

ANNUAL REPORT  
2015



**arrs**  
SLOVENIAN RESEARCH AGENCY



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# Foreword

Prof Dr József Györkös, *Director*

**“ In 2015, the Slovenian Research Agency operation was marked by activities and events through which we endeavoured to expand dialogue with researchers and provide stability and urgent financial predictability for the research activities system in the Republic of Slovenia.**

At the beginning of 2015, the Agency Steering Group was established at the proposal of the Management Board. It conducted activities most intensively during the first half of the year. It provided new standards for Agency communication with participants and significantly improved any such dialogue. The work of the office, linked to the necessary changes to the system of co-financing, evaluating and monitoring research activities, was opened up to public debate and responses, which contributed to common system proposals despite their frequently individual nature. The common system proposals are summarised in the draft of the new Rules on Procedures of (Co)financing, Evaluation and Monitoring of Research Activities that was sent to the relevant ministry for approval on 1 December 2015.

In 2015, the Agency's basic activities were carried out in accordance with the annual work plan. The Agency tendered for research projects in the extent of 12 million euros, representing the largest volume of project financing since 2011. The funding commenced in 2016, therefore the increase of funds will be evident next year. The evaluation of research programmes that constitute a stable part of research organisation funding shall be carried out at the end of their three- to six-year contract period. In 2015, funding

ended for only a small number of research programmes; therefore, the evaluation for the next funding period was carried out on a smaller scale. The funding of six-year infrastructure programmes, which were confirmed within the public call in 2014, also started in 2015.

In 2015, for the first time since 2009, the Agency carried out a call for research equipment. Due to the relatively small scope, the public response was diverse, which is understandable; therefore, we strive to increase the volume of funds for the next so-called research equipment package. For the first time since 2010, a larger number of public authorities cooperated as co-financers in the call, within the Target Research Programme, which resulted in expanding the range of topics and thus opened the way for the candidacy of research groups of different disciplines. The Agency responded to the increasing outflow of unemployed personnel from Slovenia with a pilot call for unemployed young doctors of science. Within this call, the Agency awarded a two-thirds share of wages to 45 young doctors that were evidenced as unemployed within the records of the Employment Service of Slovenia. The repetition of this pilot call depends on the assessment of its effectiveness.

In 2015, the Agency's international activities were focused on the implementation

of bilateral projects based on memoranda of the competent ministry cooperation; furthermore, cooperation in the NORFACE and Urban Europe projects – in 2015, the Agency became its full member – was enhanced. The Agency is a constructive member of the European agencies association Science Europe, which continues to implement certain activities of the European Science Foundation, which will cease operations in its current form in 2016.

The role and scope of the projects carried out under the scheme of the leading agencies or a complementary scheme are increasing in number and the scale of research. Such projects are an important complement to the national scheme on funding research activities and encourage researchers to integrate into the international environment, particularly in applying for the most prestigious projects of the European Research Council. This is also the reason why in this year's annual report the Agency will give special attention to prof. dr. Nedjeljka Žagar, a meteorologist at the Faculty of Mathematics, University of Ljubljana, who is a holder of one of the three ERC projects that are being carried out in Slovenia.

At the level of functioning of the Agency's bodies, the biggest change was in the appointment of the Scientific Council members, as the mandate of the previous formation, chaired by prof. dr. Vito Turk, came to an end. I would like to take this opportunity to thank the chairman, members prof. dr. Anuška Ferligoj and prof. dr. Maja Ravnikar, academic prof. dr. Franc Strle, prof. dr. Denis Đonlagić and prof. dr. Rado Riha for their work.

Considering the circumstances, which strongly depended on the assets, the Agen-

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cy's operation activities carried out in 2015 can be assessed as satisfactory. Since 2011, the responsible minister, prof. dr. Maja Makovec Brenčič, was the first to halt the decrease in funding for research activities with a partial rebalancing in 2015 and the budget for 2016 and 2017, which were approved at the National Assembly in December 2015. Symbolically speaking, the importance of this increase is significant as it represents an incentive for researchers, but unfortunately it does not suffice to restore the situation or achieve a surplus in financing research activities. The Agency will continue to passionately strive to increase the share of research in the budget of the Republic of Slovenia. Arguments will be used as a means to this end and the Agency will use data to illustrate the consequences. The steady decrease in funds for scientific activity has largely gone unnoticed in the public eye due to the dedication of individuals and groups to continue their research despite increasing budget strains. However, this is not a sustainable state of affairs for the scientific community. Therefore, we ask policy makers to allocate science, regarding its assets and its visibility, a place comparable to that of the rest of Europe.

József Györkös



## Legend

Natural sciences	
Engineering sciences	
Medical sciences	
Biotechnical sciences	
Social sciences	
Humanities	
Interdisciplinary research	

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## IN THE SPOTLIGHT

# »Revealing the internal dynamics of the atmosphere«

Prof Dr Nedjeljka Žagar, *Faculty of Mathematics and Physics, University of Ljubljana*

Interview: Ina Petric

**People often associate meteorology with the weather, which is nowadays increasingly in the public focus.**

That is right. Meteorology is close to people because weather as a synonym for meteorology, affects us throughout our lives. Many of our memories of major life events have a meteorological component. Since the effects of atmospheric processes repeat themselves and are observable, people have the feeling that they understand them.

**How did you become involved in this field?**

I'm not one of those who dreamt of being a meteorologist as a child, or even of having a career as a scientist. During my physics studies, I chose to focus on geophysics and on meteorology after that. My first job after graduating in theoretical meteorology was in the field of operational meteorology – weather forecasting. Several years in, I realised I wanted to do research so I handed in my notice and accepted the first research job I was offered. This was at Stockholm University, where I earned my PhD in dynamical meteorology. This year marks the twelfth year since I started researching the dynamics of atmospheric processes and their modelling for the purpose of forecasting.

**What does it mean to do research in dynamical meteorology?**

Atmospheric science research today generally means that we apply the laws and knowledge of classical physics, modern meteorological measurements (primarily satellite measurements) and modern numerical methods, in particular methods for solving partial differential equations. Through a combination of sources of information and complex solution methods, we continuously improve our understanding of atmospheric processes and how they interact with the other components of the climate system, meaning with processes in the oceans and soil.

The numerical solution of the system of equations, which approximately describes the evolution of the atmosphere from the initial conditions defined by available observations, is known as numerical weather prediction. Though it has seen remarkable progress over the last two decades, operational weather forecasting is facing great challenges today. There are important components of numerical prediction models that are not related to classical thermodynamics and the equations of motion, which we know well, but to processes for which we do not

have precise mathematical terms. Examples of these processes include the growth of water droplets in clouds or the exchange of momentum, moisture and heat between the soil or sea and the atmosphere. Since processes like this cannot be described accurately, the quality of their description, which we call parametrisation, must be assessed by verifying results against observations. High-quality, regular observations of the 3D structure of the atmosphere are thus extremely important, not only for the preparation of the initial conditions for a forecast, but also for developing new parameterisations and improving the models. Improvements of weather prediction models are intimately related to the advancement of climate models.

Overall, we can say that meteorology is a field of applied physics for which the time period between research and its application in practice is very short compared to most other areas of physics. For example, results in the field of ensemble prediction research just a few years ago are now implemented in practice and have a significant impact on the energy sector, agriculture, tourism and ultimately on the quality of our daily lives.

**This is a highly interesting and useful field. How much interest is there in studying meteorology?**

According to the survey, ten to thirty high-school students interested in studying meteorology attend Information Day at our faculty every winter. About ten to twenty students enrol in the first study year, but the number is much lower in the higher years of study and on the master level – on average up to five. This may seem a small number, but it is comparable to the number of students at some other universities in larger countries that have more professors of meteorology and bigger

**Dr Nedjeljka Žagar is an associate professor of meteorology at the University of Ljubljana, Faculty of Mathematics and Physics. In the 2011 European Research Council (ERC) call for applications she received a grant to begin her independent research and thus became the first recipient of ERC funds to work in Slovenia. MODES project is implemented in the field of dynamic meteorology, general circulation and climate dynamics.**



research groups. One can also ask how many meteorologists Slovenia needs. Since the beginning of meteorology study in Slovenia at the University of Ljubljana, which carries out the only meteorology study program in the country, we have produced around 115 meteorologists. Nearly half of them are employed at the Slovenian Environment Agency. In recent years, some of our students have chosen to continue their master-level studies in Western European countries. All of them did exceptionally well. We see this as confirmation that our curriculum is of relatively high quality, regardless of our small size and a relatively short list of optional courses. In addition to the meteorology courses at our faculty, carried out at the bachelors, masters, and graduate levels by two employed and a few adjunct professors, we also hold introductory meteorology courses at several other faculties of the University of Ljubljana, namely at the Faculty of Mechanical Engineering, Faculty of Arts, Faculty of Health Sciences, and the Faculty of Civil and Geodetic Engineering.

**A few years ago, we were pleasantly surprised to see you win a European Research Council Starting Grant with virtually no problems. You were successful in one of the most demanding grant calls in Europe. What was the selection like and what was your project?**

My ERC starting grant MODES is now in its fifth, final year and it is scheduled to end in November. I applied for an ERC grant because I was looking for funding opportunities that could allow me to establish a research group. Namely, when I got an assistant professor position at the Faculty of Mathematics and Physics, I became part of the teaching staff with 100% teaching engagement, with no graduate students or research funds unless I won external research grants. Thus I needed

to find funding in order to build a group and to continue my research and collaboration with colleagues from the USA and Japan. As I could not win national funding, winning an ERC grant instead was a great success for me.



#### An example of basic oscillations of atmospheric motions

Analytical solution for the Kelvin wave winds and temperature. The atmospheric Kelvin wave plays a major role in tropical variability on all scales. In tropical oceans, the Kelvin wave signal is associated with El Niño dynamics.

Project: MODES, UL-FMF, 2015

The ERC evaluates the scientific excellence of the proposal's principal investigator and the proposed idea. I believe that six years of post-doctoral research helped me significantly to prepare the proposal. I had studying, research, and teaching experience from several countries and universities that helped me become an independent researcher and to develop ideas that constituted my proposal.

At about the same time as the ERC, I also obtained funding from the European Space Agency while acting as a leader of one of the working packages within the Centre of Excellence SPACE-SI. In this way, I established a group of five to six young researchers, becoming their mentor. Unfortunately, this also brought plenty of administrative and management work while it was hardly possible to reduce the teaching load. Such a situation is challenging for a researcher because the time available for research is reduced while mentoring needs grow, especially without a post-doc or a senior researcher in the group.

In 2016, both the MODES project and two other projects funded by the European Space Agency are going to end. Thus this is going to be a very important year for me, in particular because the projects deal with rather different research topics.

**As you already said, your MODES project deals with dynamic meteorology and numerical weather prediction. Can you tell us a bit more about the project outcomes and what it brings to meteorology?**

The MODES project belongs to the field of dynamical meteorology, and it deals with the unbalanced component of global circulation. It focuses on the distribution of energy across various scales of atmospheric motion, in par-

ticular between the balanced and unbalanced or inertio-gravity motions. These are the two basic modes of atmospheric oscillations. Using certain approximations, we can deconstruct atmospheric motions into basic oscillations with various physical characteristics such as frequencies, wavelengths, dispersion properties with spatially and temporally varying amplitudes. Atmospheric circulation at any point in space and time can be thought of as the sum of the system's eigenmodes of various amplitudes, hence the word MODES.

One of the main results of the project is the MODES software, which is freely available to interested researchers and has so far provided some interesting results. By using the MODES method, we assessed the percentage of atmospheric wave energy that is associated with inertio-gravity waves, which is five to eight percent of the total kinetic and available potential wave energy. This share is very small at large scales, while at smaller scales, which are otherwise relatively less energetic, energy related to inertio-gravity waves is dominant over the balanced component of energy. Although the percentage may seem small, it is very important for the variability of the general circulation. This is a reference result that is now used to validate the inertio-gravity spectra in climate models used in the Climate Model Intercomparison Project 5.

On the project's website, (<http://meteo.fmf.uni-lj.si/MODES>) we present updated results about the atmospheric energy distribution and inertia-gravity circulation every day based on data from the ECMWF [The European Centre for Medium-Range Weather Forecasts] global model, which is the best global prognostic model in the world and whose results are used by virtually every na-

tional meteorological agency in Europe. The MODES software is also used at ECMWF and we hope that its use will expand in the years ahead and that it will become established as a diagnostic tool in global models for weather forecasting and climate modelling.

Of the other MODES results, I can mention that we have shown that the initial uncertainties in global forecasting models and ensemble prediction systems at large scales seem to be more important in determining the current prediction limit than the upscale cascade of initial uncertainties in small scales. The initial errors are largest in the tropics and this has an important impact on medium range and extended-range predictability in Europe.

Until recently, it was not possible to adequately describe the spectrum of inertio-gravity waves either in nature or in models due to the lack of observations and the shortcomings of the models. Now the models have reached a sufficient resolution and quality to resolve many flow features associated with inertio-gravity dynamics. Thus we can look at the details of circulation that define, for example, the distribution of precipitation or the global surface temperature. In order to prepare reliable climate scenarios, not only these surface fields but the entire circulation needs to be modelled reliably. The current general circulation models describe circulation up to an altitude of about 80 km. For long-range forecasts and climate modelling, not only the tropospheric motions that take place in the lower 10 to 12 kilometres, but also the upper layers need to be well described. For example, the stratosphere, which lies above the troposphere, contains ozone whose important role is to absorb most of the ultraviolet part of the electromagnetic spectrum. The majority of the emissions in recent decades,

“ The stratosphere, which lies above the troposphere, contains ozone whose important role is to absorb most of the ultraviolet part of the electromagnetic spectrum. The majority of emissions in recent decades, which contributed to the so-called ozone holes, occurred on the ground in the developed countries of the northern hemisphere. However, these holes did not appear where the emissions were generated, but rather in the polar regions due to general circulation of the atmosphere.

which contributed to the so-called ozone holes, occurred on the ground in the developed countries of the northern hemisphere. However, these holes did not appear where the emissions were generated, but rather in the polar regions due to the general circulation of the atmosphere. This means that the consequences associated with anthropogenic effects on circulation do not necessarily affect those parts of the Earth that were most responsible for the situation.

**The Slovenian research environment statistics show that there are very few female scientists in top research positions. What is your experience from other environments, e.g. the US or other European countries?**

It is not easy to document the gender discrimination in the Slovenian academia and it is difficult, if not impossible to sanction it. It is easier to look at such data internationally and there are studies that document the gender issues in the publishing process and the grant evaluation process. This is one of the problems we also discuss within the COST Sci-Generation research network, especially the differences between the countries of Western and Eastern Europe. Such discrimination can also often be done subconsciously and it thus makes sense to point it out and to work continuously to raise awareness.

I think that despair is the worst thing that can happen, not just to women, but to anyone experiencing discrimination. In a state of despair you feel that you are not making any progress despite all your endeavours and invested efforts. It is a state of repressed anger. Whether one remains trapped in this state or becomes angry or depressed depends on various factors, but this can absolutely have a strong impact on relations in the workplace and on the research performance. Though, I would say that gender equality is not the biggest challenge of the Slovenian research policy. It is certainly an issue, especially in natural sciences and engineering, but I think that there are even more important issues to deal with.

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**MODES**<sup>®</sup>  
<http://meteo.fmf.uni-lj.si/MODES>

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## STRUCTURE OF FINANCING

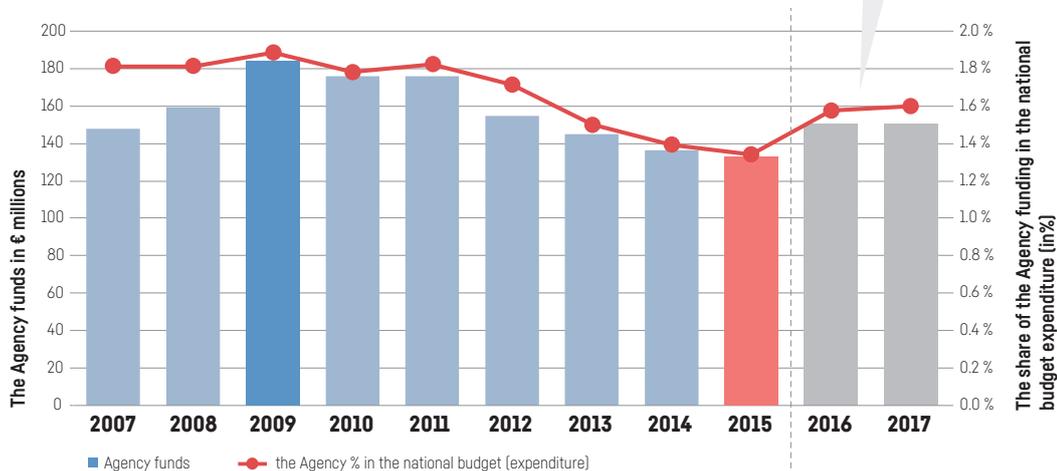
In 2015, the Republic of Slovenia via the Slovenian Research Agency (hereinafter: the Agency) provided **EUR 133.1 million** for scientific research funding, which is more than three million or approx. **2.5% less than in the previous year.**

The budget of the Agency, the main source of budgetary resources for science in Slovenia, has been decreasing for the sixth consecutive year. From 2009 to 2015, the Agency's financing of scientific and research activity decreased from EUR 183.9 million to **EUR 133.1 million**, representing a **decline of 27.6%**. In 2009, the share of the Agency assets, within the state budget, for funding scientific research activity amounted to 1.88% and in **2015 to 1.34%.**

“ We reasonably expect that the commenced trend in increasing the funding of science will continue in the coming years, and that we will nevertheless successfully create a knowledge-based society in Slovenia.

- Prof Dr Rado Bohinc, *Chairman of the Management board*

### Movement of the Agency funds for financing scientific research activities and the share of these funds in the state budget



## Distribution of the Agency funds

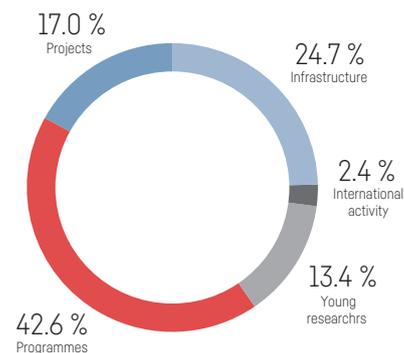
**Research programmes:** long-term funding of research, which is expected to be topical and useful over a longer period.

**Research projects:** co-financing of basic, applicative and postdoctoral projects, projects of target research programmes and young doctors of science within the framework of a pilot public tender "Promoting the Employment of Young Doctors of Science".

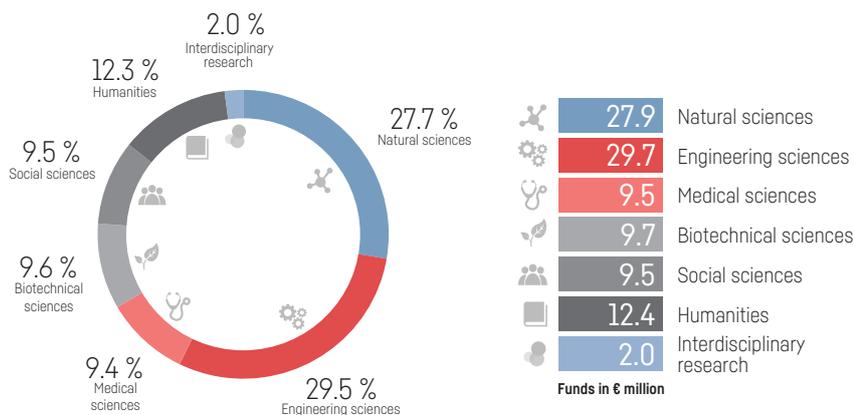
**Young researchers:** the financing of post-graduate studies and training of researchers.

**International activity:** the co-financing of international bilateral projects, promoting research organisations in Horizon 2020 calls, support to international associations and the co-financing of projects within the ERC complementary scheme and the lead agency scheme.

**Research infrastructure:** the co-financing of infrastructure programmes, scientific and popular scientific serial publications, equipment, founders' obligations and other CO-BISS and library-information activities and infrastructure, international periodicals and databases.

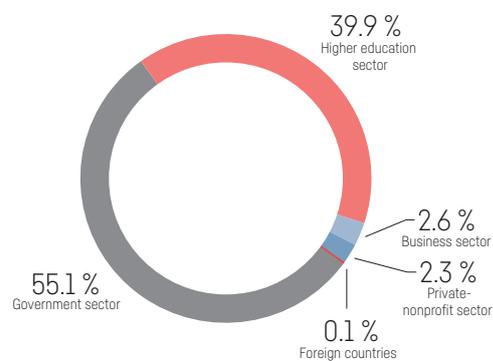


## Distribution of Agency funds by discipline<sup>1</sup>



<sup>1</sup>Funds for founding obligations, infrastructure programmes and the like, which can not be classified by discipline, are not taken into account.

## The distribution of funds by sector of activity of the Agency<sup>2</sup>



<sup>2</sup>Government sector: public research institutions and other public institutions.

# Institutional funding

Research programmes:

**€ 56.7 million**

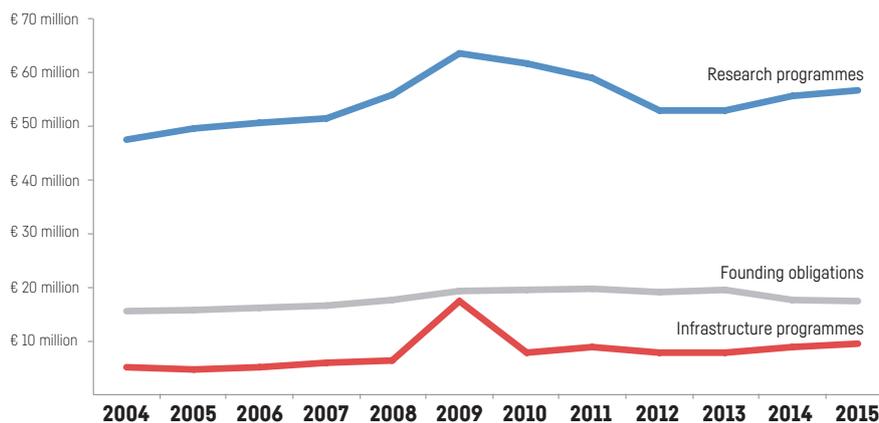
Founding obligations:

**€ 17.4 million**

Infrastructure programmes:

**€ 9.4 million**

## Movement of funds



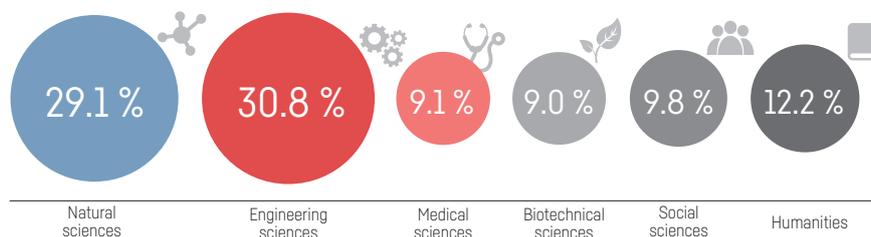
Research programmes, infrastructure programmes and founding obligations represent a stable part of the financial support to research activity, which is called institutional funding.

In 2012, programme funding decreased by 10 % compared to the previous year due to austerity measures. In 2014 and 2015, the Agency slightly increased funds for research programmes to strengthen the long-term stable funding and thereby mitigate the decrease of funds from 2012.

## Research programmes

In 2015, the Agency paid EUR 56.7 million for the co-financing of research programmes, which is 42.6 % of the total budget of the Agency. The Agency has financed 303 research programmes, namely: 90 in the field of technical sciences, 62 in natural sciences, 47 in social sciences, 45 in humanities, 38 in medicine and 21 in the field of biotechnology.

## Distribution of funds by discipline

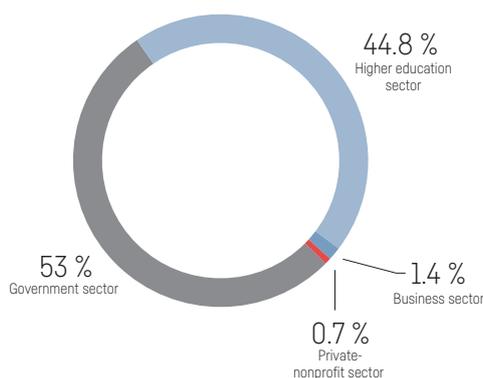


Discipline	Funds in € million	The proportion funds for programmes managed by female researchers
Natural sciences	16.5	25.0 %
Engineering sciences	17.4	13.7 %
Medical sciences	5.1	26.9 %
Biotechnical sciences	5.1	44.7 %
Social sciences	5.6	42.9 %
Humanities	6.9	19.1 %
<b>Total</b>	<b>56.7</b>	<b>24.5 %</b>

Compared with 2014, the funds for research programmes increased by 1.9 % or two percentage points considering the Agency's total budget.

- = Natural sciences: the amount of funds remained **the same**.
- ↑ Engineering sciences: **3.3 % more** than in 2014.
- ↑ Medical sciences: **2.4 % more** than in 2014.
- ↑ Biotechnical sciences: **0.8 % more** than in 2014.
- ↑ Social sciences: **4.4 % more** than in 2014.
- ↑ Humanities: **1.2 % more** than in 2014.

### Distribution of funds by sector of activity



### Public call and the public tender in 2015

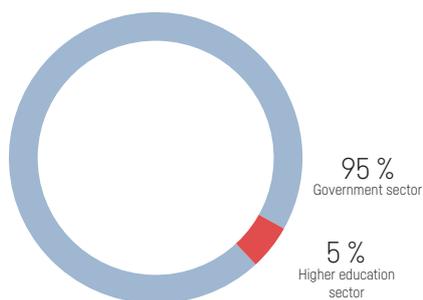
In 2015, the Agency approved the extension of funding in the amount of EUR 0.5 million based on a public call and a public tender. The extension was granted to seven research programmes, the funding of which expired in 2015.

## Infrastructure programmes and founding obligations

The purpose of financing founding obligations and the refund in connection with the work is to provide basic conditions for research work to public research institutions.

In 2015, EUR 17.4 million was paid for founding obligations, which is 1.5% less than in 2014.

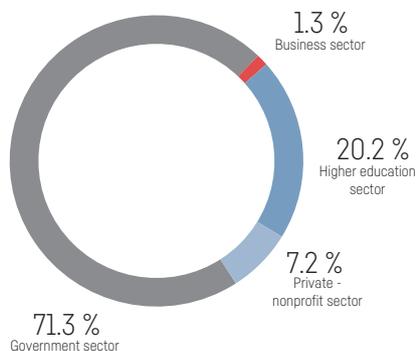
### Distribution of funds by sector of activity



Infrastructure programmes represent support for research work. Its central role is ensuring a high quality research environment.

In 2015, EUR 9.4 million was paid for infrastructure programmes, which is 6% more than in 2014.

### Distribution of funds by sector of activity



# Competitive funding

Research projects:

**€ 22.6 million**

Young researchers:

**€ 17.8 million**

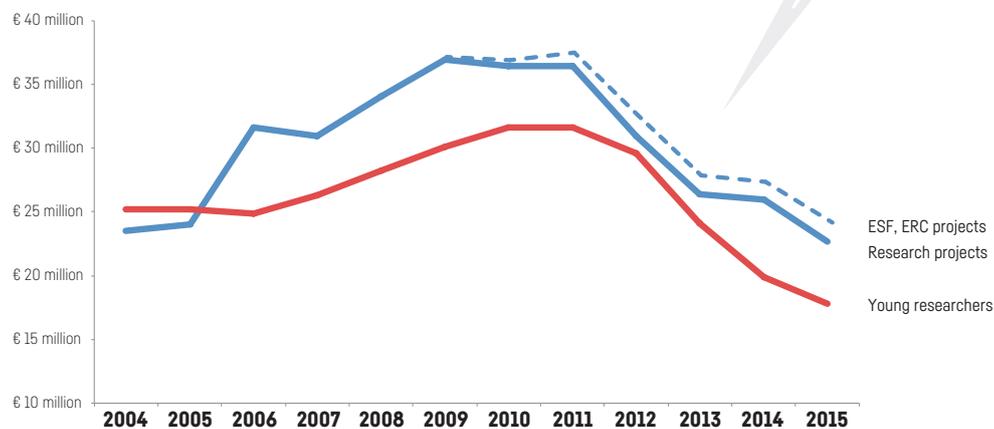
In the period between 2011 and 2015, funds for research projects decreased by 37.9%. A significant drop was recorded in 2012, as the Agency did not commence the funding of new research projects due to austerity measures. The decrease of funds for research projects in 2015 is due to a delay of the commencement of funding.

Funds for the training of young researchers have been decreasing since 2010. In 2015, the decrease of funds, compared with the previous year, is due to the integration of a small number of new young researchers in the training programme.

“ Projects under the complementary scheme importantly complement the national funding scheme of research activity and encourage researchers to integrate in the international environment, especially to candidate for the most prestigious projects of the European Research Council.

- Prof Dr József Györkös, *Director*

**Movement of funds for research projects and young researchers**



## Research projects

Basic research projects:

**€ 13.5 million**

Applicative research projects:

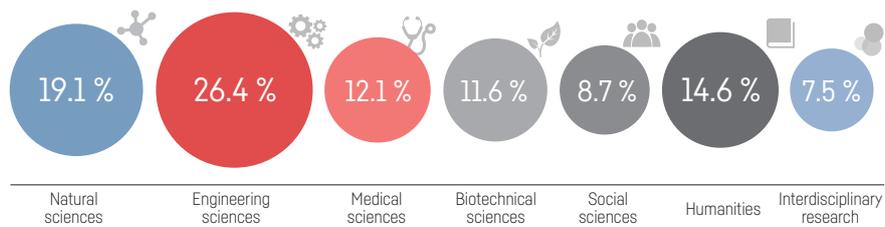
**€ 6.3 million**

Postdoctoral research projects:

**€ 1.9 million**

Targeted research programmes projects: **€ 796 thousand**

### Distribution of funds by discipline



In 2015, the amount of funds for co-financing research projects was EUR 22.6 million, which is 17 % of the Agency's total budget.

Compared with 2014, the funds for research projects decreased by 12.8 %. The fall is due to a delay of the commencement of funding of research projects that were approved within the public tender in 2015. The projects commenced to be funded in 2016; therefore, the increase of funds will be observed next year.

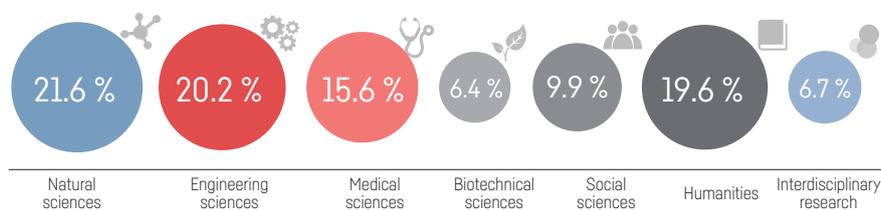
- ↓ Natural sciences: **13.4 % less** than in 2014.
- ↓ Engineering sciences: **15.3 % less** than in 2014.
- ↓ Medical sciences: **11.9 % less** than in 2014.
- ↓ Biotechnical sciences: **14.9 % less** than in 2014.
- ↓ Social sciences: **15.7 % less** than in 2014.
- ↓ Humanities: **8.0 % less** than in 2014.
- ↓ Interdisciplinary research: **5.7 % less** than in 2014.

### Promoting the employment of young doctors of science

In 2015, the Agency carried out a pilot public tender for promoting the employment of young doctors of science. The purpose of the allocation of funds based on the tender is to employ young doctors of science who are left with no job opportunities after their doctoral training, due to the prolonged economic and financial crisis. The aim of the public tender is to promote the employment of highly qualified research personnel, the use of knowledge acquired in the field of research and development work and the transfer of knowledge into practice. Within this public tender, a co-financing of 45 young doctors of science was approved.

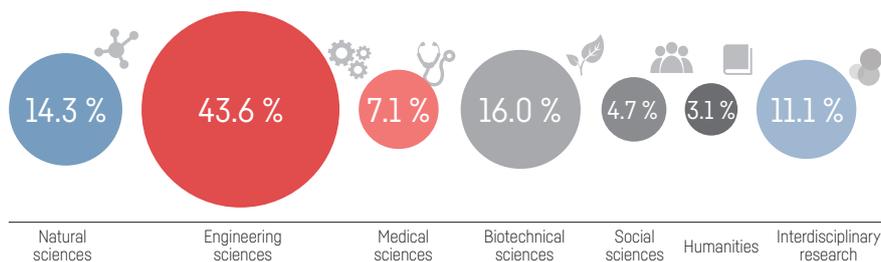
## Basic and applicative research projects

### Funds for basic research projects by discipline



In 2015, the Agency co-financed 164 basic research projects with funds from the national budget in the total amount of EUR 13.5 million. Compared with 2014, the funds decreased by 13.9 %. Young researchers (maximum of 10 active years after obtaining the doctoral degree) were the holders of 59 basic projects.

### Funds for applicative research projects by discipline



In 2015, the Agency co-financed 65 applicative research projects with funds from the national budget in the total amount of EUR 6.3 million, which is 20.1 % less than in 2014. Young researchers were the holders of 26 applicative projects.

**The Agency encourages the involvement of young scientists in the research activity. At least a third of the projects selected must have a younger researcher as manager (maximum of 10 active years after obtaining the doctoral degree).**

**“** Excellent basic and applicative science is the basis for a successful transfer of knowledge and human resources in the Slovenian economy and an increase in technological competence and competitiveness.

- Prof Dr Marko Topič,

*Chairman of the Scientific council*

### Funds for basic and applicative research projects with shares in projects managed by female researchers and young researchers

Discipline	Basic and applicative research projects in € millions	The share of funds – female managers	Young managers (of those) female managers	
Natural sciences	3.8	31.5 %	40.8 %	35.4 %
Engineering sciences	5.5	17.5 %	34.0 %	5.4 %
Medical sciences	2.6	43.2 %	33.2 %	47.2 %
Biotechnical sciences	1.9	43.3 %	32.4 %	33.2 %
Social sciences	1.6	33.8 %	36.8 %	49.9 %
Humanities	2.8	36.8 %	43.9 %	36.0 %
Interdisciplinary research	1.6	24.9 %	43.7 %	14.2 %
<b>Total</b>	<b>19.8</b>	<b>30.7 %</b>	<b>37.5 %</b>	<b>28.3 %</b>

### Postdoctoral projects

The methodology for evaluating applications for tenders provides that **at least 10 % of post-doctoral projects must be selected within each discipline.**

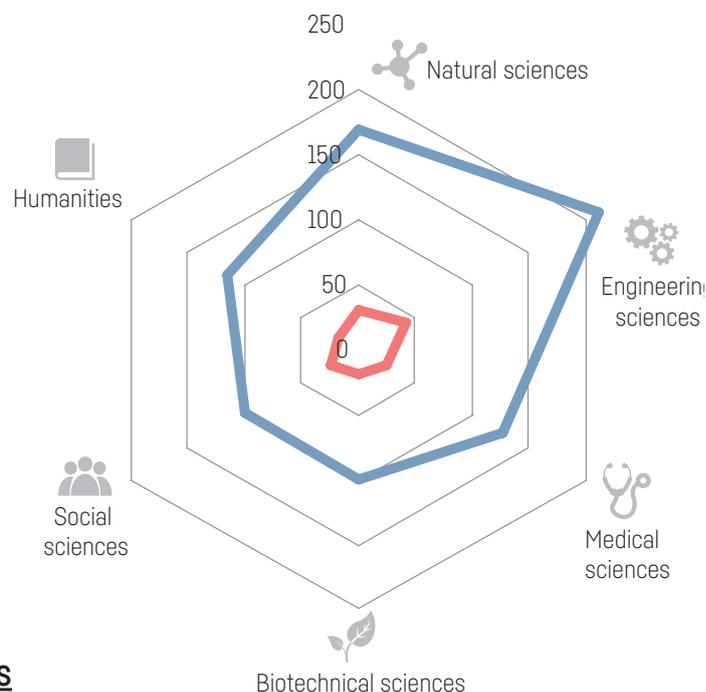
In 2015, the Agency co-financed 50 postdoctoral projects with funds from the national budget in the total amount of EUR 1.9 million, which is 6.1 % more than in 2014.

### Funds for postdoctoral projects with shares for projects that are managed by women researchers

Discipline	Funds in €	The share of funds – female holders
Natural sciences	420.760	12.6 %
Engineering sciences	430.700	39.1 %
Medical sciences	137.263	74.2 %
Biotechnical sciences	197.676	68.6 %
Social sciences	239.170	74.1 %
Humanities	395.913	68.7 %
Interdisciplinary research	92.999	66.7 %
<b>Total</b>	<b>1.914.480</b>	<b>50.7 %</b>

## Public call for co-financing research projects in 2015

In 2015, the Agency published a public tender for co-financing of research projects in 2016. The graph indicates the number of research project applications in the first phase of the tender and the number of research projects that were selected for co-financing.



## Project within target research programmes

Through the mechanism of target research programmes (TRP), the Agency provides research support to the interested ministries and other users, according to the principle of “decisions reasoned on scientific facts”, in the formulation of strategic objectives of Slovenia’s development and in deciding on the basic developmental tasks that are necessary to improve the competitiveness, flexibility and innovativeness of Slovenia. Projects are thematically focused based on the proposal of ministries and other proposers who are responsible for specific areas of public interest.

In 2015, EUR 0.8 million was spent for funding TRP, which is approximately EUR 0.2 million more than in 2014.

In 2015, the Agency published a public tender for the selection of the research projects of the Target Research Programme “TRP 2015” with the approval of the Ministry of Health, Ministry of Culture, Ministry of Education, Science and Sport and the Ministry of Economic Development and Technology. The subject of the tender is determined by the priority content in the context of the following centrepieces:

- The integration of measures for disease prevention.
- Health care - reducing health inequalities.
- Strengthening the knowledge and skills for positive social and economic effects.

- Human resources and social cohesion.
- An effective creating, two-way flow and use of knowledge for economic development and quality posts.
- Regional development: integration of measures to achieve sustainable development.
- Encourage increased competitiveness of Slovenian tourism.

In the context of the invitation, 14 projects were approved for co-financing in the amount of EUR 830 thousand.

## Young researchers

### 30th anniversary of the Young Researchers Programme

Young Researchers Programme has been implemented since 1985 and is one of the most effective ways to promote research potential. Such funding of postgraduate studies and training of researchers contributes to the rejuvenation of personnel within research groups and the inflow of fresh ideas and approaches. It is also a source of highly qualified and motivated personnel for strengthening the Slovenian economy and other areas that are important for the progress of society.

#### Features of the Young Researchers Programme:

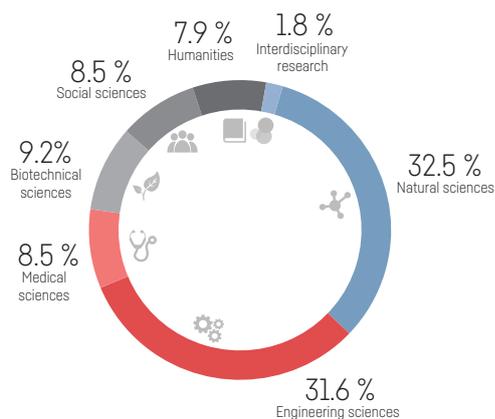
- Within postgraduate studies, young researchers are included in the research work within research programmes and basic or applicative research projects.
- Have full time employment for a fixed period.
- The Agency provides funds for their salaries, contributions, tangible and intangible costs for research work and postgraduate studies.

From 1985 to 2015, around 7,700 young researchers were trained within the framework of the Young Researchers Programme.

In 2015, the Agency funded the training of 940 young researchers. The funds amounted to EUR 17.8 million, representing 13.4 % of the Agency's total budget.

**In 2015, 10 young researchers were awarded the prize for early completion of training.**

Compared to 2014, the funds decreased by 10.8 %.



- ↓ Natural sciences: **14.4 % less** than in 2014.
- ↓ Engineering sciences: **8.0 % less** than in 2014.
- ↓ Medical sciences: **11.7 % less** than in 2014.
- ↓ Biotechnical sciences: **11.8 % less** than in 2014.
- ↓ Social sciences: **4.3 % less** than in 2014.
- ↓ Humanities: **12.2 % less** than in 2014.
- ↓ Interdisciplinary research: **1.3 % less** than in 2014.

### Funds for young researchers and shares for young female researchers financed in 2015

Discipline	Funds in € million	Share of funds for young female researchers
Natural sciences	5.8	50.7%
Engineering sciences	5.6	32.1%
Medical sciences	1.5	80.5%
Biotechnical sciences	1.6	71.0%
Social sciences	1.5	56.2%
Humanities	1.4	54.6%
Interdisciplinary research	0.3	27.1%
<b>Total</b>	<b>17.8</b>	<b>49.6%</b>

According to the regulations for public calls the share of young mentors (minimum of 4 and maximum of 10 active years after obtaining the doctoral degree) should be at least 25 % - within the research organisation.

### Public call for allocation of mentoring positions in 2015

In February 2015, the Agency published a call for the allocation of mentoring positions for research programmes. 171 mentoring positions were allocated to 185 research programs: 54 in the field of natural sciences, 53 in technical sciences, 17 in medicine, 15 in biotechnology, 18 in social sciences and 14 in humanities.

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# Scientific literature

Scientific literature:

**€ 1.4 million**

International serial publications  
and databases:

**€ 4.1 million**

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The Agency co-finances the purchase of international science literature and electronic access to the latest scientific databases in order to ensure the availability and accessibility of international scientific and technical data for the purpose of research, educational and development activities. The literature will be publicly available in all libraries, research organisations and the COBISS system.

Pursuant to the invitation, the Agency co-finances the issue of serial publications with popular science content. The aim is to enable the publication of those popular science publications that are important for the promotion of the interest of the public, especially young people, in science and technology.

In 2015, EUR 1.1 million was paid for co-financing scientific publications, which include domestic scientific and popular science serial publications, and EUR 0.3 million for scientific monographs.

# International cooperation

International bilateral projects:

**€ 0.6 million**

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In 2015, international bilateral scientific cooperation was conducted (based on the coordinated work of the Ministry and the Agency) within the framework of which 390 bilateral projects were financed. 12 countries participated in the cooperation, namely Croatia, Bosnia and Herzegovina, Montenegro, Serbia, France, Turkey, China, India, Japan, Russia, Argentina and the United States. Most funds were allocated to cooperation with the United States (30.7 %), Serbia (14.3 %) and China (12.0 %). In 2015, the co-financing of bilateral cooperation, with funds from the state budget, amounted to EUR 0.5 million.

The Agency cooperates with the French Alternative Energies and Atomic Energy Commission (CEA). In 2015, seven joint research projects were financed based on the public tender. The subject of the tender was the co-financing of international scientific research projects in the field of new energy and nuclear energy technology, climate change adaptation, fundamental research in physics, life science and global security research. In 2015, the co-financing of scientific cooperation with the CEA amounted to approximately EUR 122 thousand.

The incentive for applications to Horizon 2020 calls:

**€ 0.7 million**

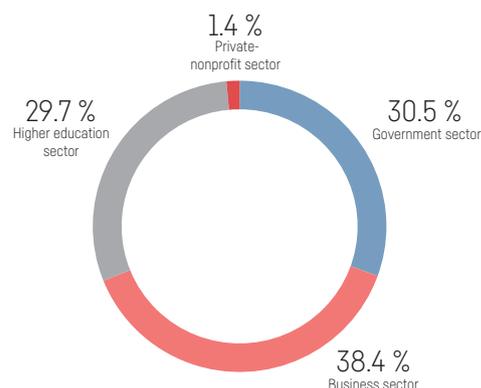
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The Agency encourages the participation of Slovenian research organisations in Horizon 2020 tenders. This enables continuous open public call for project applicants of the EU Framework Programme for Research and Innovation, Horizon 2020.

Slovenian organisations, which applied for the project as the applicant or the main coordinator or participated as a partner in a project applied for by another foreign or Slovenian organisation at the European Commission in connection with published tenders within the EU Framework Programme for Research and Innovation, Horizon 2020,

are entitled to a single financial contribution to the costs of the project application. Financial contributions to the costs of preparation and application of the project amounted to EUR 2,500 per project application, if a Slovenian organisation applied as the coordinator or the applicant within an international consortium, and EUR 1,000 per project application, if a Slovenian organisation participated within an international consortium or applied for the project independently, if so assumed by the invitation of the European Commission.

## Distribution of funds by the sector of activity



ERC complementary scheme:

**€ 0.8 million**

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The invitations of the European Research Council (ERC) are intended for individual projects for excellent frontier research in all scientific fields. The invitations are some of the most competitive in the world and, consequently, performance at the level of tender is only about 10 percent. Invitations are open to all researchers, irrespective of their current place of employment, with the condition that the acquired ERC project implementation is conducted in Europe. The evaluation system for frontier research established by the ERC is a prime example of a "peer review" that is recognised by established agencies for funding basic research worldwide. During the operation of the ERC, there have been a few cases where important scientific awards, including the Nobel Prize, were awarded to the managers of the ERC projects.

**Each year, the ERC publishes the work programme, which is the basis for the three invitations in the current year:**

- **Starting Grant** - The tender for starting the independent researcher's career (2-7 years after receiving a doctoral degree)
- **Consolidator Grant** - The tender for consolidation of an independent researcher's career (7-12 years after receiving a doctoral degree)
- **Advanced Grant** - The ERC tender for a recognised researcher

Based on the Rules, the Agency co-finances **the so-called complementary scheme**, within which applicants from Slovenian research organisations, who were positively evaluated at the ERC tender, but were not selected for co-financing, have the possibility to prepare a customised project for the Agency, which shall consider the duration of the customised project and the amount of available funds within the objectives and scope of work. In accordance with the proposal of the Scientific Council, according to the budget options, the Agency co-finances

customised projects that will be implemented primarily in Slovenia.

In 2015, the Agency co-financed 11 projects under the complementary scheme, of which five were in the field of natural sciences (58.7% of funds), four in the field of humanities (24.4% of funds) and two in the field of biotechnology (16.9% of funds).

Institutions in the higher education sector received 70.4% of funds and institutions in the government sector 29.6%.

The European Research Council was established in 2007. Today it operates within the Horizon 2020 programme and represents 17% of its budget. Since 2007, the ERC has funded over 5,000 projects that were selected for financing from more than 50,000 applications.

### Three researchers who carry out research in Slovenia are also among the recipients of the ERC funds.

#### 2011

In 2011, **Prof Dr Nedjeljka Žagar** from the Faculty of Mathematics and Physics, University of Ljubljana, received ERC funds for researchers at the commencement of their career. The *MODES* project in the field of dynamic meteorology, general circulation and climate dynamics will be completed in 2016.

#### 2013

In 2013, **Prof Dr Dragan Mihailović** from the »Jožef Stefan« Institute received ERC funds for established researchers. *Coherent trajectories through symmetry breaking transitions* project will be completed in 2018.

#### 2016

In 2016, **Prof Dr Tomaž Prosen** from the Faculty of Mathematics and Physics, University of Ljubljana, received funds for established researchers for a five-year project entitled *Open Many-Body Non-Equilibrium Systems*.

The lead agency scheme:

**€ 0.7 million**

The Agency promotes international scientific research with the scheme of the lead agency. The cooperation agreement concluded by agencies from different countries enables researchers to apply for a joint project at one of the agencies (the lead agency) that carries out a peer review process. If the application is successful in a peer review process, and is proposed for co-financing by the lead agency, another agency takes over the co-financing of researchers from their country without an additional peer review process.

**So far, the Slovenian Agency has concluded a cooperation agreement with:**

- The Austrian fund for scientific research **Fonds zur Förderung der wissenschaftlichen Forschung – FWF**

- Flemish foundation for research **The Research Foundation – Flanders, FWO**
- National fund for research, development and innovation **National Research, Development and Innovation Fund (NKFI, former OTKA)**

In 2015, the Agency co-financed 14 projects led by foreign agency - of which 10 projects were in the field of natural sciences (61.1% of funds), three in technical sciences (28.1% of funds) and one in social sciences (10.8% of funds).

Institutions in the higher education sector received 74.3% of funds and institutions in the government sector 25.7% of funds.

Support to international associations:

**€ 0.3 million**

With the promotion of Slovenian science abroad and at home, the Agency provides the collaboration of Slovenian research organisations and researchers with researchers from countries with which Slovenia has not yet concluded relevant international agreements. In addition, the programme provides collaboration with Slovenian research organisations and researchers from across the border and collaboration with Slovenian researchers working abroad.

The Agency co-finances the membership of Slovenian scientific associations in international scientific associations and the operation of Slovenian scientific representatives who are elected presidents, vice-presidents, general secretaries and members of the management bodies in international scientific associations.

## Membership in international organisations

### **Science Europe**

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Science Europe is the European umbrella association of agencies and organisations that finance or conduct research activity. The Agency is also one of its founding members. The association represents the common interests of its members and co-creates the European Research Area (ERA). Its activities are supported by the interdisciplinary scientific advisory board, a member of which is prof. dr. Igor Emri from the Faculty of Mechanical Engineering, University of Ljubljana.

Science Europe has 47 members from 27 European countries that annually allocate approximately EUR 30 billion from national budgets. National research and innovation funding in Europe represents a large majority of funds, which proves the importance of national research policies and funding for the creation of a fully operational European Research Area. The contribution to the realisation of ERA is one of the main priorities of Science Europe, which presented the strategy and implementation plan for 2020 in the Science Europe Roadmap document.

### **Norface** ERA-NET

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ERA-NET Norface (full title New Opportunities for Research Funding Agency Cooperation in Europe) is a network of 17 European national funding agencies. It has operated since 2004; the Agency is its full member since 2005.

The primary objective of the ERA-NET Norface cooperation is the preparation of joint international thematic tenders that address current, broader socially relevant themes and seek solutions through excellent research. Norface is not merely focused on the development of social sciences and humanities within the European Research Area (ERA) but wishes to stress the role of the aforementioned scientific disciplines in the development of sustainable and knowledge-based society in Europe.

Norface is characterised by highly competitive tenders with scientific excellence being the key criterion for success. The group of asst. prof. dr. Maša Filipovič Hrast from the Faculty of Social Sciences, University of Ljubljana also collaborates within the ongoing programme Welfare State Futures (WSF, tender in 2013), as part of 15 financed international consortia.

In 2015, the Norface network organised the fourth international tender, Dynamics of Inequality Across the Life Course (DIAL). The international tender budget amounts to EUR 15 million and an additional EUR 5 million, for which the Norface network applied to the tender ERA-NET Cofund of the European Commission. The deadline for applications for the international tender DIAL ended on 30 March 2016.

## Urban Europe

### Joint programming initiative

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In 2015, the Agency became a full member of the Joint Programming Initiative Urban Europe - JPI UE. The Agency received the tender to join based on national positions presented in the expert's report on the Prihodnost mest [Future of the cities]. The document is a report of the ad hoc expert body chaired by Dr. Richard Sendi from the Urban Planning Institute of RS.

The JPI UE is one of the ten joint programming initiatives of the European Union. It operates in a broad interdisciplinary intertwined network of researches that consider the urban environment from different perspectives: social, urban-spatial, architectural and construction, mobility, sustainable natural living, smart and biodiversity. The researches relate to questions about the quality of life in urban areas, also in connection with the suburban or rural environment that is adjacent to the city. The aim of the JPI UE is to create an attractive, environmentally and economically sustainable urban environment that will enable European citizens and communities to develop their full potential.

Currently, the JPI UE comprises of 13 full members: Austria, Belgium, Cyprus, Denmark, Finland, France, Italy, Malta, Norway, Slovenia, Sweden, Great Britain and the Netherlands, acting as coordinator. Latvia, Poland, Portugal, Romania, Spain, Turkey and the European Commission participate as observers.

In December 2015, an international JPI UE tender entitled Smart Urban Futures, in which research teams from Slovenia had the opportunity to participate for the first time, was published. Based on the successful application of the participating funding agencies to the European Commission ERANET Cofund tender, the budget of ENSUF tender received EUR 5 million of European funds in addition to the EUR 24.5 million of national funds.

In 2015, the preparation of the fifth international JPI UE tender was carried out, which will be published at the end of 2016 or at the beginning of 2017.



EXCELLENT IN SCIENCE

Within the framework of the annual **Excellent in Science** activity, researchers present their achievements at public open events. In 2015, the members of Scientific Councils classified **33 achievements** in the Excellent in Science selection that were presented by researchers **within seven events**.

## Natural sciences

### **Biology**

Dr Tinkara Tinta: The impact of the environmental parameters on the microbial community dynamics

### **Geology**

Dr Mateja Jemec Auflič: Landslides at a uranium mill tailing deposit site Boršt (Slovenia) detected by radar interferometry

### **Pharmacy**

Prof. Dr. Danijel Kikelj: Bazedoxifene-Scaffold-Based Mimetics of Solomonsterols A and B as Novel Pregnane X Receptor Antagonists

### **Control and care of the environment**

Prof. Dr. Radmila Milačič: The use of isotopically enriched tin tracers to follow the transformation of organotin compounds in landfill leachate.

### **Biochemistry and molecular biology**

Prof. Dr. Brigita Lenarčič: EpCAM, molecular lighthouse of cancer cells

### **Physics**

Prof. Dr. Dragan Mihailović: Ultrafast Switching to a Stable Hidden Quantum State in an Electronic Crystal

### **Chemistry**

Kristian Radan: Xenon(II) Polyfluoridotitanates(IV) Physics

### **Physics**

Assoc. Prof. Dr. Primož Zihel: Mosaic Quasicrystals

## Engineering sciences

### **Materials science and technology**

Prof. Dr. Peter Panjan: Nanolayer AlTiN-based hard coating with a blue color

### **Materials science and technology**

Prof. Dr. Albin Pintar: Novel transition metal based catalyst for syngas production from methane and CO<sub>2</sub>

### **Metrology**

Asst. Prof. Dr. Simon Pevec: Optical fiber sensors having long active lengths, systems and methods

### **Chemical engineering**

Dr. Marjan Bele: New electrochemical catalyst for the oxygen reduction in fuel cells with proton exchange membrane based on alloy of copper and platinum

### **Technology driven physics**

Assoc. Prof. Dr. Rok Petkovšek: Short pulsed gain-switched fiber laser with improved efficiency utilizing unabsorbed pump recovery

## Medical sciences

### **Oncology**

Dr. Ibrahim Edhemović: Electrochemotherapy of colorectal liver metastases

### **Psychiatry**

MSc. Helena Korošec Jagodič: Relationship of an economic crisis and suicidality in Europe and Slovenia

### **Human reproduction**

Dr. Jernej Kovač: Is Autism hidden in our genes?

### **Cardiovascular system**

Prof. Dr. Marko Noč: Sudden out-of-hospital cardiac arrest and modern postresuscitation management

### **Metabolic and hormonal disorders**

Prof. Dr. Andrej Janež, Asst. Prof. Dr. Mojca Jensterle Sever: Innovative treatment of patients with polycystic ovary syndrome

Excellent in science achievements are available in the on-line publication at [www.arrs.gov.si/en](http://www.arrs.gov.si/en) and at [Videlectures.net](http://Videlectures.net).



## Biotechnical sciences

### Forestry

Dr Viljem Vek: Extractives of mechanically wounded wood and knots in Beech

### Animal production

Asst. Prof Dr Janko Skok: Group suckling cohesion: a new paradigm of the primary socialization in piglets

### Plant production

Asst. Prof Dr Irena Maček: Mofettes – Model Ecosystems for Research of Long-Term Abiotic Selective Pressures on Soil Microbial Communities

### Biotechnology

Prof Dr Janko Kos: The role of cysteine carboxypeptidase cathepsin X in cancer

### Biotechnology

Dr Živa Ramšak: GoMapMan



## Social sciences

### Sociology

Asst. Prof Dr Luka Zevnik: Critical Perspectives in Happiness Research: The Birth of Modern Happiness

### Economics

Assoc. Prof Dr Jože Sambt: Is low fertility really a problem? Population aging, dependency, and consumption

### Law

Assoc. Prof Dr Matej Avbelj: Post-modern challenges of transnational law for the European Union

### Political science

Assoc. Prof Dr. Petra Roter in Asst. Prof Dr Ana Bojinović Fenko: Parliamentarisation in a Post-Conflict Context: The Kosovo Assembly Support Initiative

### Psychology

Dr Luka Komidar: Development and construct validation of the Individuation Test for Emerging Adults (ITEA)



## Humanities

### Archaeology

Prof Dr Andrej Pleterski: The cultural genome. Space and its ideograms of the mythical story

### Anthropology

Assoc. Prof Dr Dušanka Knežević Hočvar: Doing Various Paths of Family Farming Development

### Culturology

Assoc. Prof Dr Mirjam Milharčič Hladnik in Dr Jernej Mlekuž: Going Places: Slovenian Women's Stories on Migration

### Literary sciences

Prof Dr Janez Vrečko: Constructivism and Kosovel

### Theology

Assoc. Prof Dr Branko Klun: Biblical echoes in postmodern thought



Photo: Peter Irman



# PROMOTION OF SCIENCE

In recent years, the Agency has strengthened activities related to the promotion of science by following the European examples, according to which **the importance of the promotion of science is linked to the science contribution to the development of a knowledge-based society**. The relationship and interaction between scientific research and the challenges of contemporary society have to be built and strengthened. The Agency implements the latter through three sets of activities:

- Professional workshops for journalists within the Communication of Science project;
- Web communication with support of innovative tools for the promotion of science;
- Public presentation of excellent achievements (in the chapter Excellent in Science).

### An expert workshop for journalists with Vivienne Parry



Photo: Peter Irman

#### **Vivienne Parry**

The renowned journalist has presented the science programme *Tomorrow's World* for 35 years. Today, she moderates a number of global discussions on science (such as the G8 Summit on Dementia), is a mentor and trainer for young researchers, the Vice Chairman of Council of UCL, a member of the Medical Research Council and an active collaborator within the Genomics England project.

In December 2015, the Agency organised, for the second year in a row, an expert workshop within the Communicating Science project for editors and journalists focused on reporting on science and technology. The workshop was led by Vivienne Parry, world-renowned journalist and author in the field of science, presenter and editor of science programmes on Radio 4 and the BBC, who was appointed Officer of the Order of the British Empire and the Queen of England's recognition for her contribution to the public understanding of science.

The response from editors and journalists were extremely positive. According to the participants' evaluation, such activities are scarce and there has been great interest in the continuation and strengthening of such in 2016.

In 2015, the Agency conducted a pilot workshop on media skills for researchers. The Agency invited holders of Excellent in Science 2015 achievements to participate in the project implementation. The workshop was well acclaimed; therefore, the Agency intends to continue with and substantially strengthen the activities in 2016.

**The Communicating Science project** is one of the core activities of the Agency for the Promotion of Science, and has been implemented since 2014. Its aim is to empower both media representatives and researchers who wish to improve communication between the two communities, and increase the presence of science in the media. The project was included among the examples of European best practices within the project of RRI Tools framework programme (Responsible Research and Innovation Tools), which is the European Commission reference project in the field of responsible and responsive research.

## Support of innovative tools for the promotion of science

From 2014, innovative tools are co-financed under the public tender for the promotion of Slovenian science abroad and are a novelty in the way of promotion of science in the Slovenian area. They cover all scientific disciplines, establish communication with foreign publics and bring together excellent researchers and professionals in the field of media and communication. From the time of the introduction of co-financing, the area of new forms of science communication has strengthened and is becoming more diverse and well accepted in both the research community and in the broader media area.

### **The co-funding of innovative tools for the promotion of Slovenian science in 2015:**

### **Meta Znanost** – Slovenian scientists from around the world

In 2015, an interactive map of Slovenian researchers who regularly work, teach and do research at scientific institutions around the world was created.



## STA Krog - Science

Importance of the work of the Slovenian Press Agency in the field of science provides a strategic contribution to the integration of science and the media.



www.krog.sta.si

## Kvarkadabra Portal

Kvarkadabra Portal is one of the pioneers of bringing science to the general public. It has operated since 1997; in 2015, it set up a radio channel.



www.kvarkadabra.net/en

## Science on the street

Knowledge and Ideas on the go

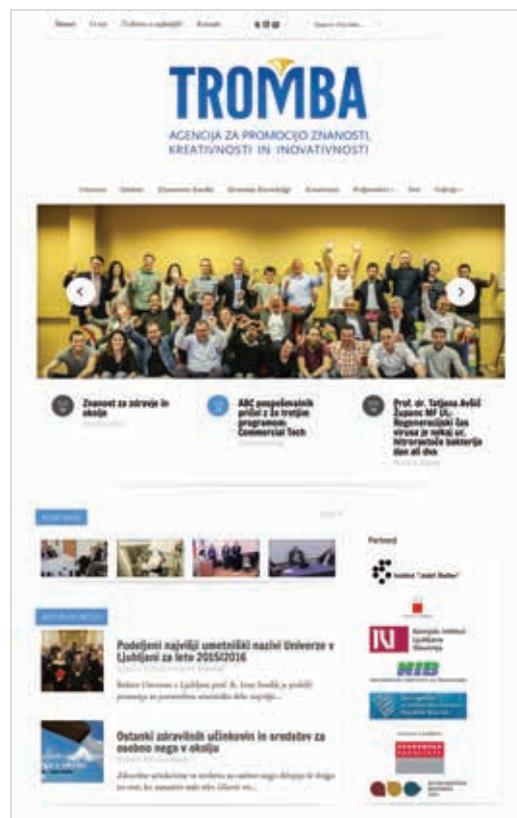
Popular science lectures, which are open to the public, introduced the concept of *scientific cafe* in Slovenia.



[www.znanostnacesti.si/en/](http://www.znanostnacesti.si/en/)

## Tromba Agency

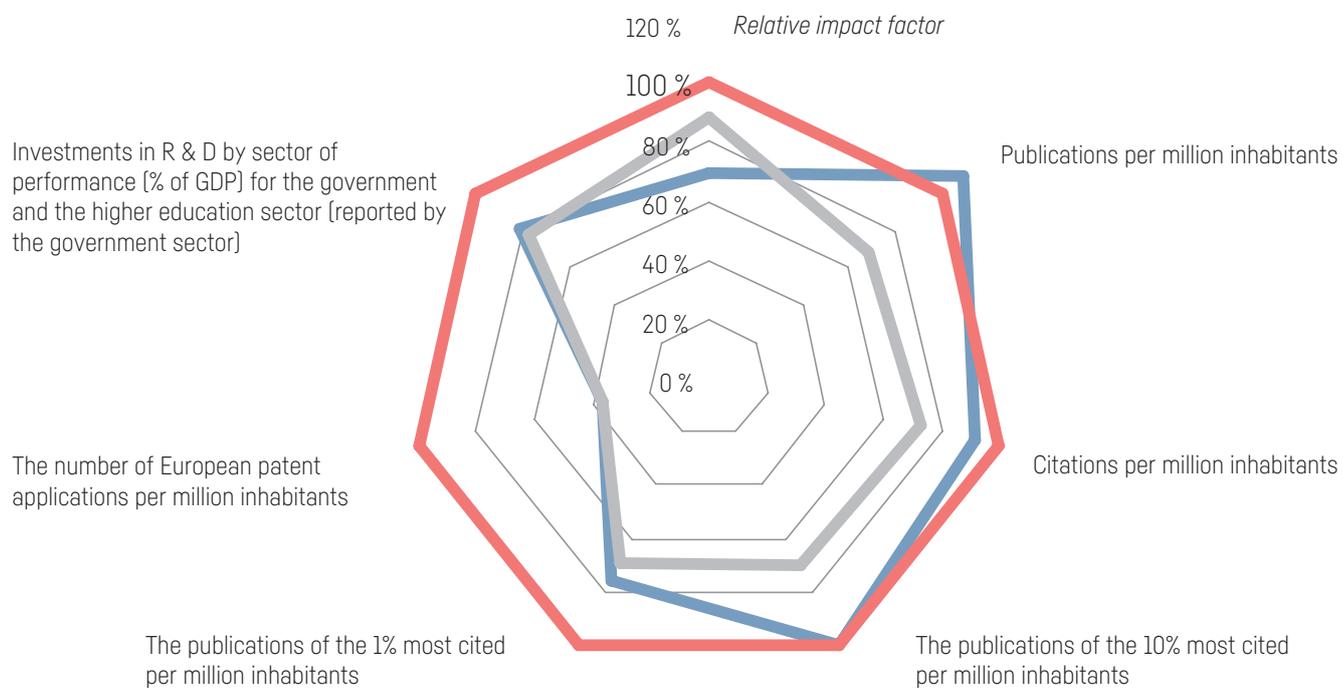
In 2015, Tromba, in collaboration with major research organisations, established a series of thematic debates entitled »Science at 13h«. Discussions address current questions and look for answers, also with the participation of government representatives.



[www.tromba.si](http://www.tromba.si)

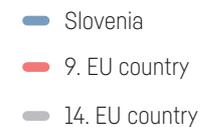


# INTERNATIONAL COMPARISONS



**The diagram shows the majority of standard bibliometric and other quantitative indicators that are used for monitoring research activities worldwide and are also included in the Resolution of the Research and Innovation Strategy of Slovenia 2011-2020.**

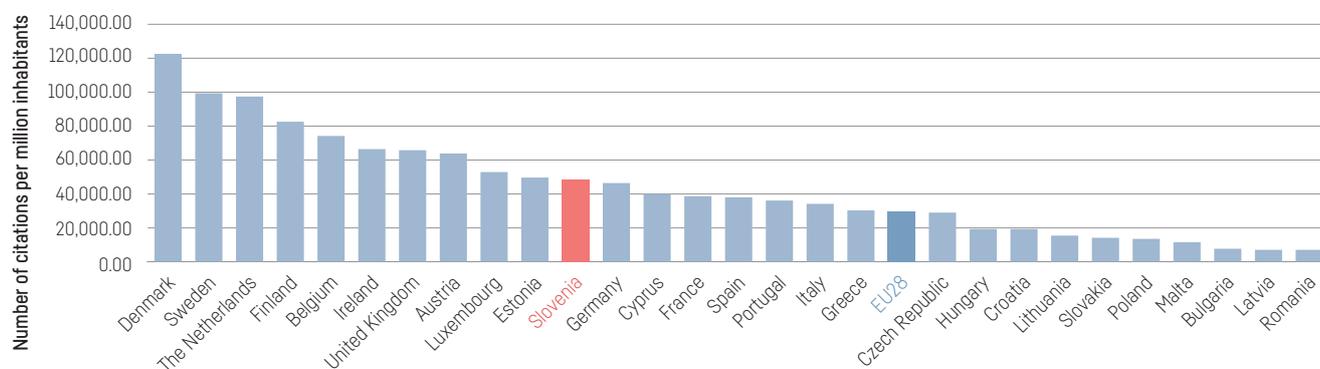
The values for Slovenia are shown in relation to the ninth EU state (the upper third of member states). Information for the 14th country (the upper half of member states) is shown for comparison.



## Citations

According to the number of citations per million of population, Slovenia comes eleventh among the EU Member States with 48.500 citations in the period 2011-2015. In the same period, Denmark is the country with most citations per million of population followed by Sweden, the Netherlands and Finland.

**Number of citations of the EU Member States in the period 2011-2015** Source: InCites, Thomson Reuters, March 2016



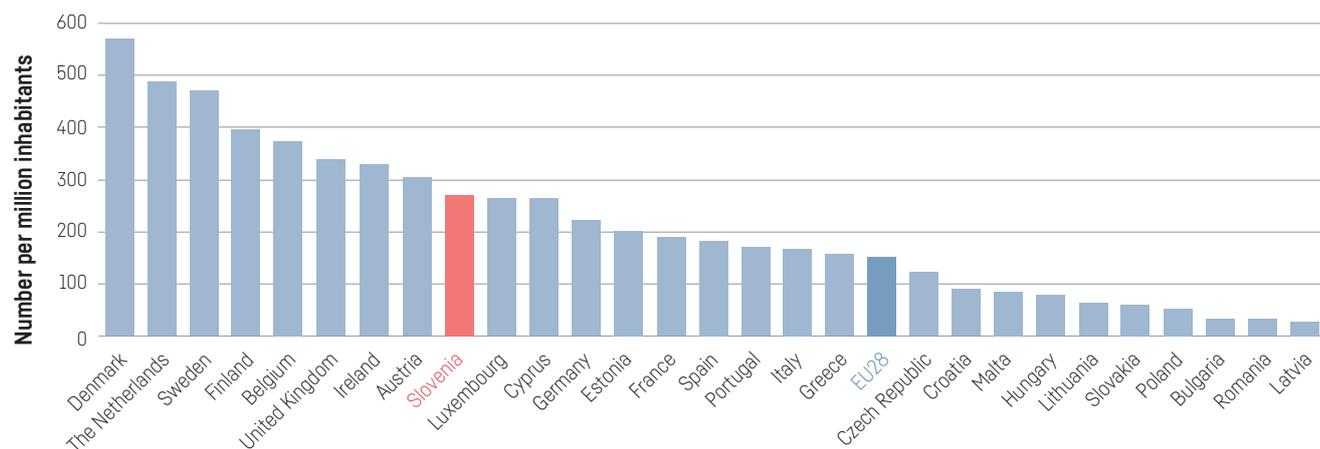
## 10 % of highly cited publications

The established bibliometric indicator used for international comparison is the number of publications of researchers in a particular country who are ranked among the 10 % of highly cited publications globally in a specific scientific field. This includes the publications in journals indexed in the Scopus bibliographic database. A four-year period including the year of publication is taken into consideration.

From 2004 onwards, Slovenia has exceeded the average growth in the EU within the top 10 % of highly cited publications per million of population. According to the available data, the growth trend has continued. Among the EU Member States, Slovenia is ranked ninth.

**Number of publications within the top 10 % highly cited in 2011 per million of population in the EU Member States**

Source: Science-Metrix, 2015



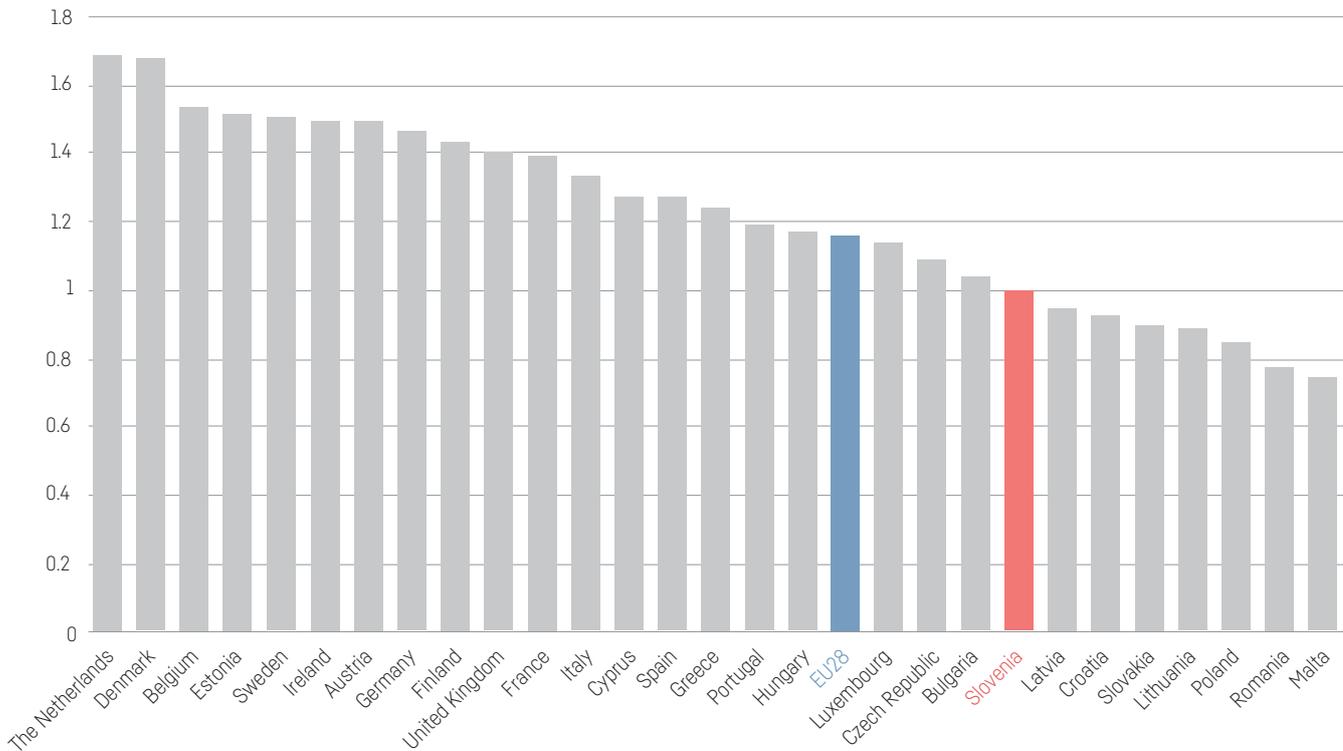
## Relative impact factor

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 twenty-first 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 in the period 2011-2015**

Source: InCites, Thomson Reuters, March 2016



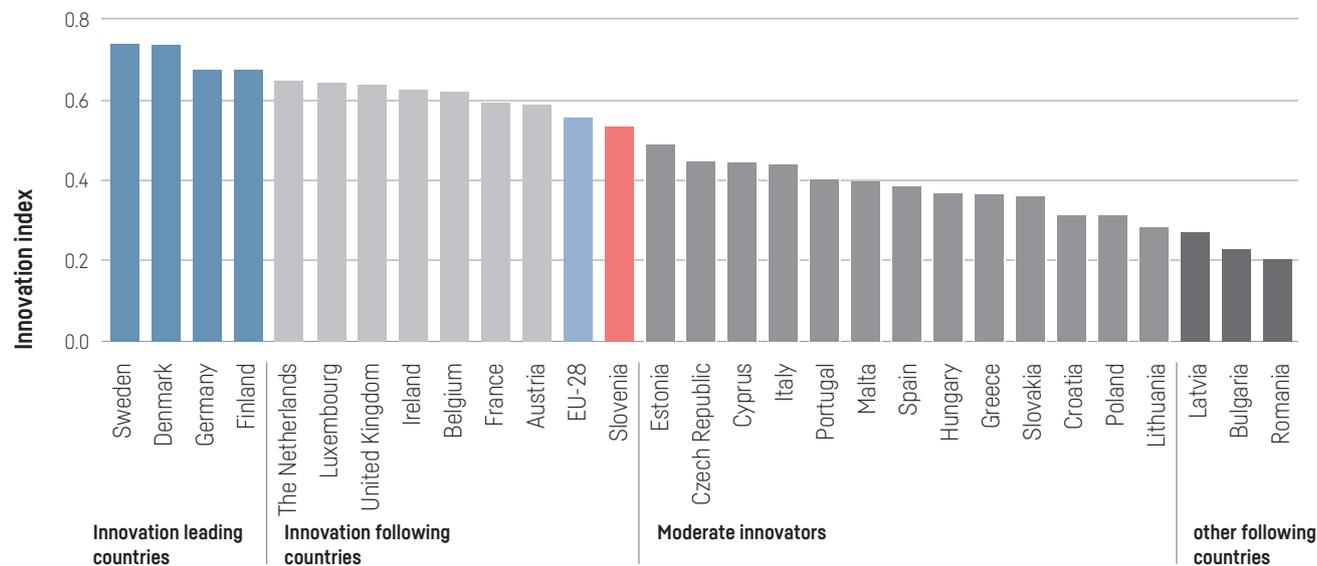
## Innovation index

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 capital.

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 ranked twelfth and classified into the second group, of the so called innovation followers.

### Innovation index for the EU Member States in 2014

Source: Innovation Union Scoreboard, 2015



## MANAGEMENT BOARD

# Amendments to the rules

Prof Dr Rado Bohinc, *Chairman of the Management board*

**“ In 2015, Slovenian science surprised us all with several globally significant achievements, showing its long-term orientation towards excellence and international comparability, which cannot be jeopardised by short-term fluctuations in funding or occasional system maladjustment.**

2015 was a landmark in that we could finally see improvements at the system level. Based on a broad public debate, the Agency Steering Group prepared starting points, while the Scientific Council and the Management Board creatively collaborated in order to adopt a renewal of the Rules on the Procedures of [Co]financing, Evaluation and Monitoring of Research Activities. Significant progress was achieved in this regard.

The most important change in the Rules is that direct application and the impact of quantitative criteria are limited to entry criteria for research projects, the determination of conditions for programme group composition and smaller calls. An assessment of visibility in relation to the number of pure citations without normalisation is proposed.

In the field of evaluating projects, the new Rules enforce a coherent reviewers' report and thus conceptual compliance with the general scheme of Horizon 2020 (Obzorja 2020) and the European Research Council (ERC). Novelties are also proposed for the evaluation of applicative and basic projects, which will consider separate indicators for both types of projects. The determination of reviewers on the four eyes principle is being introduced, which means that at least two members of the expert body shall determine reviewers for individual applications.

A single programme duration of six years is being introduced in research programmes within the draft of the Rules. The reviewers' assessment will also be considered in determining the amount of funds for research programmes. Based on the agreement between the contractors, a research organisation may propose major restructuring programmes and submit a proposal - during the reallocation of resources - regarding programmes for which the volume should be increased. The Rules envisage a harmonised assessment of the reviewers in the form of a report in the case of programme assessment.

In addition to the above, changes were also proposed in some other areas of Agency operation; the draft of the Rules has also been publicly presented. More work still needs to be done, in connection with the introduction of the system changes. Many initiatives that require in-depth discussion were recorded; therefore, the Board is determined to continue system renewal.

The Agency's budget has been decreasing for six years in a row. During this period, we noticed a 27.6 % decline in assets. From 2009 to 2015, the share of funds within the budget for financing scientific research activities decreased from 1.88 % to 1.34 %. During this period, Slovenian science suffered serious

wounds that need to be healed in the coming years; otherwise, there will be no similar successes in the future. We reasonably expect that the commenced trend of increasing the funding of science will continue in the coming years, and that we will nevertheless successfully create a society of knowledge in Slovenia. Of course, it is necessary to fulfil the terms of systemic regulation at the earliest possible time; therefore, providing for the submission of a contemporary law on research activities and eliminating the numerous administrative barriers to the efficient organisation of research activities in Slovenia are indispensable.



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# Management board

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**Prof Dr Karin  
Stana Kleinschek**

Faculty of mechanical  
engineering,  
University of Maribor

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**Prof Dr  
Rado Bohinc**

Faculty of Social Sciences,  
University of Ljubljana

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**Prof Dr  
Polona Domadenik**

Faculty of economics,  
University of Ljubljana

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**MSc  
Franci Pivec**

Institute of information science,  
Maribor (retired)

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The Management Board directs and monitors the activities of the Agency. It consists of seven members, nominated by the government for a period of five years. In its current composition, the Management Board has been operating since 2014. The term of current members ends in 2019.

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**Prof Dr  
Igor Muševič**

Faculty of Mathematics and Physics,  
University of Ljubljana,  
»Jožef Stefan« Institute, Ljubljana

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**Assoc Prof Dr  
Tomaž Savšek**

TPV d.d.

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**MSc  
Simona Jerman**

Ministry of finance,  
Republic of Slovenia

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## SCIENTIFIC COUNCIL

# Excellency matters

Prof Dr Marko Topič, *Chairman of the Scientific Council*

**“ The Slovenian Research Agency is the central pillar of the financing of Slovenian science; therefore, one of its main priorities is the provision of stable processes with pre-well-defined boundary conditions. The Agency Scientific Council, the highest professional and advisory body, is strongly aware of the importance of providing stability in Agency operation.**

Everything takes time and money. This also applies to science and science policy. However, nothing can be done without people being in the right place and at the right time. Research ideas hardly ever arise from nothing; the same is true for the path from an idea to a project, which is long and thorny, as well as the path to new scientific findings, which is complex, unpredictable and often risky. In this respect, the stability of boundary conditions and the entire system is crucial.

In mid-2015, a five-year term of Scientific council expired under the leadership of acad. prof. dr. Vito Turk. The Scientific council in its new composition took over ongoing operations in August. We rapidly got involved into numerous activities and obligations of the Agency. We devoted most of our time to preparing the draft of the Rules on Procedures of [Co]financing, Evaluating and Monitoring Research Activities, taking into account the recommendations of the Agency Steering Group, and looking for a compromise between the feasibility regarding financial, human and temporal aspects and the wishes and expectations of the Slovenian research area, which were established during public consultations. Most attention was paid to a breakaway from the quantitative criteria in the evaluation of scientific excellence,

which will only be an input threshold and support in the qualitative evaluation of projects and programme proposals. During the period of strict Slovenian science funding and co-funding conditions, it is understandable that dissatisfaction would accumulate and that the various pressures, including those in the media, become part of everyday life. However, it is less understandable that too little media space and attention is paid to the successes and achievements of Slovenian science. The promotion of the Excellent in Science (Odlični v znanosti) selection, which is carried out annually by scientific councils of disciplines, is an example of good practice and an opportunity to show the public that through its devoted work, Slovenian science knows how and is able to compete with the best.

The Scientific council will continue to make changes that will fortify the manner of achieving scientific excellence on a global scale, which will be impossible without increased investment and achieving a critical mass of people and equipment. In 2015, the trend of decreasing Agency funds finally stopped, and we expect investment in scientific research activity to rapidly intensify. Knowledge is a key factor in promoting the competi-

tiveness of the national economy, whereas increasing investment in knowledge and human development is essential for the functioning of a knowledge-based society. Therefore, excellent basic and applicative sciences are also the basis for the successful transfer of knowledge and human resources to the Slovenian economy and for improving its technological competence and competitiveness.



# Scientific Council



## Prof Dr Tatjana Avšič Županc

is a professor and a member of the Slovenian Academy of Sciences and Arts. She is Head of the Zoonoz and WHO laboratories of the Institute of Microbiology and Immunology of the Faculty of Medicine of the University of Ljubljana. She covers the biotechnology field within the Agency's Scientific Council.



## Prof Dr Marko Topič

is the president of the Agency's Scientific Council, where he covers the field engineering sciences. He is a professor at the Faculty of Electrical Engineering of the University of Ljubljana and Head of the Laboratory of Photovoltaic and Optoelectronic Sciences.



## Prof Dr Mihaela Koletnik

is a Slovenian language professor at the Faculty of Arts of the University of Maribor. She covers the humanities field within the Agency's Scientific Council.



The Scientific Council is the Agency's highest professional and advisory body. It consists of six members, covering all the research studies within the Agency's classification. The new members started their five-year service in 2015.



### **Prof Dr Mitja Žagar**

is a professor at the Institute for Ethnic Studies. He covers the field of social studies within the Agency's Scientific Council.



### **Prof Dr Roman Jerala**

is a professor at the National Institute for Chemistry, where he is Head of the Laboratory for Biotechnology. He covers the field of natural sciences within the Agency's Scientific Council.



### **Prof Dr Nina Zidar**

is a professor and Head of the Department of Pathology at the Faculty of Medicine of University of Ljubljana. She covers the field of medicine within the Agency's Scientific Council.





## ABOUT THE AGENCY

## Information support for the Agency processes

The Agency keeps a register on research organisations and records regarding researchers and research equipment. These data are publicly available through the SIC-RIS system, managed by the IZUM. Agency operation is clearly reflected through the latest information on funding of research activities. The information available on the Agency's website shows the funding content structure and funds at the level of individual research organisations in terms of activity [e.g. research programmes, projects and young researchers].

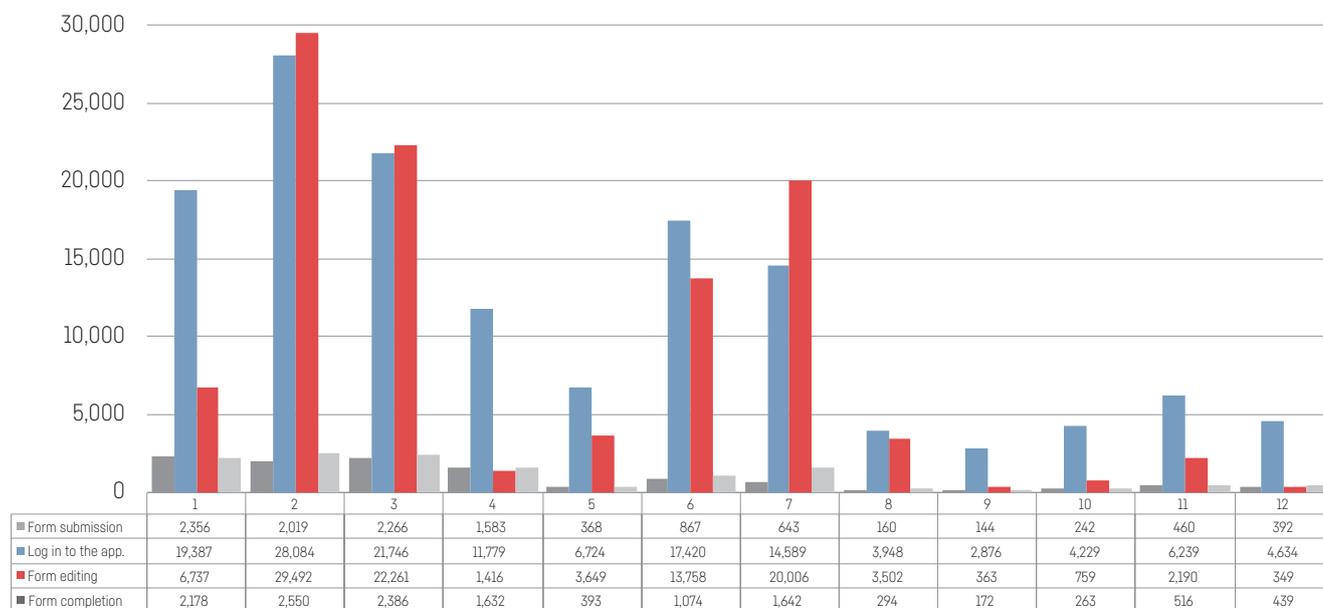
**Effective, transparent and user-friendly electronic communication provides a guide to the Agency in the tender applications and reporting on research organisations.**

E-forms is a service that throughout the years enables a greater number of user interactions, such as tender or invitation applications, reports on the implemented research work, announcements of expenditure structures [equivalents to researcher's

full-time employment], etc. E-forms are digitally signed.

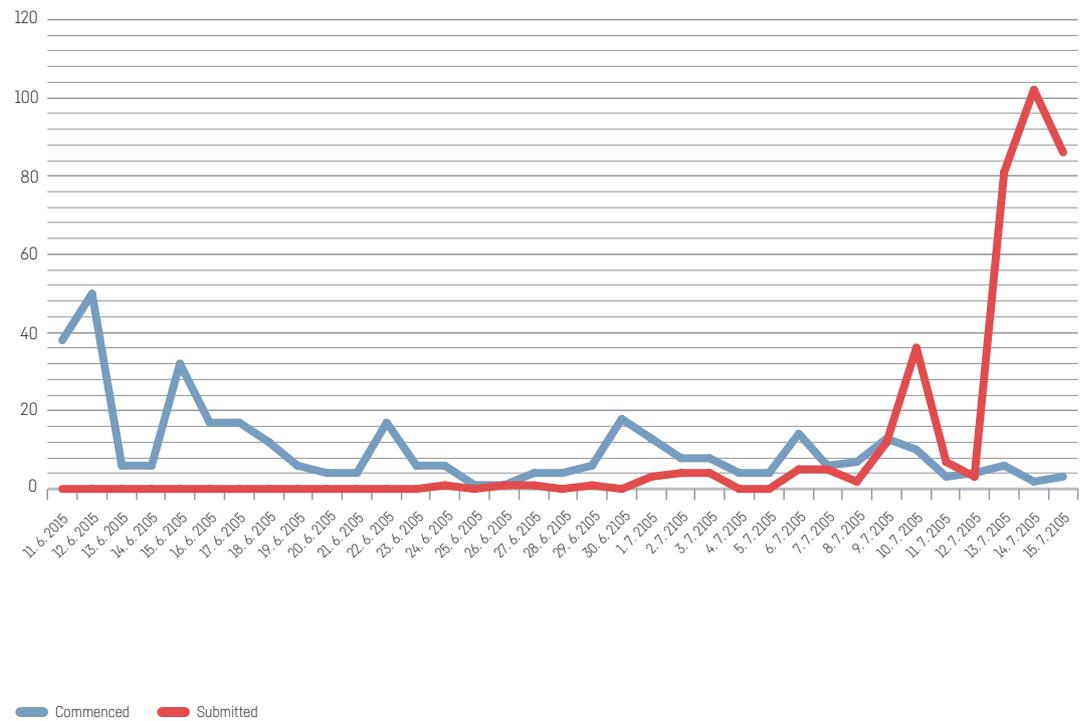
The following figures show the intensity of processes depending on the level of user activity associated with the use of E-forms. The intensity is dependent upon the periods of individual Agency activities (e.g. calls for research projects) and shows the need for stable and secure functioning of information technology during peak loads.

### eForms 2015



The number of user interventions based on the selected information system log records. Two peaks of activity can be observed: the first being at the beginning of the year, which is associated with the submission of applications for the first phase of the Call for (Co)financing of Research Projects for 2015, and the second being in the middle of the year, which is associated with the submission of applications for the second phase of the call.

### Application for public call in 2015 - the intensity of user intervention



The intensity of user intervention in the event of submission of applications for a Call for (Co)financing of Research Projects for 2015. The blue line shows dates when researchers began to submit applications, whereas the red line shows dates when research organisations submitted digitally signed applications.

## Public calls and tenders that commenced in 2015

<b>Domestic tenders</b>	<b>Date of publication</b>
Public call for the allocation of mentoring positions to research programmes in 2015	13.2.2015
Public tender for co-financing the issue of domestic scientific periodical publications in 2015 and 2016	13.2.2015
Public tender for co-financing the purchase of international scientific literature in 2015	24.4.2015
Public call for submission of applications for the funding of research programmes for the next funding period and reports on the results of research programmes for the previous funding period	08.5.2015
Public tender for the allocation of concession for implementing the public service in the field of research activity in the form of a research programme	08.5.2015
Public tender for co-financing the publishing of scientific monographs in 2015	15.5.2015
Public tender for co-financing the purchase of research equipment (Package 16)	15.5.2015
Public tender "Promoting the employment of young doctors of science" in 2015	05.6.2015
Public tender for the selection of research projects of the "TRP 2015" Target Research Programme in 2015	17.7.2015
<b>International tenders</b>	<b>Date of publication</b>
Public call to Slovenian researchers to apply for Flemish-Slovenian joint projects at the Flemish FWO as the lead agency	26.1.2015
Public call to Slovenian researchers to apply for Hungarian-Slovenian joint projects at the OTKA as the lead agency	26.1.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the Republic of France - PROTEUS programme in 2016 and 2017	27.2.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the Republic of Austria in 2016 and 2017	27.3.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and Bosnia and Herzegovina in 2016 and 2017	03.4.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the Republic of Croatia in 2016 and 2017	10.4.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and Montenegro in 2016 and 2017	17.4.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the Republic of Serbia in 2016 and 2017	24.4.2015
Public tender for co-financing activities related with the promotion of Slovenian science abroad in 2015	29.5.2015
Public tender for co-financing operation in international scientific associations in 2015	29.5.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and Japan	26.6.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the Republic of Turkey in the period 2016-2018	28.8.2015
Public tender for co-financing scientific research cooperation between the Republic of Slovenia and the United States in 2016 and 2017	23.10.2015

## The review of the funding in 2015 according to the programme sub-items on an accrual basis

Description	Realised in 2015 (in €)
<b>TRAINING AND DEVELOPMENT OF SCIENTIFIC STAFF</b>	19.823.855
Young researchers	17.777.448
Postdoctoral projects	1.914.480
Promotion of the employment of young doctors	131.927
<b>INFRASTRUCTURE OBLIGATIONS</b>	32.847.034
The PRI founding commitments	14.060.934
Infrastructure programmes - material costs and depreciation.	5.817.990
MB, reimbursement of work-related costs	3.346.757
Infrastructure programmes - salaries	3.618.096
Research equipment	233.695
Domestic popular science periodicals	78.945
Domestic scientific periodicals	1.034.866
Scientific monographs	298.063
Foreign periodicals and databases	4.100.000
Libraries and Information Centres	257.686
<b>RESEARCH ACTIVITIES IN THE INTERNATIONAL ENVIRONMENT</b>	1.679.657
CEA and JPND, cooperation within the EU	160.021
International projects, bilateral cooperation	524.962
Applications for EU projects	699.500
Promotion of Slovenian science abroad	212.965
Operation of Slovenian scientific associations worldwide	82.209
<b>RESEARCH ACTIVITIES</b>	78.760.823
Research projects	19.797.910
Research programmes	56.660.798
ERC, VA projects	1.505.826
Target research projects	796.288
<b>Total:</b>	<b>133.111.369</b>



## Slovenian Research Agency

### Abbreviated name:

ARRS

### Year of foundation:

2004

### Core activity:

Performance of professional, development and executive tasks relating to the implementation of the Resolution on Research and Innovation Strategy of Slovenia 2011-2020 and other tasks with statutory duties in public interest in order to ensure permanent, professional and independent decision-making on the selection of programs and projects financed from the national budget.

### Internal organisational units:

- Director's Office
- Department of Research Projects
- Department of research Programmes, Young Researchers and Analysis
- Department of Research Infrastructure and International Cooperation
- Department of General Affairs
- Department of Finance and Accounting
- Department of Information Technology

### Number of employees on

#### 31th December 2015:

48

### Funds received from the national budget for scientific-research activities in the 2015 financial year:

€ 133.1 million

### Basic documents:

- Research and Development Act [Official Gazette of the Republic of Slovenia, nos. 22/06 – official consolidated text, 61/06 – ZDru-1, 112/07, 9/11 in 57/12-ZPOP-1A]
- Decision establishing the Slovenian Research Agency
- [Official Gazette of the RS, nos. 123/09 and 105/10]
- Resolution on Research and Innovation Strategy of Slovenia 2011-2020 [Official Journal of the RS, no. 43/11]

### Website:

[www.arrs.gov.si/en](http://www.arrs.gov.si/en)



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