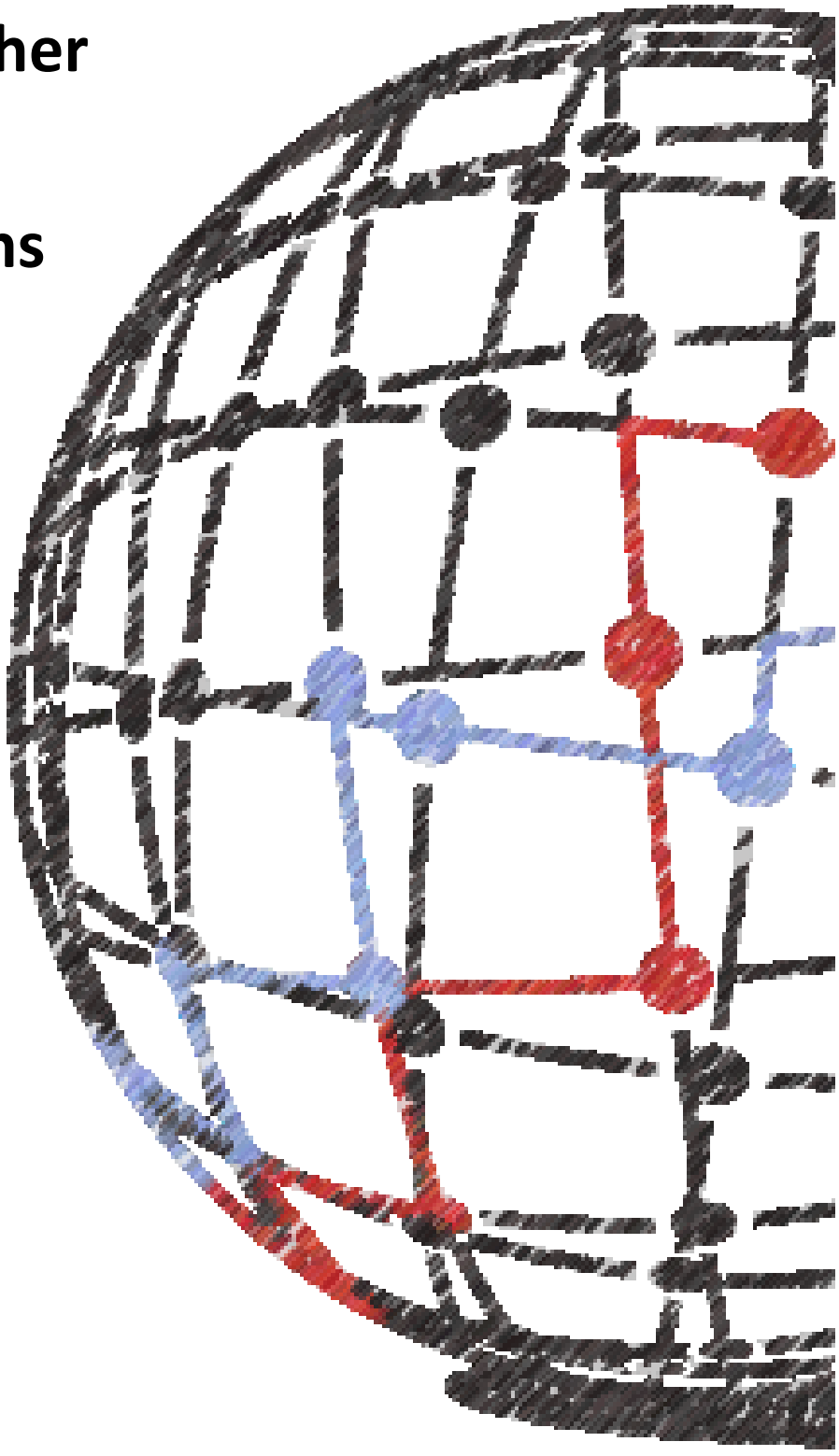
Overview of Higher Education and Research Systems in the Western Balkans



Croatia

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April 2013

The views expressed in this report represent those of the author and do not necessarily represent those of the project partner institutions or any other party.

About Country Reports

The series of reports entitled "Overview of Higher Education and Research Systems in the Western Balkans" is produced within the framework of the project "European Integration of Higher Education and Research in the Western Balkans" which is funded through the NORGLOBAL programme of the Norwegian Research Council. The reports cover seven higher education systems in the region – Albania, Bosnia and Herzegovina, Croatia, Kosovo*[1], FYR Macedonia, Montenegro, and Serbia.

Each of the seven reports represents an overview of the higher education and research systems in the region, covering topics such as policy, governance arrangements, funding, institutional landscape, and quality, while focusing on the major reforms and trends in the recent years. Aiming to secure a comparative perspective in writing the reports, their structure is built around the questionnaire produced by the project team.

Apart from striving to complement our knowledge base on the dynamics of higher education and research systems in the Western Balkan region, the purpose of the reports is to introduce these systems in a structured manner, as well as to offer a basis for prospective comparative research.

[1] * This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ opinion on the Kosovo Declaration of Independence.

European Integration of Higher Education and Research in the Western Balkans

Overview of Higher Education and Research Systems in the Western Balkans

Country Report: Croatia

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April 2013

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Size of the Higher Education System: Institutions

Croatia's Higher Education (HE) system is regulated on the national level, and has been under intensive reforms since 2003, driven by the Bologna Process, which Croatia joined in 2001.The system is primarily regulated by the 2003 Act on Scientific Activity and HE which established a binary system. **Professional studies** are offered in polytechnics, schools of professional HE and, exceptionally, universities. **Academic studies** are offered exclusively in universities. Teaching and research is carried out by one of the following constituent university units: Faculties, university departments, art academies or university institutes. Faculties and academies are parts of universities, but legally recognized as separate and independent legal entities (EACEA, 2010).

Trends in Higher Education

Table 1. Size of the higher education system (January 2013)

	Public	Private	Total
Number of non-university/vocational/professional HE institutions:			
Polytechnics	12	3	15
Schools of professional higher education	3	25	28
Total	**15**	**28**	**43**
Number of universities:			
Universities	7	3	10
Faculties	61	0	61
Art academies	6	0	6

Source: Agency for Science and Higher Education

In 2010 the share of population aged 30-34 with tertiary education was 22.6%, while the EU average was 33.6% (Erawatch, 2013).In 2003 Croatia had six universities, seven polytechnics and 15 schools of professional HE. The number of HE institutions doubled in the past ten years (Table 1; NCHE, 2011b). Croatian HE used to be concentrated at the major traditional universities Zagreb, Split, Osijek, and Rijeka, but in the past 10 years new public universities have been established: Zadar 2002, Dubrovnik 2003, and Pula 2006. The traditional universities are not functionally integrated, but the recently founded ones are. In addition to this, the incentive for polycentric development of HE has continued in Croatia since 2007, with the Ministry of Science, Education and Sport (MSES) and the Development and

Employment Fund of the Republic of Croatia investing 8 million EUR to support the establishment and development of professional study programs outside of traditional HE centers. According to the NCHE there is no need for new public HE institutions at least until the existing institutions are consolidated and have passed the first reaccreditation by 2014 (NCHE, 2011a).

Despite polycentric development, study opportunities are primarily located around the capital Zagreb. Even though institutions are now distributed across the whole country, the University of Zagreb offers the most diverse study programs, enrolling about 50% of the overall student population.

International Partnerships in Higher Education

There are two examples of international partnerships in establishing HE institutions and both are US-affiliated HE institutions. The International Graduate Business School (IGBS) in Zagreb offers an MBA degree in partnership with Indiana University's Kelley School of Business. Second, the American College of Management and Technology (ACMT) was established in 1995 in Dubrovnik. Affiliated with the Rochester Institute of Technology (RIT), ACMT is the only educational institution granting a joint diploma consisting of an American RIT degree and a Croatian ACMT degree. The programs at the undergraduate level focus on business and information technology. Limited graduate programs are offered in cooperation with RIT. In 2011 ACMT opened a second campus in Zagreb.

Croatian HE institutions prefer international cooperation on joint degree programs to the creation of international partnerships in establishing HE institutions. The MSES estimates that up to 5% of HE institutions award joint degrees and up to 5% participate in joint study programs, such as biomedicine, humanistic and social sciences, arts and interdisciplinary studies (EHEA, 2012:6).

The complex and long administrative procedure for initial accreditation of a HE institution is an impediment for international partnerships in establishing HE institutions (see section 0

Quality Assurance in Higher Education for more details). Additionally, the employment and temporary residency regulations for foreigners are not well coordinated between different state bodies. Administrative procedures are often discouragingly complex.

Therefore, the MSES set up an intergovernmental and inter-sector working group in 2009to remove obstacles and facilitate international partnerships and mobility. The first action plan for 2010-2012 was adopted by the Government in 2010.The second action plan 2013-2015 is currently under way.

Private Higher Education Institutions

The 2003 Act on Scientific Activity and HE for the first time ended the privilege of the public HE system and introduced regulation on private HE institutions, allowing for the establishment of private universities, polytechnics and schools of professional HE. All HE institutions in Croatia are non-profit institutions and perform their duties as a public service. Private and public HE institutions are treated equally, which means that the same quality assurance mechanisms apply, which proves challenging for young institutions. Still the number of private HE institutions and programs has grown since 2003, but primarily in the professional studies sector. Private HE institutions currently enroll less than 10% of all students, but enrolment rates are increasing (EACEA, 2010).

Around 20% of all students enrolled in professional studies attend private institutions (Dataset of the EUROSTUDENT survey, 2010). Assessing trends in private sector, NCHE notes that while private sector initiatives in HE are not unwelcome, the fact that most private study programs are in business and economics clearly represents an imbalance. Additionally, the geographic overlap of identical study programs at private and public HE institutions in Zagreb is a waste of resources (NCHE, 2011).

Croatia has three private universities. The number of students attending these universities is below 1% of all students enrolled in university studies (Dataset of the EUROSTUDENT survey, 2010). The NCHE criticized their hurried establishment, without the capacity to offer doctoral studies, and offering study programs exclusively in social sciences and humanities (NCHE, 2011).

Organization of Higher Education

The Bologna driven reform of study programs began in 2005, introducing undergraduate and graduate programs (first and second cycle). The majority of HE institutions transformed the previous four-year programs into the 3+2 Bologna model. Only a few kept the 4+1 model, and some adopted integrated

programs, such as Law (5+0) or Medicine (6+0). Postgraduate programs were also restructured (EACEA, 2010).

Just before 2005 Croatia had slightly more than 400 study programs (NCHE, 2011b). By 2005 a total of 819 programs were approved.[3] As of January 2013 Croatian HE institutions offered 1,334 study programs, an increase of 63% over 2005, or of more than 230% over the offer before 2005. Introducing the new degree structure has led to a significant geographically and scientifically unbalanced increase in total number of study programs. The vast majority is now concentrated in the social sciences (369) and humanities (239), accounting for 46% of the total of 1,334. Of all study programs, 643 or 48% are concentrated in Zagreb (MOZVAG database).

The 2007 Act on Academic and Professional Titles and Academic Degree established a system of degrees for students graduating from Bologna study programs and a framework for comparison of pre-Bologna and Bologna titles. Academic degree courses are organized according to the system of transferable ECTS credits and have the three cycles - undergraduate, graduate, and postgraduate. Professional degree courses also award ECTS credits, but are organized in two cycles (EACEA, 2010).

The EU/CoE/UNESCO format of the diploma supplement was prescribed by the 2005 Directive on the Content of Diplomas and Diploma Supplements. Later amendments ensure that all students of Bologna study programs receive their diploma supplements free of charge in Croatian and English, and in the EU/CoE/UNESCO format (EACEA, 2010).

Qualifications

All Croatian HE qualifications include a reference to the field of study or, for third cycle, a branch of science. First cycle graduates of university programs are awarded the academic title of University Baccalaureus or, if from the technical sciences, University Baccalaureus of Engineering. Second cycle graduates are awarded the academic title of Master or Master of Engineering. Integrated first and second cycle university programs in medicine, dental medicine or veterinary medicine award the academic title of Doctor. Third cycle university programs award the academic degree of Doctor of Science or Doctor of Arts.

[3] This is according to the MOZVAG database, (http://mozvag.srce.hr/), which is an ASHE information system on the evaluation of study programs.

After completing university postgraduate specialist programs, students are awarded the title of University Specialist. Students of postgraduate specialist programs in medicine, dental medicine or veterinary medicine are awarded the title of University Master.

Short cycle professional programs last 2 or 2.5 years, in which students accumulate between 120 and 150 ECTS credits. Upon completion students are awarded a professional associate title. On completion of the first cycle of professional programs, students are awarded the professional title of Professional Baccalaureus or Professional Baccalaureus Engineer. After completing a specialist graduate professional program, students receive the professional title of Professional Specialist or Professional Specialist Engineer.

All first cycle qualifications give access to the second cycle, but the universities determine the conditions for admission to their second cycle programs. All second cycle university qualifications give access to the third cycle, but holders of second cycle professional qualifications have to pass additional courses and examinations to prepare them for participation in a research study program. The percentage of second cycle qualifications that give direct access to the third cycle is 85% (EACEA, 2010).

According to the 2010 Eurostudent survey in Croatia, 71% of the university students of the first cycle intend to continue to the second cycle studies. In professional HE 38% of students in the first cycle plan to continue to the second cycle professional studies (Cvitan et al., 2011:42). Consequently the introduction of the Bologna cycles has lengthened the duration of studies for the majority of students to five years, in comparison to four years pre-Bologna.

Curriculum

According to the 2003 Act on Science and HE, the HE institutions are autonomous in determining contents and teaching methods of their study programs. The Act stipulates the curricula to be in line with the latest scientific achievements, national priorities, professional demands and comparable EU curricula.

The 2009 Act on Quality Assurance in Science and HE gives autonomy to the senates of the public universities to approve their own study programs, while study programs of all other HE institutions must pass the initial accreditation by the ASHE for approval. This is an unequal treatment of public universities in comparison to all other HE institutions. There is no direct legal mechanism to force senates of public

universities to respect the legal requirements in approving their study programs. There are merely two indirect mechanisms, largely in the domain of the ASHE that can enforce the law: (1)Reaccreditation of the university and faculties, which occurs in the five year cycles, and (2) Thematic evaluation in HE which can prove empirically if minimum legal requirements are not met. Thematic evaluation, however, can be initiated only at the request of the Minister of Science, Education and Sports, by the ASHE Accreditation Council, or by the subject of the evaluation itself. For all other HE institution, the ASHE's initial accreditation process of study programs ensures legal compliance (NCHE, 2011b).

Admission

Admissions to HE are regulated in the Act on Science and HE and are set individually by each HE institution. They can, for example, individually decide on admission quota or on weights placed on secondary school grades, grades of the recently introduced state level graduation exam at the end of secondary schooling or on recognition of prior learning in the admissions procedure. Since 2010/11, the technical aspects of admission to HE institutions are managed by the Central Application Office through a web portal, which is a part of the ASHE (EACEA, 2010).

Completion Rate and Study Progress

Completion rates are monitored at the level of HE institutions and are supposed to be checked as part of the external and internal quality assurance procedures at HE institutions (EHEA, 2012). The use of monitored data depends on individual HE institutions. Due to the current legal framework which does not adequately regulate issues pertaining to data information management, this data is not available at the national level and cannot be used in the development of national policies.

Although no official data on completion rates is published in Croatia, Matković (2009:248) estimates that the completion rate in Croatia was 59% for the generation that graduated in 2007. These estimates correspond to the findings of the UNDP survey which confirms that 59% of enrolled students successfully finished their studies, while 41% dropped-out, mostly in early years of study (UNDP, 2008:39).

The average duration of university studies for the generation that graduated from university studies in 2007, referring to pre-Bologna students, was 6.8 years, while the average duration of professional studies was 4.8 years (Matković, 2009:246). A more recent analysis (Cvitan et al., 2013) of the

progression of a pre-Bologna and Bologna-generation students from their second to third years of study suggests Bologna-reforms may have induced some improvements:

- 52% of university students progressed regularly from their second to third year in 2010/11, compared to 47% in 2006/07; 62% of professional HE students progressed regularly from their second to third years in 2010/11, compared to 55% in 2006/07.

- The proportion of students with a big delay in the study progress has decreased since Bologna: 14% of university students progressed with a delay of three or more years from their second to third year in 2010/11, compared to 17% in 2006/07; 8% of professional HE students progressed with a delay of three or more years from their second to third year in 2010/11, compared to 18% in 2006/07.

Increasing the completion rate is a declared policy goal of the MSES, and the major incentives are the complete coverage of tuition fees for students studying in regular manner at public HE institutions, plus incentives through scholarships (EHEA, 2012:24). Evidence shows that there is a need for additional measures to cope with the causes of low completion. According to the comparative Eurostudent report, Croatian university students generally claim that their study programs do not enhance their personal development, and most undergraduate university students contend that their study programs does not give them a solid foundation for future employment. These findings place Croatia at the bottom in comparison with other 17 European countries (Orr et al., 2011).

Mobility

The data about international and national mobility in HE is rather scarce in Croatia. A comprehensive database or monitoring system for mobility data does not exist.

According to the UIS Database, Croatia's outbound student mobility ratio was 4.9% in 2009 (6,792 students), while the median outbound mobility ratio in Europe was 3.6%. The figures show a very slow increase from 2006, which suggests that the new Bologna structure has not significantly improved to vertical mobility or degree mobility.

On the other side, according to Eurostudent survey (Cvitan et al., 2011) only 2,972 students or 2% of all Croatian students participated in international exchange programs in 2009/10. The European average is around 8%, which means that the short term or horizontal mobility was rather low before 2010.

However, in 2011Croatia became a full member of the EU Lifelong Learning Program, with Erasmus as the flagship HE exchange program. Since then the short term mobility in HE has been increasing rapidly: from 2010/11 to 2012/13, outgoing student numbers have grown from 545 to 1,317, and incoming from 333 to 600.[4]

Therefore, the Bologna degree structure was an important prerequisite for massive participation in the structured EU exchange mobility programs, and the combined effect of the two has contributed significantly to the increase of the short term outgoing and incoming mobility in HE. The MSES has indicated that recognition and curriculum/study organization are the most significant obstacles for outgoing student mobility, while language is the major obstacle for incoming students (EHEA, 2012). The consequence is that the Bologna degree structure must be further improved, and that incoming mobility depends on number of programs offered in foreign languages. The imbalance between outgoing and incoming students is likely to remain challenging.

The mobility of students inside Croatia is hampered by unequal duration of study programs at different institutions. Professional HE students usually need to pass additional courses and examinations when transferring into university programs, which is a further obstacle for the mobility between universities and professional HE institutions. Despite the lack of official data, these obstacles possibly indicate relatively low mobility within the country and between institutions.

Academic and Professional Higher Education Institutions

Universities, unlike HE institutions of professional education, are obliged to engage in research, and university teachers must prove appropriate qualifications within the scientific community, applying research and scientific knowledge in the educational process. In Croatia, both types of HE institutions organize and conduct professional study programs and issue first and second cycle degrees. Universities issue both academic and professional degrees, while other higher education institutions issue professional degrees only. Only universities can implement third cycle education. The binary system is still not fully implemented because of the reluctance of universities to surrender professional studies, mainly because of the revenues gained from these studies (NCHE, 2011b).

[4] Data from the AMPEU.

Size of the Higher Education System: Staff

Table 2. Number of staff, administrative and academic

Year	FTE	FTE administrative	FTE academic*	Academic*	Administrative**	Total Staff
2007/08	n/a	n/a	9,996.50	13,866	3,640	17,506
2008/09	n/a	n/a	10,801.90	14,995	3,861	18,856
2009/10	n/a	n/a	11,459.50	15,863	3,989	19,852
2010/11	n/a	n/a	11,693.40	16,319	4,042	20,361
2011/12	n/a	n/a	12,000.50	16,594	n/a	n/a
(Estimated) increase in total number of staff 2007/08-2011/12						2,855

* Source: CBS (2008-2012); ** Source: Data obtained from MSES's BRSTUD database

Titles of the academic staff are defined by the 2003 Act on Scientific Activity and HE. Scientific titles are awarded permanently and superseded only by the next higher grade or its revocation. Acquiring scientific title does not depend on the actual employment position. Scientific titles can be awarded upon application of an individual fulfilling the requirements set by the National Council for Science (NCS). Further, there are scientific teaching titles *(znanstveno-nastavna zvanja)* and artistic teaching titles *(umjetničko-nastavna zvanja)*.

For public universities, two types of titles are required: An appropriate scientific title, and a scientific teaching title, which relates to the scientific teaching position at the university and is obtained by autonomous appointment through university as the result of a competition. University statutes or other organizational documents will set forth the rules of such competitions. Research or teaching assistant titles are selected from the most qualified students that are appointed according to the statute of the HE institution and the regulations provided by the MSES (EACEA, 2010).

Corresponding rules apply at polytechnics and schools of professional HE, except that these do not have positions with scientific teaching titles, but positions corresponding to teaching grades only. Individuals appointed to scientific teaching grades are eligible to conduct professional HE type of instruction.

Persons appointed to scientific teaching, artistic teaching and teaching positions conclude a permanent employment contract, which includes an obligation to seek reappointment or advancement every five years. The obligation for reappointment ends with the person's second appointment to the position of a full professor or a professor of HE schools, which are permanent titles. The NCS defines minimal standards for promotion based on scientific achievements, primarily based on scientific publications. The NCHE approves the conditions of the Rectors' Conference and the Council of Polytechnics and

Schools of Professional HE for awarding scientific teaching, artistic teaching and teaching positions(EACEA, 2010).

HE institutions are autonomous in hiring their staff. They have to comply with the procedures set forth in the Act on Scientific Activity and HE and their own statutes. They appoint staff by means of public competitions. If they ask for state financing for certain working positions, they have to obtain prior approval of the MSES. Minimum wages of the employees at public HE institutions are determined by the Collective Agreement for Science and HE in accordance with the law. Salaries paid by the state are determined centrally in accordance with the law and the collective agreement applicable to certain working positions. The same conditions, principles, and procedures apply to all public HE institutions.

Since all public HE institutions are entitled to earn additional revenues, they are autonomous in distributing this income, which could be done in form of salary increases. Public HE institutions can establish jobs funded not from the state budget, but from their own funds, provided they comply with laws, collective agreement, and internal acts. Private HE institutions are financially autonomous, concerning budget and hiring.

Size of the Higher Education System: Students

The majority of Croatian students are enrolled at public HE institutions (93%). Only 7% study at private HE institutions (data for 2010; Cvitan et al., 2011). In 2011/12, 78% studied at universities, and 22% at professional HE institutions. Of a total of 152.857 students, 74% (112,848) were enrolled as full-time and 26% (40,009) part-time students (CBS, 2012a). Of all first and second cycle students in 2010/11, 38%students were enrolled in undergraduate university studies, 13% in graduate university studies, 16% in integrated undergraduate and graduate university studies, 30% in undergraduate professional studies, and 3% in specialist professional graduate studies (CBS, 2012b).

Table 3. Number of tertiary education students at ISCED 5 and ISCED 6 levels

Year	Students ISCED 5	Students ISCED 6	Total number of students
2007/08	138,126	3,052	141,178
2008/09	134,188	3,102	137,290
2009/10	145,263	3,072	148,335
2010/11	148,616	3,451	152,067
2011/12	152,857	3,235*	156,092
(Estimated) increase in total number of students 2007/08-2011/12	14,731	183	14,914

Source: CBS (2008-2012); * Source for this single figure: CBS (2012c)

Demographic indicators show population decline and ageing, diminishing younger, education-oriented age groups. The size of the education-relevant age groups in the 2010-2020 decade will have decreased by 14% in comparison to the previous decade (CBS, 2008-2012). Despite the demographics, the HE system demonstrated a remarkable expansion of 110% in the decade 1990-2010, as measured by student enrolment (Babić et al., 2006).The overall growth in the student population is caused mainly by growth in professional studies enrolments than university studies enrolment (Babić et al., 2006).

Table 4. Number of students in the system at ISCED 5A and ISCED 5B levels

Year	**Professional HE**	**University HE**			**Total Professional and University HE**
		University studies at universities	Professional studies at universities	**Total University HE**	
2007/08	**25,789**	94,796	17,541	**112,337**	**138,126**
2008/09	**26,674**	90,294	17,220	**107,514**	**134,188**
2009/10	**31,061**	97,936	16,266	**114,202**	**145,263**
2010/11	**33,661**	99,377	15,578	**114,955**	**148,616**
2011/12	**33,881**	103,316	15,660	**118,976**	**152,857**
(Estimated) increases 2007/08-2011/12	**8,092**	8,520	-1,881	**6,639**	**14,731**

Source: CBS (2008-2012)

The overall first year student enrolment in HE institutions in 2011/12 was 59,968 (CBS, 2012a). In the long run, the negative demographic trends could curb further expansion of the higher education system: The cohort of 18-year-olds is expected to decrease to 40,300 in 2024/25 (Babić et al., 2006:38).

The Gross Enrolment Ratio (GER) shows the general level of participation in HE. UNESCO defines it as the number of students enrolled in a specific level of education, regardless of their age, expressed as a percentage of the population in the official age group corresponding to this level of education. For HE in Croatia, the population used is the 5-year age group starting from the official secondary school graduation age, hence the group 18 to 22 years. GER indicates the capacity of the education system to enroll students of a particular age group. The Croatian GER shows potential for growth of the HE system.

Table 5. Gross enrolment ratio

	2005	2006	2007	2008	2009	2010
Gross enrolment ratio for tertiary education (ISCED 5 and 6)	43,77%	45,09%	47,13%	49,48%	49,17%	54,13%

Source: UIS Data Centre, UNESCO Institute for Statistics

In 2011 there were 36,448 first and second cycle students who graduated from institutions of HE, which is a 13% increase over the previous year. Also in 2011, 55% of second cycle theses were written in social sciences, followed by the engineering (21%) and biomedicine and health (12,8%). In 2011 1,072 doctors of science graduated, which was a 28% increase over the previous year. The largest number of doctoral dissertations was defended in biomedicine and health (25%), followed by social sciences (22%) and life sciences (19%) (CBS, 2012d).

Table 6. Completion rate and drop-out rate

Completion Rate2007	59%
Drop-out Rate 2007	41%

Source: Matković (2009)

Please consult section 0Organization of Higher Education for a more detailed explanation of Croatian completion and drop-out rates.

Funding of Higher Education

State Funding for Higher Education Institutions

The 2003 Act on Scientific Activity and HE delegated admission quotas and tuition fee levels and payment schemes to the universities and introduced lump sum financing, allowing HE institutions to allocate received funds independently. Sources of funding of Croatian HE institutions according to the Act are founders' funds, state budget via the MSES, local authorities funding, Croatian Science

Foundation project-based funding, institutions' own funds, and donors. Table 7 shows the level of investment into the HE system.

Table 7. Level of investment into the higher education system as % of GDP

Year	Total investment in education	Public investment in higher education	Private investment in higher education
2008	4,6	0,94	0,26
2009	4,7	0,82	0,28
2010	4,5	0,78	0,22
2011	n/a	n/a	n/a
2012	n/a	n/a	n/a

Source: Eurostat (2012)

Base funding from the state to public HE institutions combines incremental funding and negotiated funding. In theory, the basis for funding is the estimated amount of work required to implement the approved programs, which correlates with the number of employees, the estimated workload according to the defined standards in HE, and the assessed quality of the programs. In practice, however, allocations are based on the previous year allocations and there is no consistent mechanism based on the above-mentioned criteria (EACEA, 2010). Therefore, HE institutions receive base funding according to a historical allocation system, which remains unchanged compared to previous years. There is no differentiation according to the field of study or particular study programs.

In practice, most of the lump sum financing is already allotted on a state level for staff salaries through collective staff pay agreements and other indirect costs, which limits the funds available for free allocation (EACEA, 2010).At traditional, non-integrated universities, the effective implementation of lump sum funding can be problematic. Although the agreed public funds are transferred to the universities as a lump sum, the legal status of the faculties prevents universities from managing these funds in any way other than distributing them the same way as in previous years. Hence the allocation system is closer to the line-item budget model without extensive institutional autonomy (Vukasović, 2009:85).

A positive new development in the academic year 2012/13 has been the introduction of pilot scheme for three year funding agreements between the state and public HE institutions. These agreements introduce for the first time performance indicators, allowing institutions to receive additional funding if they meet specific policy objectives. Indicators are for example related to the social dimension of HE through fostering access of under-represented groups and of mature students, or related to a reduction

of drop-out rates. Performance base funding is very limited and is estimated at around 1% of overall MSES funding for HE institutions (IDE, 2013).

In addition public HE institutions receive tuition fee subsidies for their students according to recent government decree (Government of Croatia, 2012). The state will pay HE institutions for all full-time undergraduate and graduate students at public HE institutions who enroll for the first time in their first year of studies. The state will continue to pay for these students in the following years only if they have accumulated a minimum of 55 ECTS credits in the previous year of study, with 60 credits being the full annual course load. Students who do not meet these requirements pay tuition fees according to a linear model, whereby the levels of fees are variable and increase proportionally to the number of ECTS credits that students are short of the 55 credit target.

While there is no state regulation for maximum tuition fee level across different HE institutions, the price that the MSES pays to public HE institutions for each student is fixed. The MSES has determined a national flat rate of 487 EUR of subsidy per student and year, regardless of field of study, and predicts that ca. 70,000 students per year will benefit from this subsidy of 34,090,000 EUR (70,000 students x 487 EUR).These amounts are provided in the state budget until 2015. The MSES will allow the increase of subsidies up to 10% per institution yearly, but will not allow the increase of enrolment quotas beyond 5% per year.

The MSES expects that with the new tuition fee policy a more students will be able to study without paying fees. 487 EUR per student and year paid by the MSES, however, is significantly lower than the 1,174 EUR of average yearly tuition fees charged by Croatian HE institutions (see section 0Student Costs and their Source of Funding).

The 2003 act allows for public financing of private HE under the same criteria as for public institutions, and on the condition that the institution's activities cover a field of specific interest to the state which is not covered by public institutions. In practice, the state does not usually provide funding for private institutions, but their students benefit from subsidized meals, tax exemptions and health insurance provided by the state for all full-time students (EACEA, 2010).

Proportion of Public Funding and Own Income of Higher Education Institutions

Data on the proportion of public funding and own income of HE institutions in Croatia was compiled by Doolan et al. (2012):

Table 8. Funding sources of Croatian universities in 2009/10 as % of total funding, and absolute change of each funding source over five-years

Name of institution	Public funding	Own income
Juraj Dobrila University of Pula	72%	28%
5-year change (founded 2006)	n/a	n/a
University of Dubrovnik	85%	15%
5-year change	+101%	-10%
University of Rijeka	77%	23%
5-year change	+54%	+12%
University of Split	69%	31%
5-year change	+55%	+24%
University of Zadar	92%	8%
5-year change	+89%	+60%
University of Zagreb	69%	31%
5-year change	+19%	+23%

Source: ACCESS[5] questionnaire; Doolan et al. (2012:60)

Table 9. Funding sources of Croatian polytechnics and schools of professional HE in 2009/10 in million HRK, as % of total funding by source, and absolute change of each funding source over three or five years

Institution type	Total income in million HRK	Public funding	Own income
Polytechnics	43.1	66%	34%
5-year change	+69%	+68%	+63%
Schools of professional HE	11.5	24%	76%
3-year change	+244%	+465%	+206%

Source: ACCESS questionnaire; Doolan et al. (2012:62)

The above tables show that public funds have grown over the last years across the HE sector. Income from sources other than the state budget grew over the last years at all higher education institutions, except at the University of Dubrovnik (Doolan et al., 2012).

[5] ACCESS is the acronym for *Towards Equitable and Transparent Access to Higher Education in Croatia,* a project on financing HE and ensuring equitable access to HE (http://www.tempus-access.info/english/), coordinated by the Institute for the Development of Education, Zagreb. The project runs from 2009-2013 and is funded by the European Commission through the Tempus Program.

Categories of Own-income Funding for Higher Education Institutions

Doolan et al. (2012) mention four major categories of own income for public universities:

- **Tuition fees,**
- **Research and development project grants,** from international, e.g. EU, or domestic sources, e.g. MSES, Croatian Science Foundation,
- **Commercial capitalization of resources,** all permissible income-generating activities of a HE institution, include income from real estate transactions, delivering expert services, or non-degree courses,
- **Other sources,** like administrative charges to students beyond tuition, publishing fees, student employment overheads and donations.

More than half of own income is generated by tuition fees at universities. Tuition fees are also a major form of own income for polytechnics and schools of professional HE (Doolan et al., 2012). HE institutions are autonomous in allocating their own income, following their statutes.[6]

Student Costs and their Source of Funding

Cost-sharing in Higher Education

Over the past two decades the state policy on HE financing has shifted from predominantly state supported towards students' own contributions. While in 1993 88% of students did not pay tuition fees, in 2010/11 only 49% of students do not pay tuition fees (Babić et al., 2006:50; CBS, 2012b). Part-time students and postgraduate students always pay tuition fees and do not receive any benefits provided by the state student welfare system. In 2010/11 besides the 49% tuition-exempt full-time students, 26% are full-time tuition paying students, and 25% are part-time tuition paying students. There are many more fee paying students enrolled in professional HE as opposed to those enrolled in university HE.

[6] See Annex 1 for a detailed analysis of own income of Croatian public universities.

Table 10. Payment of tuition fees, and proportion of students paying (2011/12)

	Professional HE (%)	**University HE (%)**		
		Total university HE	Students of professional studies at universities	Students of university studies at universities
Undergraduate	65,44	48,87	65,43	44,58
Masters	96,01	23,94	88,50	21,10
Integrated	n/a	42,34	n/a	42,34
PhD	n/a	86,26*	n/a	86,26*

Source: Author's calculation based on data from MSES's BRSTUD database. *Source for this single figure: CBS (2012b) for year 2010/11

There are noticeable differences in tuition status by field of study. In university studies, the share of full-time students who do not pay tuition fees is highest in the natural sciences (92%), biotechnical sciences and art (79%) and biomedical and health sciences (76%), and is lowest in the social sciences (52%) (Cvitan et al., 2011).

Costs of Studying[7]

According to Eurostudent survey conducted in Croatia in June 2010, the average total cost of studies in Croatia amounts to EUR 4,200 per year. This includes direct and indirect costs of studying. Direct costs are tuition and other study related fees, adding up to an average of EUR 750 per year. Indirect costs are living expenses, amounting to EUR 3,450 per year. Not all student costs fall within the average, and there is considerable dispersion among the respondents (Cvitan et al., 2011).

Tuition-exempt students spend an average of only EUR 100 on various fees per year. Tuition-paying students, both full- and part-time, spend an average of EUR 1,174 on tuition feesper year. Students of private HE institutions, of professional HE studies, part-time students, students with children, and students that live in homes they own show the highest total costs of studies (Cvitan et al., 2011).

The range of annual tuition fees at professional HE institutions is wide. While the vast majority of polytechnics are public institutions charging lower fees, the schools of professional HE are predominantly private and charge higher fees, ranging between EUR 1,500 and 15,000 per year (EACEA, 2010).

[7] The exchange rate of the Croatian Kuna to the Euro is approximately the following: EUR 1 = HRK 7,5

Table 11. What is the range of tuition fees in EUR? (2011)

	Professional HE	University HE
Undergraduate	400-5.227	267-1.334
Masters	400-5.227	267-1.334
Integrated	n/a	267-1.334
PhD	n/a	934-8.000

Source: Doolan et al. (2012) and calculations by the author based on the data from Doolan et al. (2012:74-82). Shown are minimum and maximum amounts. The study of Doolan et al. does not contain second-cycle tuition. On the basis of 2012/13 current calls for enrolment, however, it seems a valid assumption to assume the same price ranges for second-cycle as for first-cycle studies.

The maximum amounts of tuition fees at the undergraduate and graduate level at universities are determined in an annual coordination process between the MSES, and the Rectors' Conference. The recommended maximum amounts of tuition fees are set according to the criteria of academic discipline and degree level. While all universities should abide by this resolution, in practice the tuition charged differs among universities. The transparency of the tuition fee system remains inadequate to both students and policy makers (Doolan et al., 2012). See section 0Recent Changes and Specific Characteristics for more details on tuition fee policy.

Tuition fee at the postgraduate level is not regulated. The amounts vary strongly and they are several times higher than undergraduate fees. Foreign nationals may enroll in Croatian higher education institutions under equal terms as domestic students, but may be charged additional fees. The decision whether to charge international students is up to HE institutions which produced widely differing results (Doolan et al., 2012).

The system of student welfare financed by the state includes all full-time students who receive a food subsidy, health insurance, tax exemption on student employment, subsidy for private accommodation, tax relief on student parents' income. In addition, most full-time students in Croatia have full or substantial subsidies for local transportation costs funded by the local communities. Students who live in student dormitories pay subsidized price for their housing. There are also annual state grants available for several student categories: Exceptional students, students of lower socio-economic status, and students with disabilities (EACEA, 2010).

Quality Assurance in Higher Education

External and Internal Quality Assurance Procedures in Croatia

Quality assurance is regulated by the 2009 Act on Quality Assurance in HE and Science. Internal quality assurance is provided by the institutions' internal quality assurance systems in the form of internal checks. Study programs delivered at public universities are self-accredited by university senates, while programs delivered by all other public and private HE institutions are accredited by the ASHE, which is an independent public body responsible for external quality assurance in HE and research in Croatia, responsible for

- Initial accreditation of new HE institutions, new study programs and new research activity,
- Reaccreditation of existing HE institutions and of existing research organizations every 5 years,
- Audit (review of internal quality assurance systems) of existing HE institutions and of existing research organizations, carried out in 5-year cycles
- Thematic evaluation of whole institution, part of an institution, or study program at a HE or research institution.

The ASHE applies the European Standards and Guidelines (ESG) Part 2 to its procedures. Austria, Switzerland, England, and USA were the model countries for the creation of Croatia's quality assurance system for HE. Spain, Portugal, and France were the models for the quality assurance system for research.

According to the Act and corresponding directives, HE institutions are required to develop internal quality assurance systems. The ASHE in its external quality procedures of HE institutions performs also external quality assessments of teaching indirectly. This is pertinent in case of reaccreditation, because most standards that are evaluated, particularly HE institution management, Study programs, Students, Teachers, contain criteria which include teaching assessment.

The Agency for Science and Higher Education (ASHE)

ASHE Status

ASHE is a public institution established in 2004. ASHE independently performs tasks within its competences and purview as defined by the 2003 Act on Scientific Activity and HE, the 2003 Act on Recognition of Foreign Educational Qualifications, and the 2009 Act on Quality Assurance in Science and HE. ASHE is the only national agency responsible for external evaluation of HE institutions, study programs and scientific organizations.

The ASHE is autonomous and independent, and is obliged by law to respect European Standards and Guidelines as well as international practice in the field of quality assurance in science and HE. The implementation of the evaluations, methods used, members of the evaluation panels, timetables and other evaluation issues, report recommendations and conclusions cannot be influenced by other stakeholders, such as HE institutions or ministries.

ASHE independence is particularly reflected in the fact that it adopts accreditation recommendations, on the basis of the opinion of its own expert body, the Accreditation Council. The ASHE accreditation recommendation can be positive or negative, depending on whether the conditions defined by the Act are fulfilled or not. On the basis of the ASHE accreditation recommendation, the Minister of Science, Education, and Sports issues or denies a license to the evaluated object. Granting or denying the license is an administrative act. The applicant has no right of appeal against the decision, but may initiate an administrative dispute.

ASHE is an active member of the international quality assurance community and relies on international experts in organizing peer-reviews and assembling expert panels. In November 2006 ASHE joined INQAAHE (International Network for Quality Assurance Agencies in Higher Education). In 2008 ASHE became a full member of CEENQA (Network of Central and Eastern European Quality Assurance Agencies in Higher Education). In 2011 the ASHE gained full ENQA (European Association for Quality Assurance in Higher Education) membership, and was included in the European Quality Assurance Register for Higher Education (EQAR).

ASHE Organizational Structure and Staff

ASHE bodies are the Management Board, Director, and the Accreditation Council. The bodies are composed of representatives of all stakeholders from the system of science and HE, including students.

The **Management Board** supervises the work of ASHE and reaches decisions pertaining to its activities. The members of the Management Board are appointed by the Croatian Parliament, at the nomination of the Government, the Council of Polytechnics and Schools of Professional HE, the NCS, the NCHE and the Students' Council. The ASHE appoints one member of the Management Board from the ranks of its employees.

The **Accreditation Council** is the professional council which adopts documents related to external evaluation procedures and the final opinion on the quality of higher education institutions and scientific organizations. The members of the Accreditation Council are appointed by the Management Board. Nominations are made by the same bodies as for the Management Board plus the Croatian Employers Association. The Accreditation Council may have associate members coming from non-governmental and non-profit organizations recognized as stakeholders in the area of science and HE. Public officials cannot become members of the Accreditation Council.

The **Director** represents and acts on behalf of the ASHE and is responsible for all operations and professional activities.

The ASHE has four organizational units that fulfill the ASHE mission and goals: Directorate for Quality Assurance in Science and HE, Central Applications Office, International Cooperation, and General Administration. The ASHE has a total of 64 employees, 27 of which work for the Directorate for Quality Assurance in Science and HE.

Use of experts

All external evaluation procedures include external assessment by an independent expert panel. ASHE defines a profile of experts who are competent to carry out certain assessments. The experts are chosen in line with defined criteria in Croatia and abroad. ASHE pays attention to equal representation of all stakeholders among experts and opted for compulsory involvement of foreign experts (usually 1-2 foreign experts) and students (some procedures also involve a representative of the business community). There is an international public call for experts published by ASHE.

ASHE created a database of experts with 113 certified experts, of which 93 are domestic and 20 foreign experts (ASHE, 2010). The ASHE organizes compulsory training before each review and there is also a distance learning course for auditors who are foreign experts. Foreign experts are also used for the review of the documentation needed for external evaluations, as well as for different professional development programs and trainings.

ASHE Funding

ASHE annual budget is a part of the state budget allocated to the MSES. The ASHE then proposes its budget, which will be based on the previous year's budget and drafted in line with the Annual Guidelines for Assembling the State Budget, issued by the Ministry of Finance. Budget plans are made for three-year period. When the budget is approved by the Ministry of Finance, ASHE independently decides on its activities on the basis of the funds available.

The ASHE also relies on EU project funding in financing improvement and development of specific activities. According to its statute, the ASHE may earn own funds. Currently it charges fees for the professional recognition of foreign HE qualifications (opinions, recommendations, and decisions issued within the procedure).

Recent Changes and Specific Characteristics

Changes in Tuition Fee Policies

Since 1993 Croatia has introduced various tuition fee policies and the period between 2008 and 2012 has been particularly dynamic with policy experiments.

From 1993 to 2010, Croatia used a dual-track tuition fee system. Public HE institutions and the state would agree on quotas for full-time students covered by the state budget. Public HE institutions had the autonomy to set enrolment quotas higher than the state-funded quota and to charge tuition fees to additional full-time students. Acceptance into the state-funded quota depended primarily on academic performance. Part-time students were considered a separate category and still pay tuition fees.

In 2007/08 University of Zagreb implemented a linear model for undergraduate studies: Students were charged tuition fees based initially on their success at entrance exams and secondary school credentials, and in subsequent years on their successful completion of course requirements and ECTS credits earned.

The linear model was later adopted by a majority of universities and adopted at the national level in 2010 through a government decision (Doolan et al., 2012).

The linear tuition fee is a financing system with a high level of uncertainty. It is difficult to predict the state's financial needs to cover the successful students' tuition costs. For the same reasons, HE institutions cannot accurately plan expected tuition income (Doolan et al., 2012).

Since 2008 the state has been particularly active in introducing different tuition fee policy models. These policy initiatives coincided with the beginning of economic crisis in Croatia in 2008. Through series of protests in 2009/10 students managed to put the right to free HE education high on the policy and politics agenda. These are the main decisions by the MSES in respect to tuition fees since 2008:

- **2008/09 and 2009/10:** Referring to first time enrollment only, all full-time students of university graduate studies are fully subsidized in their first and second year. Also, all full-time university integrated studies students are fully subsidized in their fourth, fifth and sixth years.
- **2010/11 and 2011/12:** Now all full-time undergraduate students, including professional HE students, are fully subsidized in their first year. Financing of undergraduate students in their second and third year was not regulated, and public HE institutions were autonomous in defining fees. This has created confusion among students and HE institutions and has led to very diverse and uncoordinated financing solutions for second and third year undergraduate students. The above 2008/09 and 2009/10 regulations remained in force. The graduate arrangements excluded professional HE students.
- **2012/13 to 2014/15:**The government decided to withdraw the dual-track system and introduced a fairer system with open access to first time first year study, and studies free of charge for all full-time undergraduate and graduate students of both university and professional HE. Full-time students enrolling in the second or third (or fourth if applicable) years of undergraduate and graduate studies continue to study free of charge in the academic year 2012/2013 or in the following 2 years, if they have accumulated 55 ECTS points or above (60 credits is the full annual course load) in the previous academic year. The students who do not meet these requirements pay tuition fees according to a linear model, whereby the levels of fees are variable and increase proportionally to the number of ECTS credits that students are short of the 55 credit target.

Based on this overview, it would be desirable to return to create policy solutions from a strategic perspective and long-term planning, rather than in response to external pressure. Frequent tuition fee policy changes are a burden on the limited human and material resources available. The policy needs a focus, because the existent tuition fee policy has a wide range of goals, from HE accessibility to increasing the low completion rates. Policy solutions should be simple, because the inherent complexity may have negative influence on transparency and students' decision to participate in HE.

Improvement of Data Collection

A major obstacle to policy development is the lack of data, which means there is no support for strategic evidence-based decision making. Central data management is not working and data is fragmented among different institutions, or does not exist at all. The legal framework needs to be improved, because it currently prevents data integration and there is a need for a comprehensive HE information system.

2. Research

Size of the Research Sector

Table 12. Size of the research sector (January 2013)

	Part of a university	Part of a company	Independent	Total
Number of public research centers or institutes	84	34	26	144
Number of private research centers or institutes	4	32	2	38

Source: Agency for Science and Higher Education

The number of researchers (in FTE) has decreased in Croatia from 8,572 in 2000 by 17% to 7,103 in 2010 (Erawatch, 2013; CBS, 2012a). Researchers are mainly concentrated in the public research sector (over 81%),52% in public universities and 29% in public research and technology organizations (RTO). Research in private businesses is underdeveloped and it employs only about 19% of researchers (Erawatch, 2013).

Table 13. Number of staff, administrative and academic

Year	FTE*	FTE administrative**	FTE research***	Total number staff*
2007/08	10,123.90	3,994.90	6,129.00	17,058
2008/09	10,583.20	4,089.50	6,493.70	17,528
2009/10	11,015.20	4,084.00	6,931.20	18,102
2010/11	10,858.60	3,754.90	7,103.70	18,459
2011/12	n/a	n/a	n/a	n/a
(Estimated) increase in total number of staff 2007/08-2010/11				1,401

Source: CBS (2008-2012); *Includes administrative and research staff in full-time and part-time employment as well as under contractual agreement or author contract, **Includes administrative staff in full-time employment as well as under contractual agreement or author's contract, ***Includes research staff in full-time and part-time employment as well as under contractual agreement or author contract.

Human resources employed in research as a share of total labor force in Croatia was 31.6% in 2009 while in developed countries is above 50% (EU-27: 39.8% in 2008). The new doctorate graduates per 1,000 population aged 25-34 has increased from 0.8% in 2009 to 1.3% in 2010, which is close to the EU average of 1.5% (Erawatch, 2013).

Research Performers: Higher Education Institutions and Public Research Organizations

As reported by the CBS the public RTOs accounted for 27% of GERD in 2010, public universities for 28% and the business sector for 44%, and it participates with 0.21% of R&D expenditures in GDP (Government Intramural Expenditure on R&D). Universities employ more than half of researchers in Croatia (52,3%of total country's FTE researchers in 2010, UIS). The university sector provides 65% of all reported publications in 2009. Research grants are awarded through the competition-driven program Research Projects. In the last 5-year project cycle, universities performed 70% of all research projects and spent 66% of all research grants (Erawatch, 2013). Universities and their faculties have a large degree of autonomy lacking functional and financial integration that resulted in fragmented research infrastructure, which is primarily national in character and has led to predominantly small research units and equipment (Erawatch, 2013).

The public RTO sector consists of public research institutes and research units classified as other legal entities. These entities are a mix of research organizations and service providers. They are established as independent institutions, such as Croatian Hydrographic Institute, Fruit Centre Zagreb, the Meteorological and Hydrological Service of Croatia and others. They are also attached to business, cultural, health, or state institutions. The majority of them are medical research units at hospitals (Erawatch, 2013).

The prime task of the public research institutes is to carry out research programs of strategic interest to Croatia and to establish, together with universities, the research infrastructure for the whole system of research and HE. RTOs employ 29% of total researchers in Croatia. As reported in 2010, the business sector finances about 5% of research activities conducted by the RTOs (Erawatch, 2013).

Research Performers: Business Enterprise Sector

Although exact data on companies are not known, the aggregate data on business R&D expenditures seems alarmingly low and continues to decrease. The structure of the business expenditures on R&D in 2010 (€ 128m) sheds light on the R&D sectors. The highest proportion (32.6%) was in scientific R&D, followed by telecommunications (17.8%), and pharmaceuticals (17.8%). Further significant shares are food (5,1%), financial and other services (5.5%), motor vehicles (4.4) and energy supply (4.7%) (Erawatch, 2013).

A minority of private scientific institutes are corporate research institutes in industry, such as Ericsson Nikola Tesla (telecommunications technology), INA (oil and gas), Končar electro-technical institute (engineering) and the Galapagos research institute. The most significant industrial research spender on R&D is Ericsson Nikola Tesla which specializes in information and telecommunication technologies (Erawatch, 2013).

Basic Information on How Research is Organized and Funded

General Trends

The research policy development is based primarily on annual budget cycles in the framework of the State budget plan, proposed by the NCS and the MSES. The inflow of resources was relatively stable up to now, however with a shrinking tendency since 2005. The economic crisis reduced the R&D expenditure (GERD) from its peak in 2004 of 1.05 % of GDP to 0.73% of GDP in 2010, which is the lowest national investment since 2000 and considerably below the average of the EU-27 of 2.1%. The majority of GERD (49%) is financed by the government, while the business sector contributes with 39%.Another 10% come from abroad mainly for services of business companies, and the rest is covered by universities (2%) and the private non-profit sector (0.2%) (Erawatch, 2013).

The public R&D sector, with universities playing a leading role, is the dominant sector in research manpower, financing and performing research activities. The ratio of private and public expenditures of 40:60 has been almost constant since 2000. The public as well business resources for R&D are both low and decreasing further. The public resources amounted to 0.4% of GDP in 2010, which is far from the national target of 1% defined in the Science and Technology Policy 2006-2010. As reported in 2010, the business sector employs a modest 19% of total researchers. This indicates a substantial lack of critical mass of researches and investments for technological accumulation and transition to knowledge economy. The share of resources from abroad has increased from 6.9% of GERD in 2009 to 10% of GERD in 2010 (Erawatch, 2013).

As reported in 2010, the government finances more than 80% of research at public universities and public institutes, while the business sector finances a small portion of public university research (10%) and that of public institutes (4,5%). The majority of business research is financed by business companies themselves (78% in 2010 against 86% in 2009) while the government contributes to the business sector

with a modest 3.8%. The share of foreign investments in the business research sector increased from 7% in 2009 to 17.2% in 2010 (Erawatch, 2013).

Allocation of Funds

Research policy in Croatia is mainly generic in character. Sectoral R&D policies or support for specific thematic areas are not common. The main policy instruments for financing scientific research follows a horizontal approach to assure the balanced development of the six main fields of science. Within the given policy context, the majority of public resources are allocated by the MSES employing four basic instruments (Švarc & Račić, 2010):

- Institutional funding (block grant), including salaries for researchers (33%),
- Research grants for operational costs of research projects (competition based program), "Research Projects" program (10%),
- Grants for new employment positions for young researchers through the competition driven "Junior Research Program" (31.4%);
- Research supporting programs such as scientific publishing activity, support for scientific and professional conferences, associations, and research equipment (8.8%).

In addition to the funds provided by the MSES, the researchers can apply to two additional public intermediary or funding institutions which also provide competition based grants for research and innovation projects:

- The Croatian Science Foundation (CSF) (€5.2m in the period 2005-2008 for various research and technological programs)
- The Business Innovation Centre of Croatia (BICRO) (€3.8m in 2009 for various programs) is a public agency responsible for managing and implementing research-based innovation programs. The implementation of technology programs managed by the Croatian Institute of Technology (HIT) has been transferred to the BICRO in 2012. HIT provided €30m in the period 2001-2009 for the TEST program.

Unity through Knowledge Fund (UKF), available until 2010, was the third public funding instrument, financed through the World Bank. Subsidies to the research and business sector are provided through different programs carried out by BICRO and HIT, but resources are limited. Budget resources provided

by the MSES usually account for 80% to 90% of total research funding at universities and public research institutes. There is no data available to calculate the ratio between institutional and competition based project funding (Švarc& Račić, 2010).

The biggest part of Government Budget Appropriations or Outlays on R&D (GBAORD) in 2010 was allocated for institutional funding including salaries of researchers of HE institutions (41%), while institutional funding of RTO absorbed around 15% of GBAORD. A similar amount (15%) is spent for junior researchers on scholarships and salaries, while remaining resources (26%) are allocated for the various research activities (research project grants, equipment, IPA programs, and similar). Only about 1.5% is allocated for technological projects and another 1.5% for international research cooperation (Švarc & Račić, 2010).

One of the most efficient tax incentives is the return of VAT on research equipment bought in Croatia or abroad, estimated at €7.2m in 2003-2005, benefitting research organizations and other entities involved in research (Švarc & Račić, 2010). While the financial crisis provoked the revocation of many tax incentives to companies, R&D tax incentives have been preserved. Companies paying profits tax can lower the tax base for eligible costs of scientific and developmental research projects. The highest incentives can be received by small companies undertaking basic research. As one moves towards medium sized and large companies, and towards applied research, and development, the incentives are reduced. However, the definitions of all these categories are rather vague and it is likely that some companies might take unfair advantage of these incentives (Švarc & Račić, 2010).

Croatia will become eligible for the structural funds like the European Regional Development Fund (ERDF) and European Social Fund (ESF) upon EU accession expected in July 2013. The innovations and research are also financed through the Seventh Framework Program (FP7), European Cooperation in Science and Technology (COST) and EUREKA programs. Croatia has been eligible for the Instrument for Pre-Accession Assistance (IPA) since 2007 (Švarc & Račić, 2010).

Evaluation

The evaluation culture of research policy in Croatia is traditionally rather weak. The typical focus of research evaluations carried out by the MSES in order to measure research output and production are individual scientists or individual projects. The evaluation of projects includes ex-ante, interim and ex-post evaluation. Ex-ante evaluation is a rather complex process while interim and ex-post evaluations

are mostly limited to determining the number of publications and articles in the Current Content journals. They do have, however, a decisive influence on the continuation of the project and/or the researchers' eligibility to submit a new project proposal. Comprehensive evaluations of research programs administered by the MSES, such as programs for young researchers, procurement of equipment, scientific publishing, that would have policy implications (e.g. equipment rationalization) are missing (Švarc & Račić, 2010). CBS collects the data on research productivity measured by published research works and published articles in different scientific publications (see Table 14.)

The funding agencies BICRO or CSF evaluate programs for internal purposes. Yet research policy evaluation are rarely undertaken with the aim of policy learning (formative evaluation) or public legitimation, and wider public is not informed about programs' successes or failures (Švarc & Račić, 2010). Progress was made since 2008 because BICRO for the first time published annual reports for 2008, 2009, and 2010 to inform a wider public about its activities. In addition, the evaluation studies of RAZUM and IRCRO programs managed by the BICRO and UKF is carried out by the Institute of Economics in 2012. Foresight or benchmarking as well as the impact assessments have not been carried out yet (Švarc & Račić, 2010).

Table 14. Data on research productivity

Year	Published research works				Published in publications		
	Total	Basic	Applied	Experimental development	Own	Other domestic publications	Foreign
2007/08	10.560	4.646	4.322	1.592	2.454	4.575	3.964
2008/09	10.584	4.973	4.080	1.531	2.801	4.066	3.999
2009/10	12.082	6.057	4.603	1.422	3.993	4.689	4.145
2010/11	10.014	4.840	3.887	1.287	2.959	3.468	3.954
2011/12	-	-	-	-	-	-	-

Source: CBS (2008-2012)

Quality Assurance of Research[8]

The ASHE is responsible for external quality assurance of both research and HE. Specifically regarding research, the ASHE performs the initial accreditation and reaccreditation of research organizations, audit (review of internal quality assurance systems) of existing research organizations, and thematic evaluation in research. Through reaccreditation process it also includes the external evaluation of research activities indirectly, as the evaluated standards include also research activities. HE institutions are required by law to develop 'fitness for the purpose' internal quality assurance systems in the form of internal checks.

Initial Accreditation of Research Organizations

All public research institutes and all publicly funded RTOs may perform research activity and enlist in the court register only with a license for research activity. Private research organization may also ask for license for carrying out research activity. The license is issued by the MSES at the recommendation of the ASHE Accreditation Council. The license is the prerequisite to apply for research projects and public research financing.

Reaccreditation of Research Organizations

In December 2012 ASHE has announced the plan for reaccreditation of all public research institutes that will happen for the first time and will be carried out in 2013. Private research organizations and other legal entities are subject to reaccreditation only regarding publicly financed research activities.

Thematic Evaluation in Research

Thematic evaluation is a procedure to evaluate a segment of the research and HE system carried out by the ASHE upon request of its Accreditation Council. It can be also initiated by a justified proposal of the Minister of Science, Education, and Sports, of an evaluation object or student councils. The result is an

[8]The external quality evaluation of both HE and research is regulated together in the 2009 Act on Quality Assurance in HE and Science. Please refer to section 0

Quality Assurance in Higher Education for a detailed description of quality assurance in both research and HE. For the structure of the research system see section 0Responsibility for Policy Making in Research and Higher Education.

expert panel report which includes the assessment of the compliance with the reviewed topic. In case of negative assessment, the ASHE may initiate the reaccreditation.

Due to a perceived lack of information about activities of public research institutes, the ASHE made the thematic evaluation of those institutes a strategic priority for 2010/11. The result is the Synthesis Report published in 2012 (ASHE, 2012a), indicating the lack of a clear plan and focus for national research development. Consequently, research remains segmented, underfunded, without profiled centers of excellence. Public research institutes lack defined mission and focus of their research activities. Research productivity is not sufficiently competitive on an international level, and both incoming and outgoing mobility of researchers is unsatisfactory. The report recommends developing a national strategy for science and research as well as to direct resources to selected research areas of strategic importance for the country. The Synthesis Report will guide the reaccreditation process of public research institutes in 2013.

On the other side, the report of thematic evaluation of private research organizations carried out in 2011/12 (ASHE, 2012b) shows that a large part of private research organizations and other legal entities registered in the Register of Scientific Organizations does not meet the minimum requirements for initial accreditation to conduct research activities and, in fact, the minimum requirements for entering the Register. Evidently, many private research organizations have mongered entering Register because it is the prerequisite to use public funds and tax incentives. The ASHE has proposed the amendment of relevant laws and regulations so that the unqualified private research organizations can be removed from the Register.

3. Governance and Policy in Research and Higher Education

Responsibility for Policy Making in Research and Higher Education

The Croatian constitution guarantees the autonomy of the universities and stipulates that universities shall independently decide on their organization and operation. The responsibilities of policy making are regulated in the 2003 Act on Scientific Activity and HE. The governance structure of scientific research, innovation and HE is a complex system that consists of the following layers (Erawatch, 2013):

High Level Political Authorities

The basic principles and guidelines of research and HE policy are determined by the Parliament and its Committee for Education, Science and Culture. The Ministry of Science, Education and Sports (MSES) is the main policymaking and administrative body responsible for planning, funding, and legal supervision of the entire research and HE system. Two high-level government bodies for research system development (Strategic Council for Science and Technology) and for innovation system (National Innovation System Council) were established but are defunct.

The Committee for Ethics in Science and HE is the Parliament's highest consultative and expert body for the promotion of ethical principles and values in science and HE. Members are appointed by the Parliament upon recommendation of the government.

Policy Formulation and Implementation

This level includes the National Council of Science (NCS) which is the highest expert and advisory body of the Parliament for the scientific research system, while the development of the HE system is a duty of the National Council for Higher Education (NCHE). Members for both are appointed by the Parliament upon recommendation of the government and are representatives of all areas of research and arts, and, regarding the NCS, researchers employed in industry. The Science and HE Funding Council provides the expertise and professional assistance on budget planning and expenditures for both Councils. The Agency for Science and Higher Education (ASHE) is responsible for external quality assurance in research and HE and for professional assistance to the NSC and NCHE.

Administrative and Evaluation Bodies

The NCS has seven Scientific Field Committees covering natural sciences, technical sciences, biomedicine and health, biotechnology, social sciences, humanities, and arts, and providing expert advice within the duties of the NCS for specific scientific fields and artistic area. The NCS has also 23 Area Councils that participate in the election procedure of scientific titles. NSC nominates both members of the Scientific Field Committees and Area Councils, based on public call for proposals and proposals received from the Rectors' Conference, public universities and research institutes as well as members of the academic community and prominent researchers.

Scientific Field Committees are responsible for assessment and monitoring of the research projects and programs financed by the MSES, and rely on recommendations of a number of assessment groups and Area Councils.

Intermediary and Financial Bodies

Research. The MSES provides institutional funding and funds for research activities through the competitive-based projects. The Croatian Science Foundation funds different programs, research projects and reforms of universities. The Business Innovation Agency of the Republic of Croatia (BICRO) is the public institution that creates, implements, and finances innovation policy programs for the commercial application of research.

The Science and Innovation Investment Fund is a fund for allocation of the EU IPA-IIIc funds for HE and RTOs with the aim of supporting technology transfer and commercialization of research results. The Agency for Mobility and EU Programs implements the EU Seventh Framework Program (FP7) and Euraxess. The Unity for Knowledge Fund (UKF) was established by the government in 2006 to support programs for fostering cooperation between scientists at home and expatriate and is currently dormant, because World Bank funding has expired.

Higher Education. The MSES performs activities relating to securing financial and material conditions for the operation of HE institutions, professional education and permanent education of teachers, accommodation, food and other issues relating to student welfare. In addition, the MSES closely cooperates with other ministries as well as with Chamber of Commerce, the Chamber of Crafts, the Employment Service and the Association of Employers.

Apart from the ASHE, the two other public agencies have important HE duties: The Agency for Vocational Education and Training and Adult Education and the Agency for Mobility and EU Programs. The latter is responsible for the implementation of the EU Lifelong Learning Program and Youth in Action Program in Croatia. It also implements the following programs: Europass, Eurodesk, Euroguidance, Erasmus Mundus, Bologna Experts, CEEPUS, and bilateral scholarships.

Research and HE Performers

Research Performers. The research performing institutions can be considered the fifth layer of the research and innovation system, consisting of universities, public research institutes, other public R&D institutions, like the Croatian Academy for Sciences and Arts, research units within health care institutions, research centers in the business sector, and independent applied research institutes. Research institutes are governed by their director, scientific council, governing board or other bodies, as stipulated by their statutes.

Higher Education Performers. The Rectors' Conference consists of all public university rectors. A representative of the Council of Polytechnics and Schools of Professional HE participates in the work of the Conference, but has no voting rights. According to the law, the Rectors' Conference decides on issues of common interest for the development of universities. The Council of Polytechnics and Schools of Professional Higher Education consists of the deans of all polytechnics and schools of professional HE and decides on issues of common interest for their development (EACEA, 2010).

HE institutions organize their activities according to their statutes and according to acts regulating specific topics (i.e. Study Regulations, Ethical Codex, Regulation of Financial Issues and others). They propose the criteria for the selection of academic staff, work closely with the NCS and NCHE and regulate other issues within the scope of responsibility of the HE institutions (EACEA, 2010).

The universities have a high level of autonomy in organization and strategy. Universities are governed by the Rector, the Senate, and the University Council. The decision making process can be characterized as the "senate model" since the senate is the highest decision making body, while a university council has a supervisory and counseling function. A senate is composed of teaching staff (at least 60% of the members), student elected representatives (at least 15 %) and representatives of other employees. A university council has 6 or 12 members, half of them appointed by the senate (at least one student), and

half of them appointed by the founder, local government bodies, and the Chamber of Commerce. A rector is elected by the electing body from the ranks of its full professors.

Universities may create additional management and advisory bodies within the scope of the institutional autonomy. The Dean, an expert council (usually the Faculty Council) and other bodies, as stipulated by the university/faculty statute or other acts, govern a faculty or an academy of arts (EACEA, 2010). Faculties and academies of arts are legally independent. Traditional universities function like a federation of faculties rather than as a single entity.

The dean, the professional council, the governing board and other professional and advisory bodies govern the polytechnics and schools of professional HE. A dean is elected by the professional council and approved by the governing board. The professional council of polytechnics and schools of professional HE consists of teachers, associates, and students (at least 15 % of members) (EACEA, 2010).

Students are represented by the Student Council. Its members are elected to the governing bodies of all institutions of HE: university senates, councils of polytechnics and schools of professional HE, the ASHE Accreditation Council. All HE institutions have a student ombudsperson appointed by the student representative body (EACEA, 2010).

Conclusion

This overview reveals that Croatia has a rather complex system governing research and HE. A number of government bodies and agencies lack mutual coordination. The multitude of levels and bodies does not only create rivalry but also prevents efficiency of the public policies. The strategy for research and technological development as well as HE remains vague(Švarc & Račić, 2011).

Research policy is rather centralized, administered and coordinated at the level of central state by the MSES which decides on research activities and investments in regions. There is no explicit regional research policy in Croatia. The majority of research potentials is located in Zagreb and is related to the University of Zagreb. HE policy, however, meets regional and local needs, which shows in the polycentric development of HE institutions in different parts of the country (Švarc & Račić, 2011).

According to the classification suggested by Gornitzka and Maassen (2000), the steering approach with respect to research consists of the mixture of elements of the ‘sovereign’ steering model and the ‘corporate-pluralist’ model. The steering approach in HE can be characterized as ‘corporate-pluralist’,

moving towards a 'supermarket' model. There are several centers of authority which means that the decision-making in HE is segmented and influenced by different interest groups. Public universities enjoy a high degree of autonomy in the area of teaching, financial and personnel affairs, and it has proven almost impossible to steer them from the outside. There are strong labor unions and student unions. Therefore, policy making consists of maneuvering a large network of advisory bodies, councils, boards and committees. There is a trend towards more organizational autonomy and sectoral self-regulation, but much more pronounced for the public universities than for the public polytechnics and schools of professional HE. Many regulations for the professional HE sector are more detailed and control-oriented than regulations for the university sector, particularly those related to external quality assurance.

Starting 2012 the government introduced a pilot project of funding agreements and started to negotiate and sign contracts with public HE institutions. The contracts contain performance indicators, which means that the HE steering approach moves towards result-oriented and market-based coordination. The most important steering device of the state will become funding agreements. This trend indicates that the government gradually introduces different elements of the 'supermarket' steering model.

Major Changes in the Governance and Policy in Research and Higher Education

Legislation

The legal framework for reform is the 2003 Act on Scientific Activity and HE which paved the way for overall modernization of research and HE management, especially regarding financial and functional integration of universities. However, the reforms have never been fully implemented and now diminish the efficiency of the whole research and HE system. In order to reform the system, the three further acts were planned by the former government to substitute the 2003 act. Due to the strong criticism encountered in the academic and student community, the drafts were withdrawn in 2011. Main criticism was the lack of strategy guiding the proposals.

The current government introduced the proposition for amendments to the original act dating from 2003. Surprisingly, the amendments by the MSES caused criticism within the governing party (SDP), resulting in rejection of the amendments and asking improvements. An improved version of the amendment was sent to parliament in February 2013.

Strategy

The main strategic documents for the research, innovation, and HE system date from 2004-2008. Development of strategic visions for research and HE priorities is stagnant. Broad strategic guidelines were defined in the document "Croatia in the Twenty-First Century – Science" in 2003 (Official Gazette 108/2003), while specific strategic research policy goals were formulated in the Science and Technology Policy 2006-2010 (MSES, 2006), recognizing research priorities in biotechnology, new synthetic materials and nanotechnologies as well as social research topics such as understanding of humanity and national identity or preservation of natural wealth and cultural heritage. The bold financial objectives (3% of GDP for R&D, a 1:1 ratio of public vs. private sector investment, etc.) were mainly seen as motivational inspiration rather than realistic goals. The Science and Technology Policy has expired with most of its objectives unfulfilled (Erawatch, 2013) and no new strategic documents have been developed to replace it.

Currently Croatia does not have a comprehensive education strategy, because there was no successor to the strategic document Education Sector Development Plan 2005–2010 (MSES, 2005), much less a HE strategy. The consequences for education of the demographic decline have not yet been fully analyzed and discussed. It affects all of education, but especially primary and secondary, since, in accordance with the Europe 2020 target for HE, a larger percentage of students entering HE might compensate for the generally declining student population (World Bank, 2012).

Therefore, the mid-term policy document Strategic Development Framework 2006–2013 (Government, 2006) is still the main strategic document for the overall development. The Economic Recovery Program adopted by the Croatian Government in April 2010 which defined 15 important goals for reforming science and education (e.g. harmonization of education with labor market, fostering education in engineering and math, consolidation of universities, enlargement of RTO) also remained unfulfilled.

The new government elected in December 2011 has initiated the development of new strategic documents in order to set the quality framework for science, technology, innovation and HE system in Croatia. The MSES introduced proposals for amendments of several laws, new Act on Croatian Qualification Framework was adopted in February 2013, institutional framework has begun to change (BICRO took over the implementation of TEST and AMPEU of FP7 program, it has been proposed that Croatian Science Foundation takes over the Unity through Knowledge Fund financing so that the fund starts working again in the future), strategic plans of MSES and Government programs have been

introduced. The quality and effects of implementation of these initiatives remains to be seen in the future.

In 2012 the government published the Guidelines for Strategy of Teaching, Education, Science and Technology, which should result in the first comprehensive national strategy for science and all levels of education by July 2013. The high expectations regarding strategy of innovation are related with the future project "National Strategy for the Croatian Innovation Development 2013-2020", which will be carried out by OECD experts in collaboration with local institutions (Erawatch, 2013).

Research Challenges

Since 2001 various governments have introduced an abundance of new policy instruments, increasingly aligned with European Research Area pillars and objectives, complementing standard research policy. Unfortunately, the effects of these measures on innovation and socio-economic development remain modest, probably due to the overall framework conditions which do not favor research and innovation for development and growth. Structural challenges hinder innovation and are not appropriately addressed within the policy mix (Švarc & Račić, 2011).

Stronger efforts are necessary to address the key challenges like increasing incoming and outgoing mobility of researchers, increasing the proportion of researchers in the private sector, developing research infrastructures and securing their efficient utilization, reforming research and HE through improved funding mechanisms, quality assurance, and accountability, developing science-industry collaboration and internationalization (Švarc& Račić, 2011).

Higher Education Challenges

The major challenges facing the HE system in the near to mid-term are the structural reform of universities, the reform of the financing system for HE, assurance of equitable access to HE, and the continuation of curricular reforms alongside the implementation of the Croatian Qualifications Framework (EACEA, 2010).

Croatia's significant demographic challenges have started to affect education. Demographic decline will have fiscal and organizational implications, but it also means that the decreasing number of active workers will need to increase their productivity in order to ensure that Croatia's revenues will meet increasing expenses, for example with regard to pensions and long-term care. Education is crucial to

raising competitiveness and productivity of the labor force. Croatia needs to both increase HE participation and significantly increase completion rates to catch up with OECD peers and meet the Europe 2020 goals (World Bank, 2012).

Given the ambitious Europe 2020 target for HE participation, supporting access for students from lower socioeconomic backgrounds needs more attention. Funding of HE needs to be more transparent and performance-oriented (World Bank, 2012). Data collection should become key issue, aiming to develop a coordinated HE information system.

The efficient and effective use of HE institutions' resources is limited by weak governance structures which need improvement. Historically, the largest public universities are loose associations of legally independent faculties, but serve over 70 % of the student body. According to OECD (MSES, 2007) and World Bank (2009, 2012) reports, this governance model hampers system reforms and decreases responsiveness to the needs of society.

Another major task is the HE curriculum reform, including the implementation and linking of the learning outcomes with student workload, allocation of ECTS credits (EACEA, 2010). This task overlaps with the development of the Croatian Qualifications Framework (CQF). The parliament passed The Act on CQF in February 2013, which will speed up the process and will enable more permeability between learning paths. It will also positively influence the recognition of prior learning (RPL) at HE institutions which is still its early stage. RPL should enable wider access to HE, particularly for social groups who traditionally do not participate in HE. The role of students is to be strengthened at all institutional levels.

Research Centers and Units Focused on Research and Higher Education

In Croatia, two kinds of institutions are involved with HE and research:

Institutions focusing on research or policy development related to HE and research

The **Institute for the Development of Education** (IDE) is a non-governmental and non-profit organization established in 1999, whose mission is linked to the development of HE policies in Croatia and in Southeast Europe. IDE's work and main publications focus on the following policies: Equity and access to HE, HE funding, academic mobility, quality assurance, qualifications framework, and student services. IDE supports the work and services of relevant institutions in HE by providing them with p**olicy analysis and research, strategic planning and policy development,** project management and

development of online tools and resources. IDE has seven employees, three of whom are involved in HE policy analysis and research. Annex 2 presents a list of selected projects.

The **Centre for Educational Research and Development** (CERD) is a research unit within the Institute for Social Research. It is dedicated to fundamental and applied research in education, as well as to educational activities aiming to develop the educational sciences and the education system. HE is one of their main research areas. CERD consists of an interdisciplinary team of 10 full time researchers with backgrounds in sociology, psychology, and educational sciences. Selected HE projects include: *Social Identities, Access to HE and Selection of Studies* (2013-16), *European University Standards and HE in Croatia* (2003-2005). CERD was the partner institution providing research expertise in most of the IDE coordinated projects listed in the Annex 2.Since the CERD is a unit within a public research institute, it is partly financed by state budget (operational financing), and partly through competitive projects at the national and international level.

The **Institute of Social Sciences Ivo Pilar** is also a public research institute engaged in scientific research in social sciences and humanities. Among its 18 research centers, there is the Center for Research on Knowledge, Education and Human Capital with occasional research in HE, and the Center for Technology Studies and Innovation System, whose main activity is research and improvement of the knowledge economy, technological development and the Croatian innovation system. The latter has two active researchers in the sociology of science and implements the research project *Social Evaluation of the Croatian Innovation System in the Function of the Knowledge Economy*. Noteworthy publications include the book *Croatia in Knowledge Society: Perspectives and Dilemmas of Innovation Policy* (Švarc, 2009) and the article *Socio-Political Factors and the Failure of Innovation Policy in Croatia as a Country in Transition* (Švarc, 2006).

The Department of Pedagogy at the Faculty of Philosophy, University of Rijeka, has started the postgraduate doctoral study in pedagogy directed towards the research and development of education systems, which includes HE system as well. Three professors focus in their research on HE, HE teaching, quality assurance in HE and civil society. Selected current projects are: *Academic Professions and Social Expectations: Challenges of the Civilian Mission of Universities* (since 2007) and *University and the External Environment in the Context of the European Integration Process* (since 2007). Selected publications are the book *Understanding University Organizational Culture: The Croatian Example*

(Kovač et al., 2006) and the article *Preconditions for Successful Quality Assurance in Higher Education* (Kovač, 2003).

Institutions indirectly working on research in the field of HE and research

Two public research institutes have organizational units and researchers whose research is occasionally directed to HE and research, even though the institutes per se are not dedicated to HE and research. At the Institute of Public Finance financing of research and HE are subject to ongoing research. Also the Department for the Labour Market, Human Resources and Social Issues of the Institute of Economics has occasionally researched on HE topics

Similarly, some public universities perform research in HE, but not as a main research activity. At the Department of Sociology of the University of Zadar several professors have researched on HE policy and the sociology of education. At the Faculty of Political Science of the University of Zagreb professors have worked on HE in the context of public policies. Professors of the Department of Social Policy of the Faculty of Law at the University of Zagreb, have worked on HE policy in the context of social and employment policies.

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Agency for Mobility and EU Programmes (http://www.mobilnost.hr/index_en.php)

Abbreviations

AMPEU	Agency for Mobility and EU Programs
ASHE	Agency for Science and Higher Education
CBS	Croatian Bureau of Statistics
ECTS	European Credit Transfer System
FTE	Full Time Equivalent
GBAORD	Government Budget Appropriations or Outlays on R&D
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GERD	Gross Domestic Expenditure on R&D
HE	Higher Education
ISCED	International Standard Classification of Education
MSES	Ministry of Science, Education and Sports
NCHE	National Council for Higher Education
NCS	National Council for Science
R&D	Research and Development
RTO	Research and Technology Organizations

Annex 1:Own Income Composition of Universities

Table Annex 1. Own income composition of universities (2009/10 or most recent year available)

Institution	Type of source	Amount in million HRK	% of total
Juraj Dobrila University of Pula	1. Tuition fees	7.5	55%
	2. R&D project grants	0.8	1%
	3. Capital commercialization	6.1	45%
	4. Other	0.0	0%
	Total	**13.6**	**100%**
University of Dubrovnik	1. Tuition fees	5.9	68%
	2. R&D project grants	1.1	13%
	3. Capital commercialization	0.4	4%
	4. Other (professional courses)	1.2	14%
	Total	**8.6**	**100%**
University of Rijeka	1. Tuition fees	–	–
	2. R&D project grants	–	–
	3. Capital commercialization	–	–
	4. Other	–	–
	Total	**105.9**	**100%**
University of Split	1. Tuition fees	61.2	43%
	2. R&D project grants	7.3	5%
	3. Capital commercialization	21.0	15%
	4. Other (publishing, administrative charges, certification, in-service training courses, entrance exam fees)	53.0	37%
	Total	**142.4**	**100%**
University of Zadar	1. Tuition fees	9.4	56%
	2. R&D project grants	3.5	21%
	3. Capital commercialization	0.2	1%
	4. Other (student employment service, promotion, fees, exams, printed materials, courses)	3.8	23%
	Total	**16.9**	**100%**
University of Zagreb[9]	1. Tuition fees	267.8	41%
	2. R&D project grants	272.1	42%
	3. Capital commercialization	0	0%
	4. Other	109.9	17%
	Total	**649.8**	**100%**

Source: ACCESS questionnaire; Doolan et al. (2012:64)

[9] It is not specified by University of Zagreb which year the stated amounts refer to, though in rough totals it most closely approximates the data for 2005/06 academic year, and the amounts were already divided into the categories presented in the table, unlike in the case of other universities.

Annex 2: Selected Projects of the Institute of the Development of Education (IDE)

IDE as National Coordinator

Project title	**Towards Transparent and Equitable Access to HE in Croatia (ACCESS)**
Year	2010-2012
Funding	European Commission, TEMPUS
Project coordinators	Technische Universität Dresden; Institute for the Development of Education

Project title	**Enhancing the Mobility of the Croatian Academic Community (MOBIL)**
Year	2007-2008
Funding	European Commission, TEMPUS
Project coordinators	Technische Universität Dresden; Institute for the Development of Education

Project title	**Platform for Career Advice Centres in Croatia (CAREER)**
Year	2005-2006
Funding	European Commission, TEMPUS
Project coordinators	Technische Universität Dresden; Institute for the Development of Education

Project title	**Virtual Academic Information Service: Scholarships.info (VIRTUS)**
Year	2004-2005
Funding	European Commission, TEMPUS
Project coordinators	Technische Universität Dresden; Institute for the Development of Education

IDE as Partner

Project title	**Peer learning initiative for the social dimension of higher education (PL4SD)**
Year	2012-2015
Funding	European Commission, Lifelong learning programme (ERASMUS Multilateral projects)
Project coordinator	Institute for Advanced Studies (Austria)

Project title	**University Recognition of Prior Learning Centres - Bridging Higher Education with Vocational Education and Training (URPL)**
Year	2011-2013
Funding	European Commission, Lifelong learning programme (Leonardo da Vinci)
Project coordinator	Jagiellonian University (Poland)

Project title	**Education for Equal Opportunities at Croatian Universities (EduQuality)**
Year	2010-2013
Funding	European Commission, TEMPUS
Project coordinator	University of Zagreb (Croatia)

Project title	**Establishing of Career Advice Services at Croatian Universities (ECAS)**
Year	2007-2009
Funding	European Commission, TEMPUS
Project coordinator	University of Dubrovnik (Croatia)