, the Agency allocated EUR 1,403,617 to co-finance scientific publications including domestic scientific and popular science periodicals, and scientific monographs, which is almost four times more than in 2012. The reason for this was that the Agency also took over co-financing of the publishing of scientific monographs and scientific periodicals from the Slovenian Book Agency.

Detailed overview of the financing of research activity by year is available on the Agency's website. <http://arrs-wwww-tmp.arrs.si/sl/finan/>

Organisation chart

Slovenian
Research
Agency





Management Board

President: *Rado Bohinc, Phd*
 Deputy president: *Milena Horvat, Phd*
 Members:
Karin Stana Kleinschek, Phd
Blaž Rodič, Phd
Tomaž Savšek, Phd
Matija Tuma, Phd
Pavel Zgaga, Phd

Composition from the latest change in April 2013

Scientific Council

President: *Vito Turk, Phd*
 (natural sciences and mathematics)
 Members:
Denis Donlagič, Phd (engineering)
Franc Strle, Phd (medical sciences)
Maja Ravnikar, Phd (biotechnical sciences)
Anuška Ferligoj, Phd (social sciences)
Rado Riha, Phd (humanities)

Permanent expert bodies

Scientific Research Councils by discipline

NATURAL SCIENCES AND MATHEMATICS

President: *Branko Stanovnik, Phd*
 Members:
Sandi Klavžar, Phd
Slobodan Žumer, Phd

Dragan D. Mihailović, Phd
Alenka Malej, Phd
Janez Plavec, Phd
Boris Turk, Phd
Gregor Anderluh, Phd
Mihael Brenčič, Phd
Dušanka Janežič, Phd
Radmila Milačič, Phd
Julijana Kristl, Phd

ENGINEERING

President: *Igor Emri, Phd*
 Members:
Andrijana Sever Škapin, Phd
Mojca Škerget, Phd
Danilo Suvorov, Phd
Marko Topič, Phd
Barbara Malič, Phd
Stanislav Strmčnik, Phd
Matjaž Vidmar, Phd
Marjan Heričko, Phd
Gorazd Štumberger, Phd
Mitjan Kalin, Phd
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MEDICAL SCIENCES

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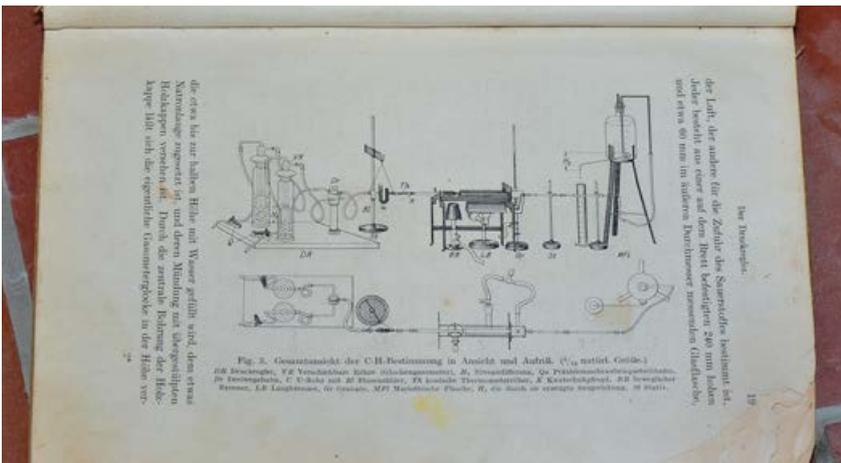
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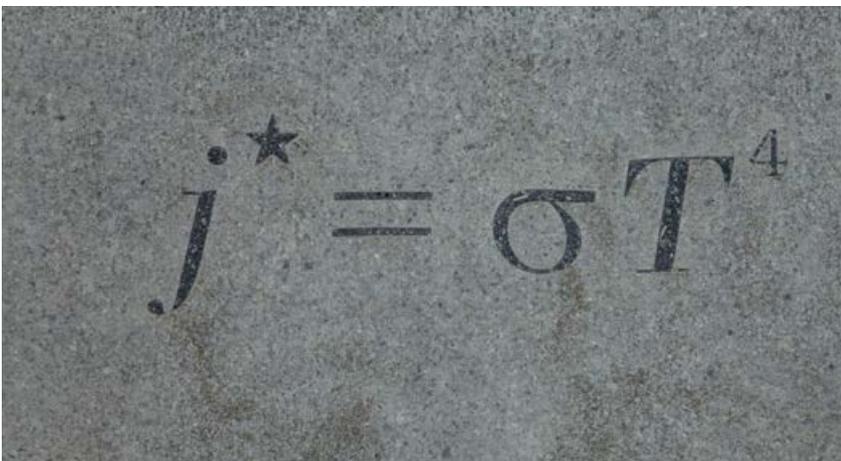
Department of Information Technology
Mitja Tomažič, Head of Department



Map of Carniola, Karst, Istria and the Slovenian landscape by Janez Vajkard Valvasor shown in '*Glory of the Duchy of Carniola*'; which was released in 1689 in Nuremberg. The Glory of the Duchy of Carniola is Valvasor's most extensive work and is considered as one of the most important scientific and artistic works of Slovenia. (pages 6-7)



Schematic representation of the original device for the determination of carbon and hydrogen in the organic compounds in mg quantities. For this method Frederick Pregl, chemist of Slovenian origin received the *Nobel Prize in 1923*. The scheme on the photo is shown in the book of Friderik Pregl issued in 1916. (page 22)



Stefan's law - law of physics, which was discovered in 1879, by the Slovenian physicist Joseph Stefan. Institut 'Jožef Stefan', one of the biggest research organizations in Slovenia is named after him and so is the street in Ljubljana, where the formula of Stefan's law is carved into the stone. (page 36)