

UNIVERSITY OF ZAGREB

University of Zagreb
Research Strategy
2008-2013



Zagreb, June 2008

UNIVERSITY OF ZAGREB

University of Zagreb
Research Strategy
2008 – 2013



Zagreb, June 2008

Publisher:

University of Zagreb

Zagreb, Trg maršala Tita 14

Editor:

Melita Kovačević

Vice-Rector for Science and Technology

Translated into English by

Borislav Knežević

Graphic Design:

Novena d.o.o.

Zagreb, Ogrizovićeveva 28b

Photographs taken from www.dreamstime.com

Press:

Sveučilišna tiskara d.o.o.

Zagreb, Trg maršala Tita 14

Circulation:

500 copies

A CIP catalogue record for this book is available from the National and University Library in Zagreb under 691278

ISBN 978-953-6002-37-5.

Table of Contents

Foreword	4
Strategic Framework	7
Introduction	8
Mission	9
Vision	9
Context	10
SWOT Analysis	11
Objectives	15
Strategic Objective	16
Immediate Objectives	16
Benchmarks of Research Activity	21



Foreword

The Senate of the University of Zagreb has unanimously approved the text of the University of Zagreb Research Strategy 2008–2013 at its meeting of June 10th, 2008. This document had been in long and careful preparation, during a period in which we had simultaneously started to establish and develop a number of conditions necessary for a successful implementation of the Strategy itself. A first step was the establishment of a new Board for research, development and technology, structured as a collection of mutually interacting working groups charged with different types of research activities in science, the arts, and transfer of technology. Next, relevant offices are now being set up, staffed by experienced as well as junior experts, who possess high qualifications for certain areas, and especially for technology transfer, participation in international projects and programmes, and support of study programmes offered in cooperation with foreign universities and other research centres. Finally, the University recently joined the Science and Technology Project (STP), a joint programme of the World Bank and Croatia, which provided a boost in the development of technology transfer mechanisms.

The Strategy encompasses a central strategic issue, the future development of the University as a research and teaching institution. It is at the same time part of a whole

mosaic of strategic deliberations that include other key aspects of the operations and development of the University. I will mention but a few documents adopted by the University in the course of 2007 and 2008: *Spatial Needs Plan of the University of Zagreb*; *Action Plan for Mobility Development*, *Declaration on the Stimulation of Participation in International Exchange Programmes*; *E-Learning Strategy of the University of Zagreb (2007-2010)*, and *Regulations on the Principles of Funding of the University of Zagreb*. The latter one, while having the form of a supplementary legal act, also defines the guidelines for the development of the University as a business system. We face the preparation and adoption of several other partial strategies, especially those that encompass the development of human resources and further improvement of the system of study at all teaching and educational levels.

All these documents, the ones already adopted and the ones about to be adopted, represent the current strategic thinking at the University which is also based on an earlier strategic document, *Breakthrough 2001*, and on the *Programme of Activities* from 2006 by the current Rector. It is an assessment by the current leadership of the University that a gradual adoption of partial strategies, along with intensive measures for initiating new activities directly related to the strategic guidelines, should provide the best approach to the current situation at the University, defined as it is by current internal and external determinants, including international ones. The University leadership will be grateful to all the university constituent units, as well as all the members of the University community, who will consider in their further work these and other strategic postulates and who will provide assistance in a critical evaluation of their implementation in the years ahead.

Rector
Prof. Aleksa Bjeliš, PhD

The draft document of the Research Strategy of the University of Zagreb has been prepared by a working group consisting of the following members: prof. Melita Kovačević, PhD, Vice-rector for science and technology; prof. Adrijan Barić, PhD, chair; and the members: prof. Damir Boras, PhD, prof. Blaženka Divjak, PhD prof. Lovorka Galetić, PhD, prof. Miloš Judaš, PhD, prof. Dorian Marjanović, PhD, prof. Milan Mesić, PhD, dr. Goran Sergej Pristaš, PhD, prof. Božidar Šantek, PhD, prof. Krešo Zadro, PhD; associate members: dr. Alemka Markotić, PhD, dr. sc. Andrea Moguš-Milanković, PhD, and Loredana Maravić. M.A. Among the many experts who made valuable contributions to the Strategy the following should be singled out: prof. Tihomir Hunjak, PhD, prof. Denis Sunko, PhD, prof. Sven Seiwerth, PhD, prof. Dragan Sremec, PhD, prof. Stjepan Bogdan, PhD The Draft of the Research Strategy was repeatedly discussed at the constituent units of the University, meetings of the Research Areas Council, meetings of the deans and vice-deans for research, and the Rectors' Collegium.



1

Strategic Framework



Introduction

Since the founding of the first universities it has been a fundamental mission of the university to create and give access to knowledge of the highest level as well as to enable intellectual growth to those who seek to expand existing knowledge and generate new knowledge. The practice of teaching at a university has always been profoundly intertwined with striving for the kind of high-quality research that opens up new perspectives and pushes the boundaries of human knowledge. Along with this primary goal, the university also has the objective of enabling economic progress and sustainable development of the society as a whole by developing and applying new ideas and technologies.

In June 2007 the Croatian Government put forward a document called *Action Plan 2007–2010. Science and Technology Policy of the Republic of Croatia*, followed by *The Action Plan for Stimulating Investment in Science and Technology* in April 2008.¹ These papers were drafted with a reference to the Lisbon Strategy of 2000 and the revised document from 2005 as a fundamental strategy documents of the EU,² as well as the two Croatian Government documents from 2006, *The Strategic Development Framework 2006–2013*,³ and *Science and Technology Policy of the Republic of Croatia 2006–2010*.⁴ In April 2008 the Croatian Academy of Arts and Sciences put forward a document called *Recommendations from a Debate: Innovation, Research University and Knowledge-Based Enterprise*.⁵ The documents presented a plan and recommendations for advancement of research and technology in Croatia.

The University of Zagreb is fundamentally defined by a commitment to the mutuality of high-quality teaching and research in various academic disciplines and fields of art. Education and research belong to primary goals of the University, and so does providing incentives to creativity and innovation for the purpose of exerting

1 <http://public.mzos.hr/Default.aspx?sec=2193>

2 http://ec.europa.eu/growthandjobs/pdf/lisbon_en.pdf and http://ec.europa.eu/growthandjobs/pdf/COM2005_330_en.pdf

3 http://vlada.hr/hr/content/download/12663/140013/file/strategijski_okvir.pdf

4 <http://public.mzos.hr/lgs.axd?t=16&id=11834>

5 http://www.hazu.hr/inovativnost_istrzivacko_sveuc_30.=4.08.pdf

a more substantial effect on economic development. The Research Strategy of the University of Zagreb is designed to help organize and maintain the development of the University, its Faculties, departments, research teams and individual academics over a longer term.

An evaluation of the quality of research accomplished by researchers, artists, research teams, Faculties and the University as a whole should be the foundation for stimulating excellence in research. In this evaluation process the applicability of research, while certainly appreciated, cannot be the sole criterion for measuring quality of research.

Since no country is wealthy enough to develop all areas of research with the same intensity, it is natural that more stimulation is given to researchers and research teams of proven excellence. It is also understood that initial support needed for academic development should be accessible to all.

While the research strategy of the University as a whole is important, it is equally important for each constituent unit to define its own research strategy, that is, determine its research priorities based on already achieved research excellence.

After the adoption of the research strategy of the University, it is necessary to monitor the implementation and impact of the strategy. The University of Zagreb Vice-Rector for science and technology is entrusted with the implementation and monitoring of the strategy. The Vice-Rector along with several related committees is in charge of preparing an action plan for the implementation of the Research Strategy.

Mission

The University encompasses faculties and academies to enable their mutually harmonized functioning, it articulates strategic decisions related to various academic matters and conceptualization of research in academic disciplines and the arts, it manages financial and investment policies, and it secures legislative support and the development of human resources and research infrastructure. The University offers undergraduate, graduate and postgraduate education based on scientific, scholarly,

developmental and artistic research for the purpose of creating new knowledge and ideas and stimulating critical thought and creativity.

Vision

The University of Zagreb has a goal of developing as a university with a clear research profile, whose excellence in research will be internationally recognized. Teaching based on research will serve to educate future protagonists of progress in science, scholarship and the arts, as well as future protagonists of overall social development. Through the creation of new ideas and technological solutions and through critical thinking and creativity, the University will become one of the engines of the economy and sustainable development. The University of Zagreb, the oldest, largest and best (in terms of its achievements in science, scholarship and the arts) will serve as the instrument of the knowledge society as well as creativity and developmental strategy of Croatian society as a whole.

Context

The University of Zagreb has put forward this Research Strategy for a period in which Croatia faces considerable challenges, coinciding with the country's preparation for accession as well as with eventual accession to full membership in the European Union, which will significantly affect the national policy on science and higher education.

The University of Zagreb is currently in the middle of the implementation of the Bologna process at all levels of study. It is engaged in preparation of a set of measures designed to facilitate significant student mobility and attract gifted students to the University. On the other hand, there is also the danger of some of the best students leaving for prominent universities in Europe. The University should for that reason make an effort to improve considerably the infrastructure in research and the arts, and to initiate competitive research projects so as to attract into doctoral programmes the best students from Croatia, Europe and the world. Only by setting

up international research projects of the highest quality and by promoting intensive international cooperation will the University become sufficiently interesting to gifted doctoral students.

Along with the educational and research aspects, university education has important economic, social and cultural aspects. The complexity of contemporary issues – such as accession to the European Union, implementation of the Bologna process, energy crisis, pollution, climate change, and insufficient reliance of the national economy on knowledge – requires the University of Zagreb to play a more active role.

The University will continue to stimulate creativity, innovation and critical thinking, so as to create new knowledge as the mainstay of social growth and development. Raising awareness about the value and protection of intellectual property as well as the mechanisms of management and transfer of intellectual property will facilitate a more successful cooperation between the University and the business sector.

Today, research creates direct and immediate benefits for the society at large. It is becoming increasingly clear that only the economies based on research, innovation and new knowledge can expect future progress.

SWOT analysis

An analysis of strengths, weaknesses, opportunities and threats (SWOT) related to the issue of “Research at the University of Zagreb” was carried out at the University in working groups and committees. The SWOT analysis is based on debates on the subjects of *International Cooperation and Student Mobility*, *Quality Assurance System at the University of Zagreb*, *Teaching at the University of Zagreb*, and *Doctoral Studies at the University of Zagreb*.

Strengths:

- centuries of tradition, reputation of the University and internationally recognizable results in research in all areas and in the arts in most areas;
- a considerable number of national research projects in all research areas;

- a large number of researchers in research/teaching ranks;
- internationally recognized researchers and research teams in certain areas;
- the University covers the entire range of areas in research and the arts, which is a good basis for interdisciplinarity and multidisciplinary.

Weaknesses

- an uneven number of researchers at different constituent units of the University;
- the majority of researchers, especially junior ones, have to deal with a too heavy teaching load as well as other professional obligations, leaving them with insufficient time for research;
- departure of junior researchers for opportunities abroad due to better research conditions at foreign institutions;
- departure of junior researchers from universities into other sectors of work in Croatia for higher pay and standard of living;
- deficient incentives for junior researchers to do top quality research;
- shortage of working space and research equipment at some constituent units of the University;
- insufficient number of international research projects in the majority of areas;
- insufficient number of researchers who participate in academic training abroad during and immediately after their doctoral studies;
- insufficient number of joint research projects carried out in collaboration with the business sector;
- uneven development of constituent units in terms of achieving internationally recognized quality of research;
- weak interfaculty cooperation and insufficiently developed level of interdisciplinarity;
- absence of a professional management and a well-trained administrative staff as support for research activities;
- absence of an efficient and up-to-date IT system as support and resource for research;

- non-participation of some research and teaching staff in the running of research projects and direction of doctoral work.

Opportunities:

- more intensive participation in international research projects and better use of EU pre-accession funds;
- introduction of more adequate criteria for employment of research assistants;
- introduction of clearer criteria for fund distribution for projects funded by the Ministry of Science, Education and Sport, in accordance with national priorities;
- increasing funding levels for all areas of research and the arts, and particularly for those suffering under current unevenness and even absence of funding;
- creation of links with other Croatian universities through joint research and development projects;
- creation of links with eminent foreign universities through joint research and development projects;
- better utilization of national technology projects and creation of more intensive cooperation with the business sector on market-oriented research and development projects;
- greater accessibility of international grants and stimulation of mobility;
- greater accessibility of research equipment, library collections and databases to all researchers through acquisition of resources and IT networking at the University level.

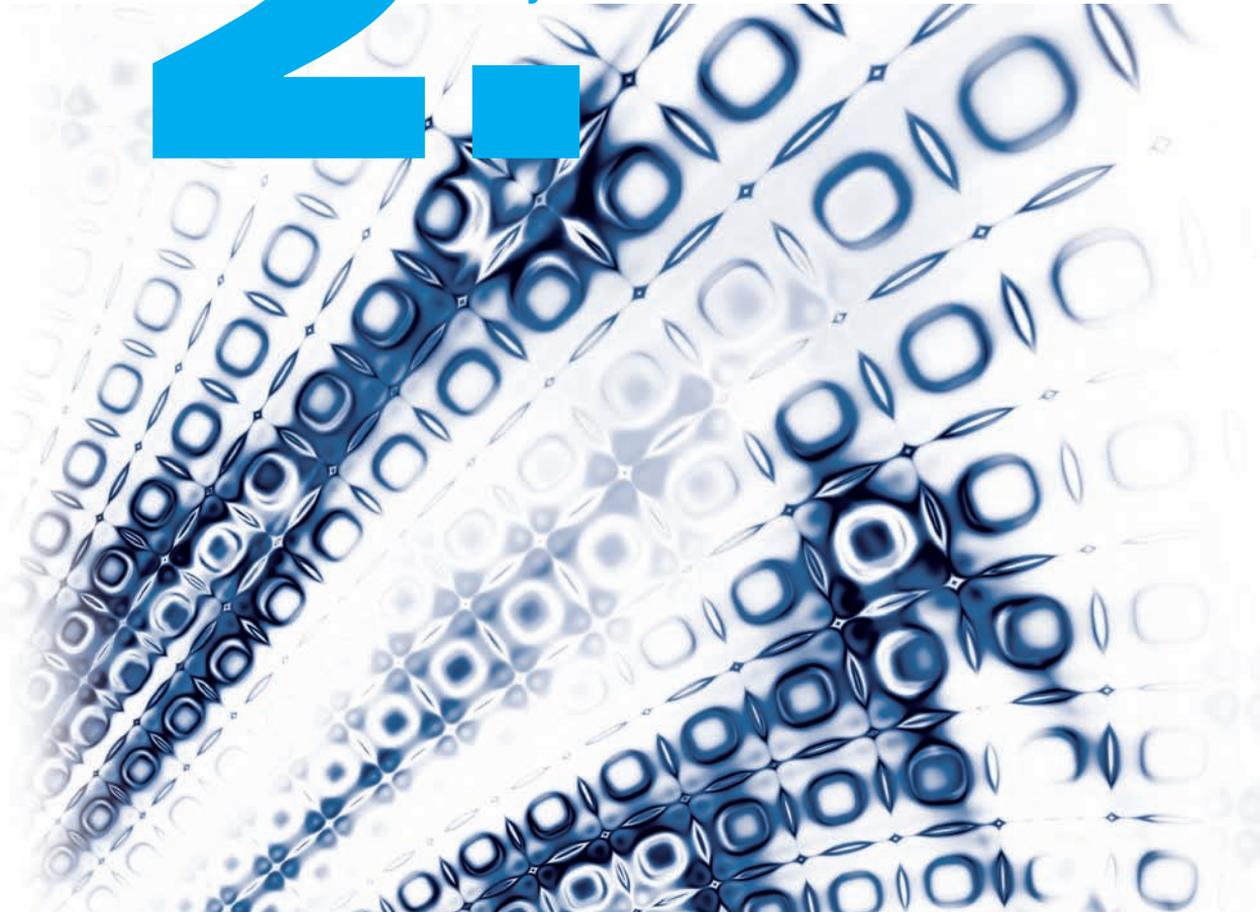
Threats:

- incompatibility of the research system with developmental needs of a society based on knowledge;
- insufficient levels of state budget funding for research;
- dominance of criteria of regional development over criteria of research excellence in the allocation of state budget research funding;

- insufficient research funding from non-budgetary sources;
- lack of interest of the business sector in research projects;
- lower competitiveness of jobs in research at the University versus jobs in other sectors;
- higher attractiveness of working in research abroad;
- unresolved issues in funding doctoral candidates from Croatia and abroad;
- inadequate state budget allocation for the maintenance of research infrastructure at the University;
- incompleteness of the regulatory framework for advancement of research;
- nonexistence of the institution of artistic research;
- impossibility of employment of research assistants in the area of the arts;
- insufficient openness of the public sector and the culture marketplace to artistic research.

2

Objectives



Strategic Objective

The strategic objective of the Research Strategy on the national level is to fortify the leading role of the University of Zagreb by increasing research and teaching quality, by participation in significant research projects, and on the international level by intensive participation in international research projects in order to achieve excellence in research and raise the profile and recognition of the University of Zagreb.

Immediate Objectives

The University of Zagreb has defined its fundamental goal as strengthening of its research profile by increasing the quality of research. Systematic research work is carried out at the constituent units of the University. In order to achieve quality research it is necessary to increase the number of researchers among teachers, increase the number of research assistants, doctoral candidates and postdoctoral fellows, increase the number of research projects and particularly international ones, increase investment in infrastructure, and provide an adequate organizational, financial and legislative framework for monitoring and expansion of research activities at the University with the aim of increasing research productivity and the quality of research results.

Achievement of immediate objectives will be measured in terms of implementation of planned goals.⁶

OBJECTIVE 1.

To determine the research profile of the University according to the principle of excellence and to secure an efficient organisational infrastructure, planning and management of research resources as well as an efficient compilation and dissemination of information.

6 In a majority of cases the goals are defined in terms of annual growth rates to be accomplished. The growth rate in 2008 and the subsequent period is to be calculated in relation to the average of the three-year period from 2005 to 2007.

Goal 1. To define the research profile of the University of Zagreb and its constituent parts according to the criterion of proven excellence in research.

(Benchmark 1)

Goal 2. To establish an efficient system of compilation of information necessary for evaluating the benchmarks of the Strategy. **(Benchmark 2)**

OBJECTIVE 2.

To increase the funding of research and to improve the research infrastructure.

Goal 3. To increase the total amount of research funding at the annual rate of at least 10%. **(Benchmark 3)**

Goal 4. To increase research funding originating outside the state budget at the annual rate of 15%. **(Benchmark 4 (4A, 4B, 4C))**

OBJECTIVE 3.

To stimulate national and international cooperation of the University and the business sector, and especially cooperation with the leading European and world universities and research centres by facilitating the training and education of junior researchers at European and world centres, by attracting postdoctoral researchers and visiting lecturers and researchers to the University of Zagreb, and by organizing joint research projects.

Goal 5. To increase the portion of teachers in research/teaching ranks involved in international research projects at the annual rate of at least 15%. **(Benchmark 7)**

Goal 6. At least 25% of doctoral candidates should spend at least 3 months in academic training outside Croatia. **(Benchmark 8)**

Goal 7. To increase the number of postdoctoral researchers from abroad who spend at least 6 continuous months at the University of Zagreb. **(Benchmark 9)**

OBJECTIVE 4.

To identify, stimulate and reward excellence in research.

Goal 8. The number of articles published in journals cited in the bibliographic databases which the Regulations on terms of academic advancement identify as the top category in specific areas should rise by the annual rate of at least 15%.

(Benchmark 10)

Goal 9. The number of published articles cited in the CC/SCI/SSCI bibliographic database should rise by the annual rate of at least 15%. **(Benchmark 11)**

Goal 10. To establish financial incentives for rewarding best research assistants at the University of Zagreb and for their introduction to independent research.

(Benchmark 12)

Goal 11. To establish financial incentives for rewarding successful participation in European research projects. **(Benchmark 13)**

OBJECTIVE 5.

To systematically create conditions for an increase in the number of doctoral dissertations defended. Also, to stimulate increase of the number of doctoral candidates, postdoctoral researchers and researchers in general.

Goal 12. To increase the number of research assistants at the University of Zagreb at the annual rate of at least 10%. **(Benchmark 16)**

Goal 13. To increase the number of doctoral candidates funded by the public sector, the business sector and international programmes at the annual rate of at least 10%. **(Benchmark 17 (17A, 17B, 17C))**

Goal 14. To increase the number of research assistants who complete their doctoral studies by the annual rate of at least 15%. **(Benchmark 18)**

OBJECTIVE 6.

To stimulate projects in art research, their funding and status equality with scientific research.

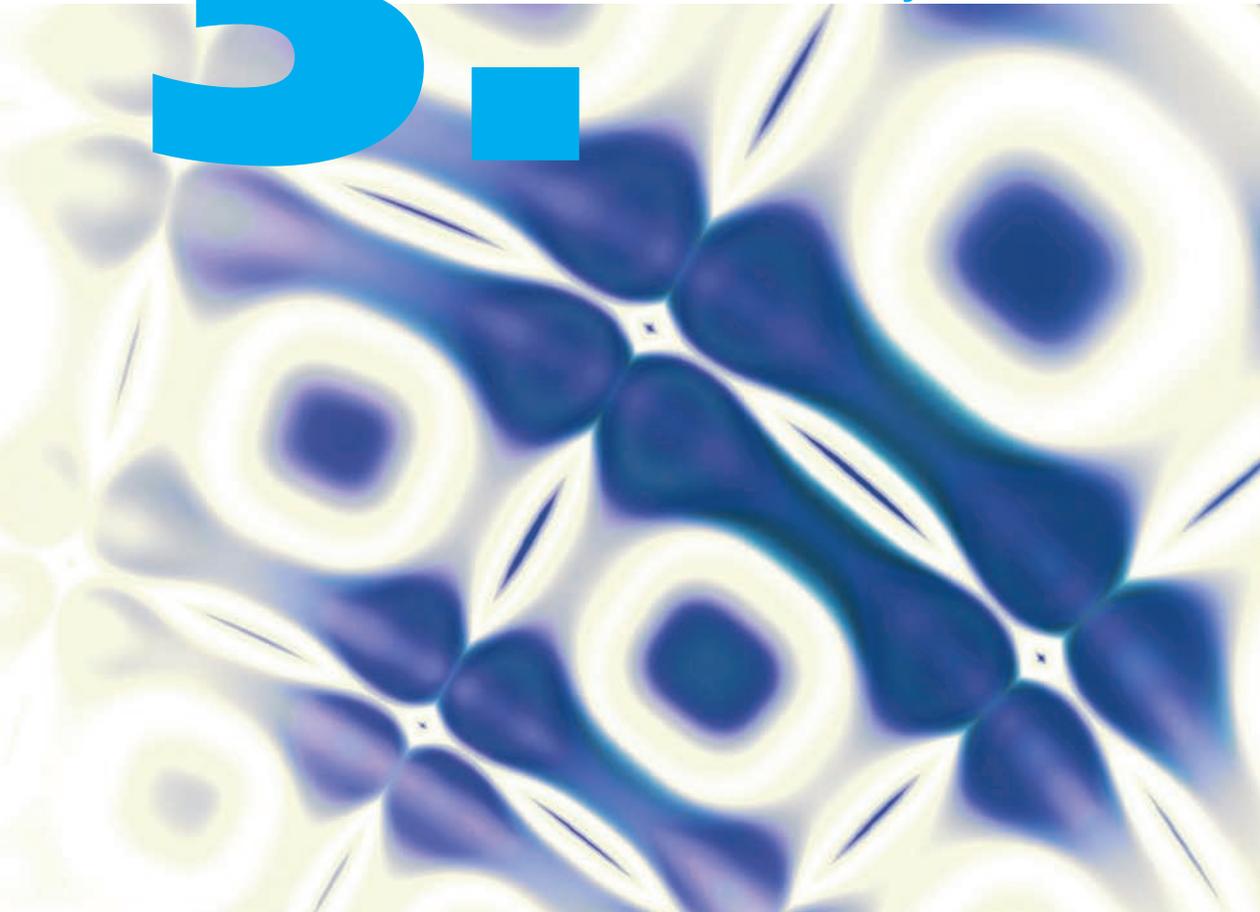
Goal 15. To establish criteria of excellence for defining the institution of artistic research as a creative practice and knowledge production. **(Benchmark 26)**

Goal 16. To work on changes to the Science and Higher Education Act with the aim of achieving equal status of the science/research areas and the art area and to advocate the establishment of an efficient system of funding artistic research projects at the Ministry of Science, Education and Sport and the Ministry of Culture. **(Benchmarks 27 and 28)**

Goal 17. To create the infrastructure for artistic research at the University by establishment of the Centre for Artistic Research. **(Benchmark 29)**

3

Benchmarks
of Research Activity



The Benchmarks of research activity at the University of Zagreb will provide the basis for evaluating the success of research performed at the University. Research results achieved in the period from 2008 to 2013 will be compared to the results achieved in the previous five-year period, from 2003 to 2007.

Annual growth rate is the criterion used to measure success in achievement of goals planned as part of the Strategy. The basis for calculating growth is the mean value of the specific benchmark in the three-year period from 2005 to 2007.⁷

The end date for each activity is December 31st, unless a different date is expressly mentioned.

Benchmark 1. Definition of the Research Profile of the University of Zagreb

- A measure of the development level of institutional policies on research at the University of Zagreb.
- It is defined in terms of institutional decisions, legislative framework, human resources, material and financial resources, and activities underway. The basis for evaluation is made up by the results achieved in the previous period. This also means that the research profile of the University and of individual constituent units is not a list of wishes of the individual units, but a list of result achieved. The priorities from the EU 7th Framework Programme can be defined as part of the research profile of the University.
- End date: June 30, 2009
- Person in charge: Vice-Rector for science and technology and Vice-Deans for research
- BM⁸

7 If the mean value of the indicators in the 2005–2007 period equals I_{MV} , then in order to achieve the annual growth rate of 20%, it is necessary to reach $1.2 I_{MV}$ in 2008, a growth of $1.2 \cdot 1.2 I_{MV} = 1.44 I_{MV}$ in 2009, and by the end of 2009 a growth of 73% relative to the mean value of indicators in the 2005–2007 period, that is $1.2 \cdot 1.2 \cdot 1.2 I_{MV} = 1.73 I_{MV}$.

8 BM stands for benchmark, that is the point of reference to be used in measuring the success of implementation of specific goals defined in relation to the immediate objectives of the Strategy.

Benchmark 2. Establishment of an Efficient System for Compilation of Information

- A measure of development of the organisational infrastructure at the University of Zagreb.
- It is defined in terms of accessibility and timely updating of all relevant information necessary for measuring the benchmarks of the implementation of the research strategy, as well as in terms of relevant activities underway.
- End date: June 30th, 2009
- Person in charge: Vice-Rector for science and technology
- BM

Benchmark 3. Funding of Research

- A measure of success in raising funds for research activities at the University of Zagreb.
- The total amount of money for funding research projects received by the University in a year. This includes all types of research projects (MSES, Ministry of Health, Ministry of Culture, other ministries, National Foundation for Science, Higher Education and Technological Development, other foundations, City of Zagreb, the public sector, the business sector, international programmes).
- Person in charge: University Accounting Manager and accounting managers at constituent parts of the University.
- BM.

	2003	2004	2005	2006	2007
MSES research projects (kuna)	53,601,131	53,944,163	59,450,000	59,122,750	69,541,400
Other sources of funding research projects (kuna)	28,151,127	25,350,142	23,520,146	21,501,714	16,912,754
Funds allotted for research assistants and research equipment (small, medium-size and capital)	102,960,000	119,520,000	134,040,000	147,458,029	149,890,639

	2003	2004	2005	2006	2007
Total (kn)	184,472,258	198,574,305	216,770,146	227,842,493	237,064,793

Source: Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.
(<http://public.mzos.hr/Default.aspx?sec=2132>)

Benchmark 4 (4A, 4B, 4C). Research Funding Originating in the Public Sector, the Business Sector and International Programmes

- A measure of success in raising funds for research activities at the University of Zagreb.
- The total amount of money for funding research projects received by the University in a year. This includes all the funds for research projects (public sector, business sector, international programmes) raised by the University of Zagreb. The “public sector” category does not include MSES research projects, but it does include other projects funded by the MSES or by its agencies. Benchmark 4 comprises three different benchmarks: 4A) public sector, 4B) business sector, and 4C) international projects.
- Person in charge: University Accounting Manager and accounting managers at constituent parts of the University.
- BM.

	2003	2004	2005	2006	2007
Other budgetary sources of funding research projects (kuna)	28,151,127	25,350,142	23,520,146	21,501,714	16,912,754
Total (kuna)	28,151,127	25,350,142	23,520,146	21,501,714	16,912,754

Source: Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.

Benchmark 5. Number of research projects funded by the MSES

- A measure of research activity at the University of Zagreb.
- Number of research projects with participation from researchers from the University of Zagreb and for which funds are transferred to the University of Zagreb. This includes only those research projects of the MSES for which the amount of funds transferred to the University of Zagreb exceeds 20,000 kuna.
- Person in charge: Vice-dean for research and Vice-rector for science and technology.

Year	Number of projects
2003	849
2004	849
2005	851
2006	829
2007	986

Source: MSES.

Benchmark 6 (6A, 6B, 6C). Number of research projects funded by the public sector, the business sector and international programmes

- A measure of research activity at the University of Zagreb.
- Number of research projects with participation from researchers from the University of Zagreb and for which funds are allocated to the University of Zagreb. This includes research projects that get funding from the public sector (excluding research projects funded by the MSES), the business sector and international programmes for which the amount of funds transferred to the University of Zagreb exceeds 20,000 kuna. Benchmark 6 comprises three different benchmarks: 6A) public sector, 6B) business sector, 6C) international projects.
- BM

Year	Number of international projects
2003	-
2004	134
2005	182
2006	213
2007	190

Source: <http://projects.unizg.hr/projekti>

Benchmark 7. Proportion of teachers in research/teaching ranks participating in international research projects

- A measure of research activity at the University of Zagreb.
- Share of the total number of teachers in research/teaching ranks working full-time at the University and participating in international research projects as Croatian research team leaders or as participating researchers.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.
- BM

Benchmark 8. Number of doctoral candidates who spent at least three months in academic training outside Croatia

- A measure of research activity at the University of Zagreb.
- The total number of doctoral candidates funded outside the state budget who spent at least three months outside Croatia. Doctoral candidates are divided in groups according to research areas; so are research assistants and doctoral candidates funded outside the state budget.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.
- BM

Time spent abroad	YES	NO
Biomedical area	40	42
Biotechnical area	31	28
Social sciences and humanities	64	47
Technical area	66	131
Natural science area	53	37
Total	254	285

Questionnaire: Research assistants, University of Zagreb, January 2008 (number=539)

Length of stay abroad	up to 3 months	3 to 6 months	6 to 12 months	more than 12 months	Total	%
Biomedical area	21	8	6	5	40	15.75
Biotechnical area	19	5	4	3	31	12.20
Social sciences and humanities	29	11	17	7	64	25.20
Technical area	32	13	14	7	66	25.98
Natural science area	25	14	7	7	53	20.87
Total %	126	51	48	29	254	100.00
	49.61	20.08	18.90	11.42	100.00	

Questionnaire: Research assistants, University of Zagreb, January 2008 (number=539)

Benchmark 9. Number of postdoctoral researchers from abroad who spent at least 6 continuous months at the University of Zagreb

- A measure of international recognition of research at the University of Zagreb.
- Total number of postdoctoral researchers from abroad who spent at least 6 continuous months at the University of Zagreb. The postdoctoral researchers are categorized by research area.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.

Benchmark 10. Number of articles published in journals cited in bibliographic databases which the Regulation on conditions of academic advancement identifies as the top category in specific areas

- A measure of the quality of research activity at the University of Zagreb.
- Number of published articles cited in bibliographic databases which the Regulations on terms of academic advancement identify as the top category in specific areas.
- Person in charge: Vice-Dean for research.
- BM

Benchmark 11. Number of published articles cited in the CC/SCI/SSCI bibliographic database

- A measure of the quality of research activity at the University of Zagreb.
- Number of published articles cited in the CC/SCI/SSCI bibliographic database.
- Person in charge: Vice-dean for research.
- BM

Year	Number of CC articles
2003	704
2004	791
2005	897
2006	773
2007	882

Source: <http://bib.irb.hr>

Benchmark 12. To establish financial incentives for rewarding best research assistants at the University of Zagreb and for introducing them to independent research

- A measure of development of institutional and financial efficiency in stimulating research activity at the University of Zagreb.
- It is defined by enacting a decision to establish a fund for rewarding best research assistants and doctoral candidates, for their introduction to independent research, and the number of awards won.
- Person in charge: Vice-Rector for science and technology.
- BM

Benchmark 13. To establish financial incentives for rewarding successful participation in European research projects

- A measure of development of institutional and financial efficiency in stimulating research activity at the University of Zagreb.
- It is measured by enactment of a decision to establish a fund for rewarding successful participation in European research projects, and by the number of awards won.
- Person in charge: Vice-Rector for science and technology.
- BM

Benchmark 14. Number of doctoral candidates at the University

- A measure of development of postgraduate doctoral studies at the University of Zagreb.
- The total number of doctoral candidates at the University. This includes all doctoral study students, that is, research assistants and other doctoral students

employed at the University, as well as doctoral students not employed at the University.

- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.
- BM

Benchmark 15. Number of doctoral candidates employed at the University

- A measure of development of postgraduate doctoral studies at the University of Zagreb.
- The total number of doctoral candidates at the University. This includes all doctoral study candidates employed at the University, that is, research assistants and other doctoral candidates employed at the University.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.
- BM

Year	Number of doctoral candidates* employed at the University	
2002/03	1355	
2003/04	1468	
2004/05	1587	<i>*assistants, junior assistants, research assistants</i>
2005/06	1542	
2006/07**	1601	<i>**April 2007</i>

Source: Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.

Benchmark 16. Number of research assistants at the University

- A measure of development of postgraduate doctoral studies at the University of Zagreb.
- Number of research assistants at the University.

- Person in charge: Vice-dean for research and Vice-rector for science and technology.
- BM

Year	Number of research assistants
2002/03	858
2003/04	996
2004/05	1117
2005/06	1063
2006/07	1125

Source: Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.

Benchmark 17. Number of doctoral candidates funded by the public sector, the business sector and international programmes

- A measure of development of postgraduate doctoral studies at the University of Zagreb.
- Number of doctoral candidates employed at the University who are funded outside of the state budget. This includes doctoral candidates funded by research projects supported by the public sector, the business sector and international programmes for which the funds transferred to the University of Zagreb exceed 20,000 kuna. The “public sector” category does not include MSES research projects, but it does include other projects funded by the MSES or by its agencies. Benchmark 17 comprises three different benchmarks: 17A) public sector, 17B) business sector, and 17C) international projects.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.
- BM

Benchmark 18. Number of research assistants who have completed their doctoral studies

- A measure of success of postgraduate doctoral studies at the University of Zagreb.
- Total number of research assistants who have completed their doctoral studies in a year. Doctorates are to be distinguished by research area. This benchmark includes research assistants funded through MSES research projects.
- Person in charge: Vice-dean for research and Vice-rector for science and technology.
- BM

Progress of research assistants funded through MSES projects in the 1999–2005 Period

	Number	Percentage
Without a degree	405	39.6
Mr. sc. (while research assistant)	259	25.3
Dr. sc. (while research assistant)	358	35.0
Total	1022	100.0

Doctorates By Research Area

Doctorates	Total number of research assistants	Number of doctorates	%
Natural science area	247	139	56.30%
Tehcnical area	272	66	24.30%
Biomedical area	266	53	19.90%
Biotechnical area	53	18	34.00%
Social sciences	97	40	41.20%
Humanities	87	42	48.30%
Total	1022	358	35.00%

Source: Polašek, Ozren. *Research Success of Research Assistants. Doctoral Dissertation. The Medical Faculty of the University of Zagreb, January 2008, p.48.*

Benchmark 19 (19A, 19B, 19C). Number of completed doctorates funded by the public sector, business sector and international programmes

- A measure of success of postgraduate doctoral studies at the University of Zagreb.
- Total number of doctorates completed at the University in a year. Doctorates to be distinguished by research areas. This benchmark includes doctorates supported by the public sector, the business sector and international programmes for which the funds transferred to the University of Zagreb exceed 20,000 kuna. The “public sector” category does not include MSES research projects, but it does include other projects funded by the MSES or by its agencies. Benchmark 19 comprises three different benchmarks: 19A) public sector, 19B) business sector, and 19C) international projects.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.

Benchmark 20. Proportion of teachers active as mentors to doctoral candidates

- A measure of research potential of the University of Zagreb.
- Proportion of teachers who are active as mentors to doctoral candidates in the total number of teachers in research/teaching rank employed at the University.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.

Benchmark 21. Number of PhDs who spent at least 6 continuous months in academic training outside Croatia after completion of doctoral studies

- A measure of international research activity and initial international experience of new teachers at the University in Zagreb.
- Total number of researchers with a doctorate which includes research assistants and doctoral candidates funded outside the state budget who spent at least 6 continuous months in academic training outside Croatia after completion of doctoral studies. Doctorates are to be differentiated by research area. Research assistants and doctoral candidates funded outside the state budget to be differentiated.
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.

Benchmark 22. Number of assistant professors who spent at least 6 continuous months in academic training outside Croatia after finishing their doctorate and before advancing to the initial research/teaching rank (assistant professor)

- A measure of international research activity and initial international experience of new teachers at the University in Zagreb.
- Total number of assistant professors who spent at least 6 continuous months in academic training outside Croatia after finishing their doctorate and before advancing to the first research/teaching rank (assistant professor).
- Person in charge: Vice-Dean for research and Vice-Rector for science and technology.

Benchmark 23A. Ratio of the number of articles published in journals cited in bibliographic databases (which the Regulations on terms of advancement in academic ranks recognize as top categories in specific areas) to the number of teachers

- A measure of quality and efficiency of research activity at the University of Zagreb.
- Ratio of the number of articles published in journals cited in bibliographic databases (which the Regulations on terms of advancement in academic ranks recognize as top categories in specific areas) to the number of teachers.
- Person in charge: Vice-Dean for research.

Year	Number of articles*	Number of teachers (research/ teaching ranks)**	Ratio
2003	1291	2129 (2002/03)	0.60
2004	1428	2234 (2003/04)	0.63
2005	1364	2266 (2004/05)	0.60
2006	1169	2336 (2005/06)	0.50
2007	1403	2529 (2006/07)	0.55

* „Original research articles and reviews in CC journals” and „Research articles in other journals” (only in social sciences and humanities)
 ** Full professors, associate professors, assistant professors

Source: <http://bib.irb.hr/> Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.

Benchmark 23B. Ratio of the number of published articles cited in CC/SCI/SSCI to the number of teachers

- A measure of quality and efficiency of research activity at the University of Zagreb.
- Ratio of the number of published articles cited in CC/SCI/SSCI to the number of teachers.
- Person in charge: Vice-Dean for research.

Year	Number of CC articles	Number of teachers (research/ teaching ranks)****	Ratio
2003	704	2129 (2002/03)	0.33
2004	791	2234 (2003/04)	0.35
2005	897	2266 (2004/05)	0.39
2006	773	2336 (2005/06)	0.32
2007	882	2529 (2006/07)	0.34

* Full professors, associate professors, assistant professors

Source: <http://bib.irb.hr/> Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006; Questionnaire: April 2007.

Benchmark 24A. Ratio of the number of articles (co)authored by research assistants and published in journals cited in bibliographic databases (which the Regulations on terms of advancement in academic ranks recognize as top categories in specific areas) to the number of research assistants

- A measure of quality and efficiency of research activity at the University of Zagreb.
- Ratio of the number of articles (co)authored by research assistants and published in journals cited in bibliographic databases (which the Regulations on terms of advancement in academic ranks recognizes as top categories in specific areas) to the number of research assistants.
- Person in charge: Vice-Dean for research.

Research assistants who published at least one article cited in Web of Science while employed at the University—the data cover the research assistants funded through MSES projects in the 1999–2005 Period (number = 1022)

	Number	Percentage
No articles published	617	60.4
Published at least one articles	405	39.6
Total	1022	100.0

Source: Polašek, Ozren. *Research Success of Research Assistants. Doctoral Dissertation. The Medical faculty of the University of Zagreb, January 2008, p.48.*

Benchmark 24B. Ratio of the number of published articles (co) authored by research assistants cited in CC/SCI/SSCI to the number of research assistants

- A measure of quality and efficiency of research activity at the University of Zagreb.
- Ratio of the number of published articles (co)authored by research assistants cited in CC/SCI/SSCI to the number of research assistants.
- Person in charge: Vice-Dean for research.

Benchmark 25. Ratio of Research Funding to the Number of Teachers

- A measure of success in raising funds for research activity at the University of Zagreb.
- Ratio of funds raised for funding research projects in a year to the number of research/teaching staff at the University of Zagreb. This benchmark refers to the funds transferred to the University for all types of research projects (MSES, public sector, business, international programmes), and this includes

only those research projects for which the amount of funds transferred to the University of Zagreb exceeds 20,000 kuna.

- Person in charge: Accounting manager at each of the constituent parts of the University.

Year	Funds* (kuna)	Number of researchers (total)**	Ratio (kuna / researcher)	
2003	184,472,258	2897 (2002/03)	63,680	<i>* Funds raised for research projects + funds marked for research assistants+ funds raised for equipment (small, medium-size, large)</i> <i>** Full professors, associate professors, assistant professors, senior assistants, junior assistants, tenured research ranks, assistants (research assistants are not included)</i>
2004	198,574,305	2963 (2003/04)	67,010	
2005	216,770,146	3007 (2004/05)	72,090	
2006	227,842,493	3085 (2005/06)	73,850	
2007	237,064,793	3165 (2006/07)	74,900	

Source: Report on the Activities of the University of Zagreb in the Academic Years 2002/2003, 2003/2004, 2004/2005, 2005/2006.

(<http://public.mzos.hr/Default.aspx?sec=2132>)

Benchmark 26. Definition of criteria of excellence in artistic research activities

- A measure of artistic research activity at the University of Zagreb.
- Completed definitions of criteria of excellence based on international experiences and local achievements in excellence.
- End date: December 31, 2008.
- Person in charge: President of Artistic Area Council.
- BM

Benchmark 27. Establishment of a system of funding artistic research at the MSES and Ministry of Culture

- A measure of collecting funds for artistic research activities at the University of Zagreb.
- Total amount of funds transferred to the University for funding artistic research projects in a year. This benchmark covers all types of artistic research projects.
- Launching of at least three research projects at each of the constituent units in the arts, as well as one interdisciplinary and one international project.
- End date: December 31, 2010.
- Person in charge: Vice-Rector for science and technology and Vice-Deans for artistic research.
- BM

Benchmark 28. Employment of research assistants on artistic research projects

- A measure of evenness of development of specific research and artistic areas at the University of Zagreb.
- Number of research assistants. Research assistants employed in research projects to be distinguished from research assistants in the arts.
- Person in charge: Vice-Rector for science and technology.

Benchmark 29. Establishment and Outfitting of the Centre for Artistic Research

- A measure of development of research infrastructure at the University.
- Number of projects started at the Centre for Artistic Research.
- End date: December 31, 2009.
- Person in charge: Vice-Rector for Development and Spatial Planning.
- BM

LIST OF ABBREVIATIONS

BM	Benchmark (a measurable indicator of success in the implementation of the strategy)
EC	European Commission
EHEA	European Higher Education Area
ERA	European Research Area
FP	Framework Programme of the EU (for instance FP 6, FP 7)
FTE	Full time equivalent
MSES	Ministry of Science, Education and Sport
MC	Ministry of Culture
NFS	National Foundation for Science, Higher Education and Technological Development
R&D	Research and Development

