

---

# Resolution on the National Higher Education Programme 2011-2020

# Resolution on the Research and Innovation Strategy of Slovenia 2011-2020

---

Resolution on the National Higher Education Programme 2011–2020

Resolution on the Research and Innovation Strategy of Slovenia 2011–2020

Issued by Ministry of higher education, science and technology

Edited by Jana Kolar and Janja Komljenovič

AD&D: Petra and Toni Anžlovar, Formalibre d.o.o.

DTP: Petra and Toni Anžlovar, Formalibre d.o.o.

Print: Partner graf d.o.o.

Editon: 1000 copies

Ljubljana, July 2011

CIP - Kataložni zapis o publikaciji  
Narodna in univerzitetna knjižnica, Ljubljana

378(497.4)"2011/2020"  
001.89(497.4)"2011/2020"

DRZNA Slovenija : Nacionalni program visokega šolstva 2011-2020  
in Raziskovalna in inovacijska strategija Slovenije 2011-2020 /  
[uredili Jana Kolar in Janja Komljenovič]. - V Ljubljani :  
Ministrstvo za visoko šolstvo, znanost in tehnologijo, 2011

ISBN 978-961-6215-32-9

1. Kolar, Jana

256264704

---



---

# Table of Contents

<b>Introduction by the Minister of Higher Education, Science and Technology</b> .....	vii
<b>Accompanying thoughts</b> .....	xi
<b>Foreword to the National Higher Education Programme 2011-2020</b> .....	1
<b>Resolution on the National Higher Education Programme 2011-2020</b> .....	7
1. Introduction .....	8
1.1. Roles of Higher Education .....	8
1.2. Current state .....	8
1.3. Drafting of the Strategy for the Development of Slovenian Higher Education .....	11
2. Dimensions, goals and measures .....	13
2.1. Higher Education System .....	13
2.2. Study structure and higher education qualifications .....	28
2.3. Funding .....	36
2.4. Diversification and differentiation .....	40
2.5. Quality and accountability .....	43
2.6. Internationalisation .....	53
2.7. Social dimension .....	62
3. Norms and Standards .....	71
4. National priorities .....	72
5. Monitoring the implementation of the National Higher Education Programme .....	73
6. Indicative amount of funds for the realisation of the National Higher Education Programme .....	74
7. Implementing goals, bodies responsible, indicators - summary .....	77
8. Appendices .....	83
8.1. Dictionary .....	83
8.2. Starting points .....	86
8.3. Data .....	86
8.4. Relevant International Reports and Declarations .....	87
<b>Foreword to the Research and Innovation Strategy of Slovenia 2011-2020</b> .....	93
<b>Resolution on the Research and Innovation Strategy of Slovenia 2011-2020</b> .....	99
1. Introduction .....	100
1.1. State of affairs .....	101
1.2. Vision .....	102
1.3. Objective .....	103
2. Effective governance of the research and innovation system .....	104

2.1. State of affairs .....	104
2.2. Objectives .....	105
2.3. Measures .....	107
3. High-quality research in the public sector .....	108
3.1. Greater autonomy and responsibility for public research organisations .....	108
3.2. Transfer of knowledge .....	115
3.3. R&D co-operation within the EU and worldwide .....	119
3.4. Public funding of research and development .....	122
3.5. Ethics in research and of the researchers .....	126
4. Strengthening capacities for research and development .....	128
4.1. Strengthening human resources .....	128
4.2. Specialisation .....	133
4.3. Development of research infrastructure .....	136
4.4. Development of business-innovation infrastructure .....	140
4.5. An ICT infrastructure which supports innovation .....	145
5. Innovative economy .....	148
5.1. Accelerating private investments into R&D .....	148
5.2. A greater number of innovative start-up companies .....	150
5.3. Faster growth of innovative companies .....	152
5.4. Strengthening the innovation capabilities of companies .....	157
6. Promotion of science, creativity and innovativeness in society and education .....	162
6.1. State of affairs .....	162
6.2. Objectives .....	163
6.3. Measures .....	164
7. Appendices .....	165
7.1. Approximated funding for the implementation of the RISS .....	165
7.2. Indicators of key objectives for monitoring the RISS .....	167
7.3. Dictionary .....	169
7.4. Starting points and outlines for RISS .....	174
7.5. Data .....	174
7.6. Events and opinions received on the RISS 2011–2010 draft .....	176
<b>Appendices</b> .....	182
1. Snapshot of Slovenia's higher education system .....	183
1.1. Demography and enrolment trends .....	183
1.2. The number of students .....	186
1.3. The number of graduates .....	189
1.4. The number of institutions .....	194

1.5. The number of personnel .....	197
1.6. Mobility .....	200
1.7. 7. Funding of higher education .....	206
1.8. References .....	209
2. Snapshot of Slovenia's research and innovation system .....	212
2.1. Management of the research and innovation system .....	212
2.2. Investment in research and innovation .....	214
2.3. Human resources .....	216
2.4. Open, excellent and attractive system .....	217
2.5. Effectiveness of research and innovation activities .....	219
2.6. Impacts on the economy .....	220
2.7. Conclusion .....	221
2.8. Attachment: Indicators for monitoring of RISS .....	221
2.9. References .....	226
<b>Notes</b> .....	<b>228</b>

---

# Introduction

## *Sapere aude* – An Audacious Slovenia

*Dare to be wise*, as one could interpret *Sapere aude*, yelled Horace in one of his witty epistles shortly before the first millennium began, to a man who decided to wait for a river to run dry before crossing it. The son of a freed slave, who sent him to study at the finest schools in ancient Rome and Athens, knew intelligence, knowledge and creative power to be virtues unique to man – if only one has the means to attain them and the daring to wield them. This notion came and went throughout history. It is no coincidence that Immanuel Kant later praised *Sapere aude!*, as a guiding principle of contemporary Enlightenment – an era of incredible scientific advancement and public education, an epoch that persists with us today in many ways.

Our National Higher Education Programme and the National Research and Innovation Strategy, both covering the period until 2020, prompted many to ask just what sort of audacity we had in mind when we chose »Audacious Slovenia« as the common title for both documents. The answer is plain and simple: the audacity of Horace and Kant. The audacity of choosing knowledge, intelligence, invention and innovation, the audacity of choosing creativity which does not waiver in the face of external obstacles and internal misgivings. To put it bluntly: if we are to maintain the ideas and ambitions we had for our country twenty years ago, indeed if we are to maintain our country as such, then Slovenia must be a knowledge-based society. This is Audacious Slovenia.

Therefore it comes as no surprise that we turn back to the beginning of the modern era, to the challenges of the Enlightenment, after our post-modern oblivion. On the one hand there are external reasons that direct us to make this turn: as a nation and as a community, we often forgo knowledge in addressing our problems, be it a matter of tolerance, solidarity, coexistence or of conflicts of a social or political nature. In addition, a considerable part of our economy still compensates for lower productivity and competitiveness by lowering labour and other costs and increasing demands on employees' flexibility. On the other hand we're witnessing the paradox of an academic community that often indulges in a pre-Enlightenment mentality: students, professors and researchers alike warn that "it is not yet time for full-fledged autonomy in the academia," that "it's institutions and community lack the required maturity"; hence the state must remain as the guardian against the excesses of academic freedom - even in fields where it has no business in the first place. Similarly un-academic concepts manifest themselves in an unprecedented prevalence of quantity over quality, be it the in the creation of an endless stream of study programmes or in the absurd idea that founding more and more faculties and universities can replace immanent academic quality and



improve the competitiveness of our higher education area. Not to mention that issuing and obtaining degrees and diplomas is taking precedence over actual knowledge and competences or that a culture of self-sufficiency and mandarinism pervades the field.

Truth be told, the state - purposefully or not - encouraged this behaviour by trivial means, such as funding or the insufficiency thereof, as well as in subtler ways: the devaluation of knowledge as a virtue unto itself and as a vehicle of societal promotion. This state of affairs eventually became an ugly and persistent habit, with forceful criticisms of the Bologna reform being no more than an alibi and a noisy overcompensation for overall conformism. There are no shortcuts, no painless and quick exits from the badlands of lost decades. This is why we have released both strategies from the constraints of five-year-plans and have rather set them out to span over a decade – so that we may thoroughly address key issues, reallocate priorities and come up with concrete measures for successive years. So that we may establish criteria that guarantee higher quality, while retaining the social dimension of access to knowledge as a public good by evolving into and becoming a part of an open higher education area. So that we may strengthen the autonomy of universities and research institutes, enabling them to secure their academic freedom through responsible self-management. And last but not least, so that we may, through persistent, significant increases of public funding for tertiary education and science, establish the prerequisites for the efficient completion of all these objectives.

Disregarding the worrying trends and keeping solely to the surface, we can still look to the future of Slovene science and higher education with trust and apparent peace of mind because of the work of uncompromising individuals and, on a systemic level, the significant reforms, incentives, investments and attention given to this field 30 or even 40 years ago. Those were the foundations of our past success and “resistance to crisis” after Slovenia gained independence. However every flywheel stops spinning eventually. Ours is stopping now, mainly due to our negligence in the past couple of decades. That is why we, as a society, have a weakened immune system – as our painfully hard landing at the bottom of the recession has shown, we are more vulnerable and recover at a slower pace. We lack knowledge, creativity and innovation – and a mind open enough to embrace these virtues. We lack audacity.

It is against this background and with a vision of a more audacious Slovenia that the two programmes before you were developed. It took some time. I believe that the preparations, work and extensive public debate were thorough, meticulous, inclusive and highly professional. We have achieved more than we had dared hope when we set out to prepare these documents – in terms of the integrity of the content as well as regarding the high degree of acceptance and agreement that we have reached with most of the

key institutions, stakeholders and professional public. One cannot expect absolute consensus in a field as filled with opposite interests as this one. As I noted in my address at the most recent public hearing, the *status quo* itself represents the widest consensus in a given situation. However, the status quo is not audacious – and it is this spontaneous, short-sighted consensus that we are taking on with these documents. In this respect the fact that we have – in the last year – managed to revive, encourage and re-establish a debate that is not hopelessly jammed between short-term impasses, but instead embraces the long-term perspective, is an important achievement. This is something that we have forgotten in previous years; however without this kind of focus we, as a state, a society and as individuals, will not be successful in meeting the many different challenges that await us.

Everyone who played their part in the development and in the adoption of these ambitious strategies deserves many thanks – for their efforts and for their recognition of the fact that waters seldom part themselves.

**Gregor Golobič**

---

# Accompanying thoughts

**Franci Pivec, M.Sc., President of the Council for Higher Education of the Republic of Slovenia**

The Council for Higher Education of the Republic of Slovenia is one of many institutions that assessed the draft National Program of Higher Education 2011–2020 and prepared an opinion in this respect. In the middle of last year, the Council endorsed the baselines for this national program. It pointed out a series of open questions regarding the structure of higher education, the status of employees and the management of higher education institutions while agreeing with the necessity of a longer – ten-year – projection of the development and the need to surpass the declarativeness of the document and show more commitment to concrete measures. The economic crisis further reinforced the conviction that higher education is of strategic importance for the country, representing an investment in overcoming the crisis. In this respect, the National Program of Higher Education 2011–2020 is closely linked with the Research and Innovation Strategy of Slovenia; therefore, we organized joint appraisals of the program with the Council for Science and Technology of the Republic of Slovenia.

Higher education is entering the common European education space where it has to face a substantially increased outflow of our students abroad and put efforts in attracting foreign students to attend our universities and colleges. Competitiveness can be ensured through efficient organization of the higher education system, modern programs and excellent personnel. All this, however, demands changes in the environment, from legislation to economic frameworks of the functioning of higher education. Without it there are no guarantees that Slovenia will still have its higher education backbone in 2020 which is the most serious threat to independent development of the country and to the possibility that the future generations are integrated in it with their best capacities. Blind defense of the existing situation is certainly not the right strategy for the upcoming challenges of our time.

The percentage of researchers employed in higher education is among the highest in Europe, while the percentage of research funds for higher education is among the lowest. The result of these “scissors” is a large number of scientific articles, while the application of original knowledge in the development is considerably lower. Therefore, the establishment of responsive research and innovation system foreseen by the Research and Innovation Strategy of Slovenia which will require rearrangement of relations between higher education and research organizations is an undisputed common interest of research and higher education areas.

When making final decisions about both programs we should not forget for a single moment that these are key strategic orientations and that no matter how difficult the current situation is, we have to overcome it and focus on Slovenia that will be able to live by using its own brains.

**Marko Jaklič, Ph.D., President of the Science and Technology Council**

In Slovenia, the global economic crisis flushed out from “under the carpet” all weaknesses of the current development model, which was based on intensive work rather than knowledge and innovation. Slovenian society is more redistributive than creative. The decade ending in 2020, to which both documents are oriented, will be crucial if Slovenia is to place itself among knowledge-based societies. The two documents present a sound basis for a continuous strategic process or social learning where activities and outcomes are continuously checked and where necessary adjustments constantly take place. The innovative challenge for Slovenia and mainly for its political understructure lies in how to “moderate” society towards a modern “enabler state”, which in opposition to the traditional “passivity-inducing” social state allows people more equal inclusion in global and local networks of information-communication structures and value adding chains. The most important elements of an enabler state appear to be a mobile (and at the same time “safe”) labour market, life-long learning, general social services which “free” individuals of their dependence from family support, and most of all, promotion of innovation and entrepreneurship and inclusion in (international) open innovation systems. Openness towards and linking to the world in terms of knowledge, innovation and entrepreneurship is a crucial critical element which may transform the small state of Slovenia into a large innovative society.

Slovenia should become one of the world locations where the modern global “Argonauts” will throw their anchor in their search for a better life on our planet.

**Jože Trontelj, Ph.D., President of the Slovenian Academy of Sciences and Arts**

Contemporary challenges of our era call for new strategic reflections about education as well as science. The time for the documents therefore could not be more appropriate. Changed conditions and especially unexpected future changes also change goals, internal relations, partially even the instruments available to higher education and science-research and innovation policy. All this came up during the long public debate in which numerous experts participated.

In the area of higher education, the Academy supports the concern for the quality of studying and internationalization of universities as well as for the preservation of their independence. It expects the weaknesses of the Bologna reform to be gradually eliminated, among them specialization which is taking place too early at the disadvantage of general education, quality criteria for the attained knowledge which are too low, and promotion of quantity at the expense of quality. The University should reinforce its support to secondary-level education which will substantially improve the knowledge base and readiness of freshmen studying at the universities. Universities should – in accordance with recommendations of European academies associations – help schools modernize and reinforce education in the area of natural science which is of great importance for the development of critical, scientific way of thinking and together with humanistic education shapes creative, value-sensitive intellectuals. Indeed, we increasingly put our hopes on natural sciences, expecting them to increasingly contribute to solving existential problems of the economy.

In the area of the science policy, the Academy was satisfied to learn about the planned increased financial investments in research activities, as well as the assurances that the support to basic research will not be reduced. This part of science is of key importance for the progress of theoretical as well as practical knowledge, for applied research and the development of new technologies and innovation. However, it can fulfill its role only with the preservation of its independence. Experience shows that scientists have to be given freedom to choose what to research and how. Nevertheless, national sciences such as studying of natural and cultural heritage of the Slovenian nation have to keep their special status. Within the science policy in general, more decentralized decision-making needs to be introduced urgently, of course combined with responsibility.

In both strategies, the Academy finds the concern for ethics to be of key importance. Already in secondary schools, adolescents have to be imparted an appropriate attitude towards knowledge as a value. Higher education has to provide education about business ethics. At the postgraduate level, courses in ethics and philosophy of science have to be introduced. Impeccable ethics of scientific research should be ensured; every project should be ethically evaluated before its initiation. Moral integrity of researchers and a good scientific practice should also be ensured. Ethics commissions for dealing with conflicts and violations in this area have to be established.

A decade is a long period for the planning of scientific and higher education policy in our turbulent times. Higher education and scientific communities expect the strategies to be implemented with flexibility and adaptations as they prove to be necessary.

**Matjaž Lukač, Ph.D., President of the Slovenian Academy of Engineering**

Due to the global economic crisis, we are asking ourselves also in Slovenia whether we should rethink the directions our country and the world as a whole is taking. During the entire history, technological innovation was an important agent of economic development. Therefore, strategic orientation towards technological innovation is the key condition of Slovenia's long-term competitiveness and success. We have to build our future on firm foundations that enable long-term sustainable growth. Firm foundations, however, can only be provided by creation of such new things that actually contribute to the quality of our lives.

Also, technological development should not be something marginal but has to be given great importance by Slovenia. In Slovenia we need a critical mass of people that will be sufficiently innovative to know what to do and how to do it. A person who knows how to do something and wants to do it should be put in the focus. We have to create an environment that will support the culture of innovativeness and decisively support investments in and orientation towards technological development. An essential shift is needed, a sort of national consent that we will build our future on the creation of new things. Slovenia is capable of making important decisions. Such an example is the decision to build highways that was made more than 30 years ago. In Slovenia today we need a similar new consent, namely for the new national-level project of a technological highway. Both of the strategic documents, the Research and Innovation Strategy and the National Program of Higher Education, are a step in the right direction since they are putting forward the establishment of an integrated innovation system with a competitive economy that creates high added value as the fundamental strategic goal. Let us hope that with the modernized system of the evaluation of research achievements and the promotion of recognizability and high reputation, Slovenia will be able to stimulate more talented young people to opt for the engineering career in the upcoming years and lay the foundation for sustainable development based on innovativeness and technological breakthroughs.

**Danilo Zavrtanik, Ph.D., Rector of the University of Nova Gorica, President of the Rectors' Conference of the Republic of Slovenia**

In past several decades, no serious systemic changes have taken place in the area of Slovenian higher education and research. Scientists and professors have followed the development of global science and have taken part in contemporary research flows, they have been open for international cooperation and to a certain degree, as far as

circumstances permitted, they have also been open for the transfer of achievements to the business environment. On the other hand, however, we have been very reserved towards changes in the university and research system. During all this time we also have not witnessed appropriate systemic changes in the areas of higher education and research that would promote modern trends and facilitate their implementation. Therefore, both strategic documents are all the more welcome, although it has to be admitted that their arrival is at least ten years late. But better late than never! The strategic documents “National Program of Higher Education 2011–2020” and “Research and Innovation Strategy of Slovenia 2011–2020” offer a series of ambitious systemic changes which are necessary if we wish for Slovenia to remain on the map of countries that foster excellent science or countries where knowledge is a value and a basis of healthy social and economic development.

A characteristic of Slovenian academic environment and the society in general is that they don't like changes. Therefore, it will be interesting to follow the further progress of both strategic documents and especially their later implementation. Accepting and implementing these documents will undoubtedly be a test of whether Slovenia really wants to become a society of knowledge or whether this is merely a political empty phrase.

### **Oto Luthar, Ph.D., Director of the Scientific Research Center of the Slovenian Academy of Sciences and Arts**

Although the Research and Innovation Strategy and the National Program of Higher Education in their final form considerably deviate from the initial ideas, they by all means surpass all similar documents produced so far in the independent Slovenia. Although before the termination of previous national development-research program, all of us were urging for a short and concise guiding document, an extensive and in some places rather detailed strategies in the areas of research and higher education were produced in the end.

Moreover, the documents provide both; in the introductory parts of each chapter dealing with key development issues we are presented with the explicitly realistic analysis of the situation; consequently, the proposals that follow give an impression of more or less logical response to each development challenge presented in the introduction.

Although in certain cases the proposals do not offer the most convincing and entirely feasible solutions and although the documents are not entirely balanced, they together and individually represent the first serious higher education and science strategic



development plan in the independent Slovenia. The added value is also long-expected and therefore extremely important distancing from generality and placativity that fatally characterized all similar documents produced so far.

The newest strategic documents are distinguished from all previous ones also by their time span. Instead of the usual five-year period they provide a scenario for a whole decade and at the same time at each step they self-critically invoke continuous auto-reflection, revision and re-evaluation, therefore urging their users to engage in further contemplation.

### **Rok Primožič, Slovenian Student Union**

In our society, knowledge is ever more important in individuals' personal development and when preparing to enter employment and lead an active life as a member of society. As such, knowledge is prerequisite for a stable and constantly developing knowledge-based society. It is precisely for this reason that the Student Organisation of Slovenia (Študentska organizacija Slovenije, hereinafter ŠOS) deems tertiary education to be one of our society's priorities, and investment in knowledge as key to exiting the current ever-present crisis. Unfortunately, the current system does not allow for further improvement and creativity. Therefore, we need change, and furthermore, the tertiary education system in Slovenia needs a clear, stable and realizable strategy – such as the Resolution on the National Higher Education Programme 2011–2020. Despite the fact that ŠOS does not agree with all measures and emphasizes certain pitfalls of the National Programme, we view that it represents a step in the right direction. That said, all stakeholders in the tertiary education system will have to take the final steps together.

Students must have an appropriate role in the co-designing of tertiary education in Slovenia. Only a democratic and public process in which students and other key tertiary education stakeholders can participate will allow us to harmonize, adopt and enact the most important decisions concerning the future of our higher education system. In this process it is crucial to strive towards agreement among stakeholders while observing the needs and arguments of various parties, as well as to strive towards common goals, which is something we witnessed in the process of designing the mentioned Plan. Likewise, when implementing the planned strategies, we must never mistake majority opinion for agreement, as the former may in certain points exist between certain partners in the absence of relevant arguments. In the process of co-designing tertiary education, students are constructive partners who contribute justified suggested improvements striving towards regulating the tertiary education system. In our discussions we empha-

size the importance of quality and accessibility, which are one of the main principles of tertiary education, and which we hope will be accepted by all stakeholders as a result of implementing the planned strategies.

**Alenka Avberšek, Executive Director of the Chamber of Commerce and Industry of Slovenia**

Development and innovation strategy of Slovenia is different from most strategies written so far. It is exemplary in terms of the way it was prepared, in terms of its vision and more or less concrete measures directed at innovation, raising of economy's productivity, levers for achieving more synergy between science in public research organizations and universities and the business sector. Its potentials and mechanisms could make it exemplary also in terms of what will be achieved if it is implemented.

As opposed to the previous national research-development program which is approaching its termination, not only stakeholders from the research/development sphere and the universities but also representatives from the business sector were included in its preparation. It developed through a wide debate where often clashing positions and starting points were debated by the Council for Science and Technology members, and later through the public debate. Consistently emphasizing our respect for science, representatives of the business sector stressed the necessity of shaping the new development-research policy that would secure science and knowledge an appropriate position in the society. Part of this is, as presented in the publication titled *3 truths and 7 moves for the technological breakthrough of Slovenia, prepared by the Chamber of Commerce and Industry of Slovenia in July 2008*, emphasized support to internationally recognizable basic science as well as the assertion of applicative science and research, in close connection with the business sector, in technological and non-technological innovation on the market, in the environment and in the society.

Our intention was not to hinder the functioning and the development of basic sciences but to assure gradual shift towards a more creative society and effects of innovation on the market. For this, however, the desired changes are not enough; they have to be complemented by concrete financial and organizational levers benefiting science and economy as well as the society as a whole.

In the business sector we are also aware that changes that were proposed in the Research and Innovation Strategy and the National Program of Higher Education would substantially affect the current system and organization of public research organiza-

tions and universities and will therefore raise suspicion whether the comparable or even better functioning of the system would be possible. Therefore, politics and science are faced with steps that can be fatal for Slovenia's development if they are not followed through.

We expect them to follow the time line that will take into account the necessity of fast changes as well as time required for adaptation. That is why the politics has first to carry out changes in the area of financing of the development-research sector, provide stable financing of the defined share of public research organizations and universities as indicated in the Research and Innovation Strategy, while linking the rest to national development priorities and co-investment by the private sector. It has to clearly demand responsibility and control over the implementation of measures. The politics has to open the way for effective independence as well as professional and business responsibility of public research organizations and universities. In this way, business sector will be given right incentives for the engagement in common development projects.

All the above stated certainly does not mean that the business sector is taking over science as the Research and Innovation Strategy was accused by its opponents. On the contrary – this is the challenge for all stakeholders, also for the Public Agency of the Republic of Slovenia for Research Activity and for the modernization of the Agency of the Republic of Slovenia for Technology. In order to be able to implement the measures of the Research and Innovation Strategy, especially the latter has to develop into a professional, independent institution that will guide and implement the innovation and shape mechanisms for the connection and flow of knowledge between public research organizations and the business sector. The Chamber of Commerce and Industry of Slovenia will certainly be active in overcoming the past practices of non-cooperation and acting with no regard for others.

### **Jadran Lenarčič Ph.D., Director of the Jožef Stefan Institute**

Contemporary economic and social trends in the Slovenian society that raise concern are only partially a consequence of the global economic crisis; mostly they are a result of rigid and obsolete structural solutions, systemic and even legal ambiguities that are by no means contributing to development. The lack of ambitious goals and visions is also obvious. There is no doubt that all potentials of this society have to be engaged in order to create conditions for the transition into an innovative and knowledge-based society. We are called upon to do this also by European strategic documents that should be consistently and efficiently implemented by our country, mostly for our own benefit.

Thus, the strategic documents on higher education and innovative system are arriving at the moment of profound development reflection, directly addressing the areas of university education and science (which are fundamental for the development) and integration of both into a holistic innovative system. The questions to which the strategic documents are trying to answer are complex and intertwined; however, it seems of key importance that science and higher education as well as technological development are interconnected and integrated into the vision of country's and society's development and that development becomes a long-term commitment of every politician, businessman and researcher.

From the perspective of research institutes it is important to find efficient and modern legal-status solutions and modes of financing that would stimulate institutes to achieve higher competitiveness at the international level and to interconnect and integrate into development projects of innovative economy. The area of university education and research needs to be open in all directions in domestic as well as international environments and modern infrastructure needs to be established to stimulate international exchange. Research and innovativeness must become the premise of our society.

---

# Foreword to the National Higher Education Programme 2011-2020\*

---

\*The Ministry of Higher Education, Science and Technology prepared the National Higher Education Programme 2011–2020 with co-operation of the Directorate of Higher Education, the Directorate of Science and the Minister's Office. Throughout the whole process, the Ministry consulted higher education experts, the Council of Higher Education of the Republic of Slovenia and the Council of Science and Technology of the Republic of Slovenia. Detailed information about the participants is found in the national programme. Preparation of the document was co-ordinated by Janja Komljenovič, an advisor in the Minister's Office.

The National Higher Education Programme 2011–2020 offers an insight into the Slovenian higher education area in the year 2020 and defines measures for reaching the defined goals. It takes the new circumstances in today's global higher education into account. Not only the massification of students, institutions, study programmes, new societal expectations of higher education, but also the understanding of higher education as a service, privatisation and global competitiveness are creating a new reality which also confronts Slovenian higher education institutions. The attractiveness of higher education systems is understood as a goal and instrument of higher quality and in many countries also as a way to ensure the survival of the university. The non-responsiveness and isolation of universities along with their sole reliance on increased public funding is already impossible today, let alone in the future.

Slovenian higher education has faced many challenges in the past few years, for example: staff shortages, inappropriate facilities and equipment for some study programmes, a high share of students who do not finish their studies, a low level of internationalisation, insufficient international co-operation and the inexistence of an agency for quality assurance.

Accordingly, in the past two years the Ministry of Higher Education, Science and Technology has already taken certain measures to improve the quality of higher education. In 2009 the legislation was amended so as to create a Slovenian quality assurance agency in line with European standards and guidelines for quality assurance and the agency was established in 2010. In the same year, the financing system of higher education was reformed so that it focuses on quality and goal attainment instead of numbers of enrolled students. The innovative scheme for co-financing doctoral studies that focuses on the individual gives all financial support for doctoral studies and increases university autonomy for those selected students who receive the support. Between 2008 and 2011 we increased the financing of higher education by 22.7%. The E-Higher Education that has been set up will guarantee the transparency of the higher education system and prevent abuses in the future.

The Ministry started with a public consultation on the future development of Slovenian higher education already in January 2010. Fourteen higher education experts responded to the invitation and contributed their written expertise (Dr. Iztok Arčon, Dr. Mara Cotič, Dr. Franc Forstnerič, Dr. Janko Jamnik, Dr. Roman Jerala, Dr. Manja Klemenčič, Dr. Zdenko Kodolja, Dr. Alojz Kralj, Dr. Janek Musek, Dr. Igor Muševič, mag. Franci Pivec, Dr. Dušan Radonjič, Dr. Branko Stanovnik, Dr. Pavel Zgaga), while other actors also responded. This consultation led to reforms and new arrangements the Ministry has put in place, including a draft of the National Higher Education Programme 2011–2020. This draft was based on the mentioned consultation, "Starting points" adopted by the Coun-

cil of Higher Education of the Republic of Slovenia and several studies and analyses of higher education. A broad public consultation concerning the draft lasted more than half a year and included all higher education stakeholders, national councils and other consultative bodies. During the process the document was adapted accordingly, leading to strong public support and the agreement of the higher education stakeholders.

Key features of the new strategic document:

1. **A renewed definition of higher education institutions and the study structure:**

- the organisational, implementation and content separation of academic and professional study programmes; new study programmes will be accredited according to new division from 2013, the existing ones from 2019 at the latest (measure 2);
- a new definition of the requirements for establishing and operating a university and other higher education institutions (measure 1);
- a renewed definition of study structure and a change of educational requirements for employment in the public administration (measures 8, 9 and 10); and
- a change to »part-time« studies so that they will contain 30 to 45 ECTS credits per year and students at public institutions and institutions with concessions will not pay tuition fees (measure 11).

2. **Strengthened institutional autonomy:**

- an arrangement of personnel such that the state will not allocate employee workloads; a renewed »habilitation« system through a reduction of "habilitation" fields and deregulation (measure 6);
- higher education institutions will define selection criteria and procedures freely for postgraduate studies; an adjustment of the selection system for undergraduate studies (measure 12);
- a change from programme to institutional accreditation (measure 22);
- deregulation of the procedures for preparing and changing study programmes (measure 23); and
- the possibility that staff can step out of the salary system for civil servants.

3. **3. Improvement of institutional and sectoral co-operation:**

- improved co-operation between higher education institutions and research institutes by staff transfers, a unified salary system and the merger of smaller public research institutes with universities if they receive mostly public funding (measure 4); and
- improved co-operation between the higher education and private sectors and increased knowledge transfer (measure 5).

4. **Funding:**

- a reformed funding system for higher education that will reward goal attainment and quality (measure 13);
- a new development pillar will stimulate internationalisation, diversification, the social dimension and the quality of higher education and will amount to 20% of the current financing (measure 13); and
- an increase in public funding for tertiary education to 2.0% of GDP in 2020.

5. **Quality improvement:**

- an increase of number of teaching staff in higher education (measure 25);
- an improvement of infrastructure and equipment by investing EUR 80 million (measure 26);
- the Slovenian quality assurance agency is to become a member of ENQA and be listed in EQAR (measure 21); and
- professional, systematic and constant teaching support for staff (measure 24).



**6. Internationalisation:**

- the removal of administrative and other barriers to staff and student mobility and financial support for mobility (measures 31, 32);
- measures to attract the best foreign experts (measure 34); and
- enabling teaching in foreign languages (measure 36).

**7. Social dimension:**

- financing studies for everyone who is willing and able to study (measure 39); and
- returning tuition fees to the state in the event of unfinished studies in the second and third cycles when an individual receives a certain amount of income (measure 41).

**Janja Komljenovič**



---

# **Resolution on the National Higher Education Programme 2011-2020\***

---

\* Resolution on the National Higher Education Programme 2011-2020 was adopted by the National Assembly of the Republic of Slovenia at its 28th session on 24.5.2011.

# 1. Introduction

## 1.1. Roles of Higher Education

Knowledge is a public good and higher education is a public responsibility. The two fundamental roles of higher education in society are the support and empowerment of citizens\* in their personal development, professional careers and active citizenship as well as the spiritual, social, artistic, cultural and economic development of the community. It is for this reason that higher education and education-related scientific research are positioned at the core of the Republic of Slovenia's development, particularly during the current global economic crisis.

## 1.2. Current state<sup>1</sup>

Since the establishment of the Slovenian state, we have witnessed great changes in the higher education area. Both in the Slovenian and in the international higher education area, the number of students has significantly increased (there were 64,000 students in Slovenia in 1991, compared to 114,873 in 2009). The mobility of students and teachers and staff working in higher education increased (for example, the number of Slovenian students involved in the ERASMUS programme grew from 170 in 1999 to 1,132 in 2008. The number of foreign students studying in Slovenia through the ERASMUS programme increased from 9 to 991 between 1999 and 2008, and the share of foreign students completing their entire study programme in Slovenia increased from 0.4% to 0.9% between 1999 and 2007. However, the percentage of foreign students is significantly lower in comparison to certain other EU countries). We have been faced with new phenomena such as globalisation, exceptional technological progress, transnational decision-making, demands for better quality of higher education, growing costs of education and a series of other political, social, ecological and economic changes.

During this period, Slovenia participated actively and creatively in the Bologna process; as a member of the European Union it has committed itself to the goals of the Lisbon Strategy.

---

\*Terms used and contained in the Resolution on the National Higher Education Programme 2011-2020 are used in masculine grammatical form as neutral and apply equally to both sexes.

<sup>1</sup>All information is available in a document »Statistični podatki o visokem šolstvu« (Statistical Data regarding Higher Education) and other analysis and documents (Appendices 8.3 and 8.4), accessible on a web page: [http://www.mvzt.gov.si/si/zakonodaja\\_in\\_dokumenti/nacionalna\\_programa\\_v\\_pripravi/javna\\_razprava\\_o\\_osnutku\\_npvs\\_2011\\_2020/](http://www.mvzt.gov.si/si/zakonodaja_in_dokumenti/nacionalna_programa_v_pripravi/javna_razprava_o_osnutku_npvs_2011_2020/)

There has been a steady increase in the number of students in Slovenia in recent decades, with the exception of the last three years due to the decline in the birth rate. There are a high number of students from the “typical generation” in higher education (for example, in 2008 50.3% of nineteen year-olds were enrolled in higher education, which is above average when compared to other European countries). However, it has been noted that a high proportion of students do not complete their studies (OECD data indicate that 35% of enrolled students do not complete their studies), and a longer duration of study is noted when compared to other European countries. In Slovenia, the proportion of the population having completed tertiary education has increased (11.7% of adult people aged between 25 to 64 held a higher vocational or higher education degree in 1991 and 22.6% in 2008); however, the level of education of the Slovenian population at tertiary level does not suffice for the ambitious projections of the needs of our society (according to CEDEFOP data, the need for personnel holding a higher education degree will amount to 31.1% among the active working population). Neither is it comparable with the best countries in the European Union in this respect (for example in 2007 in France, approximately 26% of its active working population were highly educated, in the Netherlands approximately 30%; in Belgium and Denmark 31%). In addition, the demographic trends for Slovenia indicate there will be a significant decrease in population by 2060. In 2020, the number of nineteen year-olds, i.e. the generation which usually enrolls in higher education, will have decreased by 20% compared to 2010. We also have a small percentage of citizens with doctorates per number of inhabitants and there are substantially fewer citizens with doctorates employed in the private sector compared to other countries in the European Union.

In recent years, the number of teachers in higher education has increased, which improved the ratio between the numbers of teachers and students (the ratio between students and university teachers was 20:1 in 2009/10 and 12:1 if we take into account assistant university teachers and other research staff), but we are still below the average of the OECD countries (approximately 15 students per university teacher). Slovenia has a small percentage of foreign students and foreign higher education teachers (0.9% students and 2.7% employees, the majority of whom were foreign language assistants in 2008); similarly the percentage of mobile Slovenian students and teachers is too low (approximately 1%). The number of joint study programmes with foreign higher education institutions is negligible.

The number of higher education institutions and study programmes has substantially increased in recent years (study programmes in 2002/2003 were carried out by 12 independent higher education institutions and 2 universities; 30 independent higher education institutions and five universities were registered in the Register of Higher Education Institutions on 30 June 2010). Numerous dislocated units of higher education in-

stitutions were also established. New independent higher education institutions mostly offer study programmes in the field of social sciences.<sup>2</sup> Similarly, new institutions or dislocated units are being established in the same locations, indicating that their development is not strategically and systemically positioned within a comprehensive concept of higher education in Slovenia.

In comparison with the more developed countries in the European Union or with the OECD countries, we considerably lag behind in terms of expenditure on higher education and scientific research. According to OECD data related to the expenditure on tertiary education per student and taking into account the full-time equivalence calculated in relation to purchasing power parity for GDP, expenditure on higher education in Slovenia amounted to approximately 8,000 USD in 2006. The OECD average was slightly above 12,000 USD, and in Austria, the Netherlands and in Denmark it amounted to approximately 15,000 USD. Similarly, fundamentally lower expenditure on tertiary education is noted when compared to primary or secondary education (20% of all funds dedicated to education are allocated to tertiary education, whereas 50% are allocated to primary education; the OECD data show that on average 7,981 USD was allocated per pupil in Slovenia in 2007, 6,072 USD for secondary education and 8,559 USD for tertiary education). In terms of total public funds for Slovenian higher education, a relatively high share is allocated to social transfers for students (slightly above 20%), particularly in comparison with some other countries (the EU average is 17%). The efficiency of Slovenian higher education is a matter of concern due to the high student drop-out rate and large social transfers – a fact which is also confirmed by European analysts – particularly because of the influence on the labour market.

We find that in Slovenia we also lag behind in other areas related to higher education, for example, "knowledge-based services", innovation, patents and other innovation achievements, both in comparison to other countries in the European Union and also with the OECD countries (source: European Innovation Scoreboard). The amount of research funding in the higher education sector is low in comparison with the national research sector and is among the lowest in the European Union. At the same time, we note that at universities there is a proportionally high share of practically-oriented research when compared to basic scientific research. The systemic gap and lack of coordination between higher education, science and research and economic development is therefore evident.

---

<sup>2</sup>A network of higher education institutions and study programmes in the Republic of Slovenia in 2020 (Appendix 8.3): [http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/doc/dokumenti\\_visokosolstvo/KNJIZNICA/Mreza\\_VSZ\\_2010.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/doc/dokumenti_visokosolstvo/KNJIZNICA/Mreza_VSZ_2010.pdf)

## 1.3. Drafting of the Strategy for the Development of Slovenian Higher Education

As of January 2010, the Ministry of Higher Education, Science and Technology has encouraged public debate on the development of Slovenian higher education. Up until the Draft of the National Higher Education Programme 2011-2020 was produced on September 8 2010, fourteen experts, many higher education stakeholders (Rectors' Conference of the Republic of Slovenia, University of Ljubljana, University of Maribor, University of Primorska, Student Organisation of Slovenia, some independent higher education institutions and others) and a number of individuals had contributed their opinions via the web page and discussions on various forums.<sup>3</sup> A number of bodies discussed the development of higher education and science in their meetings, including the Council for Higher Education of the Republic of Slovenia, the Council of the Government of the Republic of Slovenia for Student Issues, the Council for Science and Technology of the Republic of Slovenia, the Slovenian Academy of Sciences and Arts and the Slovenian Academy of Engineering. A number of analyses, data on higher education and two analyses of past national programmes in the area of higher education and area of research and development were prepared (Chapter 8.3). In formulating the Draft of the National Higher Education Programme the aforementioned discussions and documents, data and facts regarding the current state and trends were conceptually considered and the highlighted issues and questions were comprehensively incorporated.

The National Higher Education Programme 2011-2020 is based on Slovenia's Development Strategy<sup>4</sup> and Europe 2020 strategy<sup>5</sup>. Measures for further development of the higher education area are examined with a long-term perspective in coherence with the new strategy for research and innovation and the Resolution on the National Programme for Culture, since five-year programmes are too short for achieving strategic goals. This was indicated from experience with the past national programmes, both in the area of higher education and the area of research activity. For this purpose, the draft programme until 2020 was formulated and a vision of the medium-term future has been offered. While doing so, the long term effect of current measures was taken into consideration.

---

<sup>3</sup>A list of all events and contributions is provided in Appendix 8.5

<sup>4</sup>[http://www.svez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Strategija\\_razvoja\\_Slovenije/SRS\\_dispozicija\\_17feb2011.doc](http://www.svez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Strategija_razvoja_Slovenije/SRS_dispozicija_17feb2011.doc)

<sup>5</sup>[http://www.svez.gov.si/si/delovna\\_podrocja/nova\\_evropska\\_razvojna\\_strategija\\_doleta\\_2020/strategija\\_evropa\\_2020/](http://www.svez.gov.si/si/delovna_podrocja/nova_evropska_razvojna_strategija_doleta_2020/strategija_evropa_2020/)

The National Higher Education Programme 2011-2020 includes the entire area of tertiary education, which in addition to higher education institutions, also includes higher vocational colleges. The programme also includes links to the economy, science and cultural policy. In these terms, it is complementary to Slovenia's newly proposed Research and Innovation Strategy 2011-2020.

The National Higher Education Programme is feasible. Measures, benchmarks and responsibilities have been assigned to all listed goals. The achievement of the goals of the National Higher Education Programme is only possible through the active co-operation of all players in higher education, science and the research environment as well as in the wider Slovenian social environment, including the critical public. Independent monitoring of the achieved results and effects of the National Higher Education Programme is one of the key elements for the realisation of the set goals.



## 2. Dimensions, goals and measures

The basic goals of the Slovenian higher education area in 2020 are quality and excellence, diversity and accessibility with supporting instruments of internationalisation, diversification, study structures and funding of higher education. The quality will enable everybody to receive an internationally comparable and recognised higher education by achieving employability and mobility of graduates both within Europe and worldwide; the social dimension will allow equitable access to higher education and unhampered conditions for the completion of studies; diversity will ensure a variety of higher education institutions with various missions and study programmes in order to enable the basic goals of higher education to be achieved.

In the text, the goals and concrete measures for their achievement are defined by individual specific content dimensions (pillars and two foundations which are defined in the “Starting Points for National Higher Education Programme 2011-2020”<sup>6</sup>). The Programme clearly details the required actions, a time plan and who is responsible for achieving the goals. The National Higher Education Programme is a coherent national strategy and thus includes the necessary activity of all higher education stakeholders and other actors. The joint achievement of set goals requires a wider social and inter-generational commitment and responsibility on behalf of all actors, which is also defined within individual dimensions and measures.

### 2.1. Higher Education System

By 2020 a diverse, responsive and quality higher education area will be established. Higher education will be at the core of Slovenian society and at the core of the Republic of Slovenia's development ambitions. In order to attain this vision and realise all fundamental roles of higher education in society as mentioned in the Introduction, the individual and society need to be placed at the heart of higher education. The higher education area will respond to the needs and expectations of society, actively include higher education stakeholders and ensure transparent administration. The concentration of knowledge with a greater number of people with a high level quality education will contribute to the development of our society in the social, cultural and economic fields. Added value to the Republic of Slovenia is recognised in highly educated, motivated,

---

<sup>6</sup>[http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/IZHODI%20C5%A0%C4%8CA\\_ZA\\_NACIONALNI\\_PROGRAM\\_-\\_v30.6.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/IZHODI%20C5%A0%C4%8CA_ZA_NACIONALNI_PROGRAM_-_v30.6.pdf)

acknowledged and innovative experts with high ethical standards. That is why the entire higher education system, which will ensure quality and efficiency, will be focused on the centre of the process – the individual.

Higher education institutions in the Slovenian higher education area include universities, faculties, art academies and professional colleges. Faculties, art academies and professional colleges may also be established as independent higher education institutions outside of universities. In accordance with the Higher Education Act, universities provide for the development of science, professional competence, art and knowledge transfer. Faculties perform scientific research and educational activity, while professional colleges carry out educational as well as professional activity. This type of arrangement was meant to ensure a kind of binary arrangement at the level of higher education, which would facilitate the development of science, university-level education and professional education (which would enable graduates to develop professional competences through practical work experience in the economy). With higher education institutions being organised in such a way, it was expected that there would be a gradual natural diversification of higher education institutions in the direction of an institutional binary system, whereby certain institutions would have been more theory and research-oriented, and others professionally oriented. On the contrary – today higher education institutions, partly with the same staff, carry out both types of study programmes, i.e. university and professional programmes, whereby the contents of these programmes are often interwoven and teaching and working methods are very similar if not identical. All higher education stakeholders point out that such interweaving does not give the expected results. It has resulted in an increase in the number of new independent higher education institutions. Shortly after their establishment, higher education institutions have generally transformed from professional colleges into faculties, aiming to offer all types of study programmes at all levels, including doctoral studies outside of universities. The latter phenomenon is an exception in the higher education arena in Europe and beyond, since only universities provide an appropriate environment and critical mass for the implementation of a quality doctoral study based on scientific and research work. In addition to higher education institutions, research institutes also operate in the Slovenian science area. Institutional cooperation among higher education institutions and research institutes, both in the area of research as well as in the area of educational activity, is often too limited, which hinders synergies and the optimum use of the potential in Slovenia.

Within the context of greater diversification, flexibility, deregulation and better transparency of Slovenian higher education, the binary system of university and professional study programmes and higher education institution needs to be better defined. The “theoretical and research” orientation and “professional” orientation of studies must be

defined in order to improve and ensure increased quality in developing the potential of institutions and students. This must be achieved in a way that prevents the restrictive, intertwining of university and professional programmes or individual contents of study programmes noticed today. That is why requirements for carrying out university study programmes on the one hand, and professional study programmes on the other, will be more clearly defined in the future. Higher education institutions must provide for a diversity of both types of programmes from the content, implementation and organisational point of view. In this manner, the formation of programmes or institutions will be encouraged according to their orientation and implementation of quality professional higher education study programmes, based on determined needs for such a programme or for an institution and the active co-operation between the economic and public sectors in the planning and implementation of those study programmes. The SQAA (the Slovenian Quality Assurance Agency for Higher Education) will play an important role in deciding whether the requirements for university or professional study programmes are fulfilled. The demand for education after concluding the first study cycle is increasing and so is the need for complex social and technological knowledge: this is why the study structure will be designed in such a way that it will provide professionally-orientated higher education after the first study cycle (such as specialisation which will be provided as the second study cycle programme or as a part of the second study cycle programme, depending on the learning outcomes and competences of a graduate from this type of programme).

All study programmes must ensure that knowledge and skills are obtained in accordance with a national qualification framework and key competences, including innovation, critical thinking, communication in the mother tongue, cultural consciousness and expression, ability to operate in the international environment and information literacy, are developed.

The university, with its various scientific disciplines and artistic areas, enables new scientific and artistic knowledge to be created and disseminated. In order to achieve this basic mission, universities must demonstrate internationally comparable scientific results, top artistic achievements and provide excellent teaching. The educational process must be based on the most contemporary knowledge and on a greater inclusion of higher education teachers and students in scientific research. This will only be possible with an improved ratio of students to teachers in higher education and improved teaching and research equipment. The university must be active in at least four scientific disciplines (FRASCATI) and at least five educational areas (ISCED). Only such universities will provide an environment for top level research, and consequently as a general rule, only this type of institution will provide conditions for offering doctoral studies. The university will be an autonomous institution without economic, political and other influ-

ences and at the same time it will be responsible and responsive to the expectations of society. The university environment will be creative and innovative and will provide a suitable environment for resolving the current challenges along with its fundamental mission – the creation of new knowledge. In addition to specific competences, universities will also provide for the provision of generic competences, particularly creativity, innovation, critical thinking, independence and team work and capability of working in the international environment. Universities will offer academic study programmes in all three study cycles and, under suitable conditions, professional study programmes as well. Similarly, all state and administrative obstacles to greater co-operation and connection between universities and research institutes will be removed. Efficient and direct cooperation or a merger will be awarded by means of greater institutional funding for higher education and research activity. Besides fulfilling the conditions listed above, financial and staff resources currently available enable the operation of a maximum of three public universities in the Republic of Slovenia.

Sufficient mechanisms will be established which will encourage and facilitate possibilities for universities to organise themselves in such a way so as to improve co-operation and connections between their members (i.e. faculties) which will enrich the interdisciplinary and multidisciplinary study programmes on offer. Universities and other higher education institutions will use information-communication technology in all fields of their operation and provide for adequate modern support in terms of libraries and information to students and staff. Higher education institutions will be encouraged to rationalise and become more efficient, as well as form suitable university developmental centres, joint administrative and other supporting services.

Other higher education institutions will, in compliance with their missions, offer up-to-date knowledge and competences of the highest quality. Polytechnics will carry out professional study programmes with a particular focus on providing graduates with professional competences, whilst obtaining the required learning outcomes stipulated in the national qualification framework. A greater focus will also be placed on long-lasting cooperation with potential users of their knowledge, particularly the economy and the requirements of the region in which they operate. The manner of professional teaching will be oriented towards obtaining practical professional knowledge and skills and the ability to apply the knowledge in various environments, while the curriculum will include practical training, which will have to be guaranteed in advance. Other existing independent higher education institutions (current faculties) will provide conditions for carrying out university study programmes within a suitable scientific and research environment and the inclusion of students in the research. Should they also wish to carry out professional study programmes, conditions for appropriately separating

out the implementation of such programmes at organisational, implementation and content level will be met in such a manner that practical knowledge and skills and active contact with the economic and public sectors will be provided for.

In the coming decade, higher education institutions will increase the level and quality of cooperation between themselves, and link up research institutes with the economic and public sectors. Co-operation must be improved in order to achieve a critical mass both in higher education institutions and also in research institutes. Special attention needs to be dedicated to achieving a better level of co-operation between staff in individual knowledge institutions. Thus higher education institutions and research institutes will be encouraged to support the exchange of their staff and to include all suitable experts (trained in research and teaching) into the study and research process. Bearing in mind the autonomy of knowledge institutions, the reasonable linking of higher education institutions and research institutes needs to be permanently supported with the necessary financial funds.

Both external and internal institutional accountability will be strengthened. Higher education institutions autonomously manage their assets, prepare study programmes, set academic standards, select staff and students and are in charge of their own organisational, management and financial decision-making. In the future, higher education institutions will have even more influence in terms of selecting students, particularly in the second and third study cycle. They will have to demonstrate greater accountability towards social expectations in fulfilling their role and achieving the results. In order to ensure the appropriate functioning of higher education institutions and protection of their autonomy, the most appropriate operational framework for higher education institutions will have to be found. Attention will thus be directed towards the provision of the appropriate status and legal form of higher education institutions, or, within the framework of relevant legislation, the conditions for responsive and autonomous operation of quality higher education institutions will be ensured. Institutions will gain even greater autonomy in deciding on the type and scope of work of their employees, since the law will no longer administratively regulate teaching workloads. Higher education institutions will be left to determine the type and scope of the work performed by employees (teaching, research, professional and other staff) themselves. In so doing, the remuneration or the wage system and working duties will need to be arranged accordingly. Higher education teachers and other employees will perform all duties and obligations arising from their work for the salary they will receive – both teaching in any study cycle as well as research, mentoring, counselling, etc. The accumulation of additional contractual payments, supplements for extra workloads and similar, in addition to the basic salary, will not be possible any longer. Appropriate remuneration (basic salary) for the type and scope of work and qualifications of an individual will be enabled within

the regulation framework of the human resources system. The human resources area in higher education, including *habilitacija*, will be modernised in dialogue with the academic sphere (higher education institutions, research institutes and employees). This will be carried out in line with the basic principles of protecting the quality of institutions and facilitating excellence, which requires the best and diverse staff members with flexible experiences. The internal reproduction of staff ("in-breeding") leads to closed systems, lower quality and poorer conditions for the creation of new knowledge. This is why there is a need to design a system which will enable the transfer of staff between higher education institutions. Employees at higher education institutions will, complementary to employees in public research institutes, have an option to step out of the public sector wage system.

In addition to public higher education institutions, private institutions also operate in the higher education arena. These institutions will independently determine their own mission. Their operation will be regulated within the same legal framework as the operation of public higher education institutions (for example, conditions for the establishment and operation of institutions and study programmes, the system of external quality assurance etc.) which will provide for comparable quality standards and the possibility for both types of institutions to operate.

Conditions for the development of all educational, scientific and research, artistic and professional areas in the Slovenian higher education area and the development of all disciplines will be ensured. Higher education institutions will ensure the development of their study fields, disciplines and the creation of new knowledge, whereby the integrity of development within the higher education area will be ensured at the system level with various tools (for example, with the fundamental and development parts of higher education funding).

The placement of higher vocational education in tertiary education will be arranged. The relationship between higher vocational education and higher education must be clear in all fields, including in terms of the status of institutions, the preparation of study programmes, accreditation of institutions and programmes, funding and transfer of students and graduates between individual institutions. Relevant ministries responsible for higher education and higher vocational education will prepare a proposal of a solution for a clearer placement of education of this kind.

## Goals

- Redefine types of higher education institutions and conditions for their establishment and operation.

- Enable autonomous decision-making regarding internal organisational structure in the new arrangement of higher education institutions.
- Establish a system of internal organisation of universities which will encourage co-operation between departments and/or members and enable a greater number of interdisciplinary and multidisciplinary programmes.
- Provide for appropriate conditions for the separate implementation of university and professional study programmes.
- Reduce the number of study programmes and increase the proportion of elective courses.
- Modernise the system of *habilitacija* – reduce the number of fields requiring *habilitacija*.
- Arrange workload, remuneration and transfer of staff.
- Enhance co-operation between higher education institutions and public research institutes.
- Enhance co-operation between higher education institutions and the economic and public sectors.

### Benchmarks:

From 2013 onwards, study programmes will be accredited by SQAA separately, according to the criteria and conditions related to the professional or university orientation of programmes (the first accreditation of programmes).

From 2019 onwards only updated study programmes in accordance with the new structure of study in the sense of the binary arrangement will be re-accredited by SQAA (renewed accreditation of programmes).

Increased co-operation between universities and public research institutes will be achieved by 2013.

By 2013 the status of employees at higher education institutions will be updated.



## Measures

### **Measure 1: Redefining conditions for the establishment and operation of individual types of higher education institutions**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable from 2012 onwards or from enforcement of the Act; as regards the modification of existing institutions, during the time of re-accreditation from 2012 to 2020.
- Responsibility: Government of the Republic of Slovenia (Higher Education<sup>7</sup>), higher education institutions, SQAA.
- Explanatory note: conditions for the establishment and operation of universities and other higher education institutions will be defined anew. The university is here understood as a scientific and research institution, with an integrated offer which achieves a critical mass of staff, research, disciplines and students. On the other hand, professional education will be offered by polytechnics in active cooperation with the non-academic environment, particularly the economy. Transfers between two types of education offered by these two types of institutions or study programmes will be enabled at the system level. Other existing independent higher education institutions will be able to offer the types of education for which they fulfil the required conditions. Universities will have to offer a scientific and research critical mass and ensure graduates gain the required competences. Should universities also wish to carry out professional study programmes, they will provide them separately in terms of implementation, organisation and content and in cooperation with the local environment, economy and the public sector. In terms of higher education activity for EU regulated professions, education of teachers and professions important for the life and health of people, the consent of responsible ministries or regulatory bodies will be obtained during the accreditation and re-accreditation process. All higher education institutions will offer adequate support centres to their students and staff, such as career centres or career, academic and psychological counselling, modern higher education libraries which will ensure access to literature and sources, sports facilities and professionally conducted sports activities.

---

<sup>7</sup>The notation from here onwards in brackets means relevant ministries responsible for the mentioned field under individual measures. In this case the ministry responsible is the Ministry of Higher Education.



## **Measure 2: Redefining the binary system – separation of university and professional study programmes**

- The separation of professional and university study in terms of content, implementation and organisation, shall be introduced in the first study cycle with enforcement of the Higher Education Act in 2011; the measure will be enforced progressively during the process of accreditation and re-accreditation in the period from 2013 to 2020.
- Responsibility: higher education institutions, Government of the Republic of Slovenia (Higher Education, Economy), SQAA, employers, local environment.
- Explanatory note: the programme binarity denotes the existence of university and professional study programmes at the first study cycle. The second and third study cycle will be uniform. Specialisation will be possible after the first study cycle, which with regards to the qualification framework, will be placed at the level of the second study cycle or as a part of it, depending on the learning outcomes and competences of a graduate from this type of programme. The specialisation may also be a part of flexible learning pathways and acquisition of competences on a horizontal level, which is described in more detail in Chapter 2.4 (Diversity and Variety).
- Higher education institutions will ensure conditions for each individual type of study programme:
  - In terms of carrying out professional study programmes, the education process will focus on developing graduates' professional competences alongside obtaining the required learning outcomes originating from the national framework of qualifications. It will also be based on longer term co-operation with potential users of their knowledge, particularly the economy and the needs of the region in which they operate. The manner of professional teaching will be oriented towards obtaining practical knowledge and occupational skills and the ability to apply the knowledge in various environments, while the curriculum will include practical training, which will have to be guaranteed in advance. At least 50% of staff teaching in professional programmes will have to have at least three years of work experience in the "non-academic world" or rather the economic or public sectors.

- With regard to carrying out university study programmes, an educational process will have to be ensured which will be particularly based on obtaining generic and subject specific competences. Staff members who will teach in these study programmes will have to have evidence-based scientific and research, or in the case of art studies artistic, as well as teaching competences.

Universities will carry out university study programmes in all three cycles. If they want to carry out professional study programmes in the first study cycle and the specialisation, then the preparation, implementation and management of these programmes will have to be made separate. Staff members will demonstrate various achievements for both types of study programmes, whereby at least 50% of teachers teaching in professional study programmes will have relevant experience from the economic sector. Universities will be the only institutions which may carry out doctoral studies.

Polytechnics will carry out professional study programmes in the first study cycle and the specialisation.

Other existing higher education institutions (current independent faculties) will carry out study programmes in the first and second study cycle; those programmes for which they fulfil the conditions (university or professional programmes). If they wish to carry out both types of study programmes (university and professional) they will have to separate the preparation, implementation and management of both types of study programmes.

- Funding of the measure: an additional 5 million Euros in 2014 and 10 million Euros per year from 2015 will be allocated for the promotion of the appropriate environment for carrying out professional study programmes and the (re)organisation of higher institutions.

**Measure 3: Establishing a system of internal organisation within universities and higher education institutions which promotes cooperation between departments and/or different institutions**

- Commencement of organisational modification in 2011; the system will be established at the latest by 2014.
- Responsibility: higher education institutions, SQAA.

- Explanatory note: those universities which are organised so as to include members (i.e. faculties) or organisational units with little mutual co-operation, do not take advantage of their potential and critical mass available to them. Consequently, it is necessary to enable greater co-operation in the preparation and implementation of study programmes and in joint scientific and research work. Greater co-operation is necessary both for mono-disciplinary study programmes and also for the creation of interdisciplinary or multidisciplinary programmes. Universities must ensure recognition of competences which students have acquired from a different member within the same institution, and also of those which the students have acquired at other higher education institutions. The modularisation contributes to a simpler transition of students and staff within and among the institutions. Last but not least, co-operation and formation of joint services and joint, co-ordinated use of equipment and premises within the higher education institution (understood as a university not a faculty) facilitates financial optimisation, i.e. greater efficiency.
- Funding of the measure: with the new development part of funding.

**Measure 4: Enhancing co-operation between higher education institutions and public research institutes:**

- a. reciprocal transition of staff between higher education institutions and public research institutes**
  - b. gradual connection and integration of universities and smaller public research institutes which obtain funds for research almost exclusively from public resources**
  - c. harmonisation of the wage system and conditions of work and promotion for staff members in higher education institutions and public research institutes**
- From 2011 to 2016.
  - Responsibility: higher education institutions and public research institutes, Government of the Republic of Slovenia (Higher Education, Science, Public Administration), SQAA.
  - Explanatory note: in order to ensure higher quality higher education institutions and research institutes, greater co-operation and connection between both types of institutions must be ensured. The created knowledge must be transferred

in both directions and the through-flow of higher education teachers and researchers for educational and research work must be facilitated in both types of institutions. There are too few top level researchers in Slovenia to keep them divided between the higher education system and the public research institutes. Research institutes which obtain funds for their operation almost exclusively from public resources will be gradually connected or integrated with universities on the basis of in-depth discussion with stakeholders. Point (c) (the harmonisation of the wage system) denotes equalising conditions of work, rights and remuneration for employees at higher education institutions and public research institutes.

- Funding of the measure: with the new development part of funding and with the modification of funding for the research activity.

**Measure 5: Enhancing cooperation between higher education institutions and the economic and public sectors:**

- a. co-operation between higher education institutions and the economic and public sectors**
- b. formation of consultative forms in higher education institutions for a dialogue with employers in drafting of study programmes**
- c. inclusion of staff from non-academic environments, particularly from the economic sector, in carrying out the professional study programmes**

- From 2011.
- Responsibility: higher education institutions, SQAA
- Explanatory note: higher education institutions (both universities and polytechnics and other higher education institutions) will improve their cooperation with the social environment and provide for the successful transfer of knowledge from higher education institutions into the economic and public sectors. Research and innovative projects will be encouraged at higher education institutions carried out in cooperation with the economic and public sectors; transition of staff will also be supported. The co-operation will take place in the preparation and implementation of study programmes. Higher education institutions must autonomously develop quality academic standards for study programmes and at the same time respond to social and economic expectations. Despite their autonomy, higher education institutions must examine the needs of society for certain study programmes and occupational profiles and determine if the obtained competences

of graduates are suitable for the employability and development of an individual in the sense of active citizenship and personal growth. Higher education institutions must actively cooperate with employers in designing study programmes and must take into consideration the needs of the labour market. Alumni may play an important advisory role in formulating and modifying study programmes, as their retrospective view and their post-study experiences will enable them to contribute to improving the quality of study programmes.

In carrying out the study programme, higher education institutions will allow cooperation of staff from the non-academic environment, where appropriate and necessary and where it contributes to a higher quality of study programmes. While doing so, fulfilment of certain occupational standards and pedagogic competences will be taken into consideration. Education and training, particularly in the professional study programmes, will be enriched with practical experience of working at participating companies.

- Funding of the measure: with the new development part of funding.

#### **Measure 6: The arrangement of staff:**

a. **improvement of the 'habilitacija' system**

b. **allocation of employee workload**

c. **carrier paths of higher education staff in various institutions**

- With the amendment of the Higher Education Act in 2011 and other relevant legislation; the measure will be enforceable in the period: 2011-2020.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Science, Public Administration), higher education institutions, public research institutes, trade unions from the field of higher education.
- Explanatory note:
  - in relations to point (a): the current *habilitacija* system does not always enable the selection and academic development of the best staff because it is too closed a system. Higher education institutions will therefore reduce the number of *habilitacija* fields which, due to great fragmentation, prevent the university from maximising its potential. The number of *habilitacija* fields will as a rule

comply with the fields of the third level of ISCED classification (85 fields) and will be arranged at university level or at an adequate level in other higher education institutions.

In addition, the conditions and criteria for *habilitacija* need to be sensibly designed, focusing on scientific and research performance and teaching qualifications, as well as applicability of the knowledge. In particular, there needs to be a separation between staff members who participate in the educational process in university and those in professional study programmes.

- in relation to point (b): the State will not regulate by law the scope of work of employees, the relationship between teaching and research work, minimum obligations of employees and the like (Article 63 of the Higher Education Act<sup>8</sup> and other regulations). Institutions will themselves decide upon the allocation of work amongst employees. Institutions may be flexible in this respect and independently define the shares of teaching, research, mobility or teaching abroad and similar for individual employees on an annual or multi-annual basis. Employees will receive one salary for their work in which all activities or workloads (teaching in any study cycle, research, mentoring, international exchange, counselling activities, etc.) will be included.
- in relation to point (c): maintaining the same staff members within the same higher education institutions can lead to stagnation and a reduced quality of higher education, including scientific and research work. It is for this reason, that the transition of higher education staff needs to be enabled. Generally speaking, doctors and other young experts should be employed in another higher education institution than the one in which they studied or have worked at so far.
- Funding of the measure: with the new development part of funding.

**Measure 7: Formulating the possibility for employees at higher education institutions to step out of the salary system for civil servants**

- With the amendment of the Higher Education Act in 2011 and other relevant legislation; the measure may be enforceable from 2012.

---

<sup>8</sup>Higher Education Act: [http://zakonodaja.gov.si/rpsi/r02/predpis\\_ZAKO172.html](http://zakonodaja.gov.si/rpsi/r02/predpis_ZAKO172.html)

- Responsibility: Government of the Republic of Slovenia (Higher Education, Science, Public Administration), higher education institutions, public research institutes, trade unions from the field of higher education and research activity.
- Explanatory note: higher education institutions will gain greater autonomy in the recruitment and management of human resources. In compliance with the agreement among all participating parties, employees will have the possibility to step out of the wage system for public employees. In this case, basic rights and duties will be less rigidly regulated. The management of higher education institutions and employees will be expected to jointly propose how the wage systems and rights and obligations of employees may be arranged in this case. One of the possibilities is a collective agreement between universities as employers and trade unions as employees. The current arrangement of rights and obligations may here serve as a starting point for the new system. The management of institutions and employees will propose modifications regarding the legal labour arrangement of employees until the amendment of the legislation. The new wage system will be uniform for higher education teaching and research career paths.

**Measure 8: Modifying educational requirements for employment in public administration**

- With the amendment of legislation under the auspices of the MJU; by 2013 at the latest.
- Responsibility: Government (Public Administration, Higher Education).
- Explanatory note: with regard to the placement and the significance of the first study cycle as undergraduate education, and the second and the third as post-graduate education, and with regard to the actual state of and requirements for work posts, the arrangement is amended so that the main entry point for employment in public administration is the completed first study cycle. By taking into account the complexity of work posts and actual competences and experience of candidates, the ministries responsible for higher education and public administration will examine how to enable candidates with a completed first study cycle to be employed in a post of the first career class.

## 2.2. Study structure and higher education qualifications

The binary nature of programmes in the first study cycle without an institutional binary system is currently present within the Slovenian higher education system. Internationally speaking, this type of system is rare or even regarded as an exception. All higher education stakeholders agree that in practice this arrangement is counterproductive as the interweaving of various types of programmes or individual contents acts as a hindrance. The aim of enabling graduates to take various directions and to gain various competences has not been achieved. Similarly, the expectation that a gradual, natural diversification of higher education institutions would develop towards an institutionalised binary system, whereby the first should be more theoretical, i.e. scientific and research oriented, and other professionally oriented, has not been realised. Another characteristic of the Slovenian higher education system, which was triggered by the Bologna renewal (although this was not its purpose), is considerable dissatisfaction with the individual levels of study. The first study cycle is not always carried out or understood as a comprehensive level of education; the second study cycle is too often professionally oriented and often offers too few research competences. In the third study cycle, a significantly increased enrolment of students within one single academic year occurs without suitable selection of students on the basis of required knowledge and competences and with disregard to the available capacities of higher education institutions to ensure excellence in their doctoral studies.

Alongside the accessibility and greater diversification of the tertiary system, the significance of an individual study cycle and qualifications which they provide must be clearly and distinctly organised. The first study cycle programmes will thus offer comprehensive higher education and will facilitate the transition of graduates into the labour market. The second study cycle programmes will offer a deeper level of knowledge and competences. In this respect, the study programmes will be varied in the first and second cycle. The binary system will facilitate orientation towards both theory and research on the one hand, or a practical professional field on the other. The horizontal diversity will offer differentiation among individual study programmes of the same level in the Slovenian higher education area within one of the binary options as well (for example, various orientations of programmes within disciplines which are carried out by various higher education institutions). The third study cycle programmes will be scientific and research oriented, including the arts, and will provide the competences required for independent scientific or art research work and academic activities. It will require a contribution to the international bank of knowledge or arts and original research work,



while doctoral students will be included by universities in active research programmes and projects. Enrolment criteria for doctoral studies will encourage and facilitate higher quality performance of this type of study by ensuring academic research facilities, including mentors, and by active inclusion of students in the international research environment. In addition to universities, doctoral study may also be carried out by a consortium of public research institutes which fulfil the criteria of scientific excellence, a sufficient critical mass, adequate research equipment, provided inter-disciplinary character and a top staff line-up. The relevant criteria will be determined by SQAA and verified on a cyclical basis through evaluating the way in which doctoral study is carried out.

Transitions between individual types of study programmes will be arranged in a flexible manner and with a systemic focus on the individual. Entrance conditions for the enrolment in higher education study programmes will be adapted. As a rule, the current procedure regarding the enrolment in the first cycle will be retained but with modifications so that for individual programmes institutions will be able, in addition to the *matura* exam, to define the success of candidates with an additional set of subjects and possible additional exams. Alongside the appropriate modification of the vocational *matura* and reform regarding the calculation of points or the success with regard to achievements at an individual type of the *matura* exam, access to the first study cycle may also be modified so that it appropriately takes into consideration either one or the other type of *matura* exam. Access to professional and university study is thus opened up to candidates applying to the general and vocational *matura* exam, if the calculation and comparison of points is adapted by the system so that various grades or successes obtained by passing various *matura* exams are taken into consideration. In determining the number of places on individual higher education programmes, broader social interests and long-term forecasts regarding the development of Slovenia, as well as the employability options of graduates, will be taken into consideration at systemic level by higher education institutions. As regards study programmes educating students for EU regulated professions, education for teachers and professions important for the life and health of people, the competence of the Government of the Republic of Slovenia needs to be retained in terms of determining the number of places available and conditions for the appropriate implementation of these study programmes, both for public and private institutions. However, selection mechanisms and entrance conditions to study programmes of this kind will be determined by higher education institutions themselves. In this regard, a system to assess the quality of the implementation of study programmes of this kind needs to be designed and influenced by the responsible regulatory bodies or authorities.

Selection procedures, the determination of enrolment conditions and the required competences for enrolling in post-graduate studies, i.e. the second and third cycles, will be left to the discretion of higher education institutions, bearing in mind that enrolment to a higher cycle requires a completed previous study cycle. Thus, higher education institutions will themselves carry out the selection process for applicants to the second and third study cycle. With all accountability and in accordance with the national framework of qualifications, higher education institutions will decide on the required entrance requirements, evaluate whether candidates fulfil them, and decide on which candidates to accept. Informal and casual learning will consistently be taken into consideration in the selection process. For enrolment in study programmes of the second cycle which educate for EU regulated professions, education for teachers and professions important for the life and health of people, the same regulation applies as described above for undergraduate study programmes.

Differing durations of study programmes in the first and second study cycles cause problems in terms of the vertical transition of students between various study programmes, particularly due to the rigid organisation and implementation of study programmes and little real selection and modularisation of individual contents. Higher education institutions will themselves determine the necessary duration of the first and the second study cycle, while taking into consideration the specifics of the discipline. The SQAA will however facilitate the following: (i) co-ordination of learning outcomes and the duration of study among all programmes carried out in the Slovenian higher education arena in an individual field; (ii) transition of students between individual study programmes and disciplines with due regard to individuals' competences; (iii) flexible study programmes which are adapted to students and their previously acquired competences (in terms of duration and content, and which are accredited variably according to their duration); (iv) the inclusion of students in the study programmes without additional costs for the transition to the second study cycle with regard to the previously completed first study cycle (for example, "transitional" or "additional" year of study). A uniform Master's study and exceptions regarding the duration of study programmes will be possible in the fields of EU regulated professions. A uniform Master's study will also be allowed in fields for which a special law requires 5-years of study in the chosen field or a completed second cycle degree. However, these programmes will be organized in a way that will enable students to end their studies after 3 years and still gain the first cycle qualification. The third study cycle will last from 3 to 4 years in relation to the academic and quality appraisal of universities in the designing of doctoral study programmes. Universities and research institutes will enhance post-doctoral activity.

Greater attention will be dedicated to the teaching profession in the broadest sense. Study programmes which educate teachers must be of quality; additional selection of students and the possibility to limit entrance posts will be enabled. The selection will be carried out by higher education institutions themselves as they are best placed to decide on the suitability of candidates and whether they demonstrate the competences required to complete the study programme. As regards study programmes for the education of teachers, higher education institutions will take into consideration the specifics of disciplines, for example, the education of teachers in science, arts and humanities, in their organisation and funding. Teachers are central to the quality and success of primary and secondary schools, which is why they will enhance needed competences throughout the whole of their study. These types of study programmes must ensure an integrated development of competences and knowledge needed for teaching, including supporting teachers to contribute to the sustainable development of society. The selection of candidates does not mean making access to this study more difficult but it rather ensures better coherence between the type of study and an individual. As a consequence, such study will be of better quality and will lead to greater satisfaction of students and higher education teachers.

A national framework of higher education qualifications as part of the national framework of qualifications will be formulated. It will provide transparent information regarding all qualifications in Slovenia and acquired competences.

Study programmes will be implemented in a fairer manner. In the light of lifelong learning, we wish to provide all citizens with the same rights regardless of the period of life in which they decide to study. Part-time study, as it is known in Slovenia today (which means same workload as full time studies but the only difference being that part time students pay tuition fees at public higher education institutions) will not be possible any longer. A modified part-time study will only be an adapted form of study programme, which will be annually executed with adjusted workload, i.e. 30-45 ECTS per year. The cost of the study per year will be proportionally lower in this case.

## Goals

- Prepare the national qualifications framework and implement the self-certification of the higher education qualifications framework.
- Redefine the manner of carrying out the study programme: one academic year for the acquisition of the qualification will correspond to 60 ECTS. The part-time study will enable students to gain 30 to 45 ECTS per year.

### Benchmarks:

The national qualifications framework will be formed by 2012.

The national qualifications framework will be self-certified by 2013.

By 2016, conditions for entry into higher education will be gradually adapted:

- For the first study cycle, the current conditions for enrolment will be adapted (existing programmes gradually at re-accreditation - i.e. at the latest by 2016; new programmes with first accreditation)
- For the second and third study cycle, the definition of enrolment conditions and selection of candidates are left to the discretion of higher education institutions (existing programmes gradually with re-accreditation - i.e. at the latest by 2016; new programmes with first accreditation).
- From the academic year 2012/2013 onwards, universities will themselves determine the *numerus clausus*, taking into consideration the funding of higher education, except in the area of EU regulated professions and education of teachers.

## Measures

### Measure 9: Adoption of the National Qualifications Framework

- In 2011 – new Decree (or Act) on National Qualifications Framework.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Education, Labour).
- Explanatory note: the National Qualifications Framework will define individual qualifications in the (higher) education system, their differences and the competences acquired. The Framework will be used by higher education institutions for creating study programmes, by SQAA for deciding on the suitability of study programmes and achievement of academic standards, and by individuals when mak-

ing career and employment decisions and in deciding which study programme to follow. It will also provide employers and the general public with information on individual qualifications and the acquired competences.

### **Measure 10: Arranging the study structure**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable for new study programmes at their first accreditation, and for the existing programmes at their re-accreditation by 2016.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions, SQAA.
- Explanatory note: due to greater integration and transparency within the system, the duration of study programmes will have to be reformed so that it ensures the flexible transition of graduates through individual study cycles. As a rule, the first study cycle in its full form will last for 3 years to, exceptionally, 4 years; the second cycle will exceptionally be 1 year but generally 1 to 2 years and the third cycle from 3 to 4 years. Exceptions in the duration of the first and the second study cycle will only be allowed for study programmes which educate students for EU regulated professions or for professions for which the special law requires 5-years of study or completion of the second study cycle. It will consequently only be possible to carry out the uniform Master's degree study programme for EU regulated professions or professions regulated by the special law, by which the latter will enable the student to end their studies with a qualification or first degree study cycle diploma. In this regard, flexible study programmes and student transition between the programmes need to be ensured. Higher education institutions and SQAA will ensure: (i) co-ordination of learning outcomes and the duration of study among all programmes carried out in the Slovenian higher education arena in an individual field; (ii) transition of students between individual study programmes and disciplines with due regard to their individual competencies; (iii) flexible study programmes which are adapted to students and their previously acquired competences in terms of duration and content, and which are accredited variably according to their duration; (iv) the inclusion of students in the forms of study without additional costs for the transition to the second study cycle with regard to the previously completed first study cycle (for example, a "transitional" or "additional" year of study). These conditions must be ensured by higher education institutions for the existing study programmes during the first re-accreditation of all study programmes by 2016 at the latest, including the uniform duration and structure of all programmes in the Slovenian higher education area from the same field. Otherwise the study struc-

ture shall be arranged uniformly following the model 180 + 120 ECTS for the first and the second study cycle. SQAA will actively participate in formulating the uniform study structure for individual fields and give accreditation and re-accreditation to programmes in compliance with this national model.

**Measure 11: The organisation of study: degree study programmes comprise 60 ECTS per year with a full-time work load or 30 to 45 ECTS per year with part-time/reduced work load**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable during the academic year 2013/2014 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions, SQAA.
- Explanatory note: given that the adapted form of studies is intended for individuals who do not choose full-time studies for various reasons, the implementation of the study programme will be adapted and reduced in workload. The new definition on the decreased scope denotes that an individual and higher education institution agree on the workload (subjects or the module) in which the individual will enrol during a certain year. Institutions will adapt the forms of work and teaching to the specific issues and needs of their students. The individual year of the study programme will comprise of 60 ECTS; regular full-time studies will amount to 60 ECTS per year, and the adapted form of carrying out the study programme ("part-time" studies) to 30 to 45 ECTS per year. In the latter case the cost of the studies will be proportionally lower.

**Measure 12: Modification of entry conditions and places:**

- a. adaptation of current conditions for the first study cycle**
- b. the determination of entry conditions for the second and third study cycle is left to the discretion of higher education institutions upon the conclusion of the preceding study cycle by candidates**
- c. the decision-making with regards to limiting enrolment is transferred to universities, which take into consideration the funding of higher education, except in the field of EU regulated professions and education of teachers. In all cases SQAA verifies capacities for carrying out study activities**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable from the academic year 2013/14 onwards at the latest and implemented by 2016 for the existing study programmes.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions, SQAA.
- Explanatory note: universities will autonomously, accountably and in interaction with the social and economic environment determine the number of places available in compliance with their capacities and the assessed need for the programmes in the working world and broader society. SQAA will verify capacities to carry out the activity, as well as the employability of graduates and other evidence regarding the need for the existence of the study programme. In terms of enrolment in the first study cycle, higher education institutions will also be able to determine additional enrolment conditions in addition to the general enrolment requirements. Alongside the appropriate modification of the vocational *matura* exam and the reform regarding the calculation of points or the success regarding the achievement at an individual type of the *matura* exam, the access to the first study cycle may also be modified so that one or another type of *matura* exam is appropriately taken into consideration. Access to professional and university study is thus enabled to candidates applying for the general and vocational *matura* exam, if the calculation and comparison of points is adapted by the system in such a manner that various grades or the success achieved by passing various *matura* exams are taken into consideration. In terms of enrolment in the second and third study cycle, higher education institutions will be able to independently determine entrance conditions and the selection procedure, whereby the presence of required competences for successful study in a certain study program will be verified. As a general enrolment condition, candidates will have to have acquired their education qualification in the preceding study cycle. In this regard, higher education institutions will be able to decide on the enrolment on the basis of demonstrated competences of candidates and will be able to enrol fewer students than there are available posts, should candidates not fulfil the required or specified conditions. Additional selection will not denote new obstacles in terms of accessibility of study, but it will facilitate the enrolment of candidates into programmes which are the most appropriate for them. Ensuring that the competences of candidates better match the requirements of the study programme, will lead to a higher quality of study and greater satisfaction on behalf of both the students and staff. With regard to the determination of enrolment posts for study programmes which provide education for EU regulated professions, education for teachers and professions important for



the life and health of people, the consent of the Government of the Republic of Slovenia and responsible ministries of regulatory bodies will have to be obtained. Other public and higher education institutions holding a concession will have to obtain the consent of the Government of the Republic of Slovenia with regard to enrolment in all study programmes in all study cycles.

## 2.3. Funding

Higher education in Slovenia is defined as a public service. This refers to the entire operation of higher education institutions, regardless of their sources of funding.

An internationally comparable share of GDP will be allocated to higher education and scientific and research activity, meaning that the total funds for higher education activity need to be increased. In doing so, the roles and goals of higher education institutions will be clearly determined.

The funding of higher education institutions must ensure quality higher education, develop excellence and support their diverse missions. Funding mechanisms for public funds must be designed in a way that enables higher education institutions to independently make decisions regarding the use and integrated management of funds. In this regard, higher education institutions must be accountable to students, employees and various social environments, all systemic parts of society and to society as a whole.

An important mechanism which provides for the financial autonomy of higher education institutions, is an integral financing of their study activity, that is a "lump sum." The funding model must recognise differences among individual higher education institutions and allow them to realise their strategies. The funding structure will be based on two pillars:

- the basic pillar will facilitate stable funding for higher education institutions for longer periods (2-5 years), which will ensure the certainty of funding. The variability of the basic funding will be limited (+/- 3%) and will be dependent on definable success criteria, such as efficiency, scientific excellence and international cooperation;
- the developmental pillar will provide higher education institutions with additional funding to support their development and competitiveness in the fields of diversification, internationalisation, quality and social dimensions with regard to definable goals and criteria.



Higher education institutions will be allocated funds by taking into consideration their role in society and attainment of the goals agreed upon. Higher education institutions will enter into an agreement with the relevant ministry to define the goals which need to be achieved in order to receive funds. The strategic framework of an individual higher education institution along with measurable goals will be defined in the agreement. The framework will also include the plan for the implementation of the study activity within the defined study areas and programmes carried out by the institution, the number of students and places available, long-term goals of the institution and measures for their achievement, and the method of reporting.

The State will cover the costs of study in public higher education institutions and possibly also in institutions holding a concession. Public funds will only cover programmes offered by private higher education institutions that are not already offered by public education institutions, if there is an expressed need for them in the Slovenian area and if they demonstrate top quality performance.

A framework for a simpler diversification of funding sources for higher education will be formulated. Conditions for developing donations, as an increasingly important private source of funding higher education, will be established. Similarly, the role of centres for the transfer of technology and knowledge will be supported and the establishment of "spin off" companies of higher education institutions will be put in order. In this regard, the role of the higher education institution as the founder or the owner will be clearly determined.

While maintaining the co-funding of scientific and research work at public universities from private sources, i.e. the economy, public funding will also be increased. In this regard, the national mechanisms for funding scientific and research activities, technological and developmental as well as study activities at higher education institutions must be harmonised. This will facilitate the autonomous and integrated management of funds and will rationalise the process. Similarly, the system for funding research and development activity in Slovenia must be harmonised and equivalent conditions for decision-making on the use of funds for higher education and research institutions must be facilitated.

A part of budget research funds will be transferred to "lump sum" funding of the scientific and research work of universities. In this manner the stability of funding for one of the key missions of universities will be ensured and their autonomy in this area will also be strengthened.

## Goals

- Increase total funds available to higher education and scientific and research work.
- Create a system of funding with a basic and a developmental pillar through establishing multi-annual financing mechanisms that will reward successful higher education institutions.
- Ensure the stability of funding of universities' scientific and research activities through the introduction of integral funding of research (i.e. research "lump-sum").

### Benchmarks:

By 2015, at least 1.3% GDP from budget funds and 0.3% of GDP from other sources will be ensured for tertiary education; and by 2020 a total of 2.5% of GDP, of this amount 2.0% of GDP from budget funds.

By 2020, funds per student for higher education institutions will be above the OECD average.

A new funding system of higher education with the basic and developmental pillar will be introduced from 2011.

## Measures

### **Measure 13: Establishing a funding system for higher education institutions that will encourage development and include elements of quality and cooperation with the environment**

- With the amendment of the Higher Education Act and the Research and Development Act in 2011, and with the Decree on Financing of Higher Education Institutions from 2011 onwards.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions.
- Explanatory note: the funding of higher education needs to be regulated by law, and the Decree on Funding will define the implementation and management of funding for the higher education system that will arise from the law. In the transi-

tion period, a new Decree on Funding was formulated in 2011 which will regulate a revised system of financing higher education as of 2011. The new system of financing will include two pillars: the basic and development pillars. The basic pillar will ensure stable funds for public and concession-holding higher education institutions, and the developmental pillar will ensure additional funding in accordance with the fulfilment of institutions' missions and the attainment of pre-set goals in accordance with basic dimensions. Following the adoption of the Higher Education Act in 2011 the above mentioned Decree will be amended where appropriate.

- Funding of the measure: basic pillar funding of 259.4 million Euros will be ensured from budget funds in 2011, and 279 million Euros in 2012. The value for 2012 also includes funds of 20.2 million Euros which need to be provided for with the budgetary amendment for 2012. The new development pillar will be funded by an additional 20 million Euros in 2011, upon the budgetary amendment. Dedicated funds for higher education activity and the growth of funds from 2013 are evident from Chapter 6 (Approximate amounts of funds for the achievement of the National Higher Education Programme).

**ukrep: Measure 14: Establishing a system to monitor efficiency in the use of public funds in higher education, through monitoring achieved results and effects at national level and at the level of higher education institutions**

- The preparation of a uniform methodology for the monitoring of results and effects in 2011.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions.
- Explanatory note: indicators for measuring the efficient use of public funds for higher education and for supervision through reporting need to be defined. Uniform and content indicators will thus be developed for higher education institutions to use in their reporting and in annual work plans and other mechanisms.

**Measure 15: Establishing an information system for higher education in the Republic of Slovenia (eVŠ Information System)**

- Amendment of the Higher Education Act in the chapter "Records" in 2011 and amendment of the Rules on Register of Higher Education Institutions in 2011 and the establishment of the system by 2012.
- Responsibility: Government of the Republic of Slovenia (Higher Education).

- Explanatory note: a database with records on students and graduates, higher education actors and a registry of higher education institutions will be created. Similarly, a public portal on higher education will be designed in Slovenian and in English, and will contain information about studying in Slovenia.
- Funding of the measure: the following amounts will be provided for the establishment and operation of the eVš system: 700,000 Euros in 2011, 244,000 Euros in 2012, 144,000 Euros in 2013 and 104,000 Euros per year from 2014 onwards.

**Measure 16: Providing a framework to develop donations as an increasingly important private source of funding higher education**

- By 2015 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Science, Finance), Tax Administration of the Republic of Slovenia.
- Explanatory note: donations including tax relief for higher education, science and research which includes art, will be stimulated. Development of donations over the long term is urgently needed in order to ensure that higher education activity and research activity is better connected to society. This will consequently lead to an improved position (reputation) of higher education staff researchers and innovators in society. A key pre-condition for donations is trust in higher education and science as the catalysts for the development and nurturing of a creative, knowledge-based society. Given that donations are an important source of funding for higher education activities and research activities in developed countries, the goal of the National Higher Education Programme 2011-2020 is to encourage the long-term development of donations, through additional incentives such as tax relief. This is intended to be a permanent process not just a measure to be implemented during the current financial crisis.

## 2.4. Diversification and differentiation

The current organisational system of higher education and funding supports a situation in which all higher education institutions attempt to be more or less equal and competent in all areas, thereby fulfilling all goals or roles of higher education. Such a culture of operation does not lead to excellence and competitiveness; rather, to mediocrity as not all institutions can excel in all fields.

Developing a knowledge-based society and attaining the fundamental goals of higher education require a diverse educational choice provided by various higher education institutions, but without risking the fragmentation of study and research programmes, reflected in too large a number. It is for this reason, that the system of tertiary education will be organised in such a way, that the institutions in Slovenia will complement each other in the future, define and develop their advantages and in this manner connect themselves in the national and international area. Study programmes will become different as regards their content and orientation. The compliance of study programmes with the National Qualifications Framework will ensure the required higher education standards are attained. Besides that, higher education institutions will themselves, and in co-operation with society, prepare programmes which will meet the requirements and expectations for the future development of Slovenian society.

Higher education institutions will select their own profiles based on their fundamental mission, type and level of educational offer and achievement of excellence in selected areas. It is expected that they will consequently be more successful and more efficient in selecting the type of education and students they wish to attract and educate, and thus facilitate a better overlap between the orientation of study programmes and the applicants enrolling in these programmes. As a consequence, it will be easier for applicants to decide which study programme is most appropriate for them. For this purpose, higher education institutions will choose suitable and different methods of teaching, work and other activities which will support their new mission and orientation, and implement a system of career counselling.

SQAA will play an important role in the future diversification of higher education institutions, given that through the process of accreditation, it will inspect whether institutions are operating in accordance with their chosen profile or mission.

The new development part of higher education funding will reward ambition, variety, profiling and the operation of higher education institutions in accordance with their defined mission. Similarly, this part of the funding will take into account the national development priorities of those areas which will be required in the future and which will be defined by the concept of "smart specialisation."

Higher education institutions will also offer other forms of study programmes for life-long learning which will be classified within the national qualifications framework, although they will not provide a level of qualification. Individuals, employers and other social groups must be better informed of the importance of various flexible educational paths, acquisition of qualifications on a horizontal level and not only gaining a higher level of education but rather the most appropriate combination of competences and qualifications.

In order to support diversification, entrance conditions for individual study cycles must be adapted to enable fair access and at the same time offer more autonomy to higher education institutions in selecting the most suitable and the most motivated candidates for study. For such a system to operate, the system of transparency tools must be improved. The Diploma Supplement must focus on the student and provide reliable information on the competences and profile of an individual graduate.

## Goals

- Enable the profiling of higher education institutions – in terms of organisation, programme and implementation; higher education institutions will formulate their various missions.

### Benchmarks:

Diversified institutional strategies will be formulated by 2013.

## Measures

### **Measure 17: Formulating the missions of higher education institutions and profiling of institutions**

- By 2013.
- Responsibility: Higher education institutions, SQAA.
- Explanatory note: higher education institutions will define their missions and strategies which will differ from one another. Higher education institutions will seek out those areas of their operation where they are particularly successful or where they demonstrate potential for success, and focus their operation on strengthening these areas. They will focus on those potential students and group of students to whom they can offer the highest quality of education. Similarly, they will adapt their work and teaching methods to these groups. SQAA will have an important role in the future diversification of higher education institutions, given that through the processes of accreditation, it will inspect if institutions are operating in accordance with their chosen profile or mission.
- Funding of the measure: with new development part of funding.

## 2.5. Quality and accountability

The Slovenian higher education arena must be of quality and must enable excellent scientific and research development. Taking into consideration priorities and the breadth of quality and accountability, only some elements are chosen for this chapter in the National Higher Education Programme, with a particular focus on the external and internal system of quality assurance; institutional, national and international levels and some other elements relating to quality, such as staff, equipment, teacher competence, contemporary character of study programmes. Although in the chapter regarding quality and accountability in the National Higher Education Programme 2011-2020, only selected elements of quality are defined more precisely, the quality of the higher education area as a whole has to be ensured. "Quality" which is not equal to "quality assurance" must be in place at the academic, professional level and it is demonstrated by evaluating the scientific work, evaluating teaching, the success of employees, students and graduates in the domestic and international environment and the attraction of the higher education arena. Quality as such, must be placed at the centre of both higher education and in the operations of every higher education institution.

In the continuation of the text, the selected or individual elements from the field of quality and accountability are described.

### Ethics in higher education

Higher education has a great influence on social development and ethics and reaches an important part of the population during the time in their life in which they are developing themselves and their personalities. Universities are therefore regarded as seats of ethics and should ensure that the ethical aspect is incorporated into all teaching and research processes. There is a greater need for ethics in higher education due to the increasing role of knowledge in society, which is also demanded by the changing technical and economic conditions in which higher education functions. A person with a high level of education is expected to be capable of ethical judgement and active commitment to humanity. In these senses study programmes need to be improved and codes of ethics of higher education organisations need to be assured.

### External system of quality assurance

SQAA represents an important element of the quality assurance system. It will develop and update the entire system of external quality assurance in the coming years. Criteria for quality in the operations of higher education institutions and implementation of study programmes will be clearly determined and adapted for individual types of high-

er education institutions and forms of study programmes (university and professional). Upon the next institutional evaluation of research institutes, the Slovenian Research Agency (ARRS) will formulate mechanisms for the evaluation of their quality, which will be complementary to those used by SQAA and the co-operation with the aforementioned agency will be established. SQAA will become a member of the referential international organisations (ENQA and EQAR), which unite national agencies in quality assurance in higher education and thus provide them with credibility in the national and international area.

### Internal system of quality assurance

The responsibility for the quality of higher education is primarily the task of higher education institutions themselves, which is why they will continuously develop the culture of quality and strengthen the culture of accountability. Higher education institutions will develop their fundamental mission in a professional and responsible manner and for this purpose improve their self-evaluation procedures, peer evaluation, adopt and implement the system of internal quality improvement, engage all employees in constant quality improvement and engage students in the improvement of the teaching process and their own responsible participation. The culture of quality denotes a common value of quality and collective responsibility and commitment of all members of the institution, both of employees and students, for its continuous improvement.

### Improvement of study programmes

Higher education institutions are, and will continue to be, responsible for the preparation and implementation of study programmes, including the setting and protection of academic standards. They will be more independent in amending and adopting study programmes, and at the same time they will be considerably more responsible for ensuring quality in preparing and executing their study programmes and for enabling students to develop the required competencies. They will be supported in the formulation and implementation of study programmes so that they will be more focused on learning outcomes and focused on the student. This also requires the development of new teaching approaches and methods. Programmes will thus become more flexible, offer more selection and inter-disciplinary contact and a simpler set of desired student competences.

### Teaching excellence

Special attention will be paid to teaching. In this regard, higher education institutions will offer teaching support to their higher education teaching staff and better didactic training, in order to develop integrated teaching competences and to enable teachers



to contribute to the sustainable development of society. Higher education institutions will be encouraged to establish special development centres for this purpose which, in addition to superior training and constant improvement of knowledge and skills of the teaching staff, will also provide research on the subject of higher education learning and teaching. Higher education institutions will be more open towards new methods of teaching, facilitated by contemporary information communication systems and the related new methods of team work. In recent years, on average, the ratio between the numbers of students and teachers in higher education has already significantly improved in the Slovenian higher education arena; however, it is still somewhat behind the more developed countries. It is for this reason, that the staffing capacities of institutions will be increased and the growth of the teaching base will also be encouraged in cooperation with research institutes, as well as including doctoral students and young doctors in the teaching process. In collaboration with higher education institutions, special attention will be dedicated to extremes; higher education institutions face a rather varied range, with higher education teachers in some programmes working with a very small number of students, and others with an extremely large number, of even several hundred students. Methods on how to enable better working conditions for higher education teachers as regards the above mentioned context and study conditions for students are needed. The ratio between students and higher education teachers needs to be improved, particularly in those study programmes where this ratio is currently below the average.

## Equipment

In order to raise the quality of higher education and scientific research, spatial conditions and the equipment of higher education institutions will be improved. Investments in new teaching and research equipment will need to be increased, including libraries and sports facilities. Better utilisation of the facilities that already exist will also be enabled. Investments in the maintenance and upgrading of information and communication technology for its use in all areas of operation of higher education institutions are particularly necessary. Areas of special strategic importance, which also facilitate the accessibility of tertiary education, are the development of programmes of distance learning, the increased use of information and communication technology in teaching, and continuous training of all groups of users within the higher education community.

## Goals

- Ensure the operation of the quality assurance system (external provided by SQAA and internal provided by higher education institutions) fully in line with European standards and guidelines for quality assurance in higher education.
- Strengthen the culture of quality and the culture of accountability within higher education institutions.
- Abolish programme accreditation and change to institutional accreditation.
- Encourage higher education institutions to develop supporting activities for didactic training and support for teaching staff.
- Increase the staffing capacities of higher education institutions and limit excessive numbers of students per higher education teacher.
- Better integrate distance learning in the Slovenian higher education system.
- Improve capacities of higher education institutions in terms of premises and equipment.

### Benchmarks:

The percentage of students who enrol in higher education institutions and do not graduate will be three quarters lower by 2020; currently it amounts to 35%.

SQAA will become a member of EQAR and ENQA by 2014.

## Measures

- **Measure 18: Formulating Codes of Ethics in higher education institutions**
  - From 2012 onwards.
  - Responsibility: higher education institutions.

- Explanatory note: higher education institutions will adopt codes of ethics, which will be reflected in all areas of their operations. Codes of ethics will also be transferred to the education process and thus influence the ethical awareness and conduct of students and graduates.
- **Measure 19: All higher education institutions and colleges will be fully in line with the first set of European standards and guidelines on quality in higher education. Their internal system of quality assurance will be strengthened and information regarding their quality will be published publicly and transparently**
  - From 2012 onwards.
  - Responsibility: higher education institutions, SQAA.
  - Explanatory note: the internal quality assurance system will be verified by SQAA during the re-accreditation. In the intermediate period, support and advice will be offered to higher education institutions and higher vocational colleges for the development of the internal quality assurance system. With a strengthened culture of quality, higher educations will be required from 2012 onwards at the latest, to publicly and transparently publish information regarding their quality, advantages, disadvantages and reports from internal and external evaluations. This will fulfil the first set of European Standards and Guidelines for Quality in Higher Education.
- **Measure 20: SQAA will develop and continuously upgrade the external quality assurance system, in collaboration with all higher education stakeholders**
  - From 2011.
  - Responsibility: SQAA.
  - Explanatory note: SQAA will formulate and update the external quality assurance system fully in line with European Standards and Guidelines for Quality in Higher Education.
  - Funding of the measure: as of 2015 (when the (co)funding of SQAA from the project of the European Structural Fund expires), approximately 6 million Euros will be allocated from the budget, and the adequate growth in funds with regard to the scope of work and complexity of the Agency's operation will be provided for.

- **Measure 21: SQAA is externally evaluated and puts forward its candidacy for inclusion in EQAR and membership in ENQA**

- Preparation for external evaluation: in 2011 and 2012.
- External evaluation: in 2012 (or 2013).
- Candidacy for inclusion in EQAR and membership in ENQA: in 2012 or 2013.
- Responsibility: SQAA, Government of the Republic of Slovenia (Higher Education).
- Explanatory note: if it is established through the external evaluation that SQAA does not fulfil the European standards and guidelines for quality in higher education or the criteria for the membership of the ENQA, all required measures will be adopted immediately (in the case of problems with legislation, the Higher Education Act is amended; in the case of problems with operation, the operation of SQAA is immediately modified).

- **Measure 22: The transition from programme to institutional accreditation**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable from 2017.
- Responsibility: all higher education stakeholders.
- Explanatory note: the existence of both programme and institutional accreditation leads to overburdening of the system, higher education institutions and the SQAA, as well as duplication in verifying individual operational elements of higher education institutions. In order to ensure the quality of study programmes, the adequate operation of higher education institutions at all levels, with continuous internal systems of verification of quality (self-evaluation) and modernisation of study programmes, need to be provided for. External quality assurance will thus be directed at an institution in relation to all fields of its operation, including the implementation of study programmes where the institutional re-accreditation will be implemented. Importantly, the time of re-accreditation will be shortened from the current seven years. Programme evaluation will be included in the institutional re-accreditation by sample but it will be kept to the introduction of new study programmes (the first accreditation) and in the verification of programmes according to areas.

This measure is adopted only in the following cases:

- the re-accreditation of all existing study programmes and higher education institutions are completed by 2016;
  - when it is established that the implementation of study programmes and operation of higher education institutions comply with the criteria provided by SQAA and that, at the same time, the higher education institutions have an appropriately developed culture of quality, including suitable internal quality assurance systems.
- **Measure 23: Facilitating procedures to modify study programmes and formulate joint study programmes:**
- a. **enabling higher education institutions to independently modify study programmes**
  - b. **facilitating accreditation of joint study programmes**
- With the amendment of the Higher Education Act in 2011; amendment of criteria and other internal legal documents of SQAA; the measure will be gradually enforceable from 2012 to 2020.
  - Responsibility: Government of the Republic of Slovenia (Higher Education), SQAA.
  - Explanatory note: the transition from the programme to institutional accreditation is described above; it will be introduced gradually by 2017. Higher education institutions will be independent as regards the modification of study programmes gradually from 2012 onwards. In the process of re-accreditation, SQAA will examine whether higher education institutions carry out study programmes, which have been given an accreditation of quality and that the freedom to modify programmes is not abused. Joint study programmes are of key importance for internationalisation, in terms of mobility, active cooperation between Slovenian and foreign institutions, obtaining competences in the international area, etc. The procedure regarding their accreditation must be as flexible as possible but it must maintain their quality. It is estimated that this measure will also bring about rationalisation in the preparation of study programmes, which will mean financial savings.

- **Measure 24: Providing didactic training and support to teaching staff whereby:**

- a. **support activities are developed by higher education institutions**
- b. **the institutional teaching support and connection with the internal quality assurance system is evaluated by SQAA**

- From 2012.

- Responsibility: higher education institutions, SQAA.

- Explanatory note: higher education institutions will provide support to their teaching staff in order to contribute to higher quality teaching. This support could be in the form of centres for developing teaching competences, offering staff additional education or training, innovative methods of encouraging excellence in teaching, etc. Higher education institutions will include teaching support in their internal quality assurance system. Teaching support will thus be offered to all employees engaged in the teaching process, and gradually teacher training will be required at system level. Staff members who enter into teaching after 2013 will be systematically integrated into the teaching support which will be offered by higher education institutions. Teaching support will enable staff to develop the integrated competences necessary for teaching, including support for the sustainable development of society.

- Funding of the measure: with the new development part of funding and with the basic (fundamental) part of funding.

- **Measure 25: Increasing human resources in higher education institutions**

- From 2011.

- Responsibility: Government of the Republic of Slovenia (Higher Education, Science), higher education institutions.

- Explanatory note: higher education institutions will enhance their staff and employ new staff members. Additional funding for increasing staff members will respond to the findings of the evaluation of staff capacities and to the ratio between students and higher education teachers, with due attention to the extremes which occur in individual disciplines.

Doctoral students and young doctors will also take part in teaching, enabling them to gain teaching competences and at the same time increase staff capacities. Teaching staff will monitor their work and offer professional support, but they will not be allowed to transfer their obligations to students or rather young doctors. PhD students will thus not be overloaded with teaching which may jeopardize their own research work.

- Funding of the measure: it relates to the second measure of the Resolution on the National Higher Education Programme 2011–2020.
- **Measure 26: Improving spatial conditions and the facilities of institutions:**
  - a. **development of research infrastructure – joint measure with RISS (Research and Innovation Strategy of Slovenia).**
    - From 2011, calls to tender by ARRS.
    - Responsibility: Government of the Republic of Slovenia (Higher Education, Science), ARRS, higher education institutions, research institutes.
    - Explanatory note: in 2011, the Government of the Republic of Slovenia will adopt the National Development Plan of Research Infrastructure 2011-2020 in which priority areas regarding the development of research infrastructure will be defined. Additional funds will be invested in improving the equipment of institutions and achieving a critical mass in this area. A transparent and publicly accessible virtual centre and mechanism for accessing the available facilities of the research and higher education teaching infrastructure will also be established. It will enable a fast and transparent demonstration of facilities and applications to use the facilities, as well as information on access to this equipment to all participants in higher education. The measure refers to higher education and scientific and research activity since the access to new infrastructure centres will be opened following the principle of scientific excellence.
    - Funding of the measure: in accordance with the National Development Plan of Research Infrastructure 2011-2020.

**b. the development of teaching infrastructure and spatial conditions.**

- In the period from 2013 to 2020.
  - Responsibility: Government of the Republic of Slovenia (Higher Education, Science), higher education institutions, research institutes.
  - Funding of the measure: new funds necessary for new teaching equipment and spatial infrastructure will be ensured. An analysis of the needs for new teaching equipment, the wear and tear of the existing equipment and the spatial needs of public higher education institutions will be prepared. Once this analysis has been carried out, the Development Plan for Teaching Infrastructure will be prepared, in which priority areas for the purchase of teaching equipment will be defined and will serve as the base for financing its procurement. The plan will also define the criteria for determining teaching equipment, computer equipment and similar infrastructure. The procurement and the procurement process for teaching equipment will be harmonised in line with, and complementary to, the Development Plan of Research Infrastructure 2011 – 2020. The indicative amount of funds for teaching equipment and premises within the framework of this measure amounts to 80 million Euros.
- **Measure 27: Institutional adaptation in all areas of operation for the use of new technologies and ICT equipment**
- From 2012.
  - Responsibility: higher education institutions.
  - Explanatory note: ICT equipment and contemporary technologies will be included by higher education institutions in their operations. This includes both the administrative or managerial activities of institutions as well as the implementation of new technologies in or in support of the teaching process. Higher education institutions will also provide training to staff and students in the use of this equipment and other forms of support.
  - Funding of the measure: with the new development part of funding.



## 2.6. Internationalisation

Internationalisation of Slovenian higher education is key to its development since it is a feature of its quality. It introduces an increase in knowledge, attainment or improvement of interpersonal, communication and cultural competences, a new study choice for the future labour market etc. Given that demographic trends indicate a future decrease in population, openness towards the international area will also encourage cooperation with other countries and regions in those areas where we will not be able to obtain a critical mass by ourselves. At present, the attraction of our higher education area compared to other countries is extremely low; consequently, a number of immediate national and institutional measures must be adopted to increase the internationalisation of the Slovenian higher education area.

Higher education institutions will operate internationally. Higher education institutions will to a large extent be included in international cooperation through their participation in networks of higher education institutions, international projects and through the implementation of joint study programmes. Similarly, they will increase cooperation with foreign institutions in implementing research activities. The percentage of funds intended for research activities from international funds will be doubled by 2020. It will also be possible to teach in foreign languages, with due regard to the development of the Slovenian language and terminology.

An international orientation will facilitate both connections with the closest neighbouring regions and with the best institutions from all over the world. We particularly wish to increase the appeal of the Slovenian higher education area for students from the Western Balkans and the Euro–Mediterranean region. We wish to become an example of good practice in the area of regional mobility.

In order to reach set goals, comprehensive measures to attract foreign students, researchers and other staff will be formulated. Simultaneously, measures will be adopted to facilitate international mobility for at least one fifth of our students during their studies, for a period of at least one semester. Higher education institutions will, in accordance with their new profiles, adopt institutional measures for an increasingly international approach to the way in which they work. This will be achieved through introducing an international dimension to their teaching, providing consistent and high quality language training for staff and students, forming long-term strategic formal partnerships with foreign institutions, encouraging teachers to visit foreign universities, develop joint study programmes, and including studying abroad as a regular, integral part of most study programmes. In order to attract greater numbers of foreign experts to teach and conduct research at Slovenian higher education institutions, the salary system will

be upgraded and foreigners will be provided with other forms of support. A National Strategy for the Internationalisation of Slovenian Higher Education will be formulated, which will also include measures for increasing the appeal of the Slovenian higher education system.

The recognition of education acquired abroad will be flexible and open. For the purpose of further education, the recognition will be entrusted to universities; for the purpose of employment, the procedure will be less rigid and simpler.

## Goals

- By 2020, Slovenian higher education will be an integral part of the global higher education space, constantly improving its quality in co-operation and competition with the best foreign institutions:
  - its quality will be in line with European standards of quality and internationally comparable; its achievements will be competitive at international level;
  - through its openness to the international area, it will be a part of the European higher education area, and linked with neighbouring regions and the most developed countries worldwide;
  - teaching and research in higher education will take place in co-operation with foreign institutions, higher education teachers and researchers, and in the presence of foreign students;
  - the number of joint study programmes established with foreign higher education institutions will significantly increase;
  - students, higher education teachers, other staff and researchers from Slovenia will also learn, train, teach and carry out research at institutions abroad;
  - the recognition of education acquired abroad will be flexible and open.
- Slovenia will become an attractive destination for foreign students and professionals for higher education study and for teaching, research and professional work:
  - by the end of the decade, all Slovenian higher education institutions will prepare a set of study programmes to be offered to foreign students in foreign languages, with priority given to post-graduate study programmes;

- Slovenian universities will carry out study programmes for mixed groups of students from different countries;
- the proportion of foreign nationals in the overall population of students, higher education teachers, assistants and researchers will increase considerably by 2020, so that together with international activities, it will provide for an international character to Slovenian higher education institutions;
- Slovenia will become an example of good practice in the area of regional mobility (the Western Balkans).
- The establishment of a special scholarship fund for the promotion of inbound mobility of students, teachers and researchers from priority regions and countries will be defined in the National Strategy for the Internationalisation of Slovenian Higher Education.

#### Benchmarks:

In 2020, 20% of Slovenian graduates will be mobile (short-term mobility).

By 2020, the share of foreign students completing their entire study programme at Slovenian higher education institutions will be at least 10%.

By 2020, at least one fifth of doctoral students will study in programmes which are joint programmes held with foreign universities.

By 2020 there will be at least 10% of foreign citizens among teachers, staff and researchers in higher education.

By the end of the decade, the scope of project activities, in co-operation with the best foreign institutions and the share of funds obtained within the framework of international projects, will increase.

## Measures

### **Measure 28: Formulating the National Strategy for the Internationalisation of Slovenian Higher Education**

- By 2013 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Science) in co-operation with all higher education partners and the Council for Higher Education of the Republic of Slovenia.
- Explanatory note: the Strategy will be formulated due to the importance of internationalisation for higher education and our priority focus on internationalisation. The Strategy will precisely define the elements of the internationalisation of Slovenian higher education, priority geographical regions and related areas of co-operation, as well as the basic measures and mechanisms for achieving the goals. It will also be a starting point for funding of international agreements and programmes of co-operation and international mobility provided for from budgetary sources. It will be prepared by the ministry responsible for higher education in co-operation with all higher education stakeholders and the Council for Higher Education of the Republic of Slovenia; it will be adopted by the Government of the Republic of Slovenia.

### **Measure 29: Preparing institutional international strategies, including institutional priorities. This will be part of a wider mission and the development plan of the institution, and will take into consideration the National Strategy for the Internationalisation of Slovenian Higher Education**

- By 2014 at the latest.
- Responsibility: higher education institutions, SQAA.
- Explanatory note: higher education institutions will seek out their role in the strategy of internationalisation and precisely define their plans in this area.
- The institutional plan will act as a base for designating funds from the new development part of funding, which higher education institutions will be able to obtain for their plan of international activities.

**Measure 30: Establishing co-operation with the Western Balkans region, as an example of good practice in the field of regional mobility by 2020**

- By 2013, equal conditions for studying will be introduced on a reciprocal basis, whereby citizens of the Western Balkans countries will pay the same tuition fees as domestic students and students from EU Member Countries.
- Responsibility: Government of the Republic of Slovenia (Higher Education), CMEPIUS, Slovenian Human Resources and Scholarship Fund, higher education institutions.
- Explanatory note: Slovenia also recognises its strategic orientation in the region of the Western Balkans in the area of higher education. In addition to improving the quality of Slovenian higher education, it is important to provide attractive conditions of study for students from the Western Balkans, in order to attract students from this region and to formulate good regional practice. For this purpose, special scholarship schemes or targeted funding from existing sources will be implemented, especially encouraging doctoral and post-doctoral applicants.

**Measure 31: Removing the administrative obstacles and streamlining funding sources for international mobility**

- By 2013 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education), CMEPIUS, Slovenian Human Resources and Scholarship Fund.
- Explanatory note: the funding of international mobility currently takes place through various institutions (Slovenian Human Resources and Scholarship Fund, CMEPIUS, etc.) and there is a lack of coordination in the allocation of funds. In the future the allocation of funds will be based on the National Strategy for the Internationalisation of Slovenian Higher Education. Financial resources and supporting institutions will operate in a complementary manner to support a uniform policy for the internationalisation of higher education.

**Measure 32: Establishing special targeted support for mobility:**

a. **for Slovenian students going abroad**

b. **for the best foreign students coming to Slovenia**

- From 2013.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Social Affairs), CMEPIUS, Slovenian Human Resources and Scholarship Fund.
- Explanatory note: in order to facilitate and encourage greater student mobility, funds need to be targeted to supporting studies abroad and the study of foreign students in Slovenia. Additional funds need to be reasonably ensured.
- Funding of the measure: additional funds are ensured in compliance with available budget funds including funds from concessions deriving from the Short-term Work Act or relevant regulation.

**Measure 33: Slovenian higher education teachers and staff will regularly participate in long-term exchanges or obtain additional training abroad**

- With the amendment of the Higher Education Act in 2011.
- Responsibility: Higher education institutions, Government of the Republic of Slovenia (Higher Education).
- Explanatory note: in addition to attracting foreign experts to work in Slovenia, Slovenian staff members need to be encouraged to work and do further training abroad. Only long-term exchanges (at least one year) ensure a complete and comprehensive experience. Every Slovenian higher education teacher will be required to live for a certain period abroad and constantly engage in training and development by means of international exchanges or visits abroad. The sabbatical year will therefore become obligatory. There is an urgent need for institutions to adapt their practices in order to maximise existing possibilities and schemes, which at present are not being fully exploited, and to formulate new opportunities.
- Funding of the measure: with the new development part of funding.

**Measure 34: Establishing special measures to attract foreign experts:**

- a. **the improvement of the salary system for employees in higher education and the facilitation of higher remuneration for the best foreign (and domestic) experts, in comparison to what is currently available**
- b. **facilitation of other supporting mechanisms for foreign experts (accommodation, assistance in obtaining work permits, assistance with child care, etc.)**
- c. **removal of obstacles for obtaining residence permits for foreign experts and students**

- The measure is to be gradually introduced from 2011.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Internal Affairs, Public Administration), higher education institutions.
- Explanatory note: in order to increase the quality of Slovenian higher education and research, the best foreign experts need to be attracted. For this purpose, attractive working conditions must be provided, including suitable remuneration and other forms of support. Appropriate legislation will be formulated and attractive working conditions in higher education institutions will be established. Higher education institutions will offer support mechanisms to foreign experts. Similarly, obstacles will be removed and procedures for obtaining residence permits for foreign experts and students will be simplified.
- Funding of the measure: from European Structural Funds in the new financial perspective, Community programmes and the new development part of funding.

**Measure 35: The Republic of Slovenia will support the activities of two international organisations in the field of higher education. This may significantly contribute to greater internationalisation of the system:**

- a. **ICPE as an example of targeted support for the co-operation with important countries (India as one of the fast developing BRIC countries – Brazil, Russia, India, China) and**
  - b. **Euro-Mediterranean University, which as one of the priorities of the Union for the Mediterranean, opens up the possibility for Slovenian universities to network with universities from 42 other countries included in this extensive process**
- Responsibility: Government of the Republic of Slovenia (Higher Education) and higher education institutions.
  - Explanatory note: individual international organisations contribute to the development of the higher education system as a whole and play an important role in supporting the targeted and planned orientation of internationalisation. Support will consequently be strengthened to existing strategically important organisations which can improve co-operation between Slovenian higher education institutions and regions of high potential.

**Measure 36: Facilitating teaching in foreign languages**

- With the amendment of the Higher Education Act in 2011; the measure will be enforceable from 2012.
- Responsibility: Government of the Republic of Slovenia (Higher Education), higher education institutions, Rector's Conference of the Republic of Slovenia and Slovenian Academy of Sciences and Arts.
- Explanatory note: in order to ensure top quality internationalisation and international appeal, higher education institutions will be able to conduct the study process in foreign languages, with a particular focus on the third and the second study cycle. Higher education teachers teaching in a foreign language will demonstrate an adequate level of knowledge of that foreign language. Besides increasing the appeal of the Slovenian higher education area, this measure will also influence the acquisition of linguistic, inter-cultural and other generic competences of students and staff. In this context, the development of the Slovenian language and terminology in higher education and science will also be ensured through access



to study content in the Slovenian language. In the case of teaching in foreign languages, the accessibility of study contents in the Slovenian language refers to individual consultations or practice in the Slovenian language, studying literature or summaries of lectures in the Slovenian language and similar. Similarly, higher education institutions will offer foreign language support to their students and staff, as well as support to students from foreign countries in learning the Slovenian language.

- Funding of the measure: with the basic and the new development part of funding.

**Measure 37: Increasing the scope of research activities carried out in transnational projects or activities**

- By 2020 (gradual growth by 2020).
- Responsibility: Higher education institutions.
- Explanatory note: 12% of research funds in Slovenia are currently obtained from European projects. International cooperation in research needs to be increased. For this purpose, the research organisations will endeavour to reach the goal of doubling the funds from European projects, i.e. doubling research activities conducted in the transnational environment.

**Measure 38: Flexible and open recognition of education abroad for the purpose of employment**

- With the new Act on Recognition and Assessment of Education in 2011.
- Responsibility: Government of the Republic of Slovenia (Higher Education).
- Explanatory note: current procedures for recognising education gained abroad for the purpose of employment are administratively burdensome and long-lasting. The new arrangement will transfer the recognition for the purpose of employment to employers. In the case of regulated professions, responsible ministries or chambers will participate. The national information centre (ENIC-NARIC) will provide information about foreign education in the form of validation and public information. The system of recognition for the purpose of further education will remain the responsibility of higher education institutions.

## 2.7. Social dimension

In the coming decade tertiary education will be accessible to everybody who is interested and is capable of studying. Necessary conditions to successfully complete their study programmes will be provided. Despite a big increase in the number of students and a relatively high inclusion of each generation in tertiary education, mechanisms for monitoring the student body have still not been formulated and obstacles to study and its completion have still not been identified at system level. The data indicates that the percentage of those who do not complete their studies is high (35%), particularly in comparison with some other countries in the European Union or OECD. For this purpose, the system of social transfers for students will be harmonised in a more unified form. Systems to effectively monitor the student body and identify obstacles to study will be established. Appropriate measures will be promptly adopted based on the findings, and the system of social transfers adjusted accordingly. Higher education institutions will design institutional practices for following up on their students.

Greater attention will be dedicated to the adequate representation or inclusion of individual social groups in higher education. Mechanisms for the identification of under-represented groups in higher education will have to be developed and the reasons for such differences will have to be examined. Formulating incentives to ensure the inclusion of these groups will become a permanent activity of higher education institutions.

Higher education institutions will develop and provide support centres for students and staff, including career centres or career, academic and psychological counselling, modern higher education libraries which will ensure access to material, as well as contemporary ICT equipment, sports facilities and professionally conducted sports activities. Higher education institutions will be encouraged to introduce sports activities as an obligatory or optional subject in study programmes.

The necessary conditions for ensuring a richer choice of lifelong learning at tertiary level will be developed through upgrading procedures for the accreditation of study programmes and further professional training, encouraging flexible learning paths and public access to objective information on higher education providers in Slovenia. In this regard, higher education institutions and higher vocational colleges will be encouraged to facilitate flexible teaching paths and recognition of previously acquired knowledge and competences in accordance with the set academic standards. Non-formal and informal learning will thus be the right of the individual and subject of assessment of higher education institutions.

It is important for an individual student to play an active role in their personal development and integration in society. By taking part in extra-curricular activities intended for students and carried out at universities and other higher education institutions (in the areas of informal education, culture, art, sports and other fields), an individual may establish or realise his/her goals. Through his/her active participation in such programmes the student systematically gains and enhances values which complement the academic spirit and enable an individual to become an intellectual in the social pyramid. Knowledge and experience obtained in this manner are important for an individual's future. The goal is to form an individual who will contribute to the development of the academic, cultural and socially critical environment, which will undoubtedly influence the social and economic position of society as a whole.

Higher education study will be without tuition fees, in a fairer manner and in the light of lifelong learning. The State will cover an individual's study expenses for the first study cycle at any time in his/her life, but only for 4 or 5 years full-time or for 240 or 300 ECTS with regard to the duration of a study programme. This equates to one year more than the nominal length of study. The duration will be adequately adjusted for programmes which educate for EU regulated professions. In the case of "part-time" study, the cost of study per year will be proportionally lower and the State will finance costs for 240 or 300 ECTS for the first study cycle (for "part-time" study therefore more than 4 or 5 nominal years). An individual may exercise the right to 240 or 300 ECTS of education in the first study cycle any time in his/her life. He/she may also enter and exit from the system. When he/she repeats or changes studies several times so that the total length of his/her education will last more than 4 or 5 years, the expenses of the study for the time above 240 or 300 ECTS will be covered individually. The restriction will not apply in exceptional personal circumstances (for example, for students with special needs, student – parents) which will be dealt with on a case-by-case basis. On this basis the following will be determined: conditions for the completion of studies, the duration of such studies and the eligible time for receiving social transfers, which may be longer than four or five years in these cases. The tuition fees will be determined in an integrated manner in the case of longer studies in order to avoid discriminating with regard to the field of study. The right to have the costs of education covered for the first study cycle will be available to all individuals who have not already gained education at this level or those who have not yet been funded for their study at this level by the State. For four or five years (or other relevant period for EU regulated professions and students with special needs) students will be eligible for all other social benefits such as scholarships, subsidised meals, transportation, accommodation, and similar, in compliance with legislation in the field of social transfers.

The State shall cover the costs of study of an individual in the second study cycle for 60 or 120 ECTS with regard to the length of the selected study programme or 1 or 2 years full-time at any time in his/her life. However, should the individual not succeed in completing his studies, he will be required to return the funds to the State. The period within which the individual will have to complete his studies before returning the funds, will be 5 years as of the academic year in which he enrolled in the last ECTS. The amount of the tuition fee to be returned, should an individual fail to complete his studies, will be determined in an integrated manner in order to avoid discriminating with regard to the field of study. An individual in the second study cycle will benefit from the social benefits related to student status for 1 or 2 years in compliance with legislation in the field of social transfers. This restriction will also be adapted in the case of exceptional personal situations described above. The State will therefore cover all the costs of study for an individual to obtain 360 ECTS for the first and the second study cycle, except for longer programmes which educate for EU regulated professions.

In the third study cycle, the entire system of funding doctoral studies will be renewed so that all of the existing schemes, including the Young Researchers Scheme, Young Researchers in Economy and new Innovative Scheme of co-funding doctoral study, better complement each other. The Young Researchers Scheme or the system for the funding of doctoral studies needs to be modified so that it will be student-oriented. In order to ensure an adequate number of researchers and the regeneration of staff, the State will finance the costs of doctoral studies for a certain number of applicants at any time in their lives. Should the individual not succeed in completing his studies, he will be required to return the funds to the State. The amount of the tuition fee to be returned in the case of incomplete studies will be determined in an integrated manner in order to avoid discriminating against certain fields of study. In any case the number of posts for doctoral study will be limited in accordance with the capacities of universities, including the number of mentors available. In determining the number of applicants to be funded by the State in selected areas of study, the integrated development of all disciplines will be protected, and considerably more funds will be allocated to areas which will be set as national priorities. The selection of applicants will be carried out by universities or the providers of doctoral studies.

The State will cover the costs of study in accordance with the described system for study at public higher education institutions and possibly also in institutions holding a concession. In this regard, the criteria for selecting concession-holding institutions will be precisely defined, in particular in selecting and preserving a concession. The State will therefore finance the study of a student at a private higher education institution (i.e., grant a concession to private higher education institutes) only when such study pro-

programme is not implemented at public higher education institutions and at the same time there is a need for a certain study programme and the study programme is of high quality.

## Goals

- Access to higher education – increase inclusion in tertiary education.
- In the light of lifelong learning and in a fairer manner, enable studies without tuition fees in the first cycle and upon successful completion of studies in the second and the third study cycles.
- Establish a uniform and transparent system of social transfers for students, tied to the right to benefit from them for a limited number of years.
- Identify and encourage greater inclusion of under represented groups of the population and establish equal opportunities.

### Benchmarks:

At least 40% of the population between 30 and 34 years of age will have completed tertiary education by 2020.

The Gross Enrolment Ratio in tertiary education of the population between 19 to 24 years of age will be 75% in 2020.

20% of all students in tertiary education will be over 29 years old in 2020.

## Measures

### **Measure 39: Funding studies in the first and second cycle at any time in an individual's life under certain conditions**

- With the amendment of the Higher Education Act in 2011 and new system of funding from 2011 onwards; the measure will be enforceable during the academic year 2013/2014 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education).

- Explanatory note: from a students point of view, as of the academic year 2013/2014, the funding of studies at any time in life regardless of age, will take place within the following model:
  - a. the State will finance studies of up to a maximum of 240 or 300 ECTS for enrolment in the first study cycle at any time in an individual's life, as long as he has not yet obtained this level of education and if his study at this level has not yet been funded by the State. An exception will be made for studies for regulated professions (which lasts longer) – in this case the studies for the duration of the entire study period with a relevant additional period will be financed by the State (1 year or 60 ECTS). The limitation will be reasonably adjusted to students with special needs who will be treated individually (on a case-by-case basis) and conditions for the completion of their studies and any potential longer period of financing will be determined on the basis of individual expert assessment.
  - b. the State will finance the study of up to 60 or 120 ECTS with regard to the length of the study programme for the second study cycle at any time in an individual's life, as long as he has not yet obtained this level of education and if his study at this level has not yet been funded by the State.. If an individual does not complete his studies within five years after enrolling, he/she will be required to return the tuition fee. Repayment of the tuition fee will be arranged in such a manner that an individual will start paying it back it when he/she obtains a certain regular income and will be able to repay these funds. An exception will be the study for regulated professions (which lasts longer)– in this case the studies for the duration of the entire study period with a relevant additional period will be financed by the State (1 year or 60 ECTS). The limitation will be reasonably adapted to students with special needs who will be treated individually (on a case-by-case basis) and conditions for the completion of their studies and any potential longer period of financing will be determined on the basis of individual expert assessment.
  - c. the State will therefore cover the entire costs of an individual's study for 360 ECTS for the first and the second study cycle, except for longer programmes which educate for EU regulated professions.

**Measure 40: Comprehensive regulation of the system of doctoral studies which will be based on encouraging excellence and rewarding results**

- Regulations governing implementation and (co-)funding of doctoral studies in Slovenia will be reviewed and harmonised in 2011. The measure as a whole will be implemented from the academic year 2014/2015 onwards at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Science), ARRS, TIA, higher education institutions.
- Explanatory note: in the third cycle, the system of funding of doctoral studies will be reorganised in an integrated manner. All schemes of funding doctoral studies will be harmonised (the Young Researchers Scheme and Innovative Scheme of funding doctoral study). In order to ensure excellence in the implementation of doctoral studies, the costs of study and living expenses for a suitable number of doctoral applicants or researchers will be covered by the State. However, should an individual fail to complete his/her studies, he/she will be required to return these funds to the State. Higher education institutions will ensure that doctoral studies are appropriately executed, based on scientific and research work and that they are making a contribution to the bank of knowledge. The criterion for determining the number of places available for doctoral studies will be based on the capacities of higher education institutions, including the number of mentors.

**Measure 41: Establishing a system of returning funds in the case of incomplete studies in the second and the third cycle of study**

- With the amendment of the Higher Education Act in 2011. Adoption of the implementing regulation in 2012. The measure will be enforceable from the academic year 2013/2014 at the latest.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Science, Finance), Tax Administration of the Republic of Slovenia.
- Explanatory note: should an individual fail to complete his studies in the second or the third study cycle, he will be required to return the funds to the State according to the system described above. The period in which the studies need to be completed will generally be within five years of the study year in which the last ECTS were enrolled by an individual for the second study cycle and, as a general rule, one year for the third study cycle. The amount of the tuition fee to be returned in the case of incomplete studies will be determined in an integrated manner in order to avoid discriminating against certain fields of study.

**Measure 42: Establishing a uniform and transparent system of social transfers for study in relation to certain time periods**

- With the amendment of legislation under the auspices of Ministry of Labour, Family and Social Affairs; the measure will be enforceable during the academic year 2013/2014 at the latest.
- Responsibility: Government of the Republic of Slovenia (Social Affairs).
- Explanatory note: the system of social transfers will be harmonised so that individual benefits will be awarded uniformly, including student accommodation capacities. 1,500 new beds will be provided by 2015 and 4,500 new beds by 2020.
- A uniform and transparent system of social transfers for study will be based on the following model, except for study for regulated professions and for students with special needs:
  - a. The period for the award of social transfers for the first study cycle will be 4 or 5 years with regard to the duration of the study programme;
  - b. The period for the award of social transfers for the second study cycle will be 1 or 2 years with regard to the duration of the study programme;
  - c. In regard to the third study cycle, a uniform scheme of funding of study and living expenses of an individual will be introduced for a certain number of applicants. Should an individual not receive any funding from the above mentioned scheme, doctoral students will be able to receive social transfers for 3 or 4 years with regard to the duration of the doctoral programme.

Social transfers will be awarded to individuals in compliance with legislation in the field of social transfers, which currently ensures financial support to young people. With regard to individuals in later periods of life, other forms of social transfers will be formulated, such as various public invitations and calls to tender in relation to the European Social Fund, programmes and support provided by the Employment Service of Slovenia and similar.

**Measure 43: Introducing special loan schemes**

- With the amendment of legislation under the auspices of Ministry of Labour, Family and Social Affairs; the measure will be enforceable during the academic year 2013/2014 at the latest.



- Responsibility: Government of the Republic of Slovenia (Social Affairs, Higher Education).
- Explanatory note: special loan schemes will be an additional form of assistance and not a replacement of scholarships. The interest rate will be subsidised by the State and it will be lower than the usual interest rate.

**Measure 44: Including under-represented groups of the population in tertiary education**

- Start of the analysis in 2012, implementation of the initiatives from 2015 onwards.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Social Affairs).
- Explanatory note: an analysis will be undertaken regarding the structure of the student body in order to determine the representation of individual groups of the population and identify under represented groups in higher education. Following the analysis of the structure of the student body and the identification of under-represented groups of the population, incentives for additional support for the inclusion of these groups in higher education will be formulated. An additional 1.5 million Euros per year will be allocated for this purpose. Higher education institutions and higher vocational colleges will be encouraged to develop ways of attracting and including less represented groups of the population and assisting them in completing their studies. Funds will be available for this activity within the framework of the new developmental part of funding.
- Funding of the measure: a sum of 50,000 Euros for the research analyses and funds for the additional support for including the identified groups will be allocated from the new development part of financing.

**Measure 45: Monitoring of the student body and obstacles to accessing tertiary education and support services provided to students and staff**

- Beginning of monitoring issued at system level from 2013.
- Responsibility: Government of the Republic of Slovenia (Higher Education, Social Affairs), higher education institutions.

- Explanatory note: the student body, its composition and the obstacles preventing individuals from accessing and completing study programmes will be systematically monitored. The system of social transfers and potential additional incentives to study will be constantly adapted on the basis of analyses. Higher education institutions will design institutional practices through following up on their students.

Higher education institutions will develop support services for students and staff in the sense of establishing career centres or career, academic and psychological counselling, quality, standard-based and internationally comparable libraries and providing sports facilities with appropriate staffing.

- Funding of the measure: with the new development part of funding.

**Measure 46: Institutional monitoring of extra-curricular activities**

- From 2012.
- Responsibility: higher education institutions, SQAA.
- Explanatory note: institutions may record in the Diploma Supplement those extra-curricular activities which are organised by universities and other higher education institutions or by other organisations, and recognised by higher education institutions as relevant for obtaining various types of competences. An overview of all institutionally supported activities of an individual in a transparent form will thus be enabled. All achievements of individuals in international competitions in knowledge, research, artistic achievements, sports and other relevant competitions and other top achievements are included in the Diploma Supplement. Higher education institutions will not design new service activities for these purposes.

## 3. Norms and Standards

1. The first cycle: duration from 180 to 240 ECTS
2. The second cycle: duration from 60 to 120 ECTS
3. Long Master's study programme – only EU regulated professions
4. The third cycle: from 180 to 240 ECTS
5. Full-time study corresponds to 60 ECTS per year. An adapted form of study programmes or "part-time study" corresponds to 30-45 ECTS per year
6. Standard for individual higher education institutions:
  - a. The university must include at least four scientific disciplines (FRASCATI) and at least five educational areas (ISCED).
  - b. At least 50% of staff at an individual university must be employed full-time for more than half of their workload at this institution.
  - c. With regard to professional study programmes, active co-operation must be demonstrated by a higher education institution and at least 50% of the staff who teach in professional study programmes must have at least 3 years' work experience in the "non-academic" environment, i.e. economic or public sectors.

## 4. National priorities

An integrated development of all study, scientific and research, artistic and professional areas in the Slovenian higher education area will be ensured.

Priority areas or areas of national significance will be identified in connection with RISS on the basis of initiatives by individual stakeholders. They will be substantiated with comparable analyses of competences in individual fields. Priority areas will not be determined top-down by politics, but supported by expert opinions in studies regarding technological forecasts or opinions provided by the economic sector and researchers. The development of areas of smart specialisation will be a permanent and open process which will include all key stakeholders. The use of the concept of specialisation is brought about by means of a greater scope of funds dedicated to selected areas.

## 5. Monitoring the implementation of the National Higher Education Programme

In order to successfully achieve the goals laid out in the National Higher Education Programme, it is necessary to ensure constant follow-up in terms of the realisation and implementation of the set measures in relation to future events and changing contexts.

Due to the inseparable connection between the higher education field and the research field, joint monitoring of both programme documents for the area of higher education, research and innovative activities will be ensured. An independent group of experts will jointly monitor the achievement of the set goals, their impacts and implementation of measures. The group will submit its report to advisory bodies of the Government of the Republic of Slovenia for the fields of higher education, science and technology. Following the joint examination, bodies will report to the Government of the Republic of Slovenia with regards to programme implementation and submit proposals for amendments or adaptation of measures to ensure that both documents are more efficiently applied. The Government of the Republic of Slovenia will submit the report to the National Assembly for review every second year, including proposals for action. A thorough evaluation of the National Higher Education Programme 2011-2020 will be carried out in 2015 and will include the evaluation of measures and the attainment of targeted values. It will serve as a basis for an improved National Higher Education Programme 2015-2020 if appropriate.

## 6. Indicative amount of funds for the realisation of the National Higher Education Programme

The National Higher Education Programme 2011-2020 addresses the entire area of tertiary education, which in addition to higher education institutions, also includes higher vocational colleges. As regards the financial element of the National Higher Education Programme 2011-2020, the basic goal is to achieve 1.3% of GDP from budgetary funds for tertiary education and 2.0% of GDP from budgetary funds by 2020. That is why the remainder of the text presents total funds for tertiary education which include funds for higher education, higher vocational education, transfers to households from the field of tertiary education, study assistance and the costs of operation of the ministry responsible for higher education, for this particular area of work. The most important measures of the National Higher Education Programme are highlighted and their values presented in more detail.

The estimated financing of higher education includes: the basic and the development pillar deriving from Measure 13 of the National Higher Education Programme 2011-2020, the remaining aforementioned expenditure and a detailed overview of additional funds which are forecast, in addition to the basic and development pillar, for individual measures, i.e. Measure 2 and Measure 26. The funding of other measures is expected to take place within the development funding pillar or from other sources.

Table 1, "Estimation of funds for the achievement of goals set by the Resolution on the National Higher Education Programme", presents data regarding the evaluated nominal value of gross domestic product by 2015 and targeted values which are to be achieved by the National Higher Education Programme. That is, firstly, to achieve 1% of GDP of budgetary funds for higher education<sup>9</sup> by 2015 - according to existing evaluations regarding GDP, this would amount to 471,177,483 Euro (in current prices) – and, secondly, 2% of GDP of budgetary funds for total budget expenditure for tertiary education by 2020 – according to existing evaluations related to GDP, this would amount to 942,354,967 Euros (current prices) in 2015.

---

<sup>9</sup>As explained in the first paragraph of this chapter, funds for higher education are a portion of funds for tertiary education, and that is why the amount is lower.

Table 2, "Funds for measures requiring additional financing outside Measure 13", presents the dynamics of funding measures which will require additional funds by 2015 in addition to the basic and development funding pillars.

**Table 1. Estimation of required funds to achieve the goals set by the Resolution on the National Higher Education Programme**

	2011	2012	2013	2014	2015
Nominal GDP in Euros	37.226.883.413	39.032.875.521	41.466.300.106	44.203.535.586	47.117.748.333
<b>1% GDP – target for higher education in 2015</b>	372.268.834	390.328.755	414.663.001	442.035.356	<b>471.177.483</b>
<b>2 % GDP – target for tertiary education in 2020</b>	744.537.668	780.657.510	829.326.002	884.070.712	<b>942.354.967</b>
	2011	2012	2013	2014	2015
<b>Higher education</b>	<b>352.021.508</b>	<b>391.536.864</b>	<b>412.716.551</b>	<b>434.078.719</b>	<b>471.177.483</b>
Share of GDP (%)	0,95	1,00	1,00	0,98	1,00
<b>Higher vocational education</b>	<b>18.501.659</b>	<b>18.001.659</b>	<b>18.451.700</b>	<b>18.949.896</b>	<b>19.499.443</b>
Share of GDP (%)	0,05	0,05	0,04	0,04	0,04
<b>Social transfers for tertiary education</b>	<b>90.805.958</b>	<b>146.824.405</b>	<b>150.495.015</b>	<b>154.558.381</b>	<b>159.040.574</b>
Share of GDP (%)	0,24	0,38	0,36	0,35	0,34
<b>Total</b>	<b>461.329.125</b>	<b>556.362.928</b>	<b>581.663.267</b>	<b>607.586.996</b>	<b>649.717.500</b>
Share of GDP	1,24	1,43	1,40	1,37	1,38
<b>Costs of MVZT for HE</b>	<b>917.494</b>	<b>917.494</b>	<b>926.669</b>	<b>926.669</b>	<b>926.669</b>
Share of GDP (%)	0,00	0,00	0,00	0,00	0,00
<b>Grand total</b>	<b>462.246.619</b>	<b>557.280.422</b>	<b>582.589.936</b>	<b>608.513.665</b>	<b>650.644.169</b>
Share of GDP (%)	1,24	1,43	1,40	1,38	1,38

Note:

Higher education includes the Higher Education Programme reduced for costs of operation of the Ministry for Higher Education, Science and Technology (MVZT) for higher education (HE) and increased for the provision of promotion of the Slovenian language.

Social transfers for tertiary education include subsidised meals for students, subsidised transport for students, subsidised accommodation for students and scholarships for students.

**Table 2. Funds for measures requiring additional funding outside Measure 13**

	2011	2012	2013	2014	2015
Measure 2 – establishment of institutions	0	0	0	5.000.000	10.000.000
Measure 27 - equipment	0	0	0	15.000.000	10.000.000
<b>Skupaj</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20.000.000</b>	<b>20.000.000</b>

Note: Impacts of the most important measures by 2015 are presented in the table.



## 7. Implementing goals, bodies responsible, indicators - summary

### Higher Education System

	MEASURE	BODY RESPONSIBLE	INDICATOR
1	New definition of conditions for the establishment and operation of individual types of higher education institutions.	Government of the Republic of Slovenia, higher education institutions, SQAA.	Amendment of the Higher Education Act in 2011; the measure will be enforceable from 2012 onwards for new institutions or from the entry into force of the Act and for the modification of existing institutions during the period of accreditation in the period from 2012 to 2020.
2	Redefinition of binary system – separation of university and professional study programmes.	Higher education institutions, the Government of the Republic of Slovenia, SQAA, employers, local environment.	The separation of professional and university study, in terms of content, implementation and organisation, shall be introduced in the first study cycle by means of Higher Education Act in 2011; the measure will be enforceable gradually in the process of accreditation and re-accreditation in the period from 2013 to 2020. Diversification of the second study cycle is introduced with the Higher Education Act in 2011.
3	Establishment of a system of internal organisation of universities and higher education institutions capable of promoting co-operation among departments and/or different institutions among themselves.	Higher education institutions, SQAA.	Beginning of organisational modification in 2011; system will be established by 2014 at the latest.
4	Enhancement of co-operation between higher education institutions and public research institutes.	Higher education institutions and public research institutes, Government of the Republic of Slovenia, SQAA.	Transition or exchange of staff and number of joint projects – arranged by 2016.
5	Enhancement of co-operation between higher education institutions and economic and public sectors.	Higher education institutions, SQAA.	Transition or exchange of staff and number of joint projects – from 2011.
6	The arrangement of staff.	Government of the Republic of Slovenia, higher education institutions, research institutes, trade unions from the field of higher education.	Act amending the Higher Education Act in 2011 and other relevant legislation; the measure will be enforceable in the period from 2012 to 2020.
7	Formulation of the possibility for employees at higher education institutions to step out of the wage system for public employees.	Government of the Republic of Slovenia, higher education institutions, research institutes, trade unions from the field of higher education.	Act amending the Higher Education Act in 2011 and other relevant legislation; the measure will be enforceable from 2012.
8	Modification of the educational requirements for employment in public administration.	Government of the Republic of Slovenia.	With the amendment of legislation under the auspices of the MJU; by 2013 at the latest.

## Study structure and higher education qualification

MEASURE	BODY RESPONSIBLE	INDICATOR	
9	Formulation of the National Qualifications Framework.	Government of the Republic of Slovenia.	New legislation framework in 2011 – new Decree (or Act) on National Qualifications Framework.
10	The arrangement of study structure.	Government of the Republic of Slovenia, higher education institutions, SQAA.	Act amending the Higher Education Act in 2011; the measure will be enforceable for new study programmes at their first accreditation, and for the existing programmes at their re-accreditation by 2016.
11	Arrangement of the way in which studies can be carried out: study programmes for obtaining education comprises 60 ECTS per year with a full load or 30 to 45 ECTS per year with partial/reduced load.	Government of the Republic of Slovenia, higher education institutions, SQAA.	Act amending the Higher Education Act in 2011; the measure will be enforceable during the academic year 2013/2014 at the latest.
12	Modification of entrance conditions and enrolment posts.	Government of the Republic of Slovenia, higher education institutions, SQAA.	Act amending the Higher Education Act in 2011; the measure will be enforceable in by the academic year 2013/14 at the latest.

## Funding

MEASURE	BODY RESPONSIBLE	INDICATOR	
13	Establishment of the funding system of higher education institutions in order to encourage development. Elements of quality and cooperation with the environment will be taken into consideration.	Government of the Republic of Slovenia, higher education institutions.	Decree on funding public higher education and other institutions from 2011 and Act amending the Higher Education Act and the Research Activity Act in 2011.
14	Establishment of the system for monitoring the efficiency of use of public funds in higher education.	Government of the Republic of Slovenia, higher education institutions.	Uniform methodology for monitoring results and impacts in 2011 by means of annual plans of work of higher education institutions.
15	The establishment of a Records and Analytical Information System for higher education in the Republic of Slovenia (eVŠ Information System).	Government of the Republic of Slovenia.	Act amending the Higher Education Act in the chapter "Records" in 2011 and amendment of the Rules on Register of Higher Education Institutions in 2011 and the establishment of the eVŠ system in 2012.
16	Provision of a framework for the development of donations.	Government of the Republic of Slovenia, Tax Administration Office of the Republic of Slovenia.	Established framework by 2015.

## Diversification and differentiation

MEASURE	BODY RESPONSIBLE	INDICATOR	
17	Formulation of missions of higher education institutions and profiling of institutions.	Higher education institutions, SQAA.	Various missions and strategies of higher education institutions by 2013.

## Quality and accountability

	MEASURE	BODY RESPONSIBLE	INDICATOR
18	Formulation of Codes of Ethics in higher education institutions.	Higher education institutions.	Approved, adopted and established codes of ethics of higher education institutions by 2012.
19	Encouragement of all higher education institutions and higher vocational colleges to be fully in line with the first set of European standards and guidelines on quality in higher education. Their internal system of quality assurance will be strengthened and publication of information regarding their quality will be provided publicly and transparently.	Higher education institutions, SQAA.	Higher education institutions will publish easily accessible information regarding their quality from 2012 onwards and fulfil the first part of European standards and guidelines on quality in higher education.
20	The external quality assurance system will be developed and continually improved.	SQAA.	Upgrading of criteria and processes for the accreditation of higher education institutions and study programmes from 2011.
21	Encouragement of SQAA to be externally evaluated and its candidacy for the inclusion in EQAR and the membership in ENQA is completed.	SQAA, MVZT.	Preparation for external evaluation in 2011 and 2012. External evaluation in 2012 (or 2013). Candidacy for the inclusion in EQAR and membership in ENQA in 2012 or 2013.
22	Transition from programme to institutional accreditation.	All higher education stakeholders.	Act amending the Higher Education Act in 2011; the measure will be enforceable from 2017.
23	Facilitation of procedures for modification of study programmes and formulation of joint study programmes.	Government of the Republic of Slovenia, SQAA	Act amending the Higher Education Act in 2011; amendment of criteria and other internal legal documents of SQAA; the measure will be gradually enforceable from 2012 to 2020.
24	Promotion of didactic training and support provided to teaching staff.	Higher education institutions, SQAA.	The number of teaching staff engaged in education and other support activities.
25	Increase of staffing capacities at higher education institutions.	Government of the Republic of Slovenia, higher education institutions.	Improvement of the ratio between students and higher education teachers (to 15: 1) by 2020.
26	Improvement of spatial conditions and equipment of institutions.	Government of the Republic of Slovenia, ARRS, higher education institutions, research institutes.	For point (a): development of research infrastructure from 2011. For point (b): The analysis of needs and procurement of teaching equipment from 2013.
27	Institutional adaptation in all areas of operation of higher education institutions for the use of new technologies and ICT equipment.	Higher education institutions.	From 2012.

## Internationalisation

	MEASURE	BODY RESPONSIBLE	INDICATOR
28	Formulation of the National Strategy for the Internationalisation of Slovenian Higher Education.	Government of the Republic of Slovenia in cooperation with all higher education partners and Council for Higher Education of RS.	National strategy for the internationalisation of Slovenian higher education by 2013.
29	The preparation by higher education institutions of international institutional strategies with their own priorities, taking into consideration the National Strategy for the Internationalisation of Slovenian Higher Education which will be a part of the broader mission and developmental plan of the institution.	Higher education institutions, SQAA.	Institutional strategies for internationalisation compliant with the national strategy by 2014.
30	The establishment of co-operation with the Western Balkans region as an example of good practice in the field of regional mobility by 2020.	Government of the Republic of Slovenia (Higher Education), CMEPIUS, Slovenian Human Resources and Scholarship Fund, higher education institutions.	Students from the region of the Western Balkans study under the same conditions as domestic students from 2013 onwards on the basis of reciprocity. The adoption of international agreements by the end of 2012.
31	Removal of administrative obstacles and concentration of funding sources for international mobility.	Government of the Republic of Slovenia (Higher Education), CMEPIUS, Slovenian Human Resources and Scholarship Fund.	Easy and transparent procedures to obtain scholarships for mobility in one place for all types of mobility and the increase of funds to support mobility by 2013.
32	Establishment of a special targeted support for mobility of Slovenian students going abroad and the best foreign students coming to Slovenia.	Government of the Republic of Slovenia (Higher Education), CMEPIUS, Slovenian Human Resources and Scholarship Fund.	Easy and transparent procedures to obtain scholarships for mobility in one place for all types of mobility and the increase of funds to support mobility by 2013.

## National Higher Education Programme 2011-2020

	MEASURE	BODY RESPONSIBLE	INDICATOR
33	Encouragement of Slovenian staff members to go on exchanges and training abroad for longer periods.	Higher education institutions.	The increase in exchanges of Slovenian higher education staff from 2011.
34	The establishment of special measures for attracting foreign experts.	Government of the Republic of Slovenia, higher education institutions.	Amendment of legislation and other arrangements to obtain residence permits, gradually from 2011. 10% of employees in Slovenian higher education institutions will be foreigners in 2020.
35	Support given to activities of two international organisations in the field of higher education, which may significantly contribute to greater internationalisation of the system.	Government of the Republic of Slovenia, higher education institutions.	Support activities for the operation of two international institutions
36	Facilitation of teaching in foreign languages.	Government of the Republic of Slovenia (Higher Education), higher education institutions, Rector's Conference of the Republic of Slovenia and Slovenian Academy of Sciences and Arts.	Act amending the Higher Education Act in 2011; the measure will be enforceable from 2012.
37	The increase of the scope of research activities executed in transnational projects or activities.	Higher education institutions.	Funds for international operation. The proportion of JRO funds obtained from OP EU programmes. The number of scientific publications in co-authorship with foreign citizens will increase by 2020.
38	Flexible and open recognition of education acquired abroad for the purpose of employment.	Government of the Republic of Slovenia.	With the new Act on Recognition and Validation of Education in 2011.

## Social dimension

	MEASURE	BODY RESPONSIBLE	INDICATOR
39	Funding of studies in the first and second cycle at any time in life under certain conditions.	Government of the Republic of Slovenia.	Act amending the Higher Education Act in 2011 and new system of funding from 2011 onwards; the measure will be enforceable at the latest during the academic year 2013/2014.
40	Comprehensive organisation of the system of doctoral studies which will be based on encouraging excellence and rewarding results.	Government of the Republic of Slovenia, ARRS, TIA, higher education institutions.	Review and harmonisation of regulations regulating the implementation and (co)-funding of doctoral studies in Slovenia in 2011. The measure will be entirely established from the academic year 2014/2015 at the latest.
41	The establishment of the system of returning funds upon incomplete study of study programmes in the second and the third cycles of study.	Government of the Republic of Slovenia, Tax Administration Office of the Republic of Slovenia.	Act amending the Higher Education Act in 2011. Adoption of the implementing regulation in 2012. The measure will be enforceable from the academic year 2013/2014 at the latest.
42	Establishment of a uniform and transparent system of social transfers for studies which are tied to the right to benefit for a specific number of years.	Government of the Republic of Slovenia.	Amendment of legislation under the auspices of MDDSZ; the measure will be enforceable during the academic year 2013/2014 at the latest.
43	Introduction of special loan schemes.	Government of the Republic of Slovenia.	Amendment of legislation under the auspices of MDDSZ; the measure will be enforceable during the academic year 2013/2014 at the latest.
44	Inclusion of under-represented groups of population in tertiary education.	Government of the Republic of Slovenia.	Beginning of analysis in 2012, implementation of incentives from 2015.
45	Monitoring the student body and obstacles for access to tertiary education.	Government of the Republic of Slovenia, higher education institutions.	Beginning of monitoring the issues at the system level from 2013.
46	Institutional monitoring of extra-curricular activities.	Higher education institutions, SQAA.	Institutional monitoring and identification of extra-curricular activities from 2012.

## 8. Appendices

### 8.1. Dictionary

**ARRS**

Slovenian Research Agency

**GDP**

Gross Domestic Product

**CEDEFOP**

The European Centre for the Development of Vocational Training (<http://www.cedefop.europa.eu/EN/>)

**CMEPIUS**

Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes

**DURS**

Tax Administration of the Republic of Slovenia

**ECTS**

European Credit Transfer and Accumulation System

**ENQA**

The European Association for Quality Assurance in Higher Education (<http://www.enqa.eu/>)

**European Standards and Guidelines**

Standards and Guidelines for Quality Assurance in the European Higher Education Area

**EQAR**

The European Association for Quality Assurance in Higher Education (<http://www.eqar.eu/>)

**FRASCATI**

Standard Practice for Surveys of Research and Development

**Horizontal diversification**

Diversification among study programmes on a single study level; for example first cycle study programmes differentiate by content, orientation, and working methods.

**ICT**

Information and communication technology

**ISCED**

International Standard Classification of Education

**Informal learning**

Informal learning and knowledge gained from daily activities of an individual.

**Institutional accreditation**

The process of evaluation of higher education institutions (universities, faculties, professional colleges) in order to assess their quality and establish their services to students and society. The result of the process is “awarded accreditation” or status of accredited institution.

**MDDSZ**

Ministry of Labour, Family and Social Affairs

**MJU**

Ministry of Public Administration

**MVZT**

Ministry of Higher Education, Science and Technology

**NHEP**

National Higher Education Programme

**SQAA**

Slovenian Quality Assurance Agency for Higher Education

**Non-formal learning**

All learning completed in environments outside of the system of formal education or level of education. It thus includes various courses, seminars, training, conferences and similar.



**Public sector**

Non-economic activities (SSKJ). Within the context of this document these are social activities which are not performed with the aim of gaining profit (activities carried out by, for example, educational, cultural institutions, public administration).

**Smart specialisation**

The concept of smart specialisation has been developed within the framework of debates on the role of the European research area and indicates a significant shift in organisation of research and developmental activities in the direction of forming national and regional visions and strategies, which will be focused on specific developmental areas.

**Recognition of prior learning (RPL)**

A process of recognition of knowledge which an individual has acquired through various paths during previous activity. It includes formal, non-formal and informal learning or knowledge acquired in all three paths.

**PPP**

Purchasing Power Parity

**Programme accreditation**

The process of evaluating study programmes in order to assess their quality. The result of the process is "awarded accreditation" or status of accredited study programme.

**Full-time study – part-time study**

Full-time study is study with a full workload, i.e. 60 ECTS per year. Part-time study is, as a rule, implementation of a study programme adapted to a smaller workload, generally amounting to between 30 and 45 ECTS per year.

**RISS**

Research and Innovation Strategy of Slovenia.

**Student**

A person enrolled at higher education institutions and higher vocational colleges regardless of the period of life or the manner of carrying out the study (full-time, part-time; distance learning; lifelong learning).

**Typical generation**

Those generations which usually enrol in higher education institutions, i.e. the 19-24 age group. Guidelines for the National Higher Education Programme

### **Gross Enrolment Ratio**

The total number of students in a country divided by the number of citizens of this country in a specific age group, typically, once they leave secondary school (for example, aged between 19 to 24 years).

### **Lifelong learning**

“Lifelong learning is an activity and a process which includes all forms of learning, from formal to informal, non-formal and incidental and casual. (Appendix, 10, pg. 35–36). It takes place under different learning circumstances, from birth through early childhood and adulthood to the end of life, with the goal of improving an individual’s knowledge and skills. Interests, character traits, values, relationship to self and others and other personal characteristics are also acquired with learning. (Appendix, 11, pg. 36-37)« Source: : Strategy of Lifelong Learning in Slovenia, Ministry of Education and Sports, 2007, page 10.

## **8.2. Starting points**

Starting points for the National Programme 2011-2020 are available on the following web page:

[http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/IZHODI%C5%A0%C4%8CA\\_ZA\\_NACIONALNI\\_PROGRAM\\_-\\_v30.6.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/IZHODI%C5%A0%C4%8CA_ZA_NACIONALNI_PROGRAM_-_v30.6.pdf)

## **8.3. Data**

The following was prepared:

1. a thorough review of the state of higher education with statistical data ([http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/statistika\\_visokega\\_solstva\\_07072010.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/statistika_visokega_solstva_07072010.pdf))
2. an analysis of the implementation of the expiring NHEP and NRDP ([http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/Analiza\\_NRRP\\_in\\_NPVS.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/Analiza_NRRP_in_NPVS.pdf))
3. a thorough review of expert opinions regarding higher education in Slovenia ([http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/PREGLED\\_PRISPEVKOV\\_EKSPERTOV.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/PREGLED_PRISPEVKOV_EKSPERTOV.pdf))
4. an analysis of a network of higher education institutions and study programmes in the Republic of Slovenia in 2010

([http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/doc/dokumenti\\_visokosolstvo/KNJIZNICA/Mreza\\_VSZ\\_2010.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/doc/dokumenti_visokosolstvo/KNJIZNICA/Mreza_VSZ_2010.pdf))

Similarly, other analyses regarding the higher education system have been prepared ([http://www.mvzt.gov.si/si/delovna\\_podrocja/visoko\\_solstvo/statistika\\_in\\_analize\\_s\\_podrocja\\_visokega\\_solstva/](http://www.mvzt.gov.si/si/delovna_podrocja/visoko_solstvo/statistika_in_analize_s_podrocja_visokega_solstva/))

5. funding of higher education for the third millennium;
6. models of efficient management of higher education institutions;
7. a model for the management of knowledge in a higher education institution;
8. networking for lifelong learning;
9. social status of students – EUROSTUDENT.

In addition to all analyses, the following international evaluations and reports of international institutions for Slovenia were taken into account:

10. 2010 European Commission's Report for Slovenia: The efficiency and effectiveness of tertiary education systems: Country notes;
11. OECD evaluation upon the accession of Slovenia to OECD: OECD Economic Outlook 2009;
12. international statistical and other bases and data regarding higher education (OECD, EUROSTAT, EURYDICE).

## 8.4. Relevant International Reports and Declarations

### Documents of the Bologna process

All documents (both Declarations and five Communiqués) are available on the following web page:  
<http://www.ehea.info/>

## Relevant documents of the European Union

Europe 2020: Strategy for smart, sustainable and inclusive growth:  
[http://ec.europa.eu/eu2020/pdf/1\\_SL\\_ACT\\_part1\\_v1.pdf](http://ec.europa.eu/eu2020/pdf/1_SL_ACT_part1_v1.pdf)

Education and Training Strategy 2020:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:119:0002:0010:SL:PDF>

## Other documents

Communiqués of the World Conference on Higher Education 2009 (UNESCO):  
[http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/WCHE\\_2009/FINAL%20COMMUNIQUE%20WCHE%202009.pdf](http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/WCHE_2009/FINAL%20COMMUNIQUE%20WCHE%202009.pdf)

Higher education to 2030 (OECD):  
[http://www.oecd.org/document/11/0,3343,en\\_2649\\_39263238\\_41788555\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/11/0,3343,en_2649_39263238_41788555_1_1_1_1,00.html)  
[http://www.oecd.org/document/18/0,3343,en\\_2649\\_35845581\\_43908242\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/18/0,3343,en_2649_35845581_43908242_1_1_1_1,00.html)

## Studies and data

- Eurydice  
[http://eacea.ec.europa.eu/education/eurydice/index\\_en.php](http://eacea.ec.europa.eu/education/eurydice/index_en.php)
- Eurostat  
<http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>
- OECD  
[http://www.oecd.org/statsportal/0,3352,en\\_2825\\_293564\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/statsportal/0,3352,en_2825_293564_1_1_1_1,00.html)
- European Commission  
[http://ec.europa.eu/education/index\\_en.htm](http://ec.europa.eu/education/index_en.htm)

## Events and opinions received with regard to the Draft of the NHEP 2011-2020

Organised consultations and discussions regarding the Draft of the National Higher Education Programme:

- SAZU (SASA), 20. 9. 2010
- 2. working group of the Council of the Government of the Republic of Slovenia for Student Issues, 20. 9. 2010 in 12. 10. 2010
- at the University of Maribor, 22. 9. 2010
- at the University of Ljubljana, 23. 9. 2010
- at the Slovenian Academy of Engineering, 28.9.2010
- at the University of Primorska, 29. 9. 2010
- with trade unions in higher education, 4.10.2010
- with the Union of Independent Higher Education Institutions, 5.10.2010
- at the Council for Higher Education of the Republic of Slovenia, 6.10.2010
- at the Council of the Government of the Republic of Slovenia for Student Issues, 13.10.2010
- at the joint session of the Council for Higher Education of the Republic of Slovenia and Council for Science and Technology of the Republic of Slovenia, 20. 10. 2010 and 22. 12. 2010
- with employers' representative bodies, 25. 10. 2010

We responded to invitations and attended the following discussions:

- at the Senate of the Faculty for Social Sciences, University of Ljubljana, 4. 10. 2010
- with the Union of Higher Vocational Colleges, 5. 10. 2010
- with the Regional Study Centre Celje, 5. 10. 2010

- with the Committee for the Defence of Higher Education and Scientific Work, 6.10.2010
- with the Dolenjska Academic Initiative, 13. 10. 2010
- at the consultation of the Biotechnical Faculty of the University of Ljubljana, 18. 10. 2010
- at the evening of social sciences organised by the School of Advanced Social Sciences in Nova Gorica, 3. 11. 2010

Within the framework of the public debate the following commentaries were received in writing:

- by Franček Drenovec, publication date: 29. 9. 2010
- Union of Higher Vocational Colleges, publication date: 7. 10. 2010
- Society of Young researchers of Slovenia, publication date: 8. 10. 2010
- Student Organisation of Slovenia, publication date: 14. 10. 2010
- Jozef Stefan International Post-Graduate School, Dean Robert Blinc, publication date: 15. 10. 2010
- DOBA – The Faculty of Applied Business and Social Sciences Maribor, publication date: 15. 10. 2010
- Union of Independent Higher Education Institutions of Slovenia, publication date: 15. 10. 2010
- Coordination of Student Councils of the Republic of Slovenia, publication date: 15. 10. 2010
- College of Nursing Jesenice, publication date: 15. 10. 2010
- by Dr. Irena Šumi, European Centre Maribor, publication date: 15. 10. 2010
- The Society of Disabled Students of Slovenia, publication date: 15. 10. 2010
- Academies of Art of the University of Ljubljana, publication date: 18. 10. 2010

- University of Ljubljana, publication date: 20. 10. 2010
- Regional Chamber of Craft and Small Business Maribor, publication date: 20. 10. 2010
- National Council for library activity, publication date: 20. 10. 2010
- Central Technological Library of the University of Ljubljana, publication date: 20. 10. 2010
- Maribor University Library, publication date: 20. 10. 2010
- Youth Council of Slovenia, publication date: 20. 10. 2010
- by Dr. Matej Makarovič, Dr. Matevž Tomšič, Dr. Borut Rončević, Dr. Janez Povh, Dr. Boris Bukovec, publication date: 25. 10. 2010
- by Dr. Tomaž Savšek, publication date: 26. 10. 2010
- Faculty for National and European Studies and European Faculty of Law in Nova Gorica, publication date: 27. 10. 2010
- University of Primorska, publication date: 28. 10. 2010
- Rectors' Conference of the Republic of Slovenia, publication date: 2. 11. 2010
- by Dr. Marko Kos, publication date: 6. 12. 2010
- SATENA, publication date: 6. 12. 2010
- Faculty for Chemistry and Chemical Technology of the University of Ljubljana, publication date: 3. 1. 2011
- A proposal for a set of cultural and political actions of the Government of the Republic of Slovenia, National Council for Culture, Miran Zupančič, received within the framework of inter-departmental co-ordination by the Ministry of Culture on 31 January 2011.





---

# Foreword to the Research and Innovation Strategy of Slovenia 2011-2020\*

---

\*The Resolution on the Research and Innovation Strategy of Slovenia 2011-2020 was prepared in cooperation of Ministry of Higher Education, Science and Technology and Ministry of Economy. Throughout the whole process the ministries consulted the experts, the Council of science and technology of the Republic of Slovenia and the Council of higher education of the Republic of Slovenia. Included individuals and organisations are listed in the Strategy. The preparation of the document was coordinated by Jana Kolar, director general of Directorate of science and technology.

After the years of economic growth in Slovenia, catching up with the average EU development rate was interrupted by the emergence of global crisis in 2008. A relatively deeper drop in GDP during the crisis and a slower recovery revealed structural weaknesses and uncompetitiveness of Slovenian economy which is excessively dependent on low-technology industry and traditional services. During the worst economic crisis since Slovenia gained its independence in 1991, the Government in 2009 and 2010 recognized research and innovation as the foundation of future development of Slovenian society. This introduction is a short overview of the most important achievements in this area in past three years.

### **Improved coordination of policies...**

The state focused on the improvement of horizontal coordination of research and innovation policies which has been within the competence of a special group of Ministers since 2009. In the same year, Slovenia also shifted to target-oriented budget where the expenditure planning is directly linked to the targets and to the activities for achieving these targets.

### **...incentives within the entire research-innovation chain...**

In past two years, research and innovation were among the state's priority policies. This was primarily reflected through the budget where public funds for research and development increased by almost 70% in the period 2008–2010. In terms of the share of GDP devoted to research and development, Slovenia ranks at the average of EU-27, along with the most developed countries such as the Great Britain and Belgium. Direct investments of public funds for research and development were supplemented in 2010 by the increased general tax incentive for investments in RD from 20% to 40%, and in case of regional tax incentive from 40% to 60%. Among 30 countries covered in the OECD Science, Technology and Industry Outlook 2010, only South Korea surpassed Slovenia in direct and indirect public support, expressed as a share of GDP, to RD in companies. In order to enable maximal commercialization of knowledge, additional support was provided in 2011 to the improvement of companies' access to favourable sources of financing for technological development projects in the phase of commercialization of new solutions, products or services. Thus, investing EUR 50 million of public funds in the financial engineering program contributed to the shaping of common credit potential in the amount of almost EUR 150 million (0.3% of GDP). In 2010, an agreement on state investments in private venture capital companies was also signed which provides the total amount of at least 70 million EUR in 2011, of which EUR 34 million are public funds (0,14% BDP).

### **...emphasis on specialization...**

During the crisis years of 2009 and 2010, the majority of additional RD funds were intended for the establishment of smart specialisation.

The development of excellence that enables breakthroughs – scientific and technological – on the global scale is more important than ever. For their achievement, however, it is necessary to break away from the past practice of fragmentation of all funds and give stronger support to the areas where Slovenia disposes of scientific excellence as well as innovative industry. Slovenia followed this direction through the (co)financing of eight centres of excellence (EUR 77 million) and seven competence centres (EUR 44 million) for the period till 2013.

### **...simplification and defragmentation...**

An additional emphasis was given to simplification of instruments in particular those funded by structural funds. An example is a call for the strengthening of human resources in the business sector in 2011, where the Ministry of Higher education, Science and technology and the Ministry of Economy combined their financial resources and efforts and linked all instruments into a new program which is output based, using unit costs rather than tedious control of all the expenditures.

### **...new Research and Innovation Strategy 2011–2020 (RISS)**

In addition to the developments during the past three years, a thorough strategic consideration on further development was undertaken, resulting in a new Research and Innovation Strategy 2011–2020 (RISS) developed during last year through a wide public debate.

In accordance with the Research and Development Act, guidelines for a new strategic document in the area of research and innovation were presented in July by the consultative body of the Government, composed of twenty representatives of key stakeholders. On this basis, the Ministry of Higher Education, Science and Technology, and the Ministry of Economy prepared the draft RISS and submitted it to public debate. Simultaneously with the public debate, two international evaluations of national research and innovation system were carried out by the EU member states (ERAC) and OECD. The main findings of both reports were incorporated in the final draft RISS. After five months of public debate, the proposed document was adopted by the Government and in May 2011 by the Parliament.

The basic purpose of a wide public debate where foreign experts were also involved was to reach a wide social consensus on much-needed changes in the research and innovation system and jointly lay the path of development for the next decade. The involvement of all key stakeholders and the structure of RISS with an action plan clearly defining the measures, responsibilities and the timeline are assuring that the strategic document will not end up as just another document with no follow-up but will guide the development in the upcoming decade.

Main features of the new strategic document are as follows:

1. **Establishment of efficient integrated management of research and innovation system that will include all stakeholders**

The system is based on horizontal and inter-sectoral harmonization at all decision-making and institutional levels and is built on trust and open communication among all stakeholders. Regular monitoring of implementation and effects of RISS is introduced as well as evaluation of all implementing institutions (measures 2, 3, 5, 6, 8).

2. **Increased transparency and rationalization of the system and supporting measures. Some example are as follows:**

- one advising body will replace the current two (measure 1)
- merger of two funding agencies (measure 45)
- a single portal for publication of all calls in the area of research and innovation will replace the current publication on web pages on of one of the three agencies and two ministries (measure 48)
- merger of smaller public research organizations, which are financed almost exclusively by public funding, with universities (measure 7)
- one scheme for strengthening of human resources in the business sector replaces the current three instruments (measure 32)
- preparation of the Research Infrastructure Development Plan until 2020 (measure 44; the plan was approved by the Government in May 2011)

### 3. **Reform of the public research sector**

- more autonomy and responsibilities
- introduction of performance-based financing of public research organizations (measure 9)
- possibility of exemption of researchers from the inflexible salary system of public employees (measure 11)
- strong emphasis on cooperation between public and private sectors and knowledge transfer (section on Knowledge transfer)

### 4. **Stimulation of innovativeness in the business sector**

- stimulating legislation environment with an emphasis on legislation regulating companies, employment and taxes as well as standardization and technical regulations (Strengthening the innovation capabilities of companies, objective 5)
- incentives for restructuring of business models, production strategies and management systems and introduction of creative industries (Strengthening the innovation capabilities of companies, objective 1)
- improving access to financing resources and further development of the venture capital market (measure 59)
- development of innovative public procurement (measure 61)

### 5. **Funding**

- 1% GDP of public funds for research and development by 2012, 1.5% by 2020 (Public funding of research and development, objective 1)
- 60% of public funds for research and development will be directed towards projects where business sector is involved (measure 22). Increase of funding of fundamental research (measure 23)
- setting up and evaluation of smart specialization areas and the increase of dedicated funds (Specialization, objectives 1 and 2)

**Dr. Jana Kolar**



---

# **Resolution on the Research and Innovation Strategy of Slovenia 2011-2020\***

---

\* Resolution on the Research and Innovation Strategy of Slovenia 2011-2020 was adopted by the National Assembly of the Republic of Slovenia at its 28th session on 24.5.2011.

# 1. Introduction

At the beginning of the 21st century, we face challenges that will affect the fundamental restructuring of the world as we know it today. According to the latest data, Asia will play a key role in the global realities of this century. It is already a global manufacturing centre and major exporter, and a continuation of current trends will result in the supremacy of Asia over the USA and Europe in science and technology by 2025. Asia will chiefly develop itself as a centre of research and development for the business sector. Demographic changes in Europe will lead to a sharp rise in public expenditures to ensure the needs of an ageing population. Environmental migration will be added to growing political and economic migration. The world will face shortages of natural resources such as energy, food and water, and major threats associated with climate change.<sup>1</sup>

These challenges call for critical reflection and investigation into the causes of this situation, and require above all a change of lifestyle and changes in our socio-economic behaviour. The processes that we are witnessing place even stronger emphasis on the need for creativity and knowledge as assets for fulfilling an individual and ensuring his/her place in modern society, and to enable social inclusion, a sustainable lifestyle and a sustainable economy, all of which lead to a high quality of life and a fairer society.

With regard to social responsibility, Slovenia has demonstrated a long-term commitment to science and development, by recognising its important role in social progress and as a foundation for the well-being of citizens. We are aware that without the joint presence and intertwining of different scientific disciplines, the development of societies and technologies cannot be understood. Slovenia supports a comprehensive integration of science and the strengthening of its autonomy and institutions, while supporting harmonised interdependence between science, development and innovation. This is necessary in order to ensure overall social progress and well-being.

---

<sup>1</sup>Luc Soete et al., *World in 2025*, 2009.



## 1.1. State of affairs

According to assessments from 2010, the quality of life in Slovenia is relatively good. It is ranked in 29th place<sup>2</sup> on the Human Development Index among developed countries, while the capital Ljubljana is ranked 81st among 215 cities<sup>3</sup> on the quality of life scale. The European innovation scoreboard based on statistical figures through 2008, ranks Slovenia among the innovation followers with most indicators close to the European average. Similarly, ranking of the world's most innovative countries<sup>4</sup> puts Slovenia in 24th place according to the innovation index, and first among the countries of Central and Eastern Europe. The achievements and discoveries by Slovenian science in all areas are encouraging and are an appropriate starting point for further development. The number of scientific publications in relation to public investment in R&D puts Slovenia above the EU27 average, and just below this average for the economic impacts of science.<sup>5</sup>

The onset of the global crisis in 2008 in Slovenia almost wiped out its progress in economic and social development over the past decade, which was already inhibited by manipulated privatisation and abuses in the 1990s. The crisis has revealed a number of structural weaknesses, particularly the fact that Gross Domestic Product (GDP) growth in Slovenia is too dependent on low-technology industries and traditional services, which limit the competitiveness of the economy. In these tough conditions, Slovenia has to focus on increasing the cohesiveness of society and competitiveness of its economy, while consolidating and restructuring its public finances. In order to achieve this, Slovenia is relying on creativity and knowledge, which are fundamental values and the sources of the country's future wealth. In order to establish a knowledge society, further development in all scientific areas is needed. Only through responding to social challenges from a diversity of perspectives, can we hope to gain a comprehensive understanding in order to take appropriate action. In addition, it is of key importance to encourage partnerships between science and its users, cultivating new, sustainably set technologies that are closely associated with scientific findings and future fields.

---

<sup>2</sup>Human Development Reports, United Nations Development programme, 2009

<sup>3</sup><http://www.mercer.com/home>

<sup>4</sup>*Human Development reports*, United Nations Development Programme, 2009, <http://hdr.undp.org/en/statistics/>

<sup>5</sup>*A more research-intensive and integrated European Research Area, Science, Technology and Competitiveness. Key figures report 2008/2009*, EC, 2008, ISBN 978-92-79-10173-1, [http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009\\_en.pdf](http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009_en.pdf)

The Research and Innovation Strategy of Slovenia (RISS) is a programme document for achieving social objectives, such as improved living standards for all and an improved quality of life. These objectives will be achieved through the establishment of a modern research and innovation system, which will contribute to increased knowledge and understanding of society, respond to its challenges, increase the value added per employee, and provide quality workplaces and living environment. The RISS is based on the Development Strategy of Slovenia and is in accordance with Europe 2020 and its flagship initiatives. It is also in accordance with the National Programme for the Development of Higher Education 2011–2020 (NPVŠ), and together they constitute the "knowledge triangle," which is at the heart of strategic reflection on the future development of Slovenian and global society. In the autumn of 2010, studies were carried out by the international group of experts under the auspices of the Organisation for Economic Co-operation and Development (OECD) and the European Research Area Committee<sup>6</sup>. These studies examined the Slovenian research and innovation environment and public policies in these areas, and subsequently provided recommendations for their optimisation. The results and recommendations of these studies were taken into consideration during the preparation of the Strategy.

## 1.2. Vision

By 2020, a responsive research and innovation system, co-created by all stakeholders and open to the world, will be established. This system will be firmly entrenched in society and of benefit to it, will respond to the needs and ambitions of citizens and enable the resolution of major social challenges of the future, such as climate change, energy, lack of resources, health and ageing. As a result, the work of researchers, developers and innovators will gain greater acclaim and influence in society. By adapting legislation, a legal framework for the operation of the system will be established in 2012.

It will ensure open space for dialogue, while its governance will be democratic and economic. Involving stakeholders will serve to prevent duplication, while promoting and achieving relevant synergies. All actors will fully enjoy the benefits and advantages of the free flow of knowledge and technology between sectors. Promotion and dissemination of scientific knowledge will encourage responsible behaviour and social aware-

---

<sup>6</sup>Maja Bučar with Andreja Jaklič and Boštjan Udovič, *National system of innovation in Slovenia*, Faculty for Social Sciences, Ljubljana, 2010,

[http://www.mednarodniodnosi.si/cmo/CIR/CIR4National System of Innovation in Slovenia.pdf](http://www.mednarodniodnosi.si/cmo/CIR/CIR4National%20System%20of%20Innovation%20in%20Slovenia.pdf)

*OECD review of Slovenia's innovation policy: Overall assessment and recommendations – preliminary draft*, OECD, Pariz, 2010.

*Policy Mix Peer Reviews: Country Report – Slovenia*, European Union Scientific and Technical Research Committee, Bruselj, 2010.

ness of the common good. The gaps between research, education and innovation will be overcome, and their common denominators will include partnership, lifelong learning, new findings, and sustainable development.

The reputation and attractiveness of the research profession will also grow due to advanced infrastructure and normative conditions that will lead to effective and efficient implementation of the most complex research. Human beings will be at the heart of the system; only through the development of human resources will we be able to achieve higher levels of development. Research institutions will have strategic, financial and managerial autonomy, but also responsibility for the implementation of their socially relevant missions. The government will place research and innovation at the heart of its policies and assure adequate financial support. As early as 2012, 1% of GDP of public investment will be allocated to research and development and 1.5% of GDP by 2020. Improvements in economic development will be manifested through implementing a higher-technology structure to the economy and a higher added value per employee, as a result of technological and non-technological innovations. This will increase the competitiveness of the economy while the fiscal and supportive environment will encourage new and increased corporate investment in development, and higher quality workplaces in particular.

### 1.3. Objective

To establish a modern research and innovation system that will allow for a higher quality of life for all, critical reflection in society, efficiency in addressing social challenges, increased value added per employee, and assurance of more and higher quality workplaces.

## 2. Effective governance of the research and innovation system

Governance of the innovation system in recent years shifted from a linear model, which assumes that economic efficiency follows research efficiency, to the second generation system, which is no longer focused on technology but based on the interactive organisational model, which creates conditions for success. However, in the last decade the world has developed a third generation system, which is horizontal and requires a well-coordinated process of planning, implementation and evaluation of policies among all stakeholders involved in the innovation system, along with continuous adaptation of the institutions in the field of research, technology and innovation to the changing environment. The process is open and democratic while sharing of responsibilities in formulating the research and innovation system is unequivocal.

### 2.1. State of affairs

Since 2010, coordination of policies in Slovenia has been the task of the Umbrella Working Group for Harmonization and Coordination of Slovenia's Development Planning, which observes Slovenia's Development Strategy<sup>7</sup>, National Development Programme of the Republic of Slovenia for 2007–2013<sup>8</sup>, National Reform Programme for 2008–2010<sup>9</sup> (Europe 2020<sup>10</sup>) and the budget of the Republic of Slovenia for each financial year. The policies are implemented through the national budget. Competences for research and innovation policy are shared between the Ministry of Higher Education, Science and Technology (MVZT), the Ministry of Economy (MG) and in part by the Government Office for Development and European Affairs (SVREZ) and the Government Office for Local Self-Government and Regional Policy (SVRL). The Ministry of Economy implements its programme through the Public Agency for Entrepreneurship and Foreign Investments

---

<sup>7</sup>[http://www.svrez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Strategija\\_razvoja\\_Slovenije/SRS\\_dispozicija\\_17feb2011.doc](http://www.svrez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Strategija_razvoja_Slovenije/SRS_dispozicija_17feb2011.doc)

<sup>8</sup>[http://www.svlr.gov.si/si/zakonodaja\\_in\\_dokumenti/zakonske\\_podlage\\_s\\_podrocja\\_politike\\_spodbujanja\\_skladnega\\_regionalnega\\_razvoja/drzavni\\_razvojni\\_program/](http://www.svlr.gov.si/si/zakonodaja_in_dokumenti/zakonske_podlage_s_podrocja_politike_spodbujanja_skladnega_regionalnega_razvoja/drzavni_razvojni_program/)

<sup>9</sup>[http://www.svrez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Razvojni\\_dokumenti/NRP\\_koncna\\_17.11.\\_2010\\_FINAL.doc](http://www.svrez.gov.si/fileadmin/svez.gov.si/pageuploads/docs/Razvojni_dokumenti/NRP_koncna_17.11._2010_FINAL.doc)

<sup>10</sup>[http://www.svrez.gov.si/si/delovna\\_podrocja/nova\\_evropska\\_razvojna\\_strategija\\_doleta\\_2020/strategija\\_evropa\\_2020/](http://www.svrez.gov.si/si/delovna_podrocja/nova_evropska_razvojna_strategija_doleta_2020/strategija_evropa_2020/)

(JAPTI), the Public Agency for Technological Development (TIA) and the Slovenian Enterprise Fund (SPS). MVZT delegated the implementation of most of its measures to the TIA and the Slovenian Research Agency (ARRS).

The subject is also covered by two advisory bodies of the Government of the Republic of Slovenia, the Council for Science and Technology (SZT) and the Competitiveness Council (CC).

A consequence of the fragmented system in terms of the governance of research and innovation is a mismatch between policies and responsibilities and duplication of instruments, as well as poor implementation of the adopted strategic documents, notably the existing National Research and Development Program (NRRP)<sup>11</sup>.

The increased scope of the tasks and responsibilities, in particular the ambitious development plan, new instruments and more active participation in the international scientific and innovation environment, served to increase the responsibilities of the competent bodies in the field of science, technology and innovation. However, no corresponding measures were taken to reinforce the number of expert staff at the competent ministries in order to ensure that the policies were adequately prepared and implemented—an issue which was highlighted in the reviews performed by the international experts<sup>12</sup>. It is reflected in several lost opportunities, both nationally and internationally.

## 2.2. Objectives

The objective is to achieve better governance through the following measures:

1. Establishing an effective common governance system for the research and innovation system, involving all stakeholders.  
The system will be based on horizontal and cross-sectoral coordination at all levels of decision-making and institutional tiers. It will build on trust and open communication among all stakeholders. Management of the system will be conducted at the highest level, by a separate group of ministers (the Umbrella Working Group for Harmonization and Coordination of Slovenia's Development Planning), in which MVZT and MoE will be responsible for research and innovation. This will enable the RISS and Slovenia's new industrial policy to be implemented in close coordination with one another. The subject will be covered by a single government advisory body, the Council for Research and Innovation, which will liaise with key stakehold-

---

<sup>11</sup>Uradni list RS, št. 3/2006.

<sup>12</sup>See reference No. 6.

ers and replace the Council for Science and Technology and the Competitiveness Council. All key stakeholders will participate in the Council for Research and Innovation, and its composition will be determined by legal and executive provisions. A system for effective networking at all levels will be established, with the main driver being efficiency of governance. Implementation of the RISS will be institutionally supported by increasing the number of highly qualified staff at the competent ministries and through reforming public agencies. The agencies will be partners in providing technical guidance and evaluation of policy implementation. Funding and implementation of the various programmes will be transferred primarily to the professional executive institutions.

2. Monitoring implementation and evaluating the impact of the RISS. Implementation of the programme will be based on the principles of professionalism, transparency and cost-effectiveness.

In order to achieve the objectives of the RISS, it is vital to ensure regular monitoring of the implementation of the imposed measures. In order to increase system efficiency and effectiveness, the existing measures need to be continuously evaluated and, if necessary, improved, stopped or added to. Any additions must be developed in consultation with key stakeholders. The system should be upgraded rather than succumb to duplication and fragmentation.

Due to the inseparable nature of R&D in higher education and the public research sector, we will establish a common system of monitoring the implementation and evaluating the impact of both programme documents for the areas of higher education and research and innovation activity. Together, an independent group of experts will monitor the achievement of the set objectives, the impacts and the implementation of measures. This group will report annually to the competent advisory bodies of the Government of the Republic of Slovenia for the field of higher education, science and technology. After examining both documents together, the bodies will report on the implementation of the programmes to the Government of the Republic of Slovenia and make proposals for new measures and measures for more effective implementation of both documents. The Government of the Republic of Slovenia will report to the National Assembly every other year.

RISS measures are funded through the national budget of the Republic of Slovenia and established by the competent ministries in accordance with the Strategy. The monitoring system, in accordance with the indicators in the RISS, is further elaborated in the programme budget and includes target values projected up until

2014. In 2015, a thorough assessment of the RISS will be conducted. It will include the evaluation of measures and the achievement of targets as a basis for updating the strategy for 2015-2020.

3. Periodic evaluation of the effectiveness of all support and executive institutions. Executive institutions and agencies will realise their mission in accordance with the principles of efficiency, responsibility and transparency. The efficiency and quality of all support (e.g. agencies) and executive institutions (e.g. public research organisations; PROs) will be evaluated on the basis of measurable indicators, which will ensure transparency, professionalism and ethical standards. The evaluations will be performed by domestic and international experts.

## 2.3. Measures

MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
1	Formation of a uniform Government advisory body – the Council for Research and Innovation will replace the Council for Science and Technology and the Competitiveness Council	Government of the RS (science, technology, innovation*)	2012	Legal regulation
2	Annual independent monitoring of the implementation of the RISS	Government of the RS (science, technology, innovation, economy), Council for Research and Innovation	2012–2020	Reports to the Government and the National Assembly
3	Evaluation of impacts of the RISS instruments with measurable indicators	Government of the RS (science, technology, innovation, economy)	2011–2020	Reports
4	Reinforcement of highly qualified personnel within the competent ministries	Government of the RS (public administration, science, technology, innovation, economy)	2011	Increase in the number of highly qualified staff at the competent ministries
5	Evaluation of the impact of policy measures on the development of innovation in society with measurable indicators (a permanent inter-ministerial working group for drafting improved regulations and removal of administrative barriers in public administration)	Government of the RS (public administration)	2011–2020	Share of removal of administrative barriers in the area of competitiveness
6	Evaluation of support and executive institutions with measurable indicators	Government of the RS (science, technology, innovation, economy)	2011 and 2014	International evaluation report

\* Hereinafter, the text in brackets relates to the competent ministries responsible for each measure. In this case the competent ministry is the Ministry of Science, Technology and Innovation. If responsibilities are shared, the responsible ministry is listed first. The indication of the competent ministry also includes its executive institutions (e.g. agencies).

## 3. High-quality research in the public sector

### 3.1. Greater autonomy and responsibility for public research organisations

Public research organisations (PROs), as defined by the applicable legislation, are public entities established by the Republic of Slovenia or another public entity authorised by law, which meet the required conditions to execute R&D activities. PROs include public research and infrastructural institutions and higher education institutions established by the Republic of Slovenia (or another public entity authorised by law). According to the applicable legislation, public service in the field of R&D activities is, in addition to the PROs, also exercised in the form of research programmes by the programme groups with legally delegated public and private individuals under concession. For the needs of this document, these contractors are also considered as PROs.

As the main researchers, PROs are at the centre of the research and innovation system that is rapidly evolving and changing. In such changing circumstances, it is crucial to provide the best possible conditions for their work. Their ability to function and perform effectively in order to achieve their research goals, determines the outcomes of the entire research and innovation system. The latter should therefore ensure considerable autonomy (in terms of management, finance and research), while the PROs themselves must bear the social responsibility of effectively conveying scientific discoveries to society and its subsystems.

Scientific excellence is one of the foundations of an innovative, knowledge-based society. The development of scientific excellence is mainly based on fundamental progress in science, which extends beyond the borders of existing cognition. Fundamental progress in science can only be achieved through research which is free of pre-set priorities and based only on the primal curiosity of researchers. Scientific developments should therefore take place within autonomous research organisations, where the only measure for the assessment of scientific work is globally comparable excellence. Universities and institutes are independent in developing fields in which they might achieve outstanding breakthrough results, thereby making important contributions to the world's bank of knowledge.



Significant changes in the innovation system are reflected in the organisation of R&D activities in companies where traditional research departments are replacing experts, by placing their development and innovation activities closer to the market. This introduces significant changes to the scope of research in the public sector, as it expands R&D cooperation between companies and between the business and public sectors. On the other hand, internationalisation/globalisation of R&D is growing strongly, and both national and European public research areas are increasingly exposed to international competition. There is therefore a need to adapt and be trained to deal with the new context in order to remain attractive to the business sector. The mobility of researchers, students and teachers is increasing, as is the competition to attract the best among them. The international market in higher education is developing, with international systems also contributing through their evaluation and quality control. Industry, service sectors and other knowledge users constantly need new knowledge and skills, and lifelong learning and education in the workplace are becoming increasingly important components of the research and innovation system.

All of these processes which take place in the research and innovation system in Slovenia and worldwide, require the most current, high-level work and organisation in the public research sector.

## State of affairs

Following independence and during transition, Slovenia managed to maintain relative stability in its public R&D sector despite the restructuring of the economy, which meant that many large companies have lost a large part of the market, closed or reduced their R&D departments since independence. Increased public expenditures devoted to R&D in the early nineties compensated for the business sector's reductions in R&D investment and maintained a high level of scientific development. Due to the shift in R&D from the business to public research sector, the focus has shifted towards basic research. Despite an upturn in investment in R&D in the business sector in recent years, its cooperation with the public sector has remained at a fairly low level.

As a result, the Slovenian public research sector is characterised by small differences in the types of R&D activities carried out by higher education and public research institutions (PRI). Thus the degree of cooperation between public research institutions and the users in Slovenia is only slightly higher than in the higher education sector. In 2008, the contribution of Slovenia's business sector to the budget of the higher education sector was 10.1% compared to 12.7% to that of public research institutes. This leads to duplication of content, poor cooperation among the researchers from various institutions and fragmentation of the R&D realm.

On the other hand, PROs are unable to appropriately adapt to global processes in terms of their strategic development, as this is prevented by the current system of funding research groups. The centre of decision-making on development occurs at the level of a basic research cell, i.e. a programme group, and not at the level of the individual institution that would fully manage its operation. According to the OECD test methodology, the share of institutional funding in the overall public funds for PROs in Slovenia is 22.2%, which is the lowest share among the 13 countries covered in the OECD study. The current administrative situation of researchers in PROs, according to the laws governing the system of civil servants and the salary system in the public sector, does not allow for the development of excellence in the R&D system.

Opening up the possibility of employing researchers from outside of the administrative civil servant status, would attract top-level experts (also foreign) to institutions and motivate them using methods characteristic of industry, thereby enabling the institution to meet its development objectives more easily. At the same time, this would eliminate anomalies the system brings to a particular group of scientists without considering different, sector-dependent circumstances.

In the monitoring of high-level research, data on the number of publications, number of citations, number of highly cited publications, the impact factor and number of patent applications to certain patent offices is typically used. In the period 2004-2008, Slovenia produced 5,840 publications per million inhabitants in journals indexed in the ISI bibliographic databases, ranking it 7th regarding publications in that period in the EU, which accounts for 155% of the EU average. Regarding number of citations per million inhabitants in the same period, Slovenia holds 13th position among EU countries with 18,062 citations per million inhabitants, achieving 95% of the EU average. Regarding the impact factor, i.e. the average number of citations per publication, Slovenia is placed in 22nd position among EU countries, with IF 3.09 and 61% of the EU average, which shows that Slovenian authors attract relatively poor attention. With 62 highly cited publications per million inhabitants in the period 1998-2008, Slovenia reached 151% of the EU average and the 13th place in the EU.

## Objectives

The objective is to increase the autonomy and responsibility of PROs, which according to their mission, contribute significantly to building a successful research and innovation system. On the one hand, the results of PROs will make a contribution to the basic progress of science and technology, and on the other hand, to the development of society and the economy. Three factors are therefore required:

1. Increased international visibility and competitiveness of Slovenian science on a European and global scale.

Support for basic research will follow the efficient European Research Council (ERC) model, with special emphasis on establishing a comparable European system of evaluating research applications and results.

2. Diversifying the mission and role of the higher education sector and institutes.

In the process of diversification, PROs will define their own mission and strategy, building on the development of areas and activities where they are or might be particularly successful. All PROs will develop basic knowledge and cooperation with users; however, research institutes will place a stronger focus than universities on such cooperation. Smaller research institutes, which are almost exclusively funded by public resources, will be joined or integrated with the universities based on an in-depth discussion with the stakeholders.

3. Establishing a system to evaluate the research activities of PROs.

In order to ensure adequate monitoring of the functioning of the research and innovation system, efficient institutional evaluation is needed that takes into account a wide range of measures in establishing definitive findings. The essence of institutional evaluation is an independent external evaluation (foreign and national reviewers), which is not based exclusively on quantitative data. The evaluation system will be developed by the agencies responsible for research and technological development in cooperation with the competent ministries and other stakeholders. Evaluation criteria will be based on the evaluation of results and impact in scientific fields. One set of criteria (number of publications with high impact factor, citations, research work growth index, cooperation among PROs, etc.) will be aimed at measuring the scientific excellence of the institution and international visibility of the basic research work. Another set of criteria will address cooperation

with the users and measure social relevance of the research work. In accordance with their mission, the latter will be more prominent in the evaluation of research institutes and will, among other things, take into account revenues from licensing, number of patents in patent offices performing a complete test, number of spin-off projects from the PRO and applicative success of the PRO (cooperation with the business sector or projects between PROs and users, recruitment of students, junior researchers and researchers in the development departments in the companies, the percentage of research taking place in the priority areas of Slovenian Technology Platforms, the percentage of research to support projects of social interest, and others).

4. Autonomy and responsibility of PROs to enable their strategic development in accordance with national priorities.

With gradually increasing institutional funding due to reduced/terminated programme funding, we will ensure greater autonomy and responsibility on behalf of PROs in preparing the strategy for human resources management and development/programme strategy. R&D activity has to take place within a partnership in which a PRO assumes responsibility for the employees and for different social environments, i.e. all its system components and for society as a whole.

Institutional funding of R&D activity of the higher education sector and institutes will be harmonised and will include two pillars: one fundamental, the other development. The fundamental pillar will provide stable funding to R&D activity carried out by PROs, and the development pillar will provide additional funding based on fulfilment of the institution's mission, achievement of pre-set objectives and the results of the evaluation of PROs.

A modified method of funding PROs will allow for the achievement of the RISS objectives, while respecting their autonomy in organising their own institutional strategies and ways in which to fulfil the set objectives. Public funding mechanisms will be designed to allow more independent decision-making on the part of PROs, in terms of use and integrated management of resources earmarked for institutional funding.

In addition to the transition to institutional funding of institutions as stable funding, the existing project funding of research work through the "research hour" unit will be replaced by (co)funding the actual costs of projects.

Institutions will gain greater autonomy in the recruitment and management of human resources, since researchers at a particular institution will be able to withdraw from the salary system based on an agreement between those involved. We expect the managers and employees of research institutions to make a common proposal as to how to regulate the salary system and the rights and duties of the employees, with one possibility being a collective contract between public research organisations as the employers and unions as the employees. The existing regulation of rights and responsibilities can act as a starting point for the new system. Up until the legislation is changed, the management of the institutions and the employees will be able to make proposals concerning the administrative status of the employees. The new salary system will be uniform for the higher education and research positions. In this case, the basic rights and duties will be regulated less rigidly, in accordance with the Employment Relationship Act<sup>13</sup>.

---

<sup>13</sup>Uradni list RS, št. 42/2002, 79/2006 [<http://www.uradni-list.si/1/objava.jsp?urlid=200679&stevilka=3456>] - ZZZPB-F, 46/2007 [<http://www.uradni-list.si/1/objava.jsp?urlid=200746&stevilka=2515>] Odl.US: U-I-45/07, Up-249/06-22, 103/2007 [<http://www.uradni-list.si/1/objava.jsp?urlid=2007103&stevilka=5131>], 45/2008-ZArbit, 83/2009 [<http://www.uradni-list.si/1/objava.jsp?urlid=200983&stevilka=3714>] Odl.US: U-I-284/06-26

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
	<p><b>Successful, up-to-date public research sector</b></p> <p><b>Excellent, internationally visible research</b></p>	<p>Excellence in science  <b>Share of national scientific publications among 10% of the most cited publications in the world</b></p> <p>Integration with the needs of the economy  <b>Joint publications by researchers from PROs and companies (% of all publications)</b>  <b>Share of PRO income from intellectual property rights in the total PRO income</b></p> <p>Integration with international research  <b>International scientific publications (scientific publications co-authored with foreign researchers) per million inhabitants</b></p>		
MEASURE		RESPONSIBILITY	DEADLINE	INDICATOR
7	Association or integration of universities and smaller institutes funded mainly from public resources	Government of the RS (higher education, science)	2014	Legal regulation
8	Establishing an evaluation system to evaluate the work of PROs	Government of the RS (science, higher education)	2011	Rules with a systematic set of measures  Evaluation of PROs in 2012, subsequently every four years
9	The introduction of stable funding for PROs; the extent depending on the results of evaluations	Government of the RS (science, higher education)	2013	Legal regulation
10	In cooperation with unions and PROs, prepare a uniform salary system and conditions for promotion and work of non-administrative personnel within the civil service system, which will harmonise the awarding of researchers and higher education teachers	Government of the RS (science, higher education)	2013	Legal regulation
11	In cooperation with unions and public research organizations, prepare the option for researchers to exit the salary system of civil servants.	Government of the RS (public administration, science)	2013	Legal regulation
12	Transition from the "research hour" unit to (co)funding the actual project costs	Government of the RS (science)	2012	Legal regulation

## 3.2. Transfer of knowledge

Knowledge is the fundamental asset in the world of today. According to the OECD, Slovenian science is on average of rather good quality, but it lacks higher accountability to the society by which it is mostly funded, an appropriate legislative framework to award those who are above-average and a system of joint or associated initiatives for the research sector and companies. A research and innovation system which guarantees social inclusion and sustainability, and which envisages the further development and use of newly generated knowledge in society, is required in order to work towards providing a better quality of life for everyone. Special attention should be paid to the management and transfer of technologies demonstrating the successes of scientific and research work to the society which actually funds it, and creating possibilities for a better and more efficient use of newly acquired knowledge for the benefit of society. Flow of knowledge and good governance in the field of intellectual property are key elements in successful cooperation among public research institutions and industry, resulting in new products, processes and services. Knowledge, as it relates to the transfer of knowledge and of technologies, is of key importance for the creation of new high-tech enterprises from the PROs, which are able to exploit the results of the research and development activities. Non-technological transfer of knowledge to society may contribute to its cohesion, health and creativity and an overall higher quality of life.

### State of affairs

In Slovenia, there is no holistic approach to regulating the transfer of knowledge. The majority of activities are based on ad hoc initiatives on behalf of different actors, with public research institutions and higher education institutes playing the most active roles. In the majority of cases, state institutions are not pro-active enough in this respect. Two institutes have established links in the form of independent units for the transfer of technologies, namely the Jozef Stefan Institute and National Institute of Chemistry, while the University of Maribor has the TechnoCenter of the University of Maribor, the University of Primorska operates by means of the University Incubator of Primorska, and the University of Ljubljana has established a special Office for Research, Development and Intellectual Property. In 2009, an informal network of Slovene experts for technology transfer was created (SI.TT). Through networking and the flow of information on good practices and approaches to regulation in comparable foreign systems, the Office for Intellectual Property (UIL) is able to integrate with the projects of EPO, and the IJS is able to be involved in the CERN TT Network, and similar cases may be noticed with memberships of Slovene experts in organisations like ASTP and AUTM.

The field of knowledge and technology transfer is supported by relevant legislation. Articles 21 and 22 of the Employment Related Industrial Property Rights Act<sup>14</sup> define the conditions for the adoption of inventions and for their management within the framework of public research organisations.

Quality implementation of activities and of procedures for knowledge transfer can only be achieved through adequate support in terms of human resources and stable working conditions. This is subject to appropriate education and training, to a systematic approach in financing knowledge transfer activities and to the establishment of a generally favourable environment (from the legislative point of view and in agreement with social acceptance of the activity).

The current situation is reflected in the fact that the return of public investment into the economy, which actually enables public financing, is relatively low in comparison with similar institutions abroad. This refers to the cooperation between knowledge institutions and private enterprises (contractual research and research for development of a component or of a prototype), as well as to the licensing of the newly generated knowledge acquired through public means, and to the creation of new enterprises on the basis of this knowledge.

## Objectives

Improvements to the flow of knowledge will be achieved by the following means:

1. Creation of an environment that favours efficient knowledge transfer.

In such an environment, knowledge transfer is to be defined as a key strategic goal of PROs towards society. The system will stimulate cooperation and create trust and promote integration into the research sphere. Opportunities will be created to gain entrepreneurial skills and entrepreneurial culture among students, as well as for the simple establishment of enterprises. The arrangement of a system of technology transfer offices (TTO) and measures for the evaluation of the system's efficiency will be established and applied to the transfer of knowledge and technologies from PROs, as well as for the transfer between PROs and individuals (researchers, innovators and artists) and companies. It will strengthen and make use of knowledge essential for evaluating ideas and realising the best of them, and will be applied to innovation projects which are likely to be successful in business terms. The existing quality core of TTOs will thus be reinforced and integrated in-

---

<sup>14</sup>Uradni list RS št. 15/2007- official consolidated text.



to a comprehensive support environment, and stable funding will be provided. Emphasis will be placed on evaluating their success rate in terms of enabling the transfer of knowledge and technologies, in the forms of licensing, spin-off enterprises (number of enterprises and employees), income growth, etc.

2. Building an efficient system for the protection of intellectual property.

National guidelines (manual) to regulate intellectual property rights will enable enterprises to become acquainted with the conditions for implementing the intellectual property rights of PROs, meaning that transfer/access will be transparent and quick.

3. Fostering the culture of patent acquisition with thorough premeditated patent policy and through development of legislation for the intellectual property field.

This will enhance fair acquisition and exploitation of new patents in the academic, R&D and business sectors. The culture of innovative thinking should be stimulated at all educational levels; achievement of the desired long-term results depend exclusively on constantly improving generic understanding of the significance of this field. Solutions for involving stakeholders in the usage of results (distribution of rights arising from intellectual property among the researcher or inventor, institution and commercial agent) must be incorporated.

4. Determining knowledge transfer as a key strategic mission of PROs.

In order to ensure optimal functioning of the knowledge transfer system, the PROs need to be fully aware of the significance of knowledge transfer and it should be defined as a significant part of their visions and strategic documents.

5. Building a relationship of trust and a good level of integration within the research environment.

In view of attaining relevant objectives, trust should be established among all the key actors (research sphere and state institutions), in order to ensure an adequate flow of knowledge and information and to develop synergies as a result.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Successful transfer of knowledge from PROs into industry and the social environment</b>		<b>Share of business resources in funding of PRO research</b>		
		<b>Joint publications by researchers from PROs and companies per million inhabitants</b>		
		<b>Share of PRO income from intellectual property rights in the total PRO income</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
13	Regulation of intellectual property rights among stakeholders in commercialisation of research results	Government of the RS (economy, science, technology, innovation)	2013	Regulation
14	Establishment of support for patenting by PROs	Government of the RS (science, technology, innovation, higher education)	2012	Number of supported patent applications by PROs  Share of supported patent applications which ended in granted patents  Share of supported patent applications which ended in commercialised patents
15	Establishment of a scheme to stimulate entrepreneurship among young PhDs	Government of the RS (science, technology, innovation, higher education)	2012	Number of newly created enterprises by young PhDs
16	Enhancement of offices for knowledge transfer (TTO) from PROs into industry	Government of the RS (science, technology, innovation, higher education)	2012–2020	PRO income from licensing  New enterprises, spin-offs from PROs (number of enterprises, number of employees, revenues)
	Establishing an evaluation system of TTO		2011	Number of PRO patents commercialised within a year after the patent has been granted
17	Attracting PROs to solving social problems	Government of the RS (science, technology, innovation, higher education)	2011–2020	Share of resources directed to solving social problems in national budgets for R&D activity (e.g. objectives of »efficient use of natural resources« and »renewable energy resources«)

\* Young PhDs are PhDs in the first seven years after being awarded their doctorates.

### 3.3. R&D co-operation within the EU and worldwide

Increasing globalisation demands an improvement in scientific and technological excellence and sustainable development. Without an increase in scientific and technological co-operation in the European and worldwide context, it will not be possible to effectively address the challenges which cross national and continental borders. Globalisation calls for new and different approaches and methods on a local, regional and national level. Co-ordination of R&D policies, instruments and measures on a global level has become a necessity, including for Slovenia. International R&D co-operation must be based on principles of reciprocity, equality and mutual well-being, as well as on efficient protection of intellectual property. Such co-operation is of key importance for development, sharing and dissemination of knowledge throughout the world, and also serves as a basis for increasing the mobility of researchers or "brain circulation" in a spirit of strengthening the European research area, and broader.

#### State of affairs

Slovenia has been officially participating in the EU Framework Programmes for Research (FP) since 1999. The preliminary data from the European Commission (EC) for Slovenia related to its first two years of participation in the Seventh Framework Programme, show that Slovenia accounts for 0.9% of the participants in the programme. Slovenia therefore receives 0.6% of all the allocated EC funds, which is relatively successful, considering that it has 0.4% of the EU population. On the other hand, the success rate of applicants (number of participants in selected projects in comparison with the number of participants in all project applications) is only approximately 15%, which places Slovenia among the last few in the EU (in 24th or 25th place in the EU-27), indicating that applications are poorly prepared. Slovenia also has a small number of coordinators and a very low level of participation in European Research Council tenders. It is however more involved in the intergovernmental programmes EUREKA and COST.

Slovenia's bilateral cooperation in the R&D field has been increasing rapidly since its independence, in line with a larger recognition of Slovenian R&D within the European framework, and in a wider context. The aim of bilateral cooperation was to speed up the process of accession into the EU and to strengthen co-operation with neighbouring countries, countries in the Western Balkans, advanced non-European countries and

regionally important countries. The new strategy aims to exceed mere mobility in the framework of bilateral co-operation, and upgrade it by 2020, with special regards to the priority countries defined in Slovenia's foreign policy.

Slovenia is also starting to co-operate in the activities of the OECD and the European Space Agency (ESA).

## Objectives

The aim is to improve international co-operation by:

1. Increasing international multilateral co-operation.

We will be supporting the opening up of the Slovenian R&D area to the EU Member States and the Associated Countries to the EU Framework Programme, which needs to be adapted to the changed circumstances. This will be achieved mainly through a system of national contact points (NCP) for the EU Framework Programme, as well as through representatives in relevant European Commission Programme Committees. During the development and implementation of the new instruments, we will strive for simplicity, transparency and prevention of duplication, in order to make the system as simple as possible for researchers and the business sector. By means of financial incentives we will further support the inclusion of Slovenian researchers in European research programmes and networks, in order to ensure that the companies which develop and/or commercialise newly generated knowledge, are included to the greatest extent possible.

2. Increasing international bilateral co-operation.

Bilateral co-operation will be directed towards neighbouring countries and regions, the Western Balkan countries and the so called BRIC countries (Brazil, Russia, India and China), that are becoming new world centres of R&D, as well as towards other complementary countries in the research area.

We will constantly improve bilateral co-operation with the most advanced countries in the world, such as the USA, Korea and Japan, while co-operation with other countries will be supported in accordance with the interests of the scientific sphere and foreign policy orientations of the Republic of Slovenia. By strengthening bilateral research co-operation with the countries of South-East Europe, and in particular with the Western Balkan countries, Slovenia will become an attractive host country for excellent researchers and enterprises from these areas.

A special emphasis will be given to cross-border R&D co-operation, given that it has the most direct impact on knowledge transfer to the local economy.

We will gradually switch from financing predominantly mobility to encouraging research projects as a prevailing form of bilateral co-operation.

New guidelines will be noted in the Development Plan for Bilateral International Co-operation of the Republic of Slovenia in the Area of Research and Development in the 2012-2020 Period. The Ministry of Higher Education, Science and Technology is responsible for its preparation and shall submit it to the Government of the Republic of Slovenia for adoption.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATOR WITH TARGET VALUES		
<b>Targeted and quality international co-operation</b>		<b>International scientific publications</b> (scientific publications in co-authorship with foreign researchers) <b>per million inhabitants</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
18	Measures for increasing the scope of international co-operation and the level of participation of Slovenian partners in international research projects	Government of the RS (science, technology, innovations)	2011–2020	Budget funds for international co-operation  Increasing the number of scientific publications in co-authorship with foreign researchers  The amount of national funds designated to international research projects in which Slovenia is participating (without research infrastructure)  The amount of foreign funds obtained by Slovenian researchers through co-operation in international research projects (without research infrastructure)
19	Development Plan for Bilateral International Co-operation of the Republic of Slovenia in the R&D Area in the 2012-2010 Period	Government of the RS (science, technology, innovations)	2012	Adoption of the plan  Proportion of priority countries within all bilateral contracts  Proportion of research projects in common funds for bilateral co-operation.  Amount of funds for bilateral scientific projects

## 3.4. Public funding of research and development

Public investment into research and development constitutes one of the essential foundations of the research and innovation system, given that in the majority of cases, it strongly influences R&D outcomes and is a requirement for autonomous scientific work. In order to effectively achieve the objectives of the RISS, long-term stable financing of research and development activities needs to be ensured. The amount of public investment does not only present an incoming variable into this system, but it also reflects the very functioning of the system itself. The Barcelona goal, as a part of the Lisbon Strategy, sets the target of achieving 3% of GDP investment into science and research in the EU Member States. One third of these investments (1%) should arise from public funding, while the other two thirds (2%) from the economy. The majority of the EU Member States have not yet attained this goal, yet according to the current trends in public investment, Slovenia will already achieve this goal by 2012.

### State of affairs

The funding of research and development activities in Slovenia bares the following characteristics:

- In spite of the ambitious goal to carry out the Barcelona target of allocating 3% of GDP to research and development by 2010, the share of funding for research and development activities in 2008 represented only 1.65% of GDP, or 616.9 Million Euro (MEUR) of gross national expenditure. Its share of the state budget amounted to 0.52% of GDP or to 193.1 MEUR, and the share of total public sources (together with public inflows from abroad) to 0.57% GDP or to 212.9 MEUR. In terms of funds for research and development from the state budget (being a slightly different aggregate than that of the Barcelona target)<sup>15</sup>, in 2008 Slovenia allocated 45.8% to the government sector or public research institutes, 41.2% to the higher education sector or higher education establishments, followed by 12.2% to the private sector, 0.7% to the non-profit private sector and 0.1% to the foreign sector. The share of the budgeted funds for R&D in the higher education sector is too low, given that in the statistical report, the funds used by the state to cover research work carried out by researchers in the framework of their gainful employment, is not presented. This money is included in the funds for educational activity, and will have to be corrected in the future.

---

<sup>15</sup>This aggregate includes all the funds, intended for research and development in the national state budget, regardless of where they are used (consequently it also includes outflows abroad). However, the indicator for the Barcelona target includes all the funds for research and development, used within the state, regardless of where they come from (consequently it also includes inflows from abroad).

- Funds for research in the business sector are understandably intended almost exclusively for natural science and technical science (99%), while the share of funds for the field of science in research work conducted by public research organisations is 77%, and 23% for social science and humanities (data for 2008). Furthermore, a typical feature for Slovenia is a relatively low use of funds for research and development in the service sector (in 2008, service activities used 16% of funds allocated for research in the business sector, and at the same time, contributed 55% of added value created in the economy).

The funding system for research activities in Slovenia is characterised by a relatively high number of different instruments, which leads to its fragmentation and reduces the efficacy of invested funds. In addition, we have not yet developed a comprehensive system of ex-post analyses of scientific results, which could be used for measurement of concrete societal impacts of the research work financed by the state.

## Objectives

The aim is to improve the system of public funding for research and innovation. It will be achieved through the following:

1. An increase in funds for research and development activities.

In 2010, the Government adopted the target of allocating 3% of GDP to joint ventures by the public and private sector for research and development by the year 2020. For this purpose, the Coalition Agreement 2008–2010 anticipates public investments equating to 1% of GDP as early as 2012.

The Council for Science and Technology has set this goal even higher in guidelines for RISS, with an allocation of 3.6% of GDP to joint ventures by 2020, of which 1.2% from public funds. The share of funds for research and innovation activities in Slovenia will increase in the framework of European cohesion policy funds, both in the current and in the future programme period.

An increase of public investments into research and development activities will be achieved by a growth in national and structural funds intended for research and development activities. The share of the latter will increase in the future financial perspective; however, national, structural and other European funds (e.g. operative programmes) will be used in synergy. The areas and activities for the development of the research and innovation system in the EU programme period 2014–2020 will be defined in the Research and Innovation System Development Plan with National and Structural Funds 2014–2020. The Ministry of Higher Educa-

tion, Science and Technology, and the Ministry of Economy are responsible for its preparation, and will submit it to the Government of the Republic of Slovenia for adoption.

2. Enhancement of frontier research<sup>16</sup>.

The research policy will support frontier research, which is the most significant for science and social development. Through increasing public investment into frontier research, it will increase the funds available. There are no prospects for efficient applied research work and transfers into the economy, if there is no science of excellent quality. At the same time, only a generation of academic knowledge, which lacks potential and actual implementation in the economy, is not sufficient. Besides, the traditional border line separating basic research from applied research becomes more and more blurred. The frontier research that will not be limited by priority area will be complementary to projects and regular work at universities, enabling transfer of the excellent knowledge to future generations.

3. Encourage projects in co-operation with the innovative economy.

Upon increasing the investment of public funds into research and development, we will allocate additional funds to incentives for projects in co-operation with the innovative economy, with the final goal being the achievement of a 60:40 ratio in favour of the latter.

4. Ensure a diverse source of funds for research and innovative activities and enable the development of private sector donations as a source of funding of growing importance.

We will encourage donor activities for science and research, inter alia, with tax relief. The long-term development of donor activities is necessary in order to better integrate research activities into society, and consequently, improve the position and reputation of researchers and innovators within the society. The key prerequisite for donor activities is trust in science as a catalyst for development and for establishing a creative, knowledge-based society. Considering that the segment of donor activities is an important part of co-financing of research activities in developed countries, the goal of RISS is to encourage the long-term development of this segment in society, also by means of tax relief, bearing in mind that this is a continuing process with prospects that go beyond the current financial crisis.

---

<sup>16</sup>The expression frontier research in the entire document encompasses basic and pioneering research.



## 5. Enhancing investments into research and development activities in the business sector.

Special attention should be paid to investments into research and development economies. Support measures by the state, such as financial resources for development of products, processes and services, and tax exemptions for investment into R&D and market development, are extremely important. Measures for encouraging investments into research and development economies are explained in detail in Chapter 5.1.

## Objectives and measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Achievement of high investment into research and development activities, in accordance with national values for the so called Barcelona target</b>		<b>Public investments in R&amp;D as % of GDP</b> and as indirect effect <b>Gross domestic expenditure for R&amp;D as % of GDP</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
20	Effective use of public funds for R&D	Government of the RS (science, technology, innovation, higher education, economy)	2011-2020	Improved values of effect indicators (output) compared to input
21	Tax relief for companies as an incentive to invest into R&D	Government of the RS (science, technology, innovation, economy)	2013-2020	Improvement of tax relief instrument
22	Encourage research projects carried out by public research organisations in co-operation with the innovative economy	Government of the RS (science, technology, innovation, higher education)	2011-2020	60 % of public funds for R&D are directed into projects which involve the participation of the economy
23	Encouragement of frontier research	Government of the RS (science)	2011-2020	Increase of funds for frontier research
24	Increasing the share of funds for research and development, and innovation activities in Structural Funds	Government of the RS (science, technology, innovation, higher education, economy)	2011-2020	Percentage share growth
25	Document synergy in the use of funds from diverse sources in order to strengthen the research and development system (national, structural, and European, such as OP and CIP).	Government of the RS (science, technology, innovations, economy, regional policy, development, European affairs)	2011	Document
26	Action plan for financing the strengthening of research and development system with national and Structural Funds 2014-2020	Government of the RS (science, technology, innovation, economy, regional policy, development, European affairs, finance)	2013	Adoption of the plan
27	Establishment of the framework for development of donor activities in supporting investments into R&D	Government of the RS (science, technology, innovation, higher education)	2015	Legal regulation

## 3.5. Ethics in research and of the researchers

Research and innovation are becoming increasingly integrated into the social environment, and play a part in searching for solutions to fundamental problems and questions posed by society. Given the above, and considering difficulties in assessing the results of research and development activities on human life and on the environment, there is a growing need for researchers to be aware of ethical issues. At the same time, the research profession requires a high degree of integrity and a strong sense of responsibility, particularly due to the fact that in a small country like Slovenia, researchers often encounter situations that could be understood to represent a conflict of interests, or to interfere with the reputation of the research institution and the research profession in general.

### State of affairs

Questions of ethics in research in Slovenia are dealt with by the Commission of the Republic of Slovenia for Ethics in Medicine, as an independent body, and the Ethical Commission for Experiments on Animals, operating within the Ministry of Agriculture, Forestry and Food. The Commission of the Republic of Slovenia for Ethics in Medicine has a long tradition, being one of the oldest national ethics commissions in the world, and has actively contributed to the formation of European ethical standards for biomedical research on humans. This covers the Council of Europe Oviedo Convention on Human Rights and Biomedicine, and the additional Protocol to the Oviedo Convention on Biomedical Research. Both of them are legal and ethical instruments enforceable by law and Slovenia was one of the first countries to ratify them. They are both directly applicable in practice in relation to the ethics of research on humans. Slovenia has some special aspects regulated in respective laws, e.g. research on human embryos, handling human cells, tissues and other. Moreover, it follows the development of ethics in biomedicine and continues to co-operate in creating international standards, e.g. guidelines for the ethical assessment of research.

Ethical control over research in other areas, for example in the social sciences field, is not yet set and there is still a risk that the rights of people involved in the research, could be violated. Due to the rapid development of science and the use of its achievements, the need for ethical assessment of all scientific projects as a requirement from the outset is becoming more and more explicit. This also applies to areas, where the probability of direct violation of human rights and ethical norms appears to be small. The possibility of so called "double use of achievements" also needs to be taken into consideration. This can involve unforeseen misuse of the results, such as making a new weapon or as

a means for criminal or terrorist activities or unacceptable interventions for the benefit of an individual or society. Consistent with the tendencies in the developed world, the ethical control over publishing will also need to be considered, yet it should not affect the freedom of science and freedom of spreading its results. In any case, the legislation and legal arrangements will have to be supplemented in accordance with developments across the world. In addition, the acceptance of codes of moral integrity and good practice in science, which will serve as a basis for forming such codes, as well in all the scientific institutions, will be important.

## Objectives

The aim is to ensure a high level of ethical awareness amongst researchers for their work and in general.

1. In order to assess research ethics outside of the biomedical field, there is a need for new independent commissions for research ethics per sector. In line with other European Union countries and in cooperation with all stakeholders, we will prepare a systematic, institutional arrangement for dealing with ethical questions in all the important areas of science.
2. A national Code of Ethics, Honour and Good Practices in Science will have to be adopted. It could also serve as a basis for codes for individual research institutions.
3. A Court of Honour for the scientific area needs to be established.

## Measures

KEY SECTOR OBJECTIVE				
High ethical standards in public research and development activities in Slovenia				
	MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR
28	Establishment of a Court of Honour for the scientific area consisting of the topmost impartial and ethically impeccable members of the scientific community	Government of the RS (science), SASA	2012	Constitution of a Court of Honour for the scientific area
29	Institutionalised examination of ethical issues in science	Government of the RS (science), SASA	2012	Adopted plan
30	Public debate on guidelines for ethics in science	Government of the RS (science), SASA	2014	Formulating the guidelines in the national code of ethics, moral integrity and good practice in science

## 4. Strengthening capacities for research and development

### 4.1. Strengthening human resources

Slovenia has been aware of the importance of developing its human resources for a long time. Alongside the recognition of the importance of science for general social and economic development, the strengthening of human resources in the scientific field has a predominant place in the medium-term national research and development programmes.

#### State of affairs

In 2008, there were 16,243 people employed in research and development, of which 10,123 (62%) were researchers. Measured in terms of employment under full time equivalent (FTE), there were 7,032 FTE researchers, of which 3,058 (43%) working in the business sector, 2156 (31%) in the state sector (public research institutions), 1,795 (26%) in the higher educational sector, and only 23 (0,33%) in the non-profit private sector. The highest growth in the number of researchers was detected in the business sector, which reported a 58% increase between 2005 and 2008. The proportion of FTE researchers in the business sector therefore reached 43% in 2008, which is slightly below the EU 27 average (46%). In terms of international comparisons, the proportion of FTE researchers amongst employees is 0.71%, which places Slovenia above the EU 27 average (0.68%), yet still below the EU 15 average (0.75%).

The proportion of employees with doctoral degrees is gradually increasing. In 1990, only 12% of employees in research and development were Doctors of Science in comparison to 25% in 2008. The proportion of Doctors of Science among the researchers was 41% in the same year (compared to 39% in Ireland for example), of which the lowest ratio was in the business sector (10% in Slovenia compared to 14% in Ireland), but 62% in the higher education sector (compared to 56% in Ireland) and 46% in the state sector (in comparison to 71% in Ireland).

In terms of age and gender, the structure of Slovenian researchers is satisfactory given that the share of researchers of 34 years of age or younger is increasing. This share amounted to 34% in 1990 and had grown to 39% by 2008. At the same time, the “young researchers programme” notes a constant increase in the number of women, especial-

ly in the field of biotechnical science, medicine, social sciences and humanities, where women also make up the majority. The current percentage of women among the researchers amounts to 34% for Slovenia, which exceeds the EU 27 average (30%). However, in the academic sector, there were only 17% of women with a title of full professor in 2007.

According to data from 2008 regarding the field of work of employed researchers, the majority work in the area of technical science (42%) and natural science (34%), followed by social science (9%), medical science (7%), humanities (5%), and biotechnical science (3%).

## Objectives

The aim is to achieve a greater development of human resources, namely:

1. Increase the number of researchers and developers in the economy.

Excellent research staff will be attracted by the introduction of incentive measures in the field of tax, labour, immigration and other legislation. We will design a comprehensive system of support mechanisms to increase the mobility of personnel between public research organisations and the economy, to employ researchers in companies, for a "lease" of researchers, and to strengthen research and development capacities in the economy. The costs to employers for engaging researchers and developers in their companies will be comparable or lower to those in neighbouring and other comparable countries.

A special emphasis will be given to personnel in natural science and engineering, including encouragement to study in this field at tertiary level. In addition to developing personnel, it is important that the economy includes a wide circle of employees in the innovation processes.

2. Increase the number of Doctors of Science.

The principle of integral development of all the disciplines will be safeguarded when determining the number of doctoral candidates eligible to have their studies co-funded by the state, but there will be more funds available for the areas that will be designated as national priorities, based on Slovenia's recognised competences and competitive advantages in science and in the economy.

3. Strengthen the qualifications of personnel.

The strengthening of personnel qualifications has to be systematic and based on the principle of lifelong learning. Newly generated knowledge, in terms of acquiring skills for preparing and leading national and international R&D projects, are of particular importance to researchers. In addition, researchers will have to gain knowledge on managerial techniques, communication, intellectual property rights management, and entrepreneurship.

4. Ensure effective inter-institutional and interstate mobility of researchers.

We will enable the integration and mobility of researchers between different public research organisations. Equalising the status of researchers at the institutes and university teaching staff will contribute to this aim. Interaction and mobility between public research organisations and industry will be systematically encouraged through technology platforms and other mechanisms.

Slovenia must open itself up further to the EU and the rest of the world in terms of international exchanges. We will therefore encourage the international mobility of researchers. This significantly contributes to the quality of their research and increases the appeal of a career in research.

We will systematically encourage the integration and mobility of researchers between public research organisations and the economy, as well as the inclusion of experts working in companies into the educational and research system.

5. Improve career opportunities for researchers and include the gender equality principle.

The basic requirement for establishing career opportunities for researchers is an effective information network which promotes the possibilities of research work in Slovenia and abroad. It is necessary to create a living environment that will attract people from abroad, and encourage domestic researchers to be internationally mobile. It is also important to establish statutory provisions which will assure social security for researchers, favourable working conditions and clear employment procedures.

National efforts in support of the development of research careers will be in substance and objectives comparable to international efforts, regardless of the area of research work, and primarily in conformity with the European premises for the common framework for the development of careers in scientific research.

Vertical segregation needs to be reduced, meaning that support for changes and modernisation at decision making level in research organisations, is very important. The first is necessary to adopt measures for gender equality, to change legislation, and to focus attention on the role of gender in research, in the field of education and in the management of institutions. The basic requirement for such support is an acknowledgement of the importance of gender equality. With the help of the professional body- the Commission on Women in Science- we will support promotional activities and follow the principle of ensuring a balanced representation of both genders when appointing working bodies within the competence of MVZT, and when preparing legal acts and other strategic documents. The areas and activities for improving career opportunities for researchers in all periods of their career, and for ensuring the gender equality principle, will be defined in the Action Plan for Improving Career Opportunities for Researchers in all Career Periods and for Ensuring the Gender Equality Principle. MVZT and MG are responsible for its preparation, and shall submit it to the Government of the Republic of Slovenia for adoption.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Strong, quality and adequately allocated human resources in research activities</b>		<b>Share of researchers in the FTE among persons in employment</b> <b>Share of researchers in the business sector</b> <b>Share of researchers with foreign citizenship among all the researchers</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
31	Encourage study in natural and technical sciences (scholarships, promotion)	Government of the RS (higher education, science, technology, innovations)	2011–2020	Increase in the number of graduates in natural and technical sciences in the tertiary field of education per 1000 inhabitants aged between 20 and 29 years.
32	Scheme to promote growth in the number and the share of researchers in the business sector, inter alia:	Government of the RS (science, technology, innovations, finance)	2011–2020	Increase in the number and the share of researchers in the business sector (unit: FTE)  Increase of the number and the share of PhDs among researchers in the business sector (unit: FTE)
	- renewal of the incentives for employment of researchers in the business sector	Government of the RS (science, technology, innovations)	2011	
	- subsidisation or imposed upper limits for social security contributions, paid by employers in companies	Government of the RS (finance, science, technology, innovations)	2014–2020	
	- co-financing activities of the business sector for strengthening education and training of the employed in the R&D area, and organisational improvements in this area	Government of the RS (science, technology, innovations, finance)	2012–2014	
	- expansion of eligible costs for tax relief for companies that invest in R&D (already including expenditures for new researchers) to relief for educating personnel from the business sector	Government of the RS (science, technology, innovations)	2014	
33	Encouragement of interstate mobility of researchers	Government of the RS (science, higher education, technology, innovations)	2011–2020	Share of PhDs who have studied, worked or researched abroad for at least three months in the last 10 years
	- elimination of administrative, technical and tax barriers for international mobility in both directions			Share of researchers with foreign citizenship among all the researchers
	- systemic measures for encouragement of international mobility in both directions, inter alia			Share of foreign students among the new PhDs
34	- forming of international compatible mechanisms for recognition of researchers' qualifications			
	Action Plan for Improving Career Opportunities for Researchers in all Career Periods and for Ensuring the Gender Equality Principle	Government of the RS (science, technology, innovations)	2012	Adoption of the Action Plan



## 4.2. Specialisation

Excellency on a world-wide scale is necessary for success in a globalised world. Similar to comparative advantages in economic theory, a lack of critical mass and limited resources in smaller and less developed regions, along with the complexity of scientific problems and the size of investments necessary, lead to the need to concentrate knowledge and competencies in selected fields. Specialisation based on comparative advantages, characteristics and prior investments of a country or region into capacities and scientific excellence, enables the development of quality domestic competences as well as the chance for the country or region to establish itself as a leader in these fields, while also ensuring the most optimal use of financial resources.

### State of affairs

The Resolution on the NRDP 2006-2010 followed Central European priorities and provided five broad priority fields, namely information and communication technologies, advanced (new-emerging) synthetic metallic and non-metallic materials and nanotechnologies, complex systems and innovative technologies, technologies for sustainable economy, and health and life sciences. At the same time, it also defined narrower technological fields by means of technological foresight studies. It was foreseen that after a two year period, the Council for Science and Technology (SZT) would carry out a detailed evaluation of priority setting, and complement the list of priorities where necessary.

The breadth of the identified fields in the NRDP 2006-2010 by themselves did not allow for specialisation. Instead, funding for research and development was divided amongst a wide spectre of activities up until 2009, which hindered the establishment of a critical mass of capacities that would ensure a possibility for quality within a global context.

Although the Council for Science and Technology did not carry out the aforementioned evaluation of priority fields, there have been numerous attempts in recent years to set out narrower thematic priority fields. The 2008 study on "Technological Foresights and Slovene Development Priorities" (Institute of Economic Research) and documents from the National Technological Platforms, were based on qualitative analyses and complemented by quantitative data on the enterprises involved and on research groups and their competencies. The Report on the Identification of Narrow Priority Development Themes (2008, TIA - Technology Development Agency), and the recommendations of the governmental counselling body, the Competitiveness Council (2009), which are based on evaluations of a large number of co-operating experts from the economy and

the science field, are also important. Additional guidelines have been elaborated on the basis of the evaluation of the Call on Centres of Excellence (2009) which involved reviews by national and foreign experts and took into account the social implications and qualities of the public research sphere and co-operating economy. On the basis of all these studies, the Government decided upon and published seven narrow priority fields for the Competence Centres. Complementary to the 8 Centres of Excellence, we have in the past two years awarded over 120 million EUR from public funds to these 15 priority fields, by means of tenders (for 8 Centres of Excellence and 7 Competence Centres) for the period up until 2013, and herewith initiated specialisation within the Slovenian science and technology sector. Complementary to these fields, eight industrial sectors have been identified and supported with 185 million EUR within the framework for Development Centres of the Slovene Economy.

Prior efforts point to the future development of fields of specialisation in Slovenia. The development of smart specialisation fields will be established as a permanent and open process that involves all the key stakeholders, as opposed to a top-down decision making process, possibly supported by expert opinions in studies of technological foresight, or by opinions from those working in the economy or as researchers. The process of specialisation is being implemented through a greater amount of public funds dedicated to the selected fields.

## Objectives

The aim is to establish smart specialisation fields in a state or region, within which Slovenia will be able to establish itself as an excellent and competitive country on an international scale. RISS, as a long-term strategic document, sets out a method of formulating and evaluating fields of specialisation, but not the fields themselves, for they must be chosen on the basis of a permanent, inclusive and bottom-up open process, and substantiated with comparative analyses of competences in the individual fields that contribute to solving societal problems.

Two measures for enhanced specialisation:

1. Formulating and evaluating fields of specialisation.

This shall be a permanent and open process of recognition and selection of priority fields from the bottom-up. Priority fields will be identified based on initiatives by individual stakeholders, and substantiated with comparative analyses of the competencies, either within the framework of research and innovation policies, or industrial policies. The selection of and developments in the priority fields will be subject to domestic and foreign evaluations every second year, which may lead to changes in the earmarked support to particular priority fields. The programmes will therefore be based on partnerships between quality segments of the public and private sectors, and they will be complemented by the establishment of target capacities (e.g. personnel and infrastructure).

2. Increasing funds in the fields of specialisation in order to build domestic competences and competitive advantages in science and the economy.

We will invest additional funding into the selected smart specialisation fields. At the same time, we will continue to support projects in all other fields, based on excellence and perspectives for growth and development. This will enable the generation of new knowledge and competences, and ensure scientific breadth.

## Measures

KEY OBJECTIVE OF THE SPECIALISATION		SELECTED INDICATORS WITH TARGET VALUES		
Rise of scientific and economic competitiveness		Excellence in science <b>Share of national scientific publications among 10% of the most cited publications in the world</b>		
		Productivity <b>Value added per person in employment</b>		
		Technological complexity of the economy <b>Share of high-technology and medium-high technological products in the export of products</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
35	Permanent evaluation and recognition of the fields of specialisation	Government of the RS (science, technology, innovation, economy)	2011-2020	Comparative analyses of competitive advantages and competences
36	Investments into development of competences and strengthening of development cores in the fields of specialisation	Government of the RS (science, technology, innovation)	2011-2020	Budget share for science and technology, intended for fields of specialisation  Relative factor of influence of publications in the research areas, covered by the fields of specialisation, in comparison to relative factor of influence for Slovenia as a whole - <i>changes 2010-2014-2020</i> Expenditure for R&D per researcher in economic activities covered by specialisation, in comparison to such expenditure of the business sector - <i>changes 2010-2014-2020</i>
37	Attracting PROs to solving societal problems	Government of the RS (science, technology, innovation, higher education)	2011-2020	Share of resources for central societal challenges in national budgets for R&D activity (e.g. objectives of »efficient use of natural resources« and »renewable energy resources«)

### 4.3. Development of research infrastructure

Research infrastructures refer to facilities, resources or services that encompass larger sets of research equipment or instruments. They also complement knowledge resources such as collections, archives and databases. They are engines of innovation and the basic condition for research work. Larger and medium-sized infrastructures, are essential for research excellence and sophistication. Around 50,000 researchers from Europe are making use of at least 300 large research infrastructures on a yearly basis. This

results in 3,000 to 6,000 pieces of research with very high impact, chains of patents, spin-offs from PROs, and contracts with industry. The research helps to provide answers to the most important societal challenges, such as human health, climate changes, ageing of the population and energy supply. It also assists in monitoring and responding to changed social relations, values and behaviour of individuals, and helps industry to develop new high-performance materials and medicines, as well as to monitor the environment.

Providing Slovenian researchers with access to developed and large research infrastructures is therefore essential in order to reach and maintain a level of scientific development on a globally comparable scale. Access can be provided through the construction of national research infrastructure and by international integration in the establishment of such common infrastructure. By 2020, dozens of new research infrastructures will be ready, and Europe will be among the leading in the world in terms of e-infrastructures. The network of all the research infrastructures will reinforce human resources in science and enable free movement of people and ideas within the European research area. It will also stimulate cooperation among the higher education sector, economy and research institutes, which will encourage the emergence of new innovation ecosystems.

## State of affairs

In Slovenia, research infrastructure is very spread out (there is no adequate overview of the level of duplication of equipment within institutions), partly obsolete, and in most cases does not attain the critical mass, neither the excellence comparable with large European and global research infrastructures.

The main instruments for developing research infrastructures are provided by the Slovenian Research Agency, in terms of co-financing and allocation of funds through calls for proposals, which subsidise the purchase of equipment needed by organisations to carry out activities within the national research programme. The Slovenian Research Agency earmarks from 2 to 4 million EUR annually for the purchase of new equipment, in addition to 7 to 8 million EUR for research institutions' infrastructural programmes.

A large part of foreign research infrastructures can be accessed under competitive conditions. However, access for Slovenian researchers to international research infrastructures, of which Slovenia is not a member, needs to be improved.

In 2009, eight new Centres of Excellence (COs) were established, out of which four will allocate more than half of their assigned funds (8 to 10 MEUR) to the purchase of research equipment up until 2013. Together with excellent researchers, they will be

able to represent the critical mass in terms of a research infrastructural centre: CO for nanoscience and nanotechnology, CO for integrated approaches in chemistry and protein biology, CO for low-carbon technologies, and a NMR CO for the Study of Structures and Interactions in Biotechnology and Pharmacy, dedicated to research in biotechnology, pharmacy and matter physics.

## Objectives

The aim is to provide access to excellent research infrastructure, through:

1. Better exploitation of the existing national research infrastructure.

In order to enhance access to research equipment (which is at the disposal of PROs in Slovenia), a transparent and publicly accessible virtual node (portal) will be established. This will provide a rapid and clear overview of available capacities, together with an application form and information for all the shareholders on how to access this equipment. The node will connect to similar ones in neighbouring countries, and will enable equipment to be linked up and fully exploited. It will also facilitate the international exchange of spare capacities and establish a mechanism for the usage of the available capacities. The state will continue to provide a part of the funds to cover the maintenance and operation of the research infrastructure in the PROs. Access to research infrastructure will be granted to all the users under the same conditions, following the criteria of scientific excellence and importance.

2. Upgrading and constructing new research infrastructure in priority areas

In order to reach a critical mass and achieve scientific excellence, Slovenia will be developing national research infrastructure in priority areas, which will complement the areas of smart specialisation and contribute to a balanced development of society. The areas and activities for reaching these aims will be defined by the Research Infrastructures Roadmap 2011-2020. The MVZT is responsible for its preparation, and shall submit it to the Government of the Republic of Slovenia for adoption. The selection of the areas will be evaluated and revised in line with the process outlined in the Chapter entitled "Specialisation."

The longer-term aims are to reach a critical mass and achieve scientific excellence in at least one scientific field, to bring together international partners to form an infrastructural centre at the highest global level in Slovenia, and to place this research infrastructure on the European agenda in developing research infrastructures.

3. International integration through access to large research infrastructures.

It is feasible for Slovenia to gain access to large research infrastructures by 2020, through co-operating in international projects, which are identified as the priority projects and specified in the national Research Infrastructures Roadmap 2011-2020. Slovenia will aspire to participate in international infrastructural projects in the most appropriate manner possible, based on the premise that Slovenian contributions to international research infrastructures must be of greater benefit to Slovenian science than if these resources were to be invested in national infrastructure of this kind. In this respect, Slovenian contributions will have to be spent to the largest possible extent within the national economy, or directly returned to it as fast as possible.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATOR WITH TARGET VALUES		
<b>Strong, up-to-date, well exploited and internationally integrated research infrastructure (RI)</b>		<b>Budget funds for research infrastructure (RI) per researcher in the public sector</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
38	Arrange open access to research infrastructure at public research organisations	Government of the RS (science, technology, innovation, higher education)	2012	Legal regulation  Share of external RI users in the total hours of equipment usage
39	Establishment of a virtual node for access to RI, and of mechanism to access spare capacities	Government of the RS (science, technology, innovation)	2012	Public access to virtual centre  Number of applications for spare capacities through virtual node
40	Concentration of funds for new RI in the selected areas	Government of the RS (science, technology, innovation)	2012	Increase of funds for new RI in the selected areas
41	Establishment of national medium-sized RI centres	Government of the RS (science, technology, innovation)	2020	Two new centres
42	Providing the necessary conditions for the European RI centre in Slovenia	Government of the RS (science, technology, innovation)	2020	The seat/headquarters of a European Research Infrastructure Consortium in Slovenia
43	Inclusion in international RI centres (projects)	Government of the RS (science, technology, innovation)	2012	International RI centres, in which Slovenia is participating as co-investor - <i>funds for this purpose as % of all the funds for RI</i>  International RI centres, in which Slovenia is participating as a user, based on paid »fee« - <i>funds for this purpose as % of all the funds for RI</i>
44	Adoption of the Research Infrastructure Roadmap	Government of the RS (science, technology, innovation)	2011	Adopted plan

### 4.4. Development of business-innovation infrastructure

Innovations are one of the most important elements of economic growth, and at the same time, they present a response to social and societal challenges. Entrepreneurs play a central role in the innovation process, as they are adding commercial value to ideas and knowledge, and generating employment. Effective business-innovation infrastructures are extremely important in the development of a competitive economy.



Business-innovation infrastructure includes government executive institutions, entities of the supporting environment, as defined in the Supportive Environment for Entrepreneurship Act (ZPOP-1), and also other public and private institutions, as well as financial intermediaries that provide support for entrepreneurs and enterprises in developing their business ideas.

While research and development are still a very important part of the innovation process, new added value within companies is primarily created by the interweaving of several different activities. This is due to the changed nature of innovations and adapted role of stakeholders. In a modern business environment, the process of innovation is conducted in co-operation with suppliers, customers, competitors, the higher education sector, scientific research organisations, and, of course, in co-operation with other companies. This network allows for everyone, especially for small innovative companies, to overcome numerous obstacles and limitations related to their size, limited resources or their stage of development. In particular, it enables them to overcome the difficulties in accessing funds, partnerships and markets, as well as the challenges related to limited technological capacities and to the lack of managerial skills.

Business-innovation infrastructure must provide support to the concept of open innovation and networking, which includes small, medium and large enterprises, higher educational institutions, research institutes, various government institutions, and other stakeholders in the innovation process. It must ensure support not only to technological, but also to non-technological innovations. This means that special attention needs to be paid to management, organisational changes, new business models, design and creativity, marketing, and in general to the development of the capacity to control the changes and to adapt to them. Non-technological innovations and the creative industries in this regard, are particularly important in the service sector and its activities, which present a substantial share of the Slovenian economy. Besides, the entrepreneurial-innovation infrastructure also extends to a wider regulatory environment, and to a general environment which encourages creativity, innovation, and entrepreneurship.

## State of affairs

Slovenia has developed a broad business-innovation infrastructure with a large number of implementing and supporting institutions. This has however led to certain shortcomings, such as a high degree of fragmentation and inconsistency.

The implementing institutions do not have clearly defined missions or responsibilities in terms of ensuring that development policy objectives are met. The programmes and measures are overlapping and are not well integrated with each other. The system is therefore opaque, insufficiently exploited, unstable and inefficient.

Due to the encouragement measures taken by the state, diverse public and private institutions were established in Slovenia to connect companies and PROs, and to provide them with support services (e.g. technological centres, technological parks, entrepreneurship and university incubators, clusters, and technological networks etc.). The Supportive Environment for Entrepreneurship Act sets the legal basis for the state to co-invest in support institutions, in order to promote the development of services, yet this is being carried out in a rather partial and unsystematic manner. The role of these support institutions in comparison to the public implementing agencies is not clear, leading to a duplication of programmes and of measures in place.

A system of monitoring and evaluating the effects of the institutional setting is not established.

To create a positive micro climate for innovation, Slovenia must continue to move towards strengthening the culture of creativity, innovation and entrepreneurship, as defined in Chapter 6.

## Objective

The aim is to establish a comprehensive and high quality network of supporting institutions by:

1. Improving the operational effectiveness of implementing institutions.

The current overlap in preparing and carrying out development policy measures will be eliminated through a process of integrating and restructuring public implementing institutions in the areas of research and development, and of innovations and entrepreneurship. Greater efficiency of operation will be ensured through clearly defined missions, tasks, and responsibilities for achieving the objectives of the development policy, as well as for regular evaluation of their work, in accordance with measures from Chapter 2. Their expertise and cost-effective implementation of various public functions will be verified. The potential for optimising their functioning through the transfer of powers to the most qualified public or private institutions will also be examined.

2. Updating the network of supporting actors in entrepreneurship and innovation.

We will form a comprehensive strategy for developing the network of support institutions (i.e., technological and development centres, clusters, design centres, technological parks, incubators etc.) in order to make better use of entrepreneurial

and innovation potential and to encourage linking within the economy itself, as well as between research, educational and cultural organisations, individuals (researchers, innovators, and artists) and the economy. Support services will therefore be provided to a wider circle of users included in the network. Special attention will be paid to developing services which support new business models and encourage international integration. This framework also requires efficient and easy access to current R&D infrastructures, along with the promotion of technology transfer or activities for technology transfer offices, as defined in Chapter 3.2.

By forming a comprehensive network of supporting institutions, we will provide users with greater transparency and easier access to these services. Providing funds to individual institutions for multi-annual programmes, selected according to the quality of services and through regular evaluation of implementation success, will ensure greater stability and better planning within the entrepreneurship-innovation infrastructure.

### 3. Improving transparency and accessibility to information on public calls.

This measure calls for the establishment of a single portal for the publication of all public calls, along with a search engine for interested users. The portal will be implemented in accordance with the Public Finance Act<sup>17</sup> and the provisions related to the public and transparent publication of public tenders, which is currently ensured through publication in the Official Gazette of the Republic of Slovenia. The portal will become the single and sole point for publishing all public calls, in line with the publication of calls for public procurement. It will simultaneously result in the simplification of the process and a reduction in costs.

---

<sup>17</sup>Uradni list RS, št.11/2011- official consolidated text.

Measures<sup>18</sup>

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES			
<b>Comprehensive, quality and solid network of support institutions to ensure a favourable innovation environment</b>		Number of the companies <b>Net accrual of companies</b>			
		Innovation <b>Net accrual of companies</b> <b>Share of companies which introduced either technological or non-technological innovation</b>			
		Innovation co-operation <b>Share of SMEs, co-operating with other companies and/or PROs in innovations, among all such companies</b> <b>Number of successfully transferred inventions by individuals into economic usage</b>			
		Industrial property <b>Number of patent applications according to PCT* per MEUR GDP</b> <b>Number of protected trademarks per MEUR GDP (Community trademark)</b> <b>Number of protected designs per MEUR GDP (Community design)</b>			
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR		
45	Restructuring of public agencies for technological development JAPTI and TIA	Government of the RS (economy, science, technology, innovation)	2011	Evaluation Report on JAPTI and TIA - assessment of expertise and cost effectiveness	
46	Development of new services and supporting institutions for strengthening innovation process, including services for implementing new business models	Government of the RS (economy, science, technology, innovation)	2012	Changes in the user structure of support services according to the area of activity  Changes in user structure of support services according to the size of companies  Number of successfully transferred inventions by individuals into economic usage  Share of companies which introduced technological innovation  Share of companies which introduced non-technological innovation  Share of companies in service activities which introduced innovation	
47	Open platform for integration or networking (e-Environment)	Government of the RS (economy)	2012	Establishment of platform	
48	Single portal for publication of all public calls	Government of the RS (public administration)	2011	Introduction of the portal	

<sup>18</sup>Patent applications according to PCT (International Patent Cooperation Treaty) = PCT patent applications

## 4.5. An ICT infrastructure which supports innovation

Information and communication technology (ICT) infrastructure is one of the key strategic pillars for European research and innovation policies. Innovations and related economic and social developments are mostly dependent on the pace of scientific progress, which in today's world is only possible through open and cross-border cooperation of scientists from all over the world via broadband network. In addition, contemporary science for modelling complex systems and processing very large amounts of data is making the most of high-power computing and the almost unlimited possibilities for storing vast amount of scientific data bases.

In recent years, ICT infrastructure has crucially changed the way researchers work. This is demonstrated by new research approaches and methods in many research fields. This change, named E-Science<sup>19</sup> can be compared to "scientific renaissance", which is the basis for modern science.

### State of affairs

In order to maintain its integration within modern research flows, Slovenia needs to accept this paradigm and secure the budget for developing and maintaining the necessary e-Infrastructure, enabling it "to make full use of the emerging distributed forms of research activity (e-Science) based upon international research networks made possible by the availability and quality of European network infrastructures like GEANT and e-Science GRID-networks."<sup>20</sup> Slovenia is connected to GEANT and the e-Science GRID-network through the activities of the public institute ARNES and funded by the MVZT. In order to support the complete development of broadband connectivity, MVZT adopted a Strategy in 2008 for the development of broadband networks in Slovenia.

---

<sup>19</sup>ICT Infrastructure for e-Science COM(2009) 108, 5.3.2009.

<sup>20</sup>Competitiveness Council, 22-23 November 2007 ([http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/intm/97225.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/intm/97225.pdf)).

## Objectives:

1. Strengthen scientific e-Infrastructure in support of the Slovenian research community.

Reliable and fast broadband optical networks which enable connection to the international research network GEANT2 and e-science GRID-network, are essential components of the scientific e-Infrastructure. They enable scientists to solve complex questions more quickly and efficiently, to access ever increasing scientific data bases, and to participate in international virtual multidisciplinary research groups or to have the possibility to prepare new research environments. One of the basic components of scientific e-Infrastructure is also a national point for high performance computing.

2. Free access to data from publicly funded research.

Free access to data from publicly funded research will improve and increase knowledge and information transfer. This way, we will prevent duplication in research, increase efficiency of research work, and enhance returns on public funding for research and development.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATOR WITH TARGET VALUES		
<b>Establishment of modern ICT infrastructure for an expansion of science in Slovenia</b>		<b>Broadband penetration rate</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
49	Implementing Strategy for development of broadband networks in the Republic of Slovenia	Government of the RS (information society, telecommunications)	2013	Selected indicators in Strategy for development of broadband networks in the Republic of Slovenia
50	Support to functioning of public institute ARNES	Government of the RS (information society, telecommunications, science)	2011-2020	Annual budget funds for ARNES
51	Inclusion of the field of ICT development to support R&D infrastructure within the National programme of information society	Government of the RS (information society, telecommunications, innovation)	2011	National programme of information society
52	Ensuring the functioning of the national co-ordination centre for GRID-technology, Sign Et NGL	Government of the RS (information society, telecommunications, science, innovation) ARNES	2011	Functioning of the centre
53	Providing and expanding stable and high performance Infrastructure for the educational, scientific and cultural sphere (Eduroam, AAI)	Government of the RS (information society, telecommunications, science, higher education)	2012- 2020	Functioning of high performance ICT-infrastructure for the educational, scientific and cultural sphere
54	Ensuring access to high performance computer capacities for PROs	Government of the RS (information society)	2014	Activating the access
55	Preparation of action plan for free access to data from publicly funded research	Government of the RS (science)	2014	Action plan harmonised among relevant actors in Slovenia

## 5. Innovative economy

### 5.1. Accelerating private investments into R&D

Investments in R&D are one of the key factors influencing the competitiveness of companies. Creating a stimulative environment and ensuring the necessary conditions for an increase in private investments is therefore a priority of the state.

#### State of affairs

In recent years, private sector investment into research and development has been increasing in Slovenia and approaching the EU average, although it is still far behind the most successful countries. This progress also shows the positive influence that tax incentives have had on investments into R&D, although their share in Slovenia is still lower than in the majority of the most successful countries. The fact remains that above-average investments and increasing investments in R&D in the private sector remain limited to certain sectors of activity and to a small group of companies. Investments in development by the vast majority of businesses, in particular small businesses, is far below the average, as is their ability to exploit the advantages of innovation activities.

The amount of public resources invested in R&D in the economy has significantly increased in recent years, especially due to the use of funds provided by the European Structural and Cohesion Policy. In addition, incentives for companies are mostly directed towards implementing R&D projects in connection with the public research sector. Direct (non-refundable) financial incentives for investments into research and development have positive effects, but the funding sources are limited, and not sufficient for covering actual needs, especially given the reduction of funding sources from European structural policy. The shortcomings are shown mainly in terms of ensuring access to refundable sources of financing for investment into R&D, and into projects with higher risk, not typically acceptable by the financial market. Access to (mainly commercial) sources of financing for development is far below the EU average (67% average), according to the success indicators of the innovation system (EIS 2009).

#### Objectives

Cilj je povečati zasebno vlaganje v raziskave in razvoj, in sicer:

1. Strengthen incentives for increasing private investments into R&D from public funds.



We will direct 60% of these public funds into projects in co-operation with the economy, as defined in Chapter 3.5. A special emphasis will also be given to improving companies' access to commercial sources of financing for research, technological development, and commercialisation of new products and services, based on their own knowledge. In order to increase financial capabilities for these purposes, additional public funds will be directed into instruments of financial engineering through existing financial institutions, in order to achieve the greatest possible financial impact, and at the same time, ensure access to favourable (debt and equity) financial resources for R&D activities at diverse levels of development.

2. Support the employment of researchers or developers within the economy.

The measures are stated in Chapter 4.3.

3. Strengthen the system of tax incentives for investments into R&D.

Tax incentives have a positive influence in terms of the level of investment into R&D and clearly demonstrate the efficiency of the measure and its multiplier effect on the economy. The level of incentives are however lower than in numerous developed countries. A complete comparative analysis of the systems in applicable countries will be carried out, a proposal for optimisation will be prepared, and the measure will be updated accordingly. The aim is to expand the existing level of tax relief, or to expand existing tax relief on investments into R&D to investments in the development of human resources and lifelong education as well. The system of implementation will also be simplified so that it is accessible and supportive to the wider public, especially small businesses.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATOR WITH TARGET VALUES		
<b>Increase of private financing, mainly by the business sector, into R&amp;D</b>		<b>Private investments in R&amp;D as % of GDP</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
56	Increased public funding for R&D projects responding to needs of the economy	Government of the RS (science, technology, innovations)	2012	60% of public funds for R&D are directed into projects responding to the needs of the innovative economy  Expansion of private investments into R&D, encouraged by public sources

## 5.2. A greater number of innovative start-up companies

The innovation environment is changing. In the past, innovation policy emphasized investments into R&D, but now we need to take into consideration the entire invention and innovation process. Innovations are not just science and technology; they also encompass new marketing methods and changes in the way in which companies organise themselves, their business practices and their relationships with external stakeholders. Within this framework, the establishment of new businesses through supporting entrepreneurship and innovations, is becoming a central figure. New innovative companies are a group with specific needs. Given the fact that they tend to enter the market offering new products and technologies, with a large extent entering the global market (between 30 and 50%), they face even more obstacles than other small companies when accessing external funding resources, information and links to markets.

The significance of new and small businesses in the process of innovation has increased, as they develop and introduce new products in a more efficient way. They tend to use technological and business opportunities that are often neglected by already established enterprises. In addition, they adapt more easily to market demands, cover unexploited niches, and provide for the commercialisation of knowledge that is created at higher education and research institutions. New and innovative companies co-operate in the movement of knowledge, and are both users and sources of knowledge and penetrating business ideas at the same time.

### State of affairs

In order to simplify the process of establishing a company, Slovenia has made enormous progress by introducing VEM ("all in one place") points, that provide general information to entrepreneurs, as well as the online system e-VEM that enables rapid and affordable registration of a company. Certain instruments were created in order to support companies in the early stages of their development, such as subsidies for the start-up of innovative companies, a voucher system of training for potential entrepreneurs and emerging enterprises, as well as incentives for self-employment.

Despite the progress in recent years, the Slovenian environment does still not sufficiently support the risks, entrepreneurship and responsibilities that come with developing your own company. Consequently, the activity and development of small, particularly high-tech companies, remains very weak (e.g. in the area of pharmacy, bioscience and

nanotechnology). This is also reflected in a less than 5% share of high-tech exports and two to three times lower added value per worker than in applicable countries of the EU (Finland, Ireland, the Netherlands and Austria).

Nevertheless, Slovenia is achieving a high level of knowledge amongst researchers in individual technological areas in the public sector, and the level of co-operation with enterprises is also increasing. The relatively large start-up investments required in the area of high technology hinder the emergence of new and innovative companies. Insufficient incentives, lack of transparency and an unregulated environment, means that researchers and other individuals and groups do not take risks and do not create high-tech companies. In addition, public research organisations that are not provided with sufficient support to commercialize research results and actively manage intellectual property rights, passively contribute to this state as well.

## Objectives

The main goal is to increase the influx of new innovative companies, by:

1. Creating a stimulating environment for the commercialization of knowledge in PROs.

These measures are described in Chapter 3.2. (Knowledge Transfer) and encompass regulations in the area of legislation that will enable and stimulate institutions and researchers to create spin-offs from the PROs, the development of innovation infrastructure for founding spin-offs from PROs, and an efficient system of intellectual property rights management.

2. Setting up a complete scheme of financial and other incentives for the start-up and initial running of businesses.

Existing measures of financing with grants have turned out to be effective, but not sufficient. We will strengthen debt and equity financing resources with instruments that will stimulate financial institutions and private undertakings to invest into seed capital. Experience has also shown that financial incentives are effective in early stages of development if they are connected with the transfer of knowledge and experiences of leadership, development of activities and marketing in new enterprises. Financial incentives will be complemented with the development of services in support of newly founded enterprises, in order to ensure the support is comprehensive and adapted to actual needs.

3. Forming measures to support these start-up companies to enter the global market (so called BornGlobals).

In connection with foreign policy and programmes to encourage the internationalisation of companies, we will establish a system which will support new global enterprises to connect with innovation centres, international networks and potential partners. Through support institutions, we will be strengthening programmes for training and international integration. Incentives for developing the venture capital market will be directed to stimulating co-investments from foreign specialised trusts into new innovative companies in Slovenia.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Increase the number of high-tech micro and small-sized companies through rapid growth of new enterprises</b>		<b>Number of newly founded high-tech micro and small-sized companies</b> (annual growth or growth in the target period, expressed in index of increased number of these companies compared to previous comparative year or period)  <b>Share of high-tech companies out of the total number of micro and small-sized companies</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
57	Comprehensive system of support to newly founded companies	Government of the RS (economy)	2011–2020	Number of companies included in start-up schemes  Availability of seed capital sources
58	Support to start-up companies entering the global market	Government of the RS (economy, science, technology, innovation)	2011–2020	Extent of investments by specialised venture capital trusts into companies

### 5.3. Faster growth of innovative companies

Innovative and fast growing companies represent a significant untapped potential for economic growth and the creation of added value. They are also a key driver of structural changes and a source of dynamics in many sectors.

With the existing measures and a focus on the phase of start-up company funding, the state is not contributing enough to economic growth and employment. This is illustrated by the fact that only 1.7% of all emerging and new SMEs have shown an extraordinary growth potential (which means that in a 5-year period, they will create at least 100 new workplaces), and they actually create 50% of all new workplaces. 90% of new workplaces are created by one quarter of new SMEs.<sup>21</sup> These facts show that there is

<sup>21</sup> Global Report on High Growth Entrepreneurship (GEM), 2007.

great opportunity in directing activities towards encouraging the growth of businesses oriented towards areas with high added value, irrespective of whether they are technological or not.

The key obstacles identified by fast growing innovative companies are lack of access to external sources of financing for development of products and internationalisation, to highly qualified personnel, to information about markets, and also to a legislative system, particularly from the point of view of patenting and standardisation.

## State of affairs

Slovenia has developed a wide range of instruments for helping companies to grow. Progress has been made in equity financing by forming a venture capital fund, in order to support companies with a clear growth potential, but also with a higher risk rate. We have also strengthened debt finance in the forms of micro-guarantees, guarantees with interest rate subsidies and direct loans. Yet there is still much room for improvement in the support system, by directing measures towards innovative companies with great growth potential which work in areas with high added value.

International comparisons (European Innovation Scoreboard 2009) show that Slovenia is far behind according to the growth indicators for innovative companies. It lags behind in terms of growth and employment in technologically intensive sectors, in particular services (with 72% of the EU average), in terms of the intensity of implementing new solutions and products in the market (with 67% of the average), and in relation to share of high-technological services in export (with 43% of the average).

The state also needs to do more to develop markets and policies on the demand-side which have an effect on innovations. One of the instruments available but not yet adequately used is "innovative and green" public procurements.

The Slovenian economy also lacks a sufficient internal market. This is severely limiting the development of new products and technologies. In order to encourage a rapid growth in innovative companies, we therefore need to promote the internationalisation of operating activities, connecting and networking outside of national frameworks, and upgrading other instruments for strengthening international co-operation more effectively.

## Objectives

The main aim is to achieve faster growth of innovative companies, by:

1. Improving access to capital and other incentives for innovative companies.

Through directing public funds to financial institutions, we will strengthen sources for debt and equity financing for companies' development projects (Chapter 5.1). Equity finance is of great importance for the initial development and rapid growth of innovative companies, providing not only capital but also knowledge, market connections and access to international value chains. The already established venture capital fund that encourages development and investments of private funds will be further strengthened so as to play a more active role in the development of venture capital in Slovenia. This will be achieved by inviting specialised foreign funds, encouraging co-investments and strengthening connections with the international market.

2. Paying special attention paid to groups of fast growing companies.

We will pay special attention to fast growing companies that show a clear potential for international breakthrough and fast growth.

We will establish an open system of support to strategic R&D projects for new generation products and services, and to strengthen their position on the market. The existing system of incentives for companies or groups of companies to carry out strategic R&D projects is not adapted to actual needs. An open programme will therefore be introduced, which will react quickly to identified opportunities for technological breakthrough on the global markets by companies or groups of companies with new solutions or products. The measure will be closely linked to industrial policy measures for recognising opportunities in individual sectors or areas of convergence technologies, and to measures for recognising and supporting priority areas, presented in Chapter 3.3. The support to fast growing companies also has wider synergy effects, in terms of linking with other companies, suppliers and local partners.

3. Encouraging systemic measures for market development through innovative public procurements.

Through public procurements, the state can enable the development and testing of new products and services on the national market (flagship projects), thereby accelerating the development of new products, services or processes in the global market and making an important contribution to the faster growth of innovative companies. From this point of view, public procurements are particularly important in terms of dealing with social challenges, such as ageing of the population, management of the environment, renewable sources of energy, etc.

We will prepare an action plan and a system of innovative public procurements on all levels, in order to develop and implement innovative solutions on the market. We will introduce a concept of demonstration and testing into the system of public procurements in order to encourage the implementation of new solutions into the system of standardization and technical legislation as well. Analyses show that the system of standardisation is as important for increasing innovation, as the system of intellectual property rights protection. This aspect should not be neglected, since demonstration projects enable companies, in particular SMEs, to be included in the processes of standardisation, and at the same time, apply an increasingly important model of innovating from the point of view of the end user, which simultaneously contributes to the establishment of Slovenian knowledge on the broader market.

4. Strengthening international development and business cooperation.

Given the global nature of the market, we will pay special attention to including companies into international and open innovation systems and international value chains. This means that we will support companies to enter into international chains, take part in international projects and strengthen their competitiveness by introducing the required standards and necessary organisational changes and knowledge.

International R&D cooperation is a rich source from which to acquire access to up-to-date knowledge and to become a part of the most advanced networks and consortia. It is for this reason that we need to give it even greater support by including the best public and private organisations into international industrial projects, and by financing participation in events which provide access to strategic information,

decisions and participation. In addition to international cooperation, we need to encourage interdisciplinary industrial projects that offer new possibilities and different mechanisms for connecting companies.

5. Creating a conducive legislative environment.

When defining priorities, we will take into consideration international scales of competitiveness (amongst other things) and identify factors which are of key importance to the successful growth of the national system of innovations. We will pay special attention to these factors as well as to the key inhibitors. This is of key importance for the growth of companies. Company, employment and tax legislation as well as standardisation and technical regulations are of great importance within this framework. We will establish a favourable environment for companies when they progress to the next size classification, which bears an even bigger significance in the changing business environment.



## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATOR WITH TARGET VALUES		
<b>Increase the growth and dynamics of the development of innovative SMEs</b>		<b>Number of fast growing SME innovative companies</b> (non existent in 2011)		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
59	Improve access to financing resources and further development of the venture capital market	Government of the RS (economy)	2011– 2020	Investments of venture capital as % of GDP  Share of state funding in overall venture capital in the country  Accessibility of venture capital sources - WEF
60	Support the inclusion and establishment of companies in international value chains	Government of the RS (economy, science, technology, innovation)	2012	Increasing value added per employee in the companies - recipients of funds in comparison to increasing value added in companies baseline
61	Preparation of the Action Plan and the system of innovative public procurement	Government of the RS (finance, science, technology, innovation)	2012–2020	Adopted plan  Share of public procurements for innovative products and services in all public procurements
62	Supporting strategic R&D projects for breakthrough into global markets	Government of the RS (science, technology, innovation, economy)	2012	Number of companies leading in niche markets (champions)
63	Arrangement of business environment in accordance with the Action Plan based on the Small Business Act	Government of the RS (economy)	2012	Regular monitoring and updating of Action Plan  Introducing changes to the business environment  Progress in the GEM assessment of the business environment

### 5.4. Strengthening the innovation capabilities of companies

In today's world, companies must constantly and systematically develop through wisely and quickly introducing new business models, organisational solutions, innovative products and through mastering new business connections and markets, in order to strengthen their innovation capabilities. This is the only way they are able to compete

in the global environment or remain one step ahead of their competition. It is about strengthening the managerial, organisational and technological capabilities with which companies maintain and increase their competitive advantages.

## State of affairs

Slovenia was hit by the economic crisis even harder than many countries, due to the structure of its economy with a large processing industry with low added value and due to its strong export orientation. In 2007, these activities produced 68.3% of exported Slovenian goods and services and employed 41.9% of all workers in companies. It is for this reason that it is one of the weakest, as well as the most important segments, of the Slovenian economy in terms of export significance and the number of workers. In 2007, the added value per worker was only 31,235 EUR (in 2000, the average in low-tech industries in the EU was 42,000 EUR) and a 4.3% profit share in its revenues. Slovenian companies primarily fall into the category of low and medium technological companies, are not sufficiently active in the area of research and innovation and compete in the global market mainly in areas with strong competition, meaning they are under strong pressure in terms of prices. Another problem is that within Slovenia's structure of products there is only a small share of finished products, since individual components, segments and processing of products prevails. This means that many companies are only able to control individual components of innovation activity, with an emphasis on process and less on product innovation.

Another side to this is that the service industry, which represents a large proportion of the Slovenian economy and has an added value of 62% of the total economy, does not use innovation capabilities to a sufficient extent. Innovation opportunities are unrealised in public services such as health care, environment and public administration.

Due to inadequate business models and a poor focus on development, most Slovenian companies still operate on the basis of economies of scale, where the main emphasis is on quantity and less on added value. Development possibilities for the Slovenian economy are limited by the potential of marketing Slovenian products and services and the small share of sales to end-customers. The Slovenian economy does not have a sufficient internal market and this serves to limit the development of new products and technologies and makes it difficult to enter the global market.

## Objectives

The main goal is to strengthen the innovation capabilities of companies and thereby increase added value, create quality workplaces and promote the long-term competitiveness of the economy. Measures in this field strongly relate to policies in education and industry. To reach this goal, adequate incentives are needed:

1. Incentives to strengthen the innovation capabilities of companies.

The most important aspect in this respect is encouraging companies to restructure their business models. The RISS will encourage companies to focus on long-term restructuring of their business models, product strategies and leadership systems and the inclusion of creative industries. It will direct measures towards strengthening managerial, organisational and technological capabilities of small and medium-sized companies in particular. The programme will particularly encourage different forms of horizontal and vertical integration of companies in supply chains, technological networks and clusters and service providers.

2. Incentives for the development and introduction of new products, services and markets.

Spodbujanje razvoja in hitrejšega uvajanja novih izdelkov, storitev in razvoja novih trgov vključuje ukrepe za podporo komercializaciji znanja, kar je prepoznano kot ena bistvenih pomanjkljivosti v zdajšnjem sistemu podpore raziskavam in razvoju. Gre za neposredne spodbude za razvoj in oblikovanje proizvodov ter posredne finančne in fiskalne spodbude za njihovo tržno preverjanje in uvajanje. Z javnimi naročili, ki vključujejo inovacije, se pospeši uvajanje novih rešitev, z njimi pa ustvarjanje povpraševanja. Preverjeni bosta možnost in učinkovitost uvedbe dodatnih davčnih spodbud za razvoj in uvajanje novih proizvodov (davčne počitnice).

3. Encouraging internationalisation.

Innovation and internationalisation of companies are two intertwined determinants of growth and competitiveness. Internationalisation and successful performance in foreign markets is dependent on the innovation capacity of companies, yet at the same time, performance in foreign markets and integration in international chains strengthens the innovation capacity of companies. A review of development policy measures in the field of internationalisation, competitiveness and innovation will be prepared, as well as a comprehensive programme of measures

which support them and provide synergies. The measures will be focused on encouraging internationalisation, inward investments which bring knowledge and international connections enabling improved performance of companies in foreign markets, and outward investments of Slovenian companies which strengthen their technological and innovation capabilities. A closer association with the programmes of international development cooperation will also be established.

4. Incentives for increasing innovation in the area of services.

Services are closely integrated into raising the competitiveness of other parts of the economy and public sector. Knowledge-based services, which enhance innovation in the economy and public sector in a horizontal manner, play a special role. Technological innovations are not particularly important in services: non-technological innovations prevail in many industries, particularly those with very high added value and mutual complementarity (e.g. pharmaceuticals, ICT). Mechanisms and incentives (the existing and new) to encourage innovation will be adapted in a way as to enable service companies or companies in general to enhance technological and non-technological innovation. We will focus mainly on encouraging the development of services in technological branches which provide more sustainable and long-term competitiveness.

5. Implementing and supporting the protection of intellectual property rights and management in the private sector.

Companies' intangible assets and suboptimal intellectual property management offer opportunities not previously utilised to increase competitiveness and create higher added value. This programme will give priority to protection and implementation of intellectual property rights over business interest, including complete international testing.

## Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Increase in innovation capacity of companies to strengthen the international competitiveness of the Slovenian economy</b>		Innovation intensity <b>Share of companies which demonstrated technological or non-technological innovation</b> <b>Share of sales of new products for the company and of new products for the market in total sales</b>  Productivity <b>Added value per employee</b>  Performance in the market <b>Share of high and middle high technology exports of total exports</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
64	Support to companies in preparing and implementing new products, processes and services in the market	Government of the RS (economy)	2011-2020	Share of companies which demonstrated technological or non-technological innovation  Share of companies which implement new products and services in the total structure
65	Improved business environment in accordance with the Action Plan based on the Small Business Act	Government of the RS (economy)	2011-2020	Extent of implemented changes and removed administrative barriers  Better rating of business environment
66	Preparation of Action Plan to encourage innovation with internationalisation	Government of the RS (economy, science, technology, innovation)	2012	Plan adopted
67	Implementation and support of intellectual property rights protection and management in the private sector	Government of the RS (economy)	2011-2020	<b>Indirect (systemic) impact</b> European high-tech patents per million inhabitants  Patent applications according to PCT per billion Euro GDP  Protected trademarks per billion Euro GDP (Community trademarks)  Protected designs per billion Euro GDP (Community designs)

## 6. Promotion of science, creativity and innovativeness in society and education

The driving force behind the concept of a knowledge-based society is individuals that approach problems and challenges from a scientific and research perspective. At the same time this concept implies the presence of a societal environment that functions as an incubator for new ideas and scientists. In such a society, knowledge and creativity are values, while in the economy they are capital and investment. As such they are perceived in particular by daring individuals who offer knowledge or an idea to everyone on the market and hence contribute to the flourishing of the economy and to common progress of the society as a whole. A balanced research and innovation system equips individuals with both knowledge and with the courage and skills needed for responsible entrepreneurship.

### 6.1. State of affairs

The public image and position of researchers in Slovenian society is inadequate. Their achievements often remain unknown and their work is not perceived as being relevant to society. Citizens are often not aware of the contributions of researchers to solving social problems and the competitiveness of the economy, and are typically not familiar with globally recognized findings and products originating from domestic scientists and innovators. Responsibility for the fact that the work of researchers and innovators is not recognised is shared by all – the researchers, their institutions, the mass media, and indifferent individuals and also by the research and innovation system, including ministries and executive agencies that insufficiently facilitate such promotion. At the same time researchers also lack courage and particularly entrepreneurial skills and knowledge for the commercialisation of their findings. Such knowledge is acquired by researchers on their own in most scientific fields and most commonly very late in their careers, as the Slovenian educational system at all levels, most notably at the lower levels, does not provide sufficient knowledge in this respect.

## 6.2. Objectives

### 1. Popularisation of science.

The establishment of a scientific culture and research mentality begins with the education of young people in particular. School curricula are not optimally oriented in this area; an insufficient part of their content is dedicated to demonstration of different modes of using science and knowledge. We will therefore strive for an increase in such content.

Science must become a matter of curiosity amongst young people. Through promoting activities and supporting centres that combine leisure time with science, the RISS will strive to bring science closer to them and establish the basic infrastructure to practically test their ideas.

### 2. Promotion of creativity, innovativeness and the culture of entrepreneurship

For the development of an innovative Slovenian society it is necessary to promote entrepreneurship and create a positive climate to stimulate creativity, innovativeness and entrepreneurship. The values of creativity and innovativeness should be better communicated in all media and at all levels of the educational process. The education system should be adapted to enable independent thinking, problem solving, creativity, inventiveness, entrepreneurship and development of other personal skills, and to encourage realisation of ideas and entrepreneurship particularly at later levels of education. Inclusion of established professionals from the entrepreneurial sector into the tertiary level educational process will enable more students to become qualified and improve the quality of research work of the young.

### 3. Renovation of study programmes at the tertiary level.

In modernising university and higher education study programmes, more attention will be paid to measures and content supporting and encouraging creativity, innovativeness, goal-orientation and entrepreneurship. One of the accompanying activities of tertiary level study should include student networking with employees and potential sources of funding, which enables career development. To achieve this, universities and the state have to develop appropriate mechanisms, e.g. meetings with socially established graduates (alumni) and visiting lecturers who are successful entrepreneurs and young student entrepreneurs, networks of connections with chambers of commerce and individual companies, guided and

targeted meetings of students of technical trades and business, seminars on entrepreneurship, start-up of company, creativity, legal issues for company success and reputation management, individual mentoring of business ideas, etc. The modernisation of professional study programmes will include participation from companies, especially in terms of helping to define the competence profiles of study programmes, taking into account the balance between the general academic approach and the needs of industry.

## 6.3. Measures

KEY SECTOR OBJECTIVE		SELECTED INDICATORS WITH TARGET VALUES		
<b>Reputation of science and a high innovation culture in society</b>		Reputation of science Innovation culture <b>Share of companies active in innovation among all companies</b>		
MEASURE	RESPONSIBILITY	DEADLINE	INDICATOR	
68	Wholesale promotion of science and innovativeness in society and promotion of research achievements and inventions	Government of the RS (economy, science, technology, innovations, higher education, culture)	2014	Increase of resources for promotion from 1 million Euro in 2010 to 2 million Euro in 2014
69	Wholesale promotion of creativity, innovativeness and entrepreneurship for the young	Government of the RS (economy, culture, education, higher education, science, technology, innovations)	2011–2020	Promotion strategy and action plan put into effect  Increase of practical programmes of creativity and entrepreneurship for primary and secondary schools – establishing a network of creative schools modelled on eco-schools  Share of schools included in the network among all schools  Number of young people included in workshops or competitions per 1000 pupils



## 7. Appendices

### 7.1. Approximated funding for the implementation of the RISS

The RISS for 2011-2020 is based on the premise that spending money for R&D is not primarily a cost but an investment which is expected to increase the value of the invested funds by several times in the long term. A well-coordinated and targeted approach to providing adequate support to R&D activity is required for Slovenia's long-term competitiveness and the building of a knowledge-based society.

The RISS follows an ambitious goal of combining scientific, development and innovation activities, which is in accordance with the EU strategy – Europe 2020. The key measures of the proposal are also financially evaluated while others are primarily normative, and their direct financial impact is insignificant. The basis for financial planning is to channel 1% of public funding into R&D until 2012 and then 1.5% until 2020. Increased public funding will also enhance multiplier effects in the private sector, where we want to increase investments in R&D and gradually achieve the target investments in R&D to 2.4% of GDP by 2020 through systemic and financial incentives.

The resources to achieve the target goals are anticipated through a significant increase in national funds, and notably by a significant increase of investments in R&D through European cohesion funds. Strategic documents and operational programmes for using these funds will therefore have to be adapted accordingly, since an important resource for funding this area will cease upon expiration of the existing financial perspective, and will have to be replaced by new resources to the same or larger extent.

A breakdown of required funding is shown in Table 1.

**Table 1. Current prices**

	2011	2012	2013	2014	2015
<b>Nominal GDP in EUR</b>	<b>37.226.883.413</b>	<b>39.032.875.521</b>	<b>41.466.300.106</b>	<b>44.203.535.586</b>	<b>47.117.748.333</b>
<b>Resources for RISS implementation</b>	<b>577.423.975</b>	<b>580.557.184</b>	<b>590.000.601</b>	<b>620.000.056</b>	<b>650.000.283</b>
<b>1% of GDP – target for investment in R&amp;D until 2015**</b>	<b>313.247.865</b>	<b>390.328.755***</b>	<b>414.663.001***</b>	<b>442.035.356***</b>	<b>471.177.483***</b>
Management	12.257.074	12.328.020	12.478.000	12.701.000	13.420.000
High-quality research in the public sector	138.471.130	165.446.225	165.753.601	175.603.056	185.722.283
International cooperation	19.593.631	19.230.922	20.184.000	21.228.000	22.270.000
Human resources	52.730.169	60.462.461	60.262.000	63.379.000	66.496.000
Specialisation	150.298.363	117.967.149	117.906.000	120.177.000	127.448.000
Research infrastructure	25.029.722	41.029.722	45.214.000	52.863.000	60.512.000
Information infrastructure	24.858.187	25.322.424	25.232.000	26.744.000	26.256.000
Increase in private investments	47.975.575	37.099.774	40.592.000	46.364.000	47.136.000
Growth of companies	82.959.719	71.909.054	72.191.000	69.295.000	69.636.000
Strengthening of innovation capability of companies	19.033.992	24.907.330	26.332.000	27.694.000	27.056.000
Promotion of science and innovativeness in society	4.216.413	4.854.103	3.856.000	3.952.000	4.048.000

Notes:

\* for 2011, the adopted budget is shown.

\*\* target of 1% investment in R&D will be reached in 2012.

\*\*\* the target of 1% also includes the estimate of annual income of researchers directly from the EU framework programmes in the amount of 20,000,000 EUR.

## 7.2. Indicators of key objectives for monitoring the RISS

### R&D investments

- Gross domestic expenditure on R&D as % GDP – EU Barcelona objective
  - of which public investments in R&D as % GDP
  - investments of private/business sector in R&D as % GDP

### Human resources in R&D

- Graduates of life science and technical programmes of tertiary education per 1000 inhabitants aged 20-29 years - Eurostat
- Share of researchers among persons employed/FTE
- Share of researchers in the business sector/FTE Share of researchers with foreign citizenship among all researchers [Share of foreign students among doctoral students]

### Public research infrastructure

- Budget funds for RI per researcher in the national public sector

### Transfer of knowledge from the public research environment

- Share of business sector funds in financing the research of PROs Joint publications of researchers from PROs and companies per million inhabitants
- Income of PROs from intellectual property rights
- Share of funds for central social challenges in national budgets for R&D

### Innovation cooperation

- Share of SMEs cooperating with other companies and/or PROs in innovation among all SMEs

## International cooperation and mobility

- Scientific publications co-authored with foreign researchers per million inhabitants
- Share of researchers with foreign citizenship among all researchers
- Share of foreign students among doctoral students

## Scientific productivity

- Scientific publications per million inhabitants

## Scientific excellence

- Share of national scientific publications among the 10% of the most cited publications in the world

## Innovativeness

- Share of companies which implemented technological or non-technological innovation among all companies
- Share of companies which implemented technological innovation among all companies
- Share of companies which implemented non-technological innovation among all companies
- Share of companies in the service industry which developed innovation among all companies in this industry
- Small and medium-sized enterprises (SMEs) which developed innovation on their own or in cooperation as % of all SMEs

## Knowledge capitalisation

- Share of sales of new products for the company and of new products on the market in total company turnover
- Number of patent applications according to PCT per billion Euro GDP

- Number of protected trademarks per billion Euro GDP
- Number of protected designs per billion Euro GDP
- European patent applications (EPO) filed by SMEs or individual inventors per million inhabitants
- European high-tech patents per million inhabitants

## Economic competitiveness

- Labour productivity: gross added value per employee
- Added value of the activity with high share of knowledge in the total added value
- Share of employees in activities with a high share of knowledge among all employees
- Share of export of high and middle high technology products in total export of products
- Share of export of services with a high share of knowledge in total exports

## 7.3. Dictionary

### **AAI**

Authentication and Authorisation Infrastructure

### **AIF**

Average Impact Factor

### **ARNES**

(Public institute) Academic and Research Network of Slovenia

### **ARRS**

Slovenian Research Agency

### **ASTP**

Association of European Science & Technology Transfer Professionals

**AUTM**

Association of University Technology Managers

**BRIC**

Brazil, Russia, India, China

**CC**

Competitiveness Council

**CERN**

European Organisation for Nuclear Research

**CIP**

Competitiveness and Innovation Framework Programme

**CO**

Centre of Excellence

**COST**

European Cooperation in Science and Technology

**EC**

European Commission

**EIS**

European Innovation Scoreboard

**EPO**

European Patent Office

**ERC**

European Research Council

**EU**

European Union

**EU 27**

All members of the European Union (2010)

**EUREKA**

Intergovernmental programme for market-oriented, industrial R&D activities

**FTE**

Full time equivalent

**FP**

Framework Programme of the European Community for Research, Technological Development and Demonstration Activities

**GDP**

Gross Domestic Product

**GEANT**

European multi-gigabyte computer network for research and education purposes

**GRID**

Technology of connecting independent computer capacities with an aim of performing common computer task

**ICT**

Information-communication technology

**IER**

Institute for Economic Research

**IJS**

Jožef Štefan Institute

**IPCT**

International Patent Co-operation Treaty

**JAPTI**

Public agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments

**KI**

National Institute of Chemistry

**MF**

Ministry of Finance

**MG**

Ministry of the Economy

**MJU**

Ministry of Public Administration

**MK**

Ministry of Culture

**MVZT**

Ministry of Higher Education, Science and Technology

**NCP**

National Contact Points

**NMR**

Nuclear magnetic resonance

**NPVŠ**

National Programme for Higher Education

**NRRP**

National Research and Development Programme

**OECD**

Organisation for Economic Co-operation and Development

**PRO**

Public agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments

**RI**

Research infrastructure

**RISS**

Research and Innovation Strategy of Slovenia

**RS**

Republic of Slovenia

**SASA**

Slovenian Academy of Sciences and Arts

**SEF**

Slovene Enterprise Fund



**SI.TT**

Network of Slovene experts for technology transfer

**SIGNET NGI**

National co-ordination centre for GRID-technology

**SIPO**

Slovenian Intellectual Property Office

**SME**

Small and Medium sized enterprise

**SVLR**

Government Office for Local Self-Government and Regional Policy

**SVREZ**

Government Office for Development and European Affairs

**SZT**

Council for Science and Technology

**TIA**

Slovenian Technology Agency

**TTO**

Technology Transfer Office

**VEM**

All in one place

**WEF**

World Economic Forum

**USA**

United States of America

**ZPOP**

Supportive Environment for Entrepreneurship Act

## 7.4. Starting points and outlines for RISS

Starting points and outlines for RISS were adopted on 7 July 2010 by Council for Science and Technology of the Slovene Government. They are available at the following web address:

[http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/odnosi\\_z\\_javnostmi/IZHODI%C5%A0%C4%8CA\\_NRIP.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/odnosi_z_javnostmi/IZHODI%C5%A0%C4%8CA_NRIP.pdf)

## 7.5. Data

We formed:

1. an analysis of NRRP 2006–2010, and an estimate of carrying out the NPVŠ 2007–2010  
([http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko\\_solstvo/Analiza\\_NRRP\\_in\\_NPVS.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/visoko_solstvo/Analiza_NRRP_in_NPVS.pdf)) in
2. indicators of NRRP 2006–2010 realisation  
[http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/odnosi\\_z\\_javnostmi/kazalniki\\_ciljev\\_in\\_ukrepov\\_NRRP-spletna\\_stran\\_8.4.2010.pdf](http://www.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/odnosi_z_javnostmi/kazalniki_ciljev_in_ukrepov_NRRP-spletna_stran_8.4.2010.pdf)).

When preparing RISS, we took into consideration the national and international evaluations of research and innovative system, and of public policies and their recommendations.

3. Maja Bučar with Andreja Jaklič and Boštjan Udovič, National system of innovation in Slovenia, Faculty of Social Sciences, Ljubljana, 2010  
([http://www.mednarodni-odnosi.si/cmo/CIR/CIR4National System of Innovation in Slovenia.pdf](http://www.mednarodni-odnosi.si/cmo/CIR/CIR4National%20System%20of%20Innovation%20in%20Slovenia.pdf));
4. OECD review of Slovenia's innovation policy: Overall assessment and recommendations – preliminary draft, OECD, Paris, 2010.
5. Policy Mix Peer Reviews: Country Report – Slovenia, European Union Scientific and Technical Research Committee, Brussels, 2010.

We also drew data from the following international reports and documents:

6. Human Development reports, United Nations Development Programme, 2009.  
(<http://hdr.undp.org/en/statistics/>)
7. Quality of Living worldwide city rankings, Mercer, 2010.  
(<http://www.mercer.com/press-releases/quality-of-living-report-2010>)
8. European Commission, The World in 2025, 2009.  
([http://ec.europa.eu/research/social-sciences/pdf/the-world-in-2025-report\\_en.pdf](http://ec.europa.eu/research/social-sciences/pdf/the-world-in-2025-report_en.pdf))
9. A new ranking of the world's most innovative countries, Economist Intelligence Unit Limited, 2009.  
([http://graphics.eiu.com/PDF/Cisco\\_Innovation\\_Complete.pdf](http://graphics.eiu.com/PDF/Cisco_Innovation_Complete.pdf))
10. European Commission, A more research-intensive and integrated European Research Area, Science, Technology and Competitiveness. Key figures report 2008/2009.  
([http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009\\_en.pdf](http://ec.europa.eu/research/era/pdf/key-figures-report2008-2009_en.pdf))
11. European Commission, ICT Infrastructure for e-Science, 2009.  
(<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0108:FIN:EN:PDF>)
12. Global Entrepreneurship Monitor, 2007. Global Report on High-Growth Entrepreneurship, 2007.  
(<http://www.gemconsortium.org/download.asp?fid=606>)

## 7.6. Events and opinions received on the RISS 2011–2010 draft

For the purpose of exchanging opinions, we organised the following consultations with actors in the research and innovation system:

- 6. 10. 2010: consultation DARING SLOVENIA in City Museum of Ljubljana;
- 5. 11. 2010: consultation with rectors, deans, and managers of public research institutions, Hotel Kokra, Brdo;
- 8. 11. 2010: consultation with professional public, the Ministry of Education and Sport hall;
- 8. 11. 2010: consultation, organised by Chamber of Commerce and Industry of Slovenia;
- 15. 11. 2010: consultation with the Education, Science and Culture Trade Union of Slovenia;
- 29. 11. 2010: consultation with the Slovenian Academy of Sciences and Arts;
- 6. 12. 2010: consultation with the Slovenian Academy of Engineering.

We published the first RISS draft on 4 October 2010, upon which we received the following written comments (all being published on the MVZT web pages):

1. Irena Šumi, PhD, European Centre Maribor  
Publication date: 15. 10. 2010
2. Tomaž Grom, ASI Kamnik  
Publication date: 26. 10. 2010
3. Institute of Macroeconomic Analysis and Development of the Republic of Slovenia  
Publication date: 2. 11. 2010
4. Scientific Council of Jožef Štefan Institute  
Publication date: 2. 11. 2010
5. Srna Mandič, PhD, Centre for Welfare Studies

Publication date: 2. 11. 2010

6. Mitja Guštin, PhD, professor, Science and Research Centre of Koper, University of Primorska  
Publication date: 4. 11. 2010
7. Slovenian Research Agency (ARRS)  
Publication date: 9. 11. 2010
8. Scientific Council of the ARRS  
Publication date: 9. 11. 2010
9. Marko Juvan, PhD, Institute of Slovenian Literature and Literary Studies ZRC SASA  
Publication date: 9. 11. 2010
10. Coordination of Independent Research Institutions of Slovenia (KOsRIS)  
Publication date: 11. 11. 2010
11. National Institute of Biology (NIB)  
Publication date: 11. 11. 2010
12. University of Ljubljana, Faculty of Arts  
Publication date: 15. 11. 2010
13. Scientific Council of National Institute of Biology  
Publication date: 15. 11. 2010
14. Scientific Council of National Institute of Chemistry  
Publication date: 15. 11. 2010
15. Zdenko Kodelja, PhD  
Publication date: 17. 11. 2010
16. Vladimir Boštjan Bregar, PhD  
Publication date: 17. 11. 2010
17. Mojca Pavlin, PhD, University of Ljubljana, Faculty of Electrical Engineering  
Publication date: 18. 11. 2010
18. Konrad Ajster  
Publication date: 18. 11. 2010

19. Igor Zajc, PhD, Jožef Štefan Institute  
Publication date: 18. 11. 2010
20. Government Office of the Republic of Slovenia of Climate Change  
Publication date: 18. 11. 2010
21. Association of Slovenian Technology Transfer Professionals (SI-TT) administrative committee (SI-TT)  
Publication date: 19. 11. 2010
22. University of Primorska - opinions and proposal for amendment.  
Publication date: 22. 11. 2010
23. Jožef Vlah  
Publication date: 24. 11. 2010
24. Innovation Centre ASI  
Publication date: 24. 11. 2010
25. Martin Klanjšek, PhD, Matjaž Ličer, PhD, Samir El Shawish, PhD, Toni Petan, PhD, Erik Zupanič, PhD, Damjan Dvoršek, PhD, David Jezeršek, PhD, Gregor Gunčar, PhD, Sašo Petan, PhD, Nejc Košnik, PhD, Andrej Zorko, PhD, Rok Žitko, PhD, Peter Jeglič, PhD, Miha Fošnarič, MSc, Samo Penič, PhD, Luka Šajn, PhD, Uroš Tkalec, Andrej Mihelič, PhD  
Publication date: 24. 11. 2010
26. NSIS - National Committee of the Slovenian Innovation forum, and business group SPATINOVA  
Publication date: 24. 11. 2010
27. Grega Gostenčnik, Jerneja Penca, Urška Petrovčič (European University Institute)  
Publication date: 24. 11. 2010
28. Committee for Protection of Higher Educational and Scientific Work  
Publication date: 29. 11. 2010
29. Researchers of the Institute for the Ethnic Studies  
Publication date: 29. 11. 2010
30. I. class of SASA  
Publication date: 30. 11. 2010

Based on the suggestions from the public debate, we prepared a second draft of RISS, and published it on 8 December 2010. We received the following comments:

31. Irena Šumi, PhD, European Centre Maribor  
Publication date: 15. 12. 2010
32. Konrad Ajster  
Publication date: 15. 12. 2010
33. Gašper Tkačik, PhD  
Publication date: 16. 12. 2010
34. Slovenian Research Agency (ARRS)  
Publication date: 17. 12. 2010
35. Interest group of non-commercial fields in the National Council  
Publication date: 23. 12. 2010
36. Educational and Research Institute Ljubljana  
Publication date: 23. 12. 2010
37. Ministry of Health  
Publication date: 23. 12. 2010
38. Roman Jerala, PhD, National Institute of Chemistry  
Publication date: 23. 12. 2010
39. University of Primorska  
Publication date: 23. 12. 2010
40. Active Slovenian Inventors (ASI) - letter and proposal for amendments  
Publication date: 24. 12. 2010
41. Slovenian Research Agency (ARRS) - 2  
Publication date: 24. 12. 2010
42. Inoverzum d.o.o.  
Publication date: 27. 12. 2010
43. Grega Gostenčnik, Jerneja Penca, Urška Petrovčič (European University Institute)  
Publication date: 29. 12. 2010

44. Ministry of Labour, Family and Social Affairs  
Publication date: 29. 12. 2010
45. Ministry of Education and Sport  
Publication date: 29. 12. 2010
46. University of Ljubljana, Faculty of Chemistry and Chemical Technology  
Publication date: 4. 1. 2011
47. Development Initiative of Slovenia (RIS)  
Publication date: 11. 1. 2011





---

# Appendices

# 1. Snapshot of Slovenia's higher education system<sup>1</sup>

**Janja Komljenovič**

This chapter is an excerpt of individual parts from a publication on statistics in the field of higher education prepared by the Ministry of Higher Education, Science and Technology to support elaboration of the National Higher Education Programme 2011-2012 and new higher education legislation.

The data in this chapter are only indicative of the situation in the higher education system. For a better understanding, the reader should refer to detailed data and analyses provided by the Ministry.

## 1.1. Demography and enrolment trends

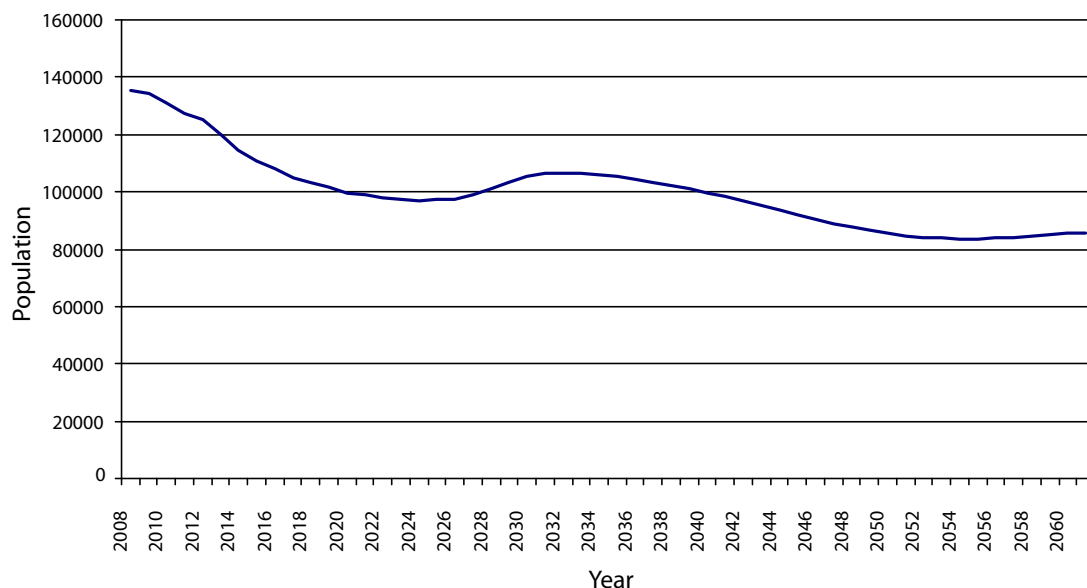
In Slovenia, the number of births has been increasing since the 1920s, with interruptions in the middle of the 1940s and 1920s. Since 2006, a new positive natural growth rate has been observed; however, the long-term population projections predict that the birth rate, and thus the number of inhabitants, will decrease significantly.

Between 2010 and 2020, the number of possible students will face a continuous decline. In 2020, the number of 20-year-olds, those who usually enrol in higher education, will be 20% less than in 2010. After 2020, the projections of inhabitants show a slight increase in the number of possible students until 2030, when it will fall again until 2060, even more so than in 2020.

---

<sup>1</sup>This chapter was taken from: Komljenovič, J., Marjetič, E. (2010). Držna Slovenija: na poti v družbo znanja, Statistical data on higher education, publication 2/3. Ljubljana: Ministry of Higher Education, Science and Technology, 2010. The said analysis and authors are thus not cited in the entire chapter.

**Figure 1. Projected number of inhabitants for the age group 20–24**



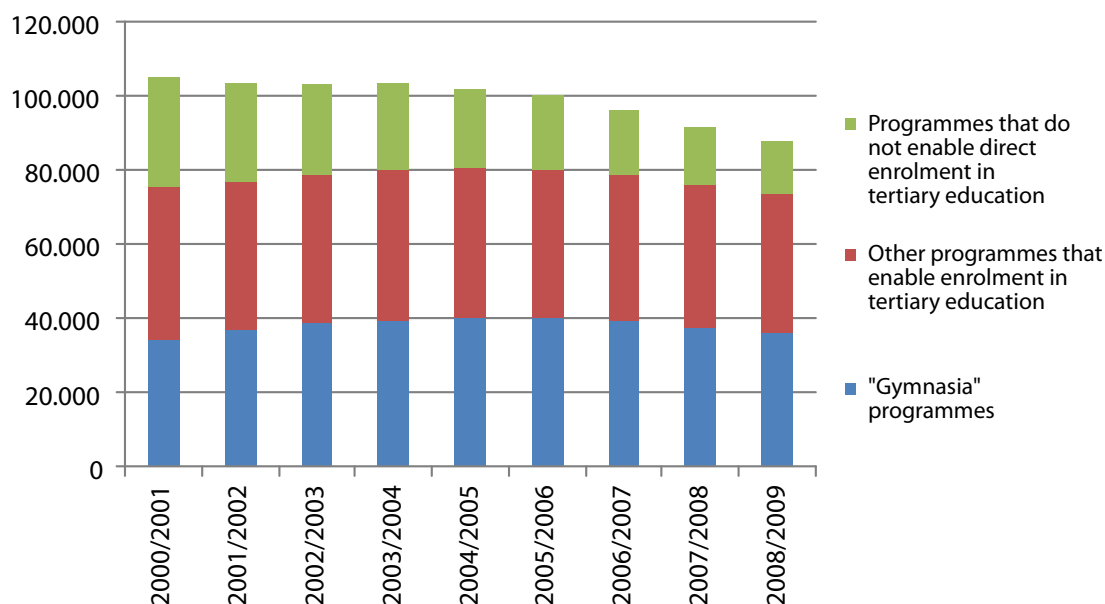
Source: Eurostat, Europop 2008

In tertiary education, enrolment trends primarily depend on the structure of secondary education and access to higher education. The student population is still dominated by “traditional students”, namely entering higher education institutions immediately after completing their secondary education. As already established by authors of the Analysis of Movements in Structure of Students and Graduates in Tertiary Education (Zgaga, 2004), since the end of the 1980s secondary education, which not only provides training for a profession but also enables further education, has become more and more popular. Further, as they wrote, the 1990s brought new problems: the standard of a “full” secondary school prevailed. At the same time, a population decline occurred which replaced the concern arising from “surpluses” of generations entering education with a concern relating to generational “shortages”. Since then, similar trends have continued and are, considering the projections of inhabitants, likely to continue in the future, until 2060.

In secondary education, the overall decrease in the number of youth in the previous century was particularly indicated by the drop in the number of those enrolled in programmes that do not provide direct entry to tertiary education. Enrolment in programmes that enable enrolment in tertiary educational programmes remained the

same; the number of those enrolled in “gymnasia” has been increasing over the last decade, while the number of students registered in technical and vocational secondary education has been falling.

**Figure 2. The number of youth in secondary school by type of educational programme, Slovenia, 2000/01–2008/09**



Note: Students enrolled in “gymnasia” programmes include those enrolled in grammar school programmes and in the “matura” course. Other programmes that enable direct enrolment in tertiary education are: 4-year and 5-year technical and general upper secondary education; +2 programmes; vocational technical training programmes (PTI) and vocational courses. Other programmes that do not enable direct enrolment in tertiary education are: short-term vocational upper secondary programmes and vocational upper secondary programmes.

Sources: SORS and calculations by IMAD

More than 90% of students who finished secondary school and satisfied the conditions for enrolment in study programmes have been enrolling in tertiary education since the 2001/02 study year; in the previous century, this trend increased constantly. In the 2008/09 study year, about 96% of students who finished secondary school and satisfied the conditions for enrolment in study programmes were thus enrolled in tertiary education. Of these, 9.9% had commenced short-term higher vocational education and 86% had commenced higher education.

**Table 2. Transition from secondary into tertiary education from 2000 to 2008**

Year	Finished secondary 4- and more-year programmes	Of these, enrolled in the same year into:			Shares		
		short-term higher vocational education	higher education	total	short-term higher vocational education	higher education	total
2000	16,762	797	13,789	14,586	4.8	82.3	87.0
2001	17,081	864	15,015	15,879	5,1	87,9	93,0
2002	16,997	1.160	14.940	16.100	6,8	87,9	94,7
2003	16.972	1.416	14.737	16.153	8,3	86,8	95,2
2004	18.345	1.415	15.096	16.511	7,7	82,3	90,0
2005	17.890	1.572	14.966	16.538	8,8	83,7	92,4
2006	18.366	1.833	15.411	17.244	10,0	83,9	93,9
2007	18.130	1.719	15.229	16.948	9,5	84,0	93,5
2008	17.171	1.695	14.773	16.468	9,9	86,0	95,9

Note: Differences in the figures are due to rounding up.  
Source: SORS

In Slovenia, the number of inhabitants who have finished short-term higher education and higher education is increasing while, at the same time, the share of inhabitants who have finished primary education and short-term vocational upper secondary programmes is decreasing. If establishing the education of only working-active inhabitants, namely those aged from 25 to 64, in 2008 22.6% of inhabitants from this age group had at least a short cycle higher education. According to an international comparison for 2007, the share of inhabitants with at least a short cycle higher education in Slovenia was 24.5% below the average of 19 European member states and 27.5% below the average of OECD countries.

## 1.2. The number of students

In Slovenia, 50.3% of 19-year-olds were included in tertiary education in 2008. In the 2006/07 study year, among the EU countries Slovenia had the biggest proportion of people aged between 20 and 24 included in tertiary education.

**Table 3. Proportion of the population included in tertiary education, by age group for 1996 and 2000, and from 2004 until 2008**

Age	1996*	2000	2004	2005	2006	2007	2008**
19	32,4	37,9	44,5	45,3	47,5	48,5	50,3
20–22	29,1	39,9	47,7	49,6	51,0	51,6	53,1
19–24	/	35,3	43,1	44,6	46,3	46,9	48,1
19–26	21,5	29,9	36,8	37,9	39,4	39,9	41,0
20–29	15,3	22,2	27,6	28,3	29,0	29,1	29,7

Notes:

\* In 1996, only candidates for graduation were considered in the age group 19–26.

\*\* In 2008, the definition of inhabitants was changed, affecting a slightly greater decrease in the number of inhabitants and thus influencing the index.

Sources: SORS, SI-STAT database, calculations by the SORS and MHEST

In the 2009/10 study year, 114,873 students were enrolled in tertiary education in Slovenia, of whom 16,594 were enrolled in short cycle higher education and 98,275 in higher education. The number of students in tertiary education had been rising until the 2006/07 study year, and was then decreasing until the 2008/09 study year. In the 2009/10 study year, the number of students in tertiary education was again higher than in the previous study year, but still lower than it was in the 2005/06 and 2006/07 study years.

**Table 4. Students in tertiary education from the 1997/98 to 2009/10 study years**

Year	Short-term higher education*	Undergraduate programmes and the second cycle of the long-non-structured masters' study programme**	2. level	3. level***	TOTAL
1997****	5.854	59.688	/	2.584	<b>68.126</b>
1998	3.927	72.193	/	3.006	<b>79.126</b>
1999	2.925	77.131	/	3.760	<b>83.816</b>
2000	4.821	82.751	/	3.922	<b>91.494</b>
2001	6.261	88.009	/	4.944	<b>99.214</b>
2002	8.796	87.056	/	5.606	<b>101.458</b>
2003	11.099	87.205	/	6.092	<b>104.396</b>
2004*****	12.621	91.229	/	8.378	<b>112.228</b>
2005	14.246	92.204	1.108	7.236	<b>114.794</b>
2006	15.831	91.426	2.107	6.580	<b>115.944</b>
2007	16.424	89.558	2.909	6.554	<b>115.445</b>
2008	16.263	87.356	3.391	7.381	<b>114.391</b>
2009	16.594	84.067	6.752	7.460	<b>114.873</b>

Notes:

\* Students in higher vocational educational programmes and former short cycle higher programmes are included.

\*\* Students in former professional higher study programmes, former academic study programmes, students in the first cycle of professional higher study programmes, in the first cycle of academic study programmes and in the second cycle of the long-non-structured master's study programme are included.

\*\*\* Students in study programmes for obtaining a specialisation, a "magisterij" of science and a doctorate of science are included.

\*\*\*\* From the 1997/98 study year, candidates for graduation holding student status are also included in the total number of students of undergraduate programmes.

\*\*\*\*\* Until the 2004/05 study year, only enrolment in study programmes for obtaining a "magisterij" of science and specialisation was included in monitoring of the postgraduate study level; in the 2004/05 study year, this also included enrolment in study programmes for obtaining a doctorate of science.

Sources: SORS; SI-STAT database; for 2009, special data processing for the MHEST; calculations by the MHEST

In the 2009/10 study year, 36.5% of undergraduate students and students of the second cycle attended study programmes in the fields of the social sciences, business and law. This is the lowest proportion in the entire period under observation until the 1998/99 study year, when the proportion of students was the highest, namely, 43.2%. The fields of engineering, manufacturing and construction then follow with 18.2% of enrolled students, which is the highest proportion in the period under observation. Next are the health and welfare fields with 10.5%. Also in this field, this is the highest proportion of students enrolled since the 1998/99 study year. They are followed by the fields of



the humanities and arts, teacher training and education science, with 9%. As for the humanities and arts, 9% is the highest proportion in the entire period examined, while for teacher training and education sciences this proportion has been at its lowest until now. As for the field of services, the proportion of students decreased in comparison with the 2006/07, 2007/08 and 2008/09 study years by 0.5%, namely to 7.6%. In the 2009/10 study year, 6.3% of all students in the first and second cycles were enrolled in studies from the field of science, which was the highest result in the period under observation, and 0.9% more than in the 2005/06 study year when the proportion of students was the lowest in this field. On the other hand, the proportion of students in the field of agriculture dropped to its lowest level, which was the same as in the 1998/99 and 2001/02 study years – 2.9%.

**Table 5. The proportion of students in tertiary education by study fields, from the 2004/05 to 2009/10 study years, in %**

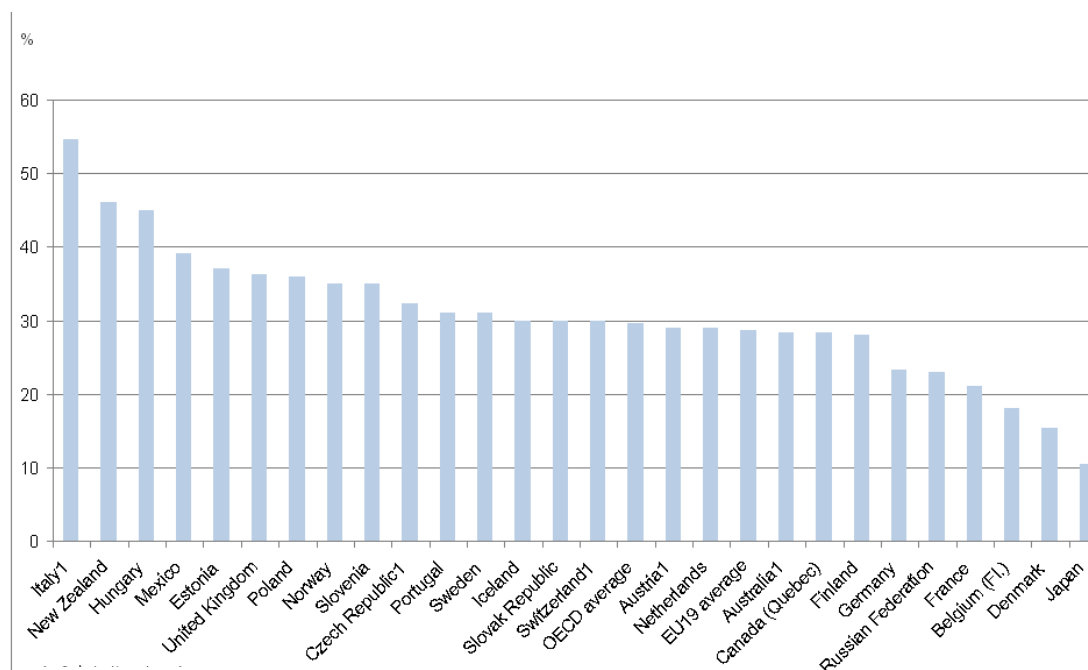
Study year	Teacher training and education sciences	Humanities and arts	Social sciences, business and law	Science	Engineering, manufacturing and construction	Agriculture, forestry and fisheries	Health and welfare	Services	Total
2004 total	9,1	7,6	43,9	5,4	15,8	3,2	7,2	7,9	100,0
2005 total	8,8	7,5	43,5	5,4	15,7	3,1	7,4	8,7	100,0
2006 total	8,4	7,8	41,7	5,6	16,7	3,2	7,2	9,5	100,0
2007 total	8,1	8,1	39,3	5,9	18,2	3,3	7,6	9,6	100,0
2008 total	7,7	8,2	38,0	6,2	19,1	3,3	8,1	9,5	100,0
2009 total	7,4	8,3	37,5	6,7	18,9	3,2	8,7	9,3	100,0

Sources: SORS; SI-STAT database; for 2009, special data processing for the MHEST; calculations by the MHEST

### 1.3. The number of graduates

In spite of the high accessibility and enrolment of inhabitants in higher education in Slovenia, the effectiveness and results of study are not as encouraging. 35% of people who enrol in tertiary education fail to finish it. The number of people enrolled in the 1st study year at higher education institutions who do not continue their studies in the next study year has been increasing in the last five years and represents almost one-third of all students enrolled.

**Figure 3. Percentage of students who do not finish their studies**



Notes:

\* Only tertiary-type A.

\*\* Note: The same percentage was indicated in 2010 (OECD Education at a Glance Indicators, 2010)

Source: Education at a Glance, 2009 (OECD)

**Table 6. Data on the number of students enrolled in the 1st study year who do not continue their studies at higher education institutions**

Study year	Number of students enrolled in the first study year, total	Study year	Number of students enrolled for the first time in the second study year, total	Number of all students re-enrolled in the first study year, total	Total number of students who continued with their studies, total	Total number of students who did not continue with their studies in the next study year	Proportion of students in relation to students enrolled in the first study year, who did not continue with their studies in the next study year
<b>2004/2005</b>	29.146	<b>2005/2006</b>	16.196	6.310	22.506	<b>6.640</b>	<b>22,78</b>
<b>2005/2006</b>	28.456	<b>2006/2007</b>	16.448	4.949	21.397	<b>7.059</b>	<b>24,81</b>
<b>2006/2007</b>	27.178	<b>2007/2008</b>	15.550	3.805	19.355	<b>7.823</b>	<b>28,78</b>
<b>2007/2008</b>	26.503	<b>2008/2009</b>	14.934	3.587	18.521	<b>7.982</b>	<b>30,12</b>

Sources: SORS and calculations by MHEST

The number of graduates from tertiary education has been growing since 1980. In 2009, the number of students who graduated was almost three times the number in 1980 or 1991, more than two times more than in 1996, and more than half as many as in 2000, almost 15% more than in 2005, and 5.1% more than in 2008. The difference in the increase depends on the type of study programme.

In 2007, 58 students of tertiary education per 1,000 inhabitants of the age group 20–29 years graduated in Slovenia, which is more than in certain European Union countries, for example Austria, Germany, Czech Republic, the Netherlands and Sweden, but less than in Italy, Romania, Ireland, France and Denmark.

The structure of graduates by study fields in a certain year is lagging behind the structure of students by a few years. Thus, in 2009 the proportion of graduates is still the highest in the fields of the social sciences, business and law (47.2%). In comparison with 2008, the proportion of graduates decreased in the field of teacher training and education sciences (as was already the case until 2006), as did the number of graduates in engineering, manufacturing and construction, as well as agriculture. Considering all other fields, the total number of graduates of the first and second cycles rose in comparison with 2008.

When we compare data on the proportion of graduates by study field in 2006 among European Union countries, we can establish that relative to the average of the 27 European Union countries the proportion of tertiary education graduates in Slovenia was higher in the fields of the social sciences, business and law, engineering, manufacturing and construction, services, as well as agriculture.

**Table 7. Total number of graduates of the first and second cycles of study programmes, by study field, from 1998 to 2009**

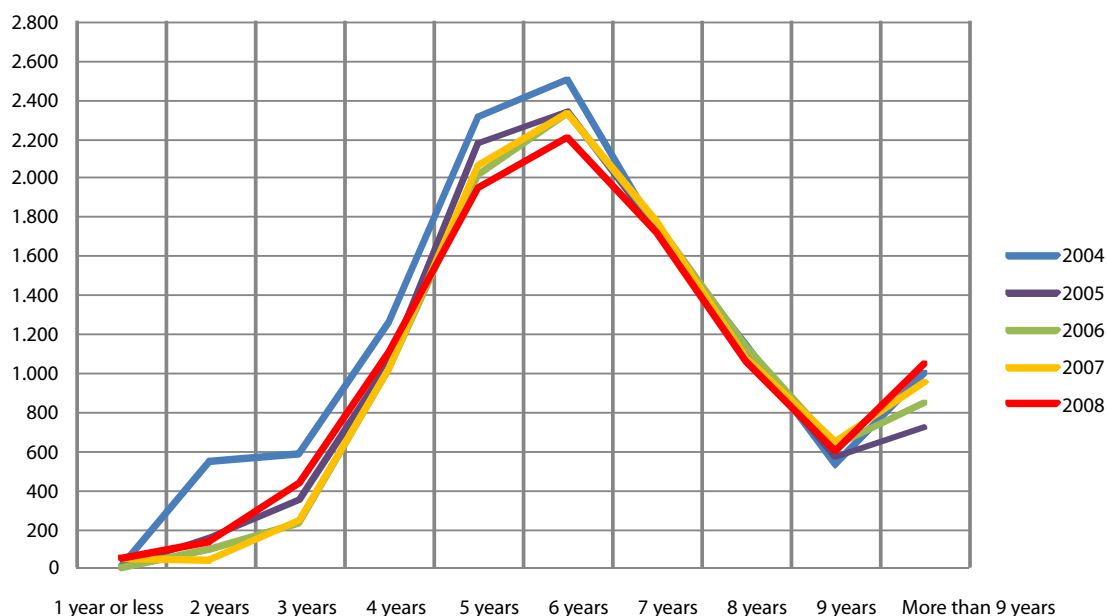
Study field	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>1 Teacher training and education sciences</b>	<b>843</b>	<b>1.003</b>	<b>1.169</b>	<b>1.281</b>	<b>1.561</b>	<b>1.531</b>	<b>1.407</b>	<b>1.522</b>	<b>1.524</b>	<b>1.422</b>	<b>1.370</b>	<b>1.361</b>
14 Teacher training and education sciences	843	1.003	1.169	1.281	1.561	1.531	1.407	1.522	1.524	1.422	1.370	1.361
<b>2 Humanities and arts</b>	<b>438</b>	<b>478</b>	<b>555</b>	<b>619</b>	<b>837</b>	<b>692</b>	<b>692</b>	<b>668</b>	<b>682</b>	<b>771</b>	<b>742</b>	<b>847</b>
21 Arts	116	143	136	127	147	156	199	201	200	223	224	194
22 Humanities	322	335	419	492	690	536	493	467	482	548	518	653
<b>3 Social sciences, business and law</b>	<b>2.312</b>	<b>2.929</b>	<b>3.614</b>	<b>3.967</b>	<b>4.568</b>	<b>5.059</b>	<b>5.327</b>	<b>5.072</b>	<b>5.616</b>	<b>5.514</b>	<b>5.588</b>	<b>6.154</b>
31 Social and behavioural science	271	398	492	532	731	725	762	785	849	913	850	1.071
32 Journalism and information	130	109	112	107	95	73	87	88	91	93	82	130
34 Business and administration	1.526	2.023	2.643	2.915	3.229	3.710	3.988	3.648	3.804	3.960	4.044	4.318
38 Law	385	399	367	413	513	551	490	551	872	548	612	635
<b>4 Science</b>	<b>265</b>	<b>261</b>	<b>241</b>	<b>285</b>	<b>342</b>	<b>320</b>	<b>407</b>	<b>492</b>	<b>444</b>	<b>506</b>	<b>470</b>	<b>530</b>
42 Life sciences	71	83	76	80	79	92	127	155	104	133	127	153
44 Physical sciences	98	73	82	81	80	81	90	109	88	117	86	102
46 Mathematics and statistics	30	24	18	24	35	32	55	54	62	40	39	48
48 Computing	66	81	65	100	148	115	135	174	190	216	217	227
<b>5 Engineering, manufacturing and construction</b>	<b>1.023</b>	<b>1.208</b>	<b>1.394</b>	<b>1.367</b>	<b>1.450</b>	<b>1.447</b>	<b>1.500</b>	<b>1.504</b>	<b>1.437</b>	<b>1.410</b>	<b>1.449</b>	<b>1.485</b>
52 Engineering and engineering trades	766	887	831	803	807	810	759	753	691	771	744	781
54 Manufacturing and processing	78	102	262	284	358	345	328	365	346	312	326	333
58 Architecture and building	179	219	301	280	285	292	413	386	400	327	379	371
<b>6 Agriculture</b>	<b>143</b>	<b>146</b>	<b>190</b>	<b>238</b>	<b>287</b>	<b>264</b>	<b>319</b>	<b>310</b>	<b>317</b>	<b>313</b>	<b>334</b>	<b>327</b>
62 Agriculture, forestry, fisheries	98	107	147	186	221	219	241	256	267	264	286	269
64 Veterinary	45	39	43	52	66	45	78	54	50	49	48	58
<b>7 Health and welfare</b>	<b>510</b>	<b>665</b>	<b>894</b>	<b>1.038</b>	<b>1.228</b>	<b>1.222</b>	<b>1.261</b>	<b>1.645</b>	<b>1.574</b>	<b>1.214</b>	<b>1.253</b>	<b>1.265</b>
72 Health	349	526	715	868	1.030	1.038	1.056	996	943	972	988	963
76 Social services	161	139	179	170	198	184	205	649	631	242	265	302
<b>8 Services</b>	<b>269</b>	<b>300</b>	<b>501</b>	<b>539</b>	<b>633</b>	<b>697</b>	<b>695</b>	<b>729</b>	<b>818</b>	<b>820</b>	<b>773</b>	<b>1.062</b>
81 Personal services	1	34	61	73	110	120	117	210	255	242	202	305
84 Transport services	138	158	290	317	315	358	341	297	291	257	239	345
85 Environmental protection	0	0	0	0	0	1	237	3	6	13	19	18
86 Security services	130	108	150	149	208	218	0	219	266	308	313	394
<b>Total</b>	<b>5.803</b>	<b>6.990</b>	<b>8.558</b>	<b>9.334</b>	<b>10.906</b>	<b>11.232</b>	<b>11.608</b>	<b>11.942</b>	<b>12.412</b>	<b>11.970</b>	<b>11.979</b>	<b>13.031</b>

Note: The number of graduates includes those from the former professional higher study programmes, former academic study programmes, professional higher and study programmes of the first and second cycles.

Sources: SORS; Statistical Yearbook until 1999 to 2009; for 2009, special data processing by SORS for the MHEST

When comparing the duration of study in the undergraduate study programme, whereby different durations of study programmes are considered, we may conclude that this was 6.3 years for undergraduate study programmes, 5.9 years for former professional study programmes, and 6.8 years for former academic study programmes. The average study time from enrolment until graduation is calculated as the weighted arithmetic average of the sum of diplomas and the number of study years, with 10 years being considered as the upper limit. Public universities set a priority objective to increase the effectiveness of finishing studies by stimulating students who stopped their studies to return and finish. This results in an increase in the number of students who graduated after more than 9 years of study. This trend is expected to continue until the 2015/16 study year or as long as it remains possible to finish the former study programmes. The duration of study in undergraduate study programmes from enrolment to graduation varies among higher education institutions.

**Figure 4. Graduates of undergraduate higher education considering the duration of study from enrolment until graduation between 2004 and 2008**



Note: Undergraduate studies include graduates of former professional higher study programmes, former academic study programmes, professional higher and academic study programmes of the first cycle.

Source: SORS, SI-STAT database

## 1.4. The number of institutions

In the 2002/03 study year, courses of study were offered by 48 higher education institutions, as follows:

- 2 public universities: the University of Ljubljana, which had 3 academies, 20 faculties and 3 colleges, and the University of Maribor with 9 faculties, 1 institution college, university library and student dormitories;
- 1 public independent higher education institution (College of Police Work and Security); and
- 11 independent private higher education institutions – colleges, of which 7 were granted a concession while 3 only offered postgraduate study.

**Table 8. The number of higher education institutions and other members of universities that provided studies in the 2002/03 study year**

Higher education institutions and other members of universities	Number of academies	Number of faculties	Number of institutions of higher education	Total number of higher education institutions	Number of other members	TOTAL
University of Ljubljana	3	20	3	26		26
University of Maribor		9	1	10	2	12
University of Primorska				0		0
University of Nova Gorica				0		0
Euro-Mediterranean university				0		0
independent higher education institutions		5	7	12		12
<b>Total</b>	<b>3</b>	<b>34</b>	<b>11</b>	<b>48</b>	<b>2</b>	<b>50</b>

Source: MHEST

In the 2009/10 study year, courses of study were offered by 80 higher education institutions, as follows: 26 members of the University of Ljubljana, 16 members of the University of Maribor, 6 members of the University of Primorska, 6 members of the University of Nova Gorica and 26 independent higher education institutions, of which 1 was public and 25 were private institutions. In June 2010, there were also 6 higher education institutions that did not offer study programmes in the 2009/10 study year: Euro-Mediterranean

ranean University, Faculty of Tourism, a member of the University of Maribor, Faculty of Business and Management Sciences Novo mesto, Faculty of Organisational Studies in Novo mesto, Faculty of Business Sciences and Commercial and Business School.

**Table 9. The number of higher education institutions and other members of universities on the list of higher education institutions with the Ministry of Higher Education, Science and Technology, 30 June 2010**

All higher education institutions and other members of universities	Number of academies	Number of faculties	Number of institutions of higher education	Total number of higher education institutions	Number of other members	TOTAL
University of Ljubljana	3	23	0	26	/	26
University of Maribor	/	17	0	17	2	19
University of Primorska	/	5	1	6	3	9
University of Nova Gorica	/	5	1	6	/	6
Euro-Mediterranean university	/	1	/	1	/	1
independent higher education institutions	/	15	15	30	/	30
<b>Total</b>	<b>3</b>	<b>66</b>	<b>17</b>	<b>86</b>	<b>5</b>	<b>91</b>

Note: At the University of Maribor, the Faculty of Tourism is also included; although it has been established it has not yet been entered on the list of higher education institutions.

Source: MHEST

It is evident from the network of higher education institutions and study programmes that most higher education institutions operate in all Slovenian regions. The majority of them offer study programmes from the same fields.

**Table 10. Higher education institutions entered on the list of higher education institutions on 30 June 2010**

Statistical region*	University of Ljubljana	University of Maribor**	University of Primorska	University of Nova Gorica	EMUNI	Public higher education institutions	Private higher education institutions
<b>Pomurska</b>	FU, PEF	EPF, FKBV, FS	FTŠ Turistica, PEF				FKPV
<b>Podravska</b>	EF, FU, TEOF	EPF, FERI, FG, FKKT, FKBV, FNM, FOV, FS, FVV, FZV, FF, MF, PEF, PF	FTŠ Turistica, PEF				DOBA FAKULTETA, ESM, FKPV, GEA COLLEGE – FP, VŠR, VŠUP
<b>Koroška</b>	EF, FU	EPF, FOV, FZV	FTŠ Turistica				FKPV, VŠZV, VŠTP

## Appendices

Statistical region*	University of Ljubljana	University of Maribor**	University of Primorska	University of Nova Gorica	EMUNI	Public higher education institutions	Private higher education institutions
<b>Savinjska</b>	EF, FPP, FS, FU	EPF, FE, FG, FL, FOV, FS	FM, PEF				DOBA FAKULTETA, FKPV, MFDPŠ, GEA COLLEGE – FP, VŠVO, VZŠCE, VGŠ
<b>Zasavska</b>	EF	FOV					
<b>Spodnjeoposavska</b>	EF, FU	FE, FT, FL, FOV					
<b>South eastern Slovenia</b>	EF, FS, PEF	EPF, FOV, FVV	FTŠ Turistica			FIŠ	FUDŠ, VŠUP, FOŠ, FPUV Novo mesto, VITES, VŠPI, VŠZNM
<b>Central Slovenia</b>	AG, AGRFT, ALUO, BF, EF, FA, FDV, FE, FFA, FGG, FKKT, FMF, FPP, FRI, FSD, FS, FŠ, FU, FF, MF, NTF, PEF, PF, TEOF, VF, ZF	EPF, FOV, FVV	FTŠ Turistica	FPŠ		FIŠ	DOBA FAKULTETA, FKPV, FaM, FPUV Novo mesto, FPV, FUDŠ, ISH, MPŠJS, VŠD, VŠRS, VIST, VITES, GEA COLLEGE – FP, VŠPI, VŠR, VŠTP, VŠUP, VŠZNJ, VŠZNM
<b>Gorenjska</b>	EF, FU	FOV, FS, FL	FM				EVRO – PF, FDŠ, FKPV, IEDC, VŠR, VŠZNJ
<b>Notranjsko-kraška</b>	EF			FPŠ			
<b>Goriška</b>	EF, FE, FS	FOV, FS	FM, FTŠ Turistica, PEF, VŠZI	FAN, FH, FPŠ, FZO, PTF, VŠVV		FIŠ	EVRO – PF, FKPV, FUDŠ
<b>Obalno-kraška</b>	FU, FRI, FS	EPF	FHŠ, FM, FAMNIT, FTŠ Turistica, PEF, VŠZI		EMUNI		GEA COLLEGE – FP

Legend: black – headquarters of higher education institutions; blue – discrete units.

Notes:

\* In an individual statistical region, a higher education institution is only entered once regardless of the number of units it has in the region.

\*\* At the University of Maribor, the Faculty of Tourism is also included. It was established on the basis of the Ordinance on changes and completions of the ordinance on the remodelling of the University of Maribor (Official Gazette of the Republic of Slovenia, No. 96/09), which had still not been entered on the list of higher education institutions and study programmes in the 2009/10 study year.

Source: MHEST



## 1.5. The number of personnel

The proportion between the number of students and university teachers and assistants has improved over the last few years since their number has increased at a faster pace than the number of students. In the 2009/10 study year the proportion between students and university teachers was 20.1 and the proportion between university teachers and assistants and students was 12. At the level of OECD and EU countries, the average is about 15, meaning, by taking assistants who take part in the teaching process into account, that we have already exceeded the said average. As already mentioned in the National Programme of Higher Education 2011–2020 in the Republic of Slovenia 2011-2020, one problem involves the significant differences between mass and other studies, which are not clearly indicated from the average value for all Slovenian higher education.

Among the latest available data referring to 2008 (OECD Education at a Glance 2010), the OECD indicates the figure 20.8 for Slovenia which classifies Slovenia below the average of other OECD countries.

**Table 11. 1. Number of university teachers, co-workers and scientific workers in the 2009/10 study year**

	Full and associate professors, assistant professors and lecturers	Assistants, instructors and other university co-workers	Scientific workers	TOTAL
Full or more or part-time teaching load	5.182	3.050	59	8.291
Full-time equivalence	5.740			

Source: SORS

**Table 12. 1. Proportion between university teachers and students in the 2009/10 study year**

Proportion	
university teacher/student	20,1
faculty assistant and research faculty/student	12

Note: 1. We obtained these figures by calculating the number of teaching staff and the number of students in the equivalent of full working time or, for students, the equivalent of a full-time student.

Source: SORS

**Table 13. Proportion between students and university teachers in higher education, 2008**

	Tertiary education				Tertiary education		
	Type B	Type A*	All tertiary		Type B	Type A*	All tertiary
<b>OECD countries</b>							
Australia	m	15,2	m	Poland	11,5	16,8	16,7
Austria	x	x	14,6	Portugal	x	x	13,8
Belgium	x	x	19	Slovakia	10,5	15,5	15,4
Canada	m	m	m	Spain	8,8	11,6	11,1
Chile	74,2	21,6	30	Sweden	x	x	8,5
Czech Republic	16,2	19,4	19,1	Switzerland	m	m	m
Denmark	m	m	m	Turkey	80,8	20	25,7
Finland	n	15,8	15,8	United Kingdom	x	x	16,9
France	16,7	16,1	16,2	United States of America	x	x	15
Germany	12	11,5	11,5				
Greece	m	m	m	<b>Države partnerice</b>			
Hungary	19,5	17	17,1	Brazilija	x	x	15,9
Iceland	x	x	10,1	Kitajska	10,1	m	m
Ireland	x	x	15,9	Estonija	m	m	m
Italy	7,5	19,7	19,5	Indija	m	m	m
Japan	7,5	11,8	10,4	Indonezija	x	x	17,6
Korea	m	m	m	Izrael	m	m	m
Luxembourg	m	m	m	Ruska federacija	10,2	13,5	12,6
Mexico	13,3	14,5	14,4	Slovenija	x	x	20,8
the Netherlands	n	14,9	14,9				
New Zealand	17,3	17,9	17,8	<b>Povprečje OECD</b>	<b>19,7</b>	<b>16,2</b>	<b>15,8</b>
Norway	x	x	9,3	<b>Povprečje EU-19</b>	<b>12,8</b>	<b>15,8</b>	<b>15,4</b>

Note: The data are calculated on the basis of full-time equivalents.

\* 1. Tertiary-type A and advanced research programmes

x Data included in other categories m Data not available Source: 1. OECD Education at a Glance, 2010

In the 1980s, the number of university teachers varied; in the second half of the 1980s, a decline was noticed that was then constantly increasing after 1991. We have already noticed such a trend in student numbers. However, in comparison with the trend in the number of students it is evident that up until 2002 the number of university teachers was growing at a significantly faster pace than the number of students and graduates, thereby contributing to the improved ratio of the number of students per teacher.

Most teachers are full and assistant professors, and associate professors. Until the mid-1990s, the category of university teachers (full professor, associate professor, assistant professor) was primarily represented by full professors, who were followed by associate professors and, only then, assistant professors. At the end of the 1990s, younger teaching staff were engaged and the proportion of associate professors started to increase. The group of lecturers or university lecturers is in stagnation or decline.

## 1.6. Mobility

The number of Slovenian students who participate in the ERASMUS mobility programme for studying abroad has been constantly rising over the last 10 years and is currently about 1,000 students per year. Despite the significant growth in the number of students participating in the ERASMUS mobility programme for studying abroad, this figure is still extremely low since it only represents about 1% of Slovenian students.

The number of foreign students who participate in the ERASMUS mobility programme for studying in Slovenia has also been constantly increasing over the last 10 years and is currently also about 1,000 students per year. Most students come from Poland, the Czech Republic, Spain, Portugal, Turkey and Germany.

The number of Slovenian students participating in the ERASMUS mobility programme for placements is low at about 170 students a year, which only represents 0.16% of Slovenian students. In Slovenia, the number of foreign students who pursue practical training on the basis of the ERASMUS programme is somewhat less than the number of Slovenian students abroad.

The number of Slovenian university teachers and assistants who participate in the ERASMUS mobility programme for teaching has been increasing over the last 10 years; however, it is currently only somewhat more than 250. Most teachers go to Germany, Austria, Finland and the Czech Republic. The number of foreign university teachers and assistants who participate in the ERASMUS mobility programme for teaching in Slovenia has also been rising. The majority of teachers come from Poland, Austria and Germany. The relatively constant trend indicates that more teachers come to Slovenia on the basis of this programme than leave Slovenia. Among all employees, the share of Slovenian teachers and assistants who participate in the ERASMUS mobility programme for teaching amounts to less than 4%.

The number of Slovenian staff participating in the ERASMUS mobility programme for training is about 100 per year. Each year, somewhat fewer than 100 foreign personnel participate in the ERASMUS mobility programme for training in Slovenia. According to the trend, more personnel leave Slovenia on the basis of the ERASMUS mobility programme for training than come to Slovenia.

**Table 14. The percentage of students who participate in the ERASMUS mobility programme for studying abroad, of all students enrolled in tertiary education in Slovenia in the 2000/01 to 2008/09 study years**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Percentage	0,20	0,25	0,39	0,45	0,55	0,74	0,88	0,84	0,89

Note: Students in short-term higher education programmes are included in the ERASMUS mobility programme from the 2007/08 study year. In the calculation of the percentage of students, those enrolled in higher education study programmes and all tertiary students in 2007 are included.

Sources: SORS; Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes; calculations by MHEST

About 2% of all Slovenian students leave Slovenia for countries of the European Union and the European economic area for the entire period of their studying; the values are similar to those of the Czech Republic, the Netherlands, Romania, Denmark, France, Latvia, Lithuania, Belgium, Finland and Sweden. Significantly more students (10% or greater) come from Malta, Slovakia, Macedonia, Ireland, Iceland, Liechtenstein, Cyprus and Luxembourg.

Of all students enrolled in Slovenian higher education institutions for the entire study period, about 1% of students come from the European Union, the European Economic Area or candidate countries. Thus, in comparison with other countries, Slovenia is placed among the lower average, while the most attractive for students are Austria, Great Britain and Belgium.

Of all students who studied at Slovenian higher education institutions in the 2008/09 study year, 1.6% were foreigners. Of these, about 12% came from European Union countries and 84% from non-member countries of the European Union. Of all foreign students, 39% came from Croatia, Macedonia and Bosnia and Herzegovina.

Most foreign students were enrolled in undergraduate study programmes and fewer were enrolled at the postgraduate level. The majority were thus attending former university and professional programmes, which are followed by the first cycle of education. Of all foreign students, only 8.6% are enrolled in education leading to a doctorate. .

The majority of foreign students are enrolled at the University of Ljubljana, namely about 65% of all foreign students in Slovenia. The University of Maribor follows with about 15%. When reviewing the distribution of foreign students in Slovenia among higher education institutions in 2004, we notice that the number of enrolments at the

University of Ljubljana decreases somewhat, while the number of enrolments at the University of Maribor and independent higher education institutions sees a slight increase.

## Appendices

**Table 15. The proportion of students in tertiary education (ISCED 5 and 6) who study abroad in one of the countries of the European Union, EFTA or in a candidate country, from among all tertiary education students in the 1997/98 to 2006/07 study years, in %**

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
United Kingdom	0,7	0,7	0,6	0,6	0,5	0,5	0,6	0,5	0,7	0,7
Spain	1,0	1,1	1,1	1,2	1,1	1,2	1,2	1,1	1,3	1,4
Turkey	/	2,4	3,3	2,1	2,1	1,8	1,8	1,6	1,6	1,5
Italy	1,4	1,8	1,7	1,7	1,6	1,6	1,6	1,5	1,7	1,8
Hungary	1,8	1,8	1,7	1,8	1,7	1,7	1,5	1,5	1,7	1,8
Poland	0,9	0,9	0,9	0,9	1,0	1,1	1,2	1,3	1,6	1,8
Czech Republic	1,0	1,2	1,3	1,5	1,6	1,8	1,8	1,8	2,0	2,1
the Netherlands	1,5	2,2	1,9	1,8	1,7	1,8	1,8	1,8	2,1	2,1
<b>Slovenia</b>	<b>1,9</b>	<b>1,7</b>	<b>2,2</b>	<b>1,8</b>	<b>1,7</b>	<b>2,4</b>	<b>2,1</b>	<b>2,0</b>	<b>2,1</b>	<b>2,1</b>
Romania	1,5	1,7	1,5	2,0	2,1	2,2	2,4	2,3	2,2	2,2
Denmark	2,6	2,8	2,7	2,6	2,6	2,7	2,5	2,3	2,6	2,5
France	1,3	1,9	1,8	1,9	1,9	1,9	2,0	2,1	2,4	2,5
Latvia	1,0	1,2	1,3	1,4	1,3	1,7	1,6	1,7	2,2	2,5
Belgium	/	2,5	2,4	2,4	2,4	2,6	2,6	2,6	2,5	2,6
EU-27	2,0	2,2	2,1	2,1	2,1	2,2	2,2	2,3	2,6	2,8
Finland	2,9	3,3	3,2	3,0	3,0	3,0	2,9	2,7	3,0	2,9
Sweden	2,7	2,7	2,7	2,7	2,4	2,3	2,2	2,3	2,7	3,0
Germany	1,6	1,9	1,8	1,9	1,9	1,9	1,9	2,2	2,8	3,1
Lithuania	1,5	1,5	1,8	2,0	2,1	2,3	2,3	2,6	3,0	3,3
Portugal	2,3	2,6	2,3	2,3	2,3	2,5	2,7	2,9	3,7	4,0
Estonia	2,3	2,4	2,5	3,2	3,0	3,2	3,5	3,6	4,1	4,5
Austria	4,0	4,2	3,8	3,8	4,7	4,7	4,7	4,4	4,6	4,7
Norway	4,4	5,1	4,7	4,9	4,6	4,5	4,7	4,8	4,9	5,0
Greece	13,8	14,1	12,4	10,9	8,6	7,9	7,3	6,0	5,5	5,8
Croatia	/	/	/	/	/	6,8	6,9	6,3	6,4	6,2
Bulgaria	1,9	2,6	3,2	4,3	6,0	7,4	8,6	8,7	8,9	8,3
Malta	/	8,3	8,2	6,9	12,4	5,9	8,4	7,8	10,0	9,9
Slovakia	2,6	3,0	3,0	5,5	6,4	7,9	8,2	8,6	10,2	10,2
Macedonia	2,8	4,0	6,2	7,2	4,3	9,2	10,4	11,9	11,9	10,5
Ireland	11,7	11,1	9,4	8,0	7,4	7,5	8,5	9,3	13,8	14,2
Iceland	18,3	18,5	16,9	16,3	15,3	15,7	15,5	17,0	17,4	17,8
Liechtenstein	/	/	/	/	/	/	/	77,1	73,6	51,0
Cyprus	/	32,7	46,5	44,4	52,2	53,6	54,8	56,5	53,2	56,9
Luxembourg	71,8	71,4	74,5	68,6	66,0	66,7	/	/	80,8	/

Source: EUROSTAT

**Table 16. The proportion of foreign students from countries of the European Union, EFTA or candidate countries, from among all students in the country in the 1997/98 to 2006/07 study years, in %**

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Croatia	/	/	/	/	/	0,2	0,2	0,1	0,1	0,1
Turkey	/	0,2	0,6	0,3	0,2	0,1	0,1	0,1	0,1	0,1
Poland	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2
Romania	1,6	1,3	1,0	0,7	0,5	0,3	0,3	0,3	0,2	0,2
Macedonia	0,3	0,4	0,3	0,2	0,1	0,0	0,2	0,2	0,2	0,2
Latvia	0,2	0,2	0,4	0,6	0,5	0,6	0,6	0,8	0,6	0,5
Lithuania	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,3	0,5
Slovakia	/	/	0,6	0,5	0,5	0,4	0,5	0,5	0,5	0,5
Portugal	/	/	0,6	0,7	/	0,7	0,7	0,8	0,8	0,8
Spain	1,0	1,1	0,4	0,4	0,4	0,5	0,6	0,7	0,8	0,9
Italy	0,8	0,7	0,7	0,8	0,7	0,8	0,8	0,8	0,8	0,9
<b>Slovenia</b>	<b>0,5</b>	<b>0,4</b>	<b>0,5</b>	<b>0,6</b>	<b>0,6</b>	<b>0,6</b>	<b>0,7</b>	<b>0,7</b>	<b>0,8</b>	<b>0,9</b>
Estonia	1,3	1,4	1,3	0,9	0,5	1,3	0,9	1,0	1,1	1,2
Finland	0,7	0,7	0,8	0,9	0,9	1,0	1,0	1,0	1,1	1,2
Malta	/	2,0	1,7	1,5	3,0	1,4	1,7	2,0	2,2	2,1
Greece	/	/	/	/	1,4	1,9	2,0	2,0	1,6	2,2
Hungary	1,5	1,5	/	2,2	2,1	2,0	2,0	2,0	2,1	2,2
France	1,9	1,9	2,0	2,0	2,0	2,4	2,4	2,2	2,3	2,3
Norway	1,6	1,7	2,0	2,2	2,2	2,2	2,4	2,5	2,6	2,7
Bulgaria	2,3	2,3	2,3	2,5	2,2	2,5	2,7	2,7	2,8	2,8
EU-27	2,3	2,5	2,4	2,4	2,4	2,5	2,5	2,6	2,9	3,1
Ireland	2,5	2,3	2,4	2,6	2,4	2,4	2,6	2,3	2,5	3,2
Iceland	1,8	1,9	3,2	3,2	3,1	3,3	2,2	2,2	3,3	3,7
the Netherlands	/	1,6	1,6	1,9	2,2	2,3	2,3	3,4	3,9	4,3
Denmark	2,5	2,7	2,6	2,8	3,0	3,5	3,5	3,9	4,5	4,9
Sweden	2,8	4,1	4,2	4,3	4,3	4,3	4,5	4,6	4,8	5,0
Cyprus	/	3,1	4,0	3,9	3,9	3,7	3,7	3,9	4,6	5,1
Czech Republic	1,0	1,0	1,2	1,9	2,1	2,8	2,8	3,6	5,0	5,3
Germany	4,6	4,9	5,1	5,3	5,5	5,6	5,7	5,7	5,6	5,4
Belgium	/	6,2	6,6	6,6	6,8	6,2	7,1	7,5	8,1	8,1
United Kingdom	5,8	6,1	5,9	5,7	4,9	4,8	5,1	5,1	8,4	9,0
Austria	8,7	9,0	9,2	9,4	10,2	10,8	11,1	10,9	12,1	13,0
Liechtenstein	/	/	/	/	/	/	/	79,3	86,7	/
Luxembourg	27,0	21,9	24,5	/	/	/	/	/	38,5	/

Source: EUROSTAT



**Table 17. Foreign national students by type of programme and nationality in the 2008/09 study year**

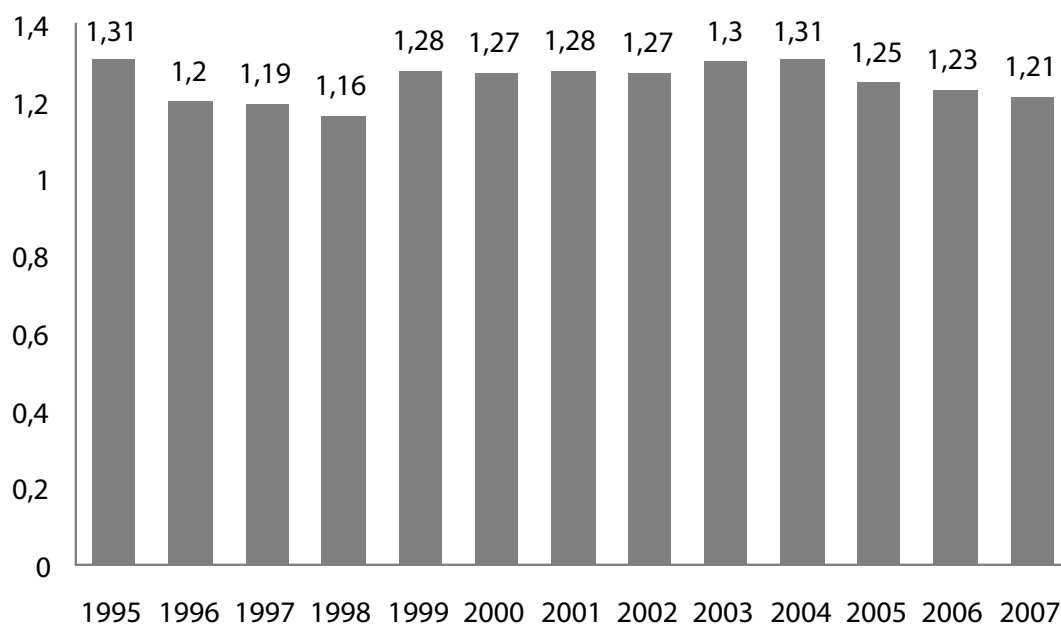
State of nationality	TOTAL	Higher vocational	Professional higher (former)	Professional higher education (first Bologna cycle)	Academic higher education (first Bologna cycle)	Academic higher education (former)	Long-non-structured masters' study programme (second Bologna cycle)	Master's education (second Bologna cycle)	„Magisterij“ of science (former)	Specialisation after professional higher education (former)	Education leading to doctorate of science (third Bologna cycle)	Education leading to doctorate of science (former)
Italy	111	1	13	8	13	42	/	1	11	/	7	15
Austria	15	/	4	/	2	8	/	/	1	/	-	-
Poland	14	/	1	/	4	4	/	1	1	/	-	3
Bulgaria	13	/	/	2	4	4	/	1	1	/	1	-
Hungary	14	2	1	1	3	6	/	/	/	/	-	1
Germany	10	/	/	/	3	4	/	1	2	/	-	-
other European Union Member States	71	4	4	4	12	15	1	11	6	2	1	11
Croatia	759	32	90	43	105	323	18	22	80	7	7	32
Macedonia	255	7	16	28	78	76	1	8	19	/	4	18
Bosnia and Herzegovina	253	45	49	38	43	50	5	4	6	2	3	8
Serbia	145	16	13	17	16	39	1	10	18	/	6	9
Russia	44	1	1	8	6	15	2	2	7	/	/	2
India	39	/	/	/	/	/	/	23	13	/	2	1
Ukraine	25	4	3	2	1	8	/	3	2	/	/	2
Montenegro	14	1	1	/	/	3	/	6	3	/	/	-
other countries, non-EU states	115	6	2	12	15	17	0	22	14	0	11	16
unknown state	72	28	10	5	8	3	/	2	5	1	4	6
<b>TOTAL</b>	<b>1.969</b>	<b>147</b>	<b>208</b>	<b>168</b>	<b>313</b>	<b>617</b>	<b>28</b>	<b>117</b>	<b>189</b>	<b>12</b>	<b>46</b>	<b>124</b>

Source: Statistical Yearbook 2009

## 1.7. 7. Funding of higher education

In 2007 total expenses for educational institutions represented 1.26% of GDP, while the share of public expenses for education represented 1.21% of GDP.

**Figure 5. Total public expenses for tertiary education expressed as a proportion of GDP in Slovenia for 1995–2007, in %**

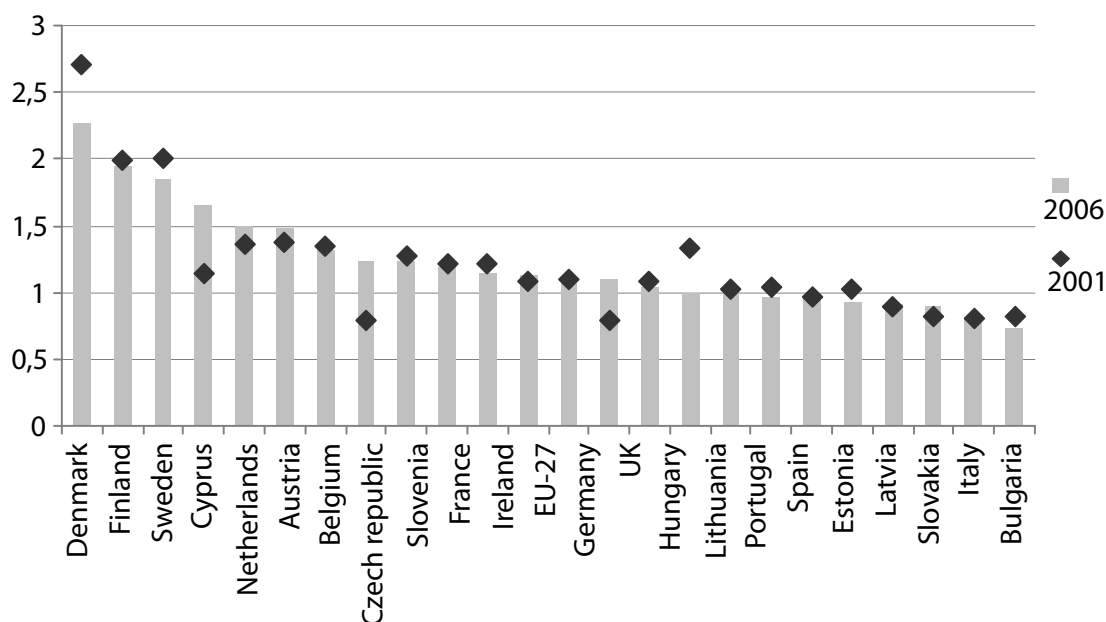


Note: Public expenses for education encompass all budgetary expenditure on the formal education of youth and adults at the state and municipality levels. Direct public expenses for educational institutions and transfers as well as payments to households and other private subjects are included. The proportion of public expenses for tertiary education is calculated in line with the revision of GDP in October 2009.

Sources: SORS, calculations by IMAD

Slovenia was above the European Union average regarding public expenses for tertiary education in 2006.

**Figure 6. Total public expenses for tertiary education, (Isced 5, 6), EU-27, 2001 and 2006, in %**



Note: The image presents figures for those countries for which data for 2006 are available. Data for EU-27 states are available up to 2001. The proportion of public expenses for tertiary education for Slovenia is calculated in line with the revision of GDP in October 2006.

Sources: Eurostat, SORS

A comparison between the funds used per student by institutions indicates that higher education institutions in Slovenia allocate fewer funds per student than the average in states of the European Union or OECD. They allocate more funds per student in a tertiary institution than for a secondary school student; however, the difference in the consumption of a secondary school student and a tertiary education student is significantly smaller than in other countries.

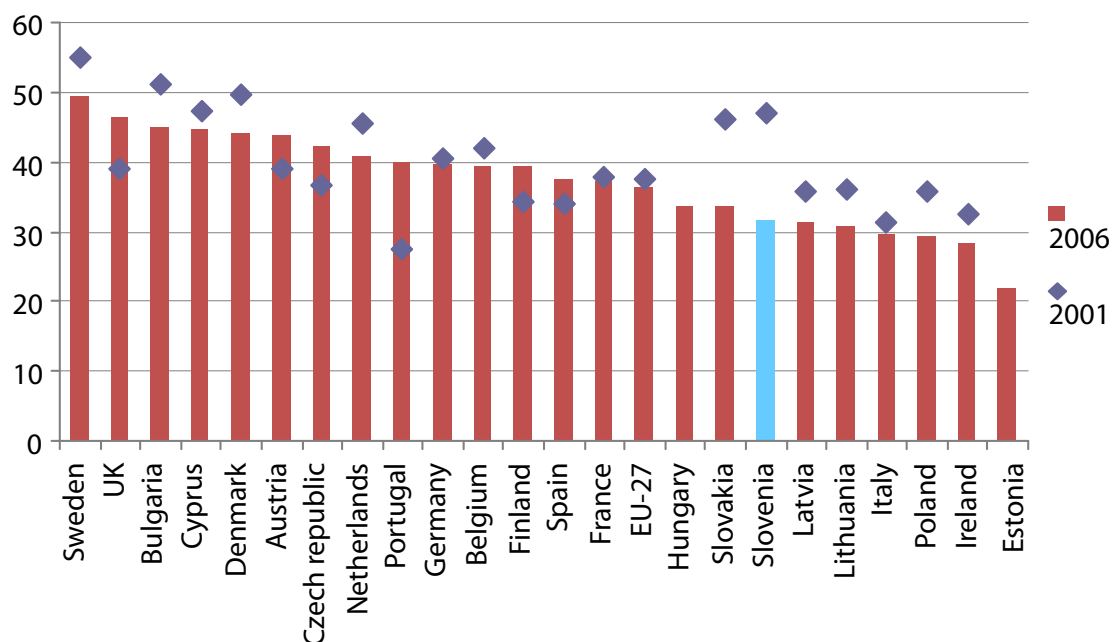
**Table 18. Annual consumption of higher education institutions per student for all services in 2007**

	Pre-primary education (for children 3 years and older)	Primary education	Secondary education			All tertiary education
	(1)		(2)	Lower secondary education	Upper secondary education	
<b>OECD countries</b>						
Greece	m	m	m	m	m	m
Luxembourg	x(2)	13.985	17.928	17.928	17.928	m
Turkey	m	m	a	m	m	m
United States	9.394	10.229	10.862	11.788	11.301	27.010
Switzerland	4.506	9.211	10.574	17.362	13.982	20.883
Canada	x(5)	x(5)	x(5)	x(5)	8.045	20.278
Sweden	5.666	8.338	9.020	9.247	9.143	18.361
Norway	5.886	9.922	10.603	13.132	11.997	17.140
Denmark	5.594	9.176	8.998	10.342	9.675	16.466
the Netherlands	6.130	6.552	9.902	10.616	10.248	15.969
United Kingdom	7.598	8.222	9.166	8.714	8.892	15.463
Austria	6.409	8.664	10.249	11.068	10.641	15.039
Australia	6.507	6.498	8.967	8.639	8.840	14.726
Japan	4.518	7.247	8.346	9.159	8.760	14.201
Germany	6.119	5.548	6.851	9.557	7.841	13.823
Finland	4.789	6.234	9.730	6.806	7.829	13.566
Belgium	5.247	7.363	x(5)	x(5)	8.992	13.482
France	5.527	6.044	8.339	11.082	9.532	12.773
Ireland	m	6.901	9.207	9.575	9.375	12.631
Spain	6.138	6.533	8.155	9.867	8.730	12.548
Portugal	5.006	5.011	6.497	7.243	6.833	10.398
New Zealand	5.185	4.675	5.146	6.828	5.933	9.905
Iceland	8.884	9.629	9.147	7.807	8.349	9.309
Korea	3.909	5.437	6.287	9.620	7.860	8.920
Italy	7.191	7.383	8.222	7.864	8.004	8.673
Czech Republic	3.700	3.359	5.635	5.428	5.527	8.209
Mexico	1.979	2.111	1.814	3.070	2.236	6.971
Hungary	4.304	4.656	4.321	4.131	4.225	6.721
Chile	3.371	2.268	2.190	2.239	2.222	6.626
Slovak Republic	3.419	3.499	2.946	3.475	3.219	5.736
Poland	4.658	4.063	3.643	3.543	3.590	5.576

Note: Expenses for primary education for Slovenia are presented in the column "lower secondary education" which, according to the OECD classification, combines "primary" and "lower secondary" education which includes Slovenian primary education.

Source: OECD Education at a Glance 2010

**Figure 7. Annual expenses for educational institutions in tertiary education per participant in comparison with GDP per inhabitant, EU-27, 2001 and 2006, in %**



Sources: Eurostat, IMAD

## 1.8. References

EUROSTAT, EURYDICE, Education, Audiovisual & Culture Executive Agency: Key Data on Education in Europe 2009.

Komljenovič, J., Marjetič, E. (2010). Drzna Slovenija: na poti v družbo znanja, Statistical data on higher education. Publication 2/3. Ljubljana: Ministry of Higher Education, Science and Technology, 2010.

Marjetič, E., Dobnikar, M. (2010). Mreža visokošolskih zavodov in študijskih programov v Republiki Sloveniji 2010. Ljubljana: Ministry of Higher Education, Science and Technology, 2010.

OECD: Education at a Glance 2009.

Ministry of Higher Education, Science and Technology: Register of higher education institutions: Dsata on higher education institutions.

Statistical Office of the Republic of Slovenia Statistical Yearbook 1999.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2000.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2001.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2002.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2003.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2004.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2005.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2006.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2007.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2008.

Statistical Office of the Republic of Slovenia Statistical Yearbook 2009.

Statistical Office of the Republic of Slovenia First publication: Student enrolment in tertiary education in the academic year 2009/10 – final data, May 2010.

Statistical Office of the Republic of Slovenia First publication: Students graduating from vocational colleges and higher education institutions, Slovenia, 2009 – final data.

Zgaga, P. (2004). Analysis of Trends in Structure of Students and Graduates in Tertiary Education (1981-2004)]: research for preparation of the development strategy of Slovenia (R 6). Ljubljana: University of Ljubljana, Faculty of Education – Centre for Educational Policy Studies, 2004.

Databases and data acquired:

EUROSTAT database

EUROSTAT: EUROPOP data

Statistical Office of the Republic of Slovenia: SI-STAT database and Thematic Cartography, obtained from April 2010 to July 2010

Statistical Office of the Republic of Slovenia, data preparation for MHEST: data on the number of students in the 2009/10 study year; data on the number of personnel in higher education; data on the educational structure of inhabitants; and other data as indicated in the text.

Institute of Macroeconomic Analysis and Development: data sent to the MHEST: the number of youth in secondary schools, the number of pre-school children, pupils, secondary school students (youth) and students by types of educational programmes.

## 2. Snapshot of Slovenia's research and innovation system

**Jana Kolar, Ph.D.**

This Chapter briefly presents the current state of affairs concerning the research and innovation system in Slovenia.

It presents Slovenia's research and innovation system through key performance factors such as the management of a research and innovation, investment in science and innovation, human resources, an open, excellent and attractive innovation system, effectiveness of research and innovation activities, as well as through impacts on the economy.

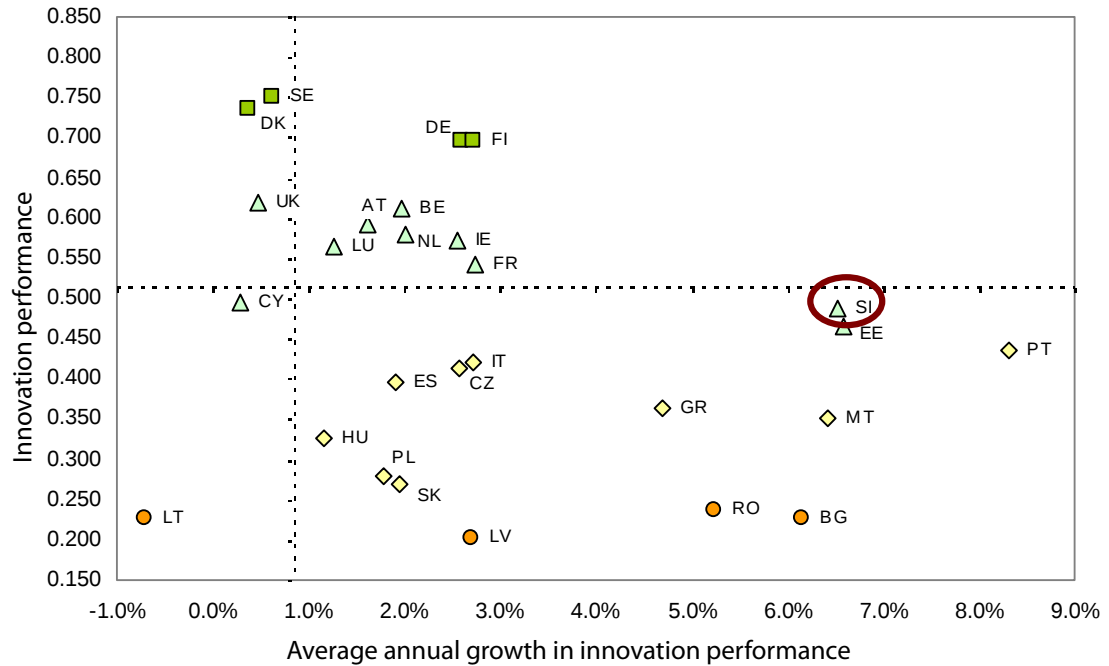
The data are sourced from the recent studies: the National system of innovation in Slovenia [1], Policy Mix Peer Reviews: Country Report – Slovenia [2] and OECD review of Slovenia's innovation policy: Overall assessment and recommendations – preliminary draft [3]. Quantitative data are based on the Innovation Union Scoreboard 2010 indicators [4], statistical data from Eurostat [5], OECD [6] [7] and Statistical office of the Republic of Slovenia (SORS) [8]. At the end of this Chapter, a set of core indicators for monitoring the implementation of the Research and Innovation Strategy of Slovenia (RISS) is provided.

### 2.1. Management of the research and innovation system

The European Innovation Scoreboard 2010 [4] places Slovenia among countries such as France, the United Kingdom, the Netherlands and Austria, which follow the best innovation performing states such as Sweden, Denmark, Finland and Germany. In their group, Estonia and Slovenia are growth leaders in innovation performance (Figure 8).



**Figure 8. Convergence in innovation performance**



Source: European Innovation Union Scoreboard 2010 [4]

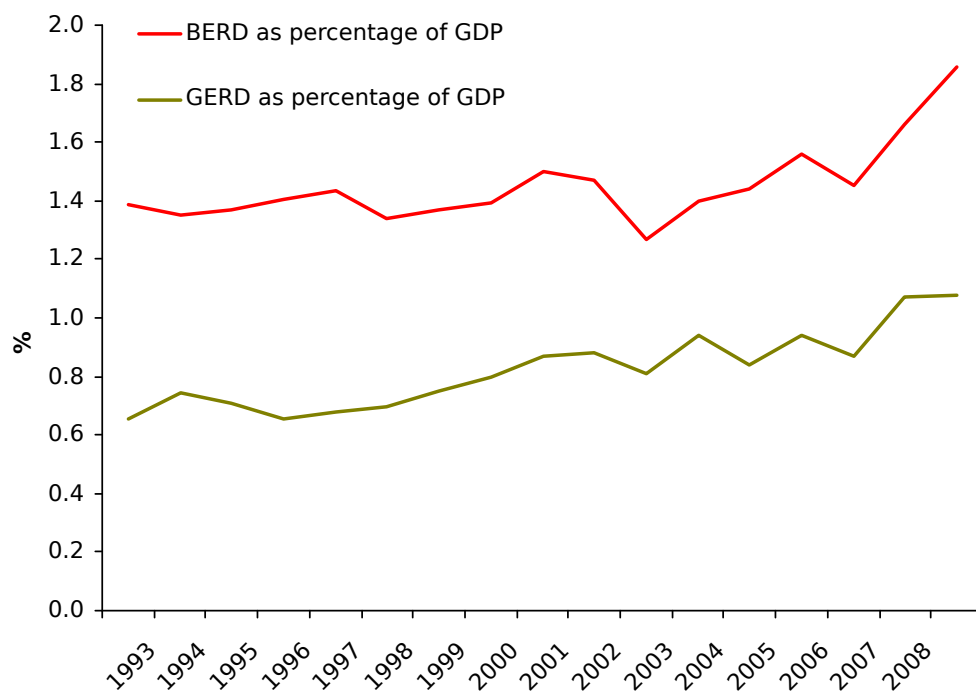
Slovenia scores well in terms of innovation input indicators (research and development expenditure, the number of researchers, etc.). However, output indicators (e.g. high growth and the number of patents) point to a low efficiency of overall innovation efforts [4]. According to the OECD, one of the main factors constraining innovative efficiency relates to the organisation of government innovation policy, which is marked by administrative dispersion, a lack of coordination among stakeholders and ensuing implementation deficit. The government should reduce dispersion and overlap among various stakeholders of innovation policy by improving information flows and transparency among ministries and associated agencies [7]. The OECD believes the proposed strategy goes in the right direction, but is unlikely to be successful as long as regular, in-depth consultations among major stakeholders of innovation policy fail to respond to the needs of the business community [7]. Reviewers have also noted that, due to the limited number of people employed in the directorates who are directly responsible for research and innovation, the system of governance is particularly vulnerable [2].

## 2.2. Investment in research and innovation

Investment in research and development (R&D) is a key engine of economic and societal growth. It is investment, not expenditure, which – among other benefits – has a direct impact on the GDP growth. Independent analyses of effects of state aid aimed at stimulating technological advance testify to the effectiveness of these measures. A recent study entitled the Effectiveness of Measures of the Ministry of Higher Education, Science and Technology aimed at stimulating innovation and technological development in Slovenian companies (CRP V5-0448) revealed that a 1 Euro of technological incentive to a company results in additional sales worth 6.7 Euro, an added value of 3.9 Euro, and a 60% faster rate of company growth. Last but not least, it contributes to fiscal stability, as sources return to the budget through higher tax payments and contributions by the recipients roughly within a year's period.

After a period in which state investment in innovation was low, or even declining, in relation to GDP, Slovenia's investment in R&D increased significantly in 2008, surpassing GDP growth (Figure 9).

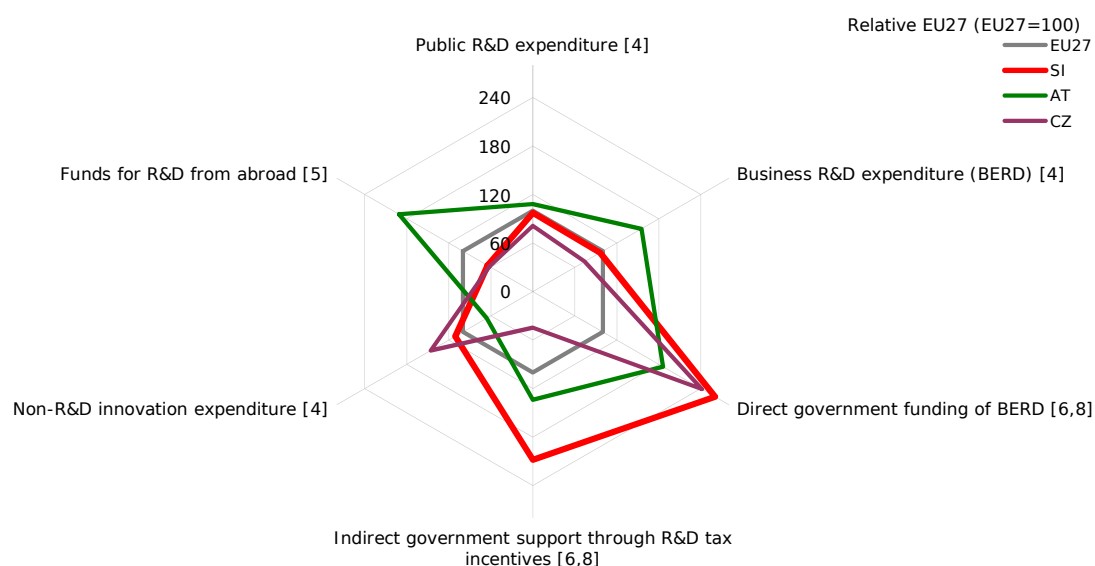
**Figure 9. Expenditure for research and development as a proportion of GDP [6], [8]**



In 2009, Slovenia allocated 234 million Euro of budgetary finance for R&D, which is an increase of 21% on the previous year. In terms of international comparison, Slovenia's investment in R&D growth rate is high, yet the proportion of GDP allocated for R&D is still lagging behind the best performing states (Figure 10).

R&D expenditure is close to the EU27 average, in the business and public sectors alike. Slovenia, like Austria or Finland, allocates the majority of business related R&D funds to large companies with more than 500 employees. In 2009, 76% of all government funding for R&D was consumed by companies with over 500 employees (66.5% in 2006). The proportion of funding used by small-size companies was merely 6.8% (9.1% in 2006).

**Figure 10. Investment in research and innovation as a proportion of GDP**



Notes:

Data sources for each indicator are indicated in brackets after the name of the indicator.

Due to non-availability of complete data for certain Member States, when referring to data on public and business investment in R&D, the European Commission uses, for the purposes of international comparison, cumulative data on R&D expenditure in both sectors. In the case of Slovenia the investment data for both sectors were used which is why the figures differ from the information presented in reference no. 4 [4]. The data have been sourced from the Statistical Office of the Republic of Slovenia [8].

Both the direct and indirect government funding of business R&D are OECD indicators [6], which is why OECD's average value was used instead of the average value relative to the EU27. The data for Slovenia are sourced from Slovenia's Statistical Office for 2009.

Next to the public R&D expenditures, business R&D expenditures are also close to the EU27 average, while the share of government funding earmarked for business R&D either directly or indirectly, through tax reliefs, is particularly prominent. The primary re-

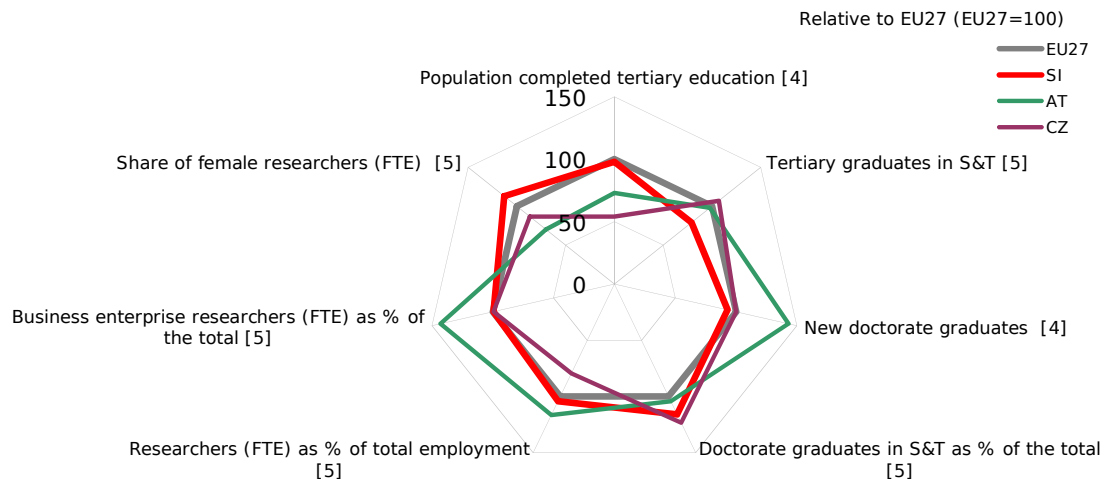
ipients of government funds for R&D in the form of direct incentives are small and medium-sized enterprises (46.3% and 30.8% respectively in 2007) [6], while tax reliefs are mainly taken advantage of by large enterprises. From among 30 countries included into the OECD survey, the level of direct and indirect support granted to business R&D in Slovenia is only exceeded by Korea [6]. We can expect that the level of indirect support in Slovenia will further increase in the coming years, since in 2010 the tax incentive for investment into R&D was raised from 20 to 40% and the regional incentive from 40 to 60%. Special attention will have to be paid to the monitoring of the effects of public funds so invested.

In order to stimulate commercialisation of knowledge, Slovenia earmarked in 2010 50 million EUR of government funds for the financial engineering programme, thus enabling the creation of a total credit potential worth 150 million EUR (0.3% of the GDP). Equally in 2010, a contract was signed on government investment into private venture capital funds, on the basis of which a total of 70 million EUR of venture capital will be available in 2011 (34 million EUR of which are government funds), which is expected to additionally facilitate companies' access to financial resources.

## 2.3. Human resources

An appropriate structure and a sufficient number of quality human resources are a precondition for society's development and innovativeness. The human resources indicators for science and technology in Slovenia are mostly close to the average of EU27 (Figure 11). According to the data of the Statistical Office of the RS, the researchers employed in the business enterprise sector in 2009 were principally experts in engineering (71%) and natural sciences (27%), while all other fields of science together made up for less than 3% of researchers. For this reason, data on the number of graduates in and doctors of natural sciences and engineering are especially important for Slovenia. While the share of students in these two fields is lower than EU average, the situation is better with doctoral students.

**Figure 11. Human resources**



At the end of 2009, Slovenia had nearly 6500 PhDs. 79% of PhDs has been at work in their primary employment engaged with research and development. In a recent SORS survey more than 50% of PhDs indicated that they are “satisfied” in almost all categories relating to employment (income from work, benefits, job security, job location, working conditions, intellectual challenge, career opportunities, job responsibility, autonomy in the workplace, contributing to society, social status). More than 40% of PhDs were “very satisfied” with autonomy on the job, the intellectual challenge and the location of employment, while the highest level of dissatisfaction were expressed about the potential for promotion and the income [9].

## 2.4. Open, excellent and attractive system

A successful research and innovation system is based on scientific excellence, cooperation between the public and the private spheres, and is not confined to national or regional borders.

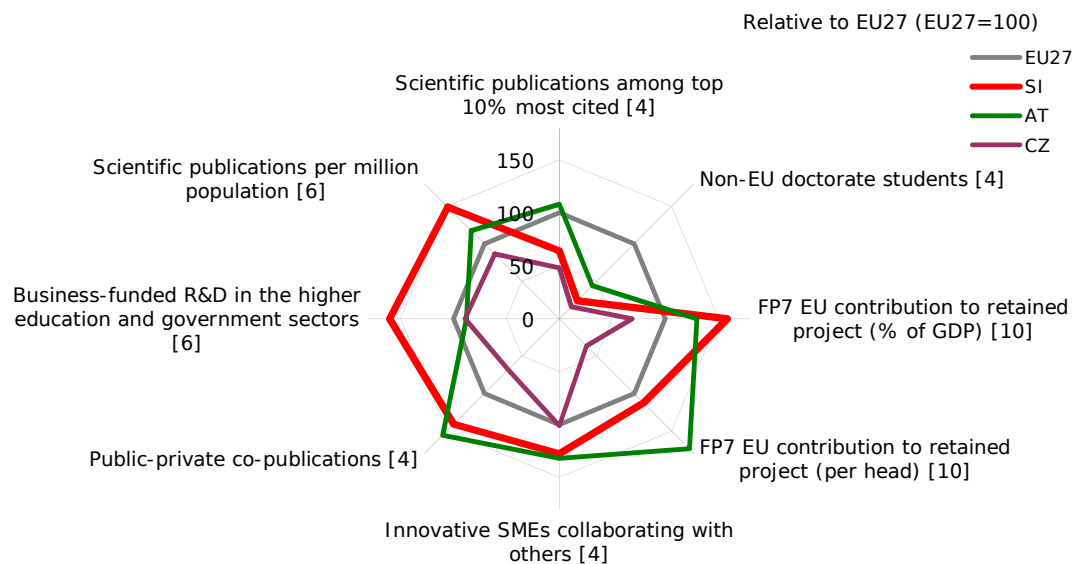
Slovene researchers are among Europe's more productive researchers in terms of the number of scientific publications, with Slovenia ranking sixth among the EU27 countries. This shows that our researchers focus on the highest possible number of publications, which, consequently, meet with less response. In the mass of publications there is only a small share of those that belong to the top 10% of most often cited publications (Figure 12), even though their share is growing fast. This is primarily to be attributed to

the assessment criteria for projects submitted to the Slovenian Research Agency, which in the past more often awarded researchers for the number rather than the quality of scientific publications.

Slovene researchers foster relatively strong links with their international colleagues. When it comes to the number of scientific publications co-authored by Slovene and foreign researchers, Slovenia ranks ninth among the EU27 with 749.7 publications per million inhabitants, outperforming Germany, France, the Czech Republic and Estonia [4]. Slovenia is also relatively successful in drawing on the EU Framework Programme funds, particularly if expressed as a percentage of GDP. Similarly characteristic of Slovenia is the above-average openness of enterprises to cooperation with other companies as well as with the public sector (Figure 12).

On the other hand, the number of non-EU doctoral students illustrates that Slovenia, being a small state, is not very visible in the higher-education and research arena. While the legislation allows for a fairly simple inclusion of foreign researchers into Slovene companies and research organisations, it also requires that courses at Universities be given in Slovene. This, together with the fact that the title of a full professor can only be awarded following habilitation at a Slovene university, places considerable limits on the development of the universities. Such an approach may lead to unbalanced internationalisation ("internationalisation à la carte"), which could have serious consequences for Slovenia's long-term performance [3].

**Figure 12. Openness, excellence and attractiveness of the system**



Notes:

Data sources for each indicator are indicated in brackets after the name of the indicator.

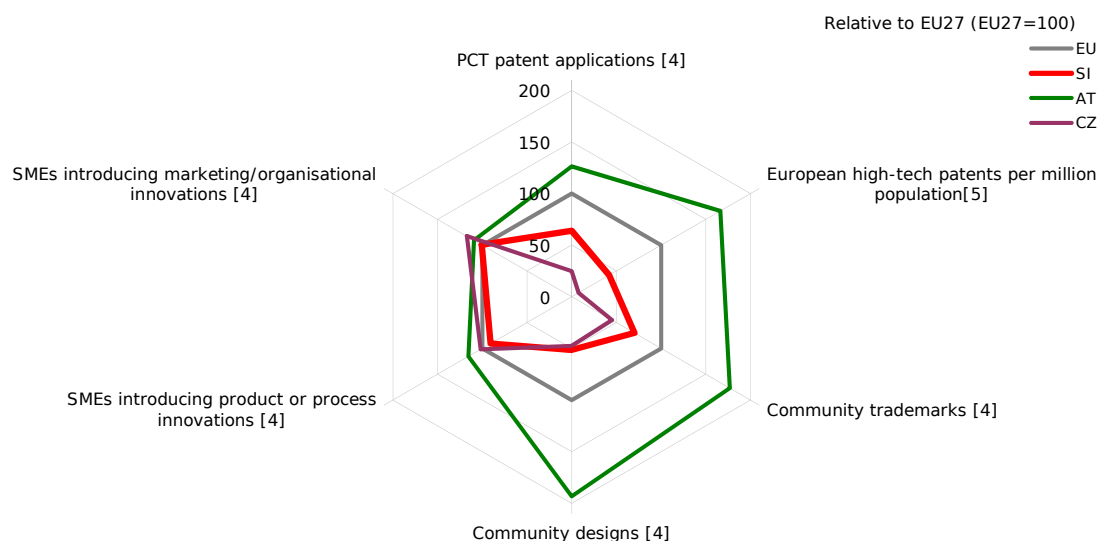
The business enterprise expenditure on R&D in the public sector as a percentage of public sector R&D is an OECD indicator.

The average value of EU27 is replaced by the average value for the OECD.

## 2.5. Effectiveness of research and innovation activities

If Slovenia is attaining relatively positive or average results with innovation input indicators, this certainly is not true for output indicators (Figure 13). Significant growth can be noted in Community trademarks and Community designs indicators [4], while the remaining four indicators stand at the EU27 average. A partial explanation for the innovation gap can be found in the fact that new innovation policy instruments more quickly influence factors entering the innovation process, while their impact on outputs is typically slower, particularly since the outputs frequently depend on the restructuring of the economy [11]. Poor results can probably also be linked to a reduction of non-R&D innovation expenditure and to a low share of private loans to companies. In addition, the underdeveloped offer of venture capital and lengthy processes of the government's entering the venture capital market have thus far failed to encourage innovation activities of small enterprises in higher-risk industries [11].

**Figure 13. Effectiveness of research and innovation activities**



Note: Data sources for each indicator are indicated in brackets after the name of the indicator.

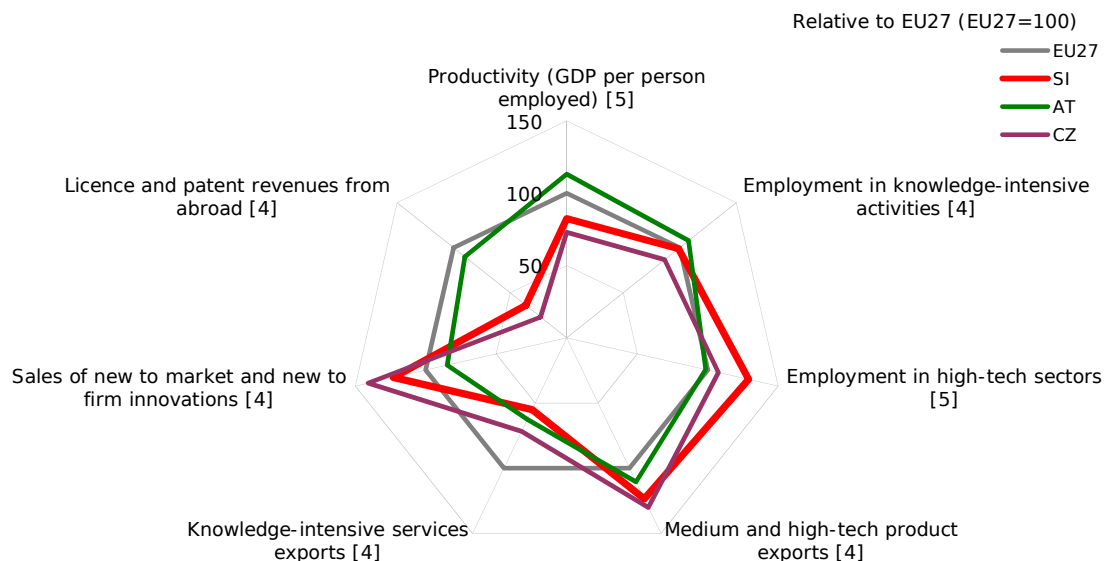
## 2.6. Impacts on the economy

In 2010, the productivity growth of Slovenia was higher than the EU average. Expressed in the purchasing power standards, Slovenia was attaining 84.6% of the EU average labour productivity level (77.0% of the Eurozone average) in 2008. In 2009, however, Slovenia's gross domestic product shrank more than in the rest of the EU, increasing the gap with the EU by as much as 2.2 percentage points according to the latest available data. Since last year's productivity growth in Slovenia was above the EU average, the Institute of Macroeconomic Analysis and Development estimates that the gap under this indicator did not continue to grow [11].

In Slovenia, 12.9% of employees work in knowledge-intensive activities, which is close to the EU27 average (13%). While the share of medium and high-tech products in the total Slovene exports is above the EU average, Slovenia very much lags behind in the exports of knowledge-intensive services (Figure 14) [4].



**Figure 14. Impacts on the economy**



Note: Data sources for each indicator are indicated in brackets after the name of the indicator.

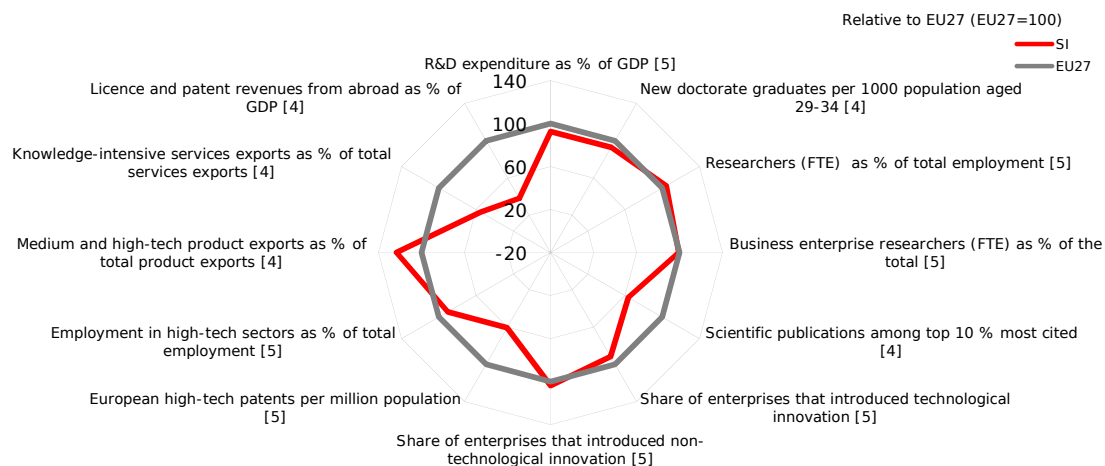
## 2.7. Conclusion

In the last years Slovenia has achieved progress in terms of innovation performance and takes a leading position among new EU member states according to many knowledge and innovation indicators. In order to catch up with the pace of the most innovative EU member states, however, significant changes in its research and innovation system are imperative.

## 2.8. Attachment: Indicators for monitoring of RISS

In order to attain the RISS goals, the implementation of set measures has to be monitored continuously. On the basis of selected indicators for science, research and innovation, Slovenia's performance will be examined once a year and compared to the EU27 average (Figure 15).

**Figure 15. Indicators for monitoring RISS [12]. SI percentages compared to EU27**

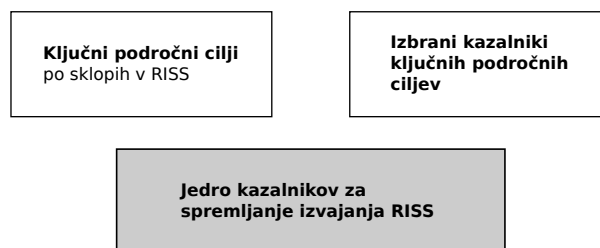


Indicators listed in Figure Figure 15 were selected as core indicators for monitoring the implementation of Slovenia’s Research and Innovation Strategy.

Goals and indicators for monitoring the implementation of RISS.

I. Shema ciljev in kazalnikov spremljanja izvajanja RISS [6]

**Figure 16. Kazalniki za spremljanje RISS.**



II. Kazalniki ukrepov (glej tabele ukrepov v besedilu RISS)

III. Kazalniki ključnih področnih ciljev (glej tabele ukrepov v besedilu RISS)

IV. Jedro kazalnikov za spremljanje izvajanja RISS

Kazalniki v tem naboru so izbrani zelo selektivno izmed kazalnikov ključnih področnih ciljev RISS in sicer tako, da čimbolj enakomerno pokrivajo vse dimenzije problematike raziskovalno-razvojne dejavnosti in inovacij v njihovih ključnih vidikih. S takšnim naborom kazalnikov lahko zelo pregledno primerjamo dosežke Slovenije s povprečjem EU27 (ali s katerokoli posamezno članico EU), kakor tudi dosežene spremembe v času (npr. izhodiščno stanje – stanje v trenutku evalvacije; načrtovane ciljne vrednosti – dejansko dosežene vrednosti).

### V. The list of main indicators for monitoring of implementation of RISS

#### 1. INPUT

- 1.1. R&D expenditure (GERD) as % of GDP
- 1.2. New doctorate graduates (ISCED 6) per 1000 inhabitants aged 25-34
- 1.3. Researchers (FTE) as % of total employment
- 1.4. Business enterprise researchers (FTE)<sup>1</sup> as % of the total

#### 2. OUTPUT

- 2.1. Share of top 10% most cited publications worldwide
- 2.2. International scientific co-publications per million of population
- 2.3. Share of enterprises that introduced technological innovation
- 2.4. Share of enterprises that introduced non-technological innovation
- 2.5. European high-technology patents per million of population

3. GLOBAL IMPACT

- 3.1. Employment in high-technology sectors as % of total employment
- 3.2. Medium and high-technology product exports as % of total product exports
- 3.3. Knowledge-intensive services exports as % of total services exports
- 3.4. License and patent revenues from abroad as % of GDP

VI. Indicator definitions

- 1. 1.1. R&D expenditure (GERD) as % of GDP  
Numerator: Gross domestic expenditure on R&D (GERD)  
Denominator: Gross domestic product (GDP)
- 1.2. New doctorate graduates (ISCED 6) per 1000 inhabitants aged 25-34  
Numerator: Number of new doctorate graduates (ISCED 6)  
Denominator: Number of inhabitants aged 25-34
- 1.3. Researchers (FTE) as % of total employment  
Numerator: Number of researchers (FTE)  
Denominator: Number of employed persons
- 1.4. Business enterprise researchers (FTE) as % of the total  
Numerator: Number of researchers in the business sector (FTE)  
Denominator: Total number of researchers (FTE)
- 2. 2.1. Share of top 10% most cited scientific publications worldwide  
Numerator: Number of scientific publications in top 10% most cited worldwide  
Denominator: Total number of scientific publications of the country
- 2.2. International scientific co-publications per million of population  
Numerator: Number of scientific publications with at least one co-author based abroad  
Denominator: Total population

- 2.3. Share of enterprises that introduced technological innovation  
Numerator: Number of enterprises that introduced technological innovation (new products or/and processes; one or more)  
Denominator: Total number of enterprises
- 2.4. Share of enterprises that introduced non-technological innovation  
Numerator: Number of enterprises that introduced non-technological innovation (organisational and/or marketing innovation; one or more)  
Denominator: Total number of enterprises
- 2.5. 2.5 European high-technology patents per million of population  
Numerator: Number of patent applications made directly to the European Patent Office (EPO) or via the Patent Cooperation Treaty and designating the EPO (Euro-PCT), in the field of high-technology patent<sup>2</sup>  
Denominator: Total population
3. 3.1. Employment in high-technology sectors as % of total employment  
Numerator: Number of persons employed in high-technology sectors. High-technology sectors comprise high-technology manufacturing and knowledge-intensive high-technology services<sup>3</sup>.  
Denominator: Total number of persons in employment
- 3.2. Medium and high-technology product exports as % of total product exports  
Numerator: Value of medium and high-technology product exports. These exports include selected product groups of the Standard International Trade Classification (SITC Rev. 3)  
Denominator: Value of total product exports
- 3.3. Knowledge-intensive services exports as % of total services exports  
Numerator: Value of knowledge-intensive services exports. These exports are measured by the sum of credits of selected classes in the Extended Balance of Payments Services Classification (EBOPS).  
Denominator: Total services exports as measured by credits in EBOPS

---

<sup>2</sup>The definition of high-technology patents uses specific subclasses of the International Patent Classification (IPC) as defined in the trilateral statistical report of the EPO, JPO and USPTO.

<sup>3</sup>Knowledge-intensive activities are defined, based on EU Labour Force Survey data, as all industries of the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2) at 2-digit level where at least 33% of employees have higher education degree (ISCED 5 or ISCED 6).

3.4. License and patent revenues from abroad as % of GDP

Numerator: License part of international transactions in royalties and license fees

Denominator: Gross domestic product (GDP)

## 2.9. References

- [1] Maja Bučar with Andreja Jaklič and Boštjan Udovič; *National system of innovation in Slovenia*; Faculty for Social Sciences, Ljubljana; 2010; <http://www.mednarodniodnosi.si/cmo/CIR/CIR4National System of Innovation in Slovenia.pdf>;
- [2] *Policy Mix Peer Reviews: Country Report – Slovenia*; European Union Scientific and Technical Research Committee, Bruxelles; 2010; [http://www.era.gv.at/attach/Item4.1Slovenia\\_OMC\\_Report\\_FinalDec20.pdf](http://www.era.gv.at/attach/Item4.1Slovenia_OMC_Report_FinalDec20.pdf);
- [3] *OECD review of Slovenia's innovation policy: Overall assessment and recommendations – preliminary draft*; OECD, Pariz; 2010;
- [4] *European Innovation Union Scoreboard*; The Innovation Union's performance scoreboard for Research and Innovation, EC.; 1 February 2011;
- [5] *Eurostat Web page – Science and Technology*; Eurostat, Luxembourg; 2011; <http://epp.eurostat.ec.europa.eu>;
- [6] *OECD Science, Technology and Industry Outlook*; OECD Publishing; 2010; [http://dx.doi.org/10.1787/sti\\_outlook-2010-en](http://dx.doi.org/10.1787/sti_outlook-2010-en);
- [7] *OECD Economic Surveys Slovenia February 2011*; OECD Publishing; February 2011;
- [8] *Statistical Office of the Republic of Slovenia web page*; Statistical Office of the Republic of Slovenia; <http://www.stat.si/>;
- [9] *PhD careres, Slovenija, 2009 - final data*; Statistical Office of the Republic of Slovenia; May 31. 2011;
- [10] *Interim Evaluation of the Seventh Framework Programme, Report of the Expert Group, Final Report*; November 12. 2010; [http://dx.doi.org/10.1787/sti\\_outlook-2010-en](http://dx.doi.org/10.1787/sti_outlook-2010-en);

- [11] *Development report 2011*; Institute of macroeconomic analysis and development; 2011;
- [12] *Concept for the monitoring of implementation of RISS and the set of indicators was prepared by Daša Bole-Kosmač, M.Sc.; MHEST;*

---

# Notes