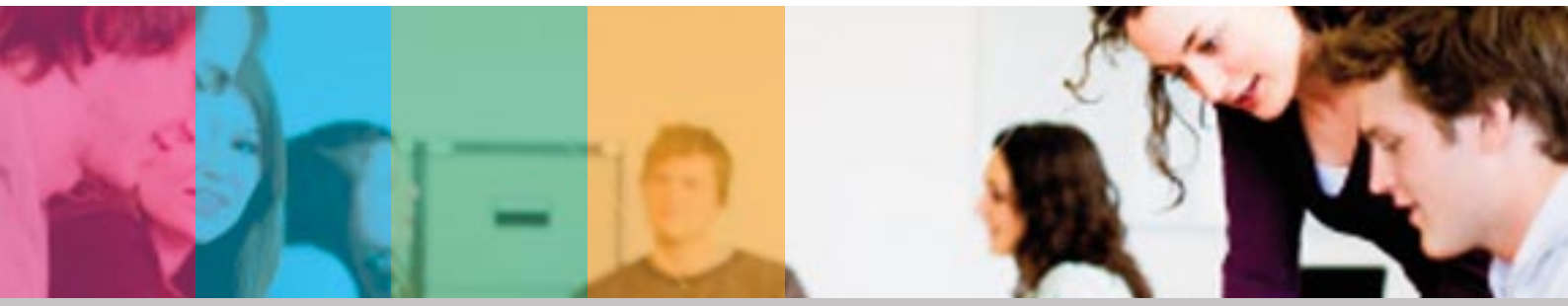
BOLOGNA 1999 • 2009

Higher education in the Flemish Community of Belgium, the French Community of Belgium, Luxembourg and the Netherlands



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BOLOGNA 1999 • 2009

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PREFACE

We are very honoured to host the fifth Bologna Ministerial Conference in Leuven/Louvain-la-Neuve. This conference can be considered as the linking pin between the first Bologna decennium and the emerging second Bologna decennium, between 2010 and 2020. It is the right time to prepare the Bologna 2020 era and to define the policy issues and priorities for that new era.

We find this conference a unique opportunity to publish a small booklet, giving an overview of the policy issues and priorities of the hosting countries as well as an overview of major facts and figures related to higher education and research. Each chapter gives information on the policy priorities and the structure of the higher education system, shows some facts and figures about students and staff in higher education and deals with some thematic issues such as doctoral education, quality, internationalisation of higher education, funding, employability and innovation and research. We hope those facts and figures will contribute to a better understanding of our four higher education systems.

At the European level, we have realised a tangible level of convergence and transparency of the national or regional higher education systems. Although our higher education systems are similar, the compilation of a comparable set of facts and figures for the four Benelux-countries was however a huge task. This demonstrates the clear need to work on the development of statistics and indicators to make the profiles, the missions and the performances of all Bologna higher education systems and institutions more transparent and understandable.

Higher education is a public responsibility. From this responsibility arises the duty of the public authorities to encourage the development of tools and instruments to achieve greater transparency and understanding of higher education and research systems in the European Higher Education Area.

We hope that this small booklet will serve as a starting point for a broader undertaking.

Leuven/Louvain-la-Neuve, April 2009

François BILTGEN, Minister for Culture, Higher Education and Research, Luxembourg
Marie-Dominique SIMONET, Vice President, Minister for Higher Education, Scientific Research and International Relations, French Community - Belgium
Ronald PLASTERK, Minister of Education, Culture and Science, The Netherlands
Frank VANDENBROUCKE, Vice President, Minister for Work, Education and Training, Flemish Community - Belgium

Higher education in the Flemish Community of Belgium

1. PRIORITIES

Policy issues and priorities in higher education and research in the Flemish community of Belgium are:

1. widening participation
2. efficiency and quality
3. funding
4. research and innovation
5. teacher training

1.1 WIDENING PARTICIPATION

Policy objectives are:

- getting more young people to and through higher education in a way that promotes social cohesion and that addresses the demographic trends;
- improving the attainment and achievement for those who are most at risk of failing in higher education programmes;
- reducing the educational attainment gap between the different groups participating in higher education.

Driving forces or rationales are:

- increasing the student numbers and the participation rates;
- the belief that a diverse student population enriches learning experiences;
- social justice: higher education has an important role to play in fostering equity and social justice to the wider society;
- contributing to social and economic development;
- tapping the pool of talent;
- participation in higher education is important because of its implications for an individual's chances in life.

Central to the policy is access to and participation in higher education, but also progression and success within it. It is not just about access to higher education but it is also about completion.

Policy instruments are:

- Funding: provide incentives to institutions for improving access and participation of students coming from disadvantaged and underrepresented groups in society (ethnic minorities, lower socio-economic groups) and for improving the outcomes; funding is tied to performance through the funding mechanism as well as through performance agreements; the aim is to provide financial rewards to institutions that enrol and graduate high numbers of grant recipients and other at risk students; changing one's study programme in the first year is recognized as a positive progression and is financially not regarded as a 'drop out'; there is no financial punishment for losing students in the first year if a student changes his or her programme;
- Curriculum reform: HEIs have ample room to provide flexible learning opportunities including curricula;
- Further development of vocational oriented study programmes at level 5 (associated degrees – 90-120 ECTS study points); graduates of those study programmes can progress to Bachelor degrees on successful completion of a shortened study programme of about 90 ECTS study points at level 6;
- Graduates of the professional Bachelor study programmes can progress to academic Master study programmes on successful completion of a bridging programme.

There is no one best pathway for ensuring that the policy goals have been reached. HEIs are encouraged to develop their own approaches depending on such multiple factors as their local and geographical context and environment, the supply of study programmes, their partnerships, information and guidance, student support in terms of teaching and learning, support for students as a function of their financial status, disability, mental health and well being, pastoral support, summer classes, bridging courses for students coming from a non-academic track, language courses, students as tutors for high school students, distance education, lifelong learning as a means for broadening participation, recognition of prior learning, monitoring academic progression.

1.2 EFFICIENCY AND QUALITY

Shaping and reconfiguring the higher education landscape towards a higher education system which is differentiated and collaborative.

The minister has appointed a committee of leading persons in higher education. The terms of reference of this committee are to make concrete proposals for a restructuring of the higher education landscape and for the supply of study programmes in Flanders with the overall goal to improve the efficiency and the quality of higher education.

The rationales for this large-scale operation are:

- the increasing costs of teaching and research;
- the increased global challenges;
- the increased competition at a European and international level;
- the constraints of the public budgets.

The overall aim is to help institutions cope more effectively with external changes and opportunities.

This exercise follows the implementation of the Bologna process. Alongside the introduction of the Bachelor-Master degree system and the accreditation imperatives in higher education, a new form of collaboration in higher education has been introduced: the association as a new and relevant legal entity. Partners in the association are one university and one or more university colleges (*Hogescholen*). The associations are legal entities, established by one university and one or more university colleges (*Hogescholen*). They are established as non-for-profit organizations. They are legally qualified to act: they are entitled to close contracts, to acquire goods and properties,… There is a general assembly (the organizing body), a governing board, a president and a director and a limited staff (1-to-5 at the start). The roles and tasks of the Flemish higher education associations are:

- to develop a strategic plan in order to streamline and to tune the overall supply of degree courses; it is the aim to abolish overlap of courses: the association is striving for concentration (critical mass) and a good division of labour, based on the strengths of each member institution;
- to tune the structure of the curricula in order to improve the transfer opportunities for continuing one's studies, from Bachelor degree courses to Master degree courses, or from vocational degree courses into academic degree courses;
- to improve the guidance, the counselling and the support of students by pooling the experience and the capacity of each partner;
- to develop a strategic plan for the improvement and the innovation of teaching and learning, as an element of a common framework for internal quality assurance;
- to improve and enhance the research capacity of the university colleges (*Hogescholen*); this is needed to interweave teaching and research in the Master degree courses;
- to develop a strategic plan for research and community services and to develop a common framework for the internal quality assurance of research;
- to make the investments in buildings, laboratories, auditoriums, libraries and real estate facilities more efficient;
- to advise the plans of each partner for developing new degree courses;
- to advise the teaching development plans of each partner;
- to make agreements on how to deal with IPRs, to tune the partners' R&D policies and their relations with the industry.

Effects and impact of those reforms until now are:

- Students can and do switch from one study programme to another study programme early in their first year, contributing to a better match of students' capabilities and interests with the demands and requirements of the study programme. The funding model stimulates institutions to develop a screening system in the first semester in order to give students the possibility to switch to fields of study without losing too much time.
- The teaching-research nexus at the university colleges has been strengthened.
- Knowledge transfer and commercialization of the knowledge produced at the university colleges has been improved with the support of the university technology transfer offices.
- Quality of applied research of the university colleges has been improved through the collaboration with the universities. A better involvement of university college staff in research projects has been the result, with a positive impact on teaching.
- An overall increase of the efficiency and cost-effectiveness through a better use of resources and infrastructure for teaching and research.
- Networks for the exchange of ideas and practices regarding innovation in teaching, learning and evaluation.
- Networks for improving teacher training.

1. PRIORITIES

Further policy developments are:

- Continuation of the dual higher education system: universities offering academic Bachelor and Master study programmes and university colleges offering professional Bachelor study programmes; the academic-professional differentiation might be further institutionalised;
- Concentration and rationalisation: the small study programmes of which the viability in the long run is at risk, have to rethink the conditions of their further existence: closing down, merging with other similar study programmes within the same association, collaborating with other institutions through developing a joint study programme;
- The university colleges have an important role to play in innovation and regional development as they have to be responsive to the needs of the knowledge-driven economy; the increase in collaboration and cooperation between the universities and university colleges will be crucial in this perspective.

1.3 FUNDING

From January 1 2008, a new model of funding in higher education is operational. The new model encompasses the whole higher education sector: both university colleges and universities, the professional degree programmes and the academic degree programmes.

There is a formula based block grant for teaching and research as well as a performance agreement to achieve a higher level of participation of specific student groups. The components of the funding formula are:

- a fixed amount of funding, about 8-to-15%, depending on the size and the profile of the institutions, taking into account economies of scale;
- a variable amount for teaching, depending on the volume of teaching activity;
- a variable amount for research (only for the universities) depending on the volume (output) of the research activity;
- there are different weights for the different disciplines;
- the funding model applies temporary premiums for closing down study programmes and for merging study programmes between different institutions;
- the funding method applies premiums (i.e. higher weights) for:
  - students from underrepresented socio-economic groups (i.e. low cultural capital groups);
  - disabled students;
  - working students, provided that the institution has specific provisions in place.

Apart from the lump sum, the funding model will have multi-annual agreements between the minister and each higher education institution, stipulating agreed upon objectives and targets as well as the commitment of the institution to deliver on them, and the amount of funding involved. The performance agreements cover an increase in participation of specific student target groups and an incentive for the institutions to support student achievement and progression and to improve academic success (in terms of completing credits and gaining a qualification), especially the achievement and success of students from more vulnerable backgrounds (i.e. low cultural capital groups).

The funding method should help:

- to enable the HEIs to enhance their innovative capacity;
- to enable the HEIs to increase the participation of students from ethnic minorities and underrepresented socio-economic groups;
- to enable the HEIs to develop more flexible learning paths and to develop opportunities which are more suitable to mature and employed students while maintaining academic standards;
- to enable the HEIs to improve the efficiency and the overall quality of the higher education system by pooling capacity and expertise (critical mass) and by developing joint study programmes.

One of the crucial issues was to find a right balance between input-based and output-based funding. Funding enrolments (input) imply to a certain extent providing funding for teaching activities which are not undertaken and giving an incentive to recruit students who have little prospect of completing the study programme. On the other hand, the students and some professors have expressed their concerns that linking funding to academic achievement could compromise academic standards and could lower the quality of education by encouraging the institutions to pass students to ensure the funding will be received. Also the Humanities have expressed their concerns about the performance driven funding of research.

In order to meet those concerns the government has decided to develop a Flemish Academic Bibliographic database for the Humanities and Social Sciences.

1.4 RESEARCH AND INNOVATION

Flanders is committed to invest in research and innovation, with a high R&D intensity both at the level of public and private R&D spending.

Flanders is also committed to strike the right balance between the different types of research: basic research, applied and strategic research and experimental development activities (pre-competitive industrial research). Another commitment is to strengthen the collaboration between industry and HEIs through the support of competence poles & centres and through strategic research centres as innovation platforms involving enterprises, research institutes and universities.

The strategic priorities of the research and innovation policy include:

- a strong commitment to the realisation of the 3% R&D spending target in 2014;
- strengthening of the building blocks for research and innovation: public funding, human resources, public awareness of the contribution of research and innovation to wealth and welfare, research infrastructure and equipment;
- the reinforcement of the tools for knowledge transfer and the exploitation of the research findings (IPR and venture & risk capital);
- a strong emphasis on international cooperation;
- a continued attention to policy evaluation;
- a strong commitment to enhance the research productivity, the output, the outcome and the quality of research and innovation activities.

1.5 TEACHER TRAINING

The quality of teaching is one of the key factors in determining whether the EHEA will become the most attractive educational area in the world.

The teaching quality is significantly and positively correlated to the teacher quality and to the quality of teacher training. Improving the quality of teacher training should, therefore, be one of the highest policy priorities of each minister of (higher) education.

Investing in securing the quality of teacher education is therefore a long term and lifetime investment, generating high returns on investment.

Being a teacher is also being a professional. Initial teacher training must equip teachers with new disciplinary, pedagogical and didactical knowledge and skills, including the competence to extend the boundaries of professional knowledge through commitment to reflective practice and research.

The main characteristics of the reform of the teacher training are:

- the study programme of the teacher training subsequent to a professional or academic Master degree programme has been expanded from 36 credits to 60 credits; on completion of the programme the institutions will award a professional teacher diploma;
- the teaching practice will become more important (at least 30 credits);
- there will be room for pre-service practice training as well as in-service training;
- the minister will provide the schools with means for school practice tutors (mentors); the aim is to provide the trainee teachers and the newly appointed teachers with better support and coaching;
- the newly appointed teachers will have access to structured guidance and mentoring by experienced teachers;
- all teachers will benefit from the partnerships between schools, higher education teacher training departments and research institutions;
- all teachers will have access to opportunities for continuous professional development such as placements in enterprises.

The minister will also stimulate all teacher training institutions to cooperate and to pool their expertise and capacity: the universities are strong in research, the university colleges are strong in teaching practice and the adult learning centres are strong in providing opportunities for employed students. The teacher training study programmes will therefore become at the same time more research-based and more work-based.

2. STRUCTURE OF HIGHER EDUCATION

The structure of Higher Education in the Flemish Community has been reformed in 2003 to comply with the Bologna Principles (Higher Education Act of 4 April 2003). The core of this act defines the degree structure, which is based on three main cycles Bachelor, Master and Doctorates, introduced gradually for all programmes from the 2004/2005 academic year. The new system reflects a binary system consisting of professional oriented (ISCED 5B) programmes leading to Bachelor degrees and academic oriented (two-cycle ISCED 5A) programmes leading to Bachelor and Master degrees. In general, a Bachelor degree requires at least 180 ECTS credits; a Master degree requires at least 60 ECTS credits.

A diploma of secondary education (or equivalent) is a general prerequisite to start a Bachelor programme. Universities and university colleges (*Hogescholen*) have the possibility to admit candidates who do not meet this entry condition for 1) humanitarian reasons, 2) medical, psychological or social reasons, and 3) the general level of qualification, merits or competencies of the candidate. Students who want to start a Bachelor programme in Medicine or Dentistry have to pass an entrance examination. An admission test designed to gauge the students' artistic talents is mandatory for the disciplines of Visual and Audio-visual Arts, Music and Performing Arts.

The general entry prerequisite to a Master programme is a diploma of an academic Bachelor programme. By means of the mechanism of bridging courses (*schakelprogramma's*), holders of a professional Bachelor degree may have access to a Master programme. The bridging course programme is determined by the university board, and the number of credits needed varies between 45 and 90 ECTS.

Professional Bachelor programmes are only organised at university colleges (*Hogescholen*). Academic Bachelor and Master programmes are provided by universities.

University colleges (*Hogescholen*) participating in an association are also allowed to organise academic education. An association is an inter-institutional co-operation between one university and one or more university colleges. There are five associations in the Flemish Community:

- the K.U.Leuven Association;
- the Ghent University Association;
- the Antwerp University Association;
- the Brussels University Association;
- the University and Colleges of Limburg Association.

The numbers in table 2.1. and in graph 2.1. show that most of the students are enrolled in a university college (more than 60%). Here the professional Bachelor programmes are the most popular. The number of students in those programmes as well as the number of university students in the Bachelor and Master programmes has been growing during the last years.

The highest level of specialisation in scientific research is a doctorate, which is based on an original research project resulting in the public presentation of a doctoral thesis. The Higher Education Act does not specify any minimum or maximum duration for this kind of programme. However, the normal duration is 4 years of full time study and is taken as a basis for the doctoral scholarship scheme. This degree is only offered at the six universities in Belgium and at two theological institutions.

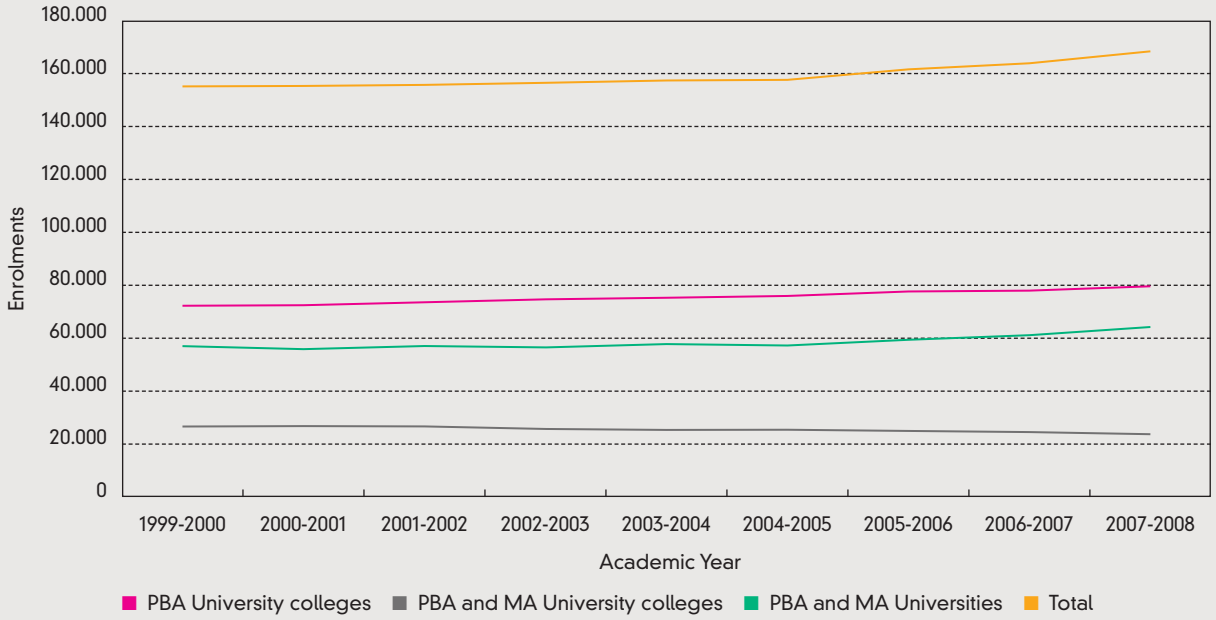
The higher education institutions (HEIs) also offer further training programmes. Students who have completed a professional Bachelor programme, can start a Bachelor after Bachelor programme. A Master programme can be followed by a 'Master after Master programme' (second or subsequent Master). These programmes have a load of at least 60 ECTS credits and a Bachelor or Master diploma is awarded upon completion.

Table 2.1: Enrolments in initial Bachelor and Master programmes by type of institution (academic year 2007-2008)

University colleges	104.174,0	61,81%
Professional Bachelor	80.010,0	47,47%
Academic Bachelor en Master	24.164,0	14,34%
Universities	64.372,0	38,19%
Academic Bachelor en Master	64.372,0	38,19%
Total	168.546,0	100,00%

Source: Database Higher Education (Department of Education and Training)

Graph 2.1: Enrolments in initial Bachelor and Master programmes: evolution



Source: Department of Education and Training

Furthermore the HEIs organise postgraduate courses. A postgraduate degree is delivered after a course corresponding with education and study activities of at least 20 credits. These training pathways focus on the strengthening and/or deepening of competencies acquired after the Bachelor or Master programme. The institutions can also offer a wide range of updating and in-service training courses. They decide themselves about the student workload and the entry conditions. Upon completion of the courses, students are awarded a certificate.

In the near future (from the academic year 2009-2010), the university colleges (*Hogescholen*) will be allowed to organise higher vocational education.

Until now, these courses are only organised in adult education centres. Typical of those courses is the close co-operation with the professional sectors. These programmes will have a workload of 120 ECTS credits. On the one hand, the programmes of the higher vocational education do focus on immediate employability on the labour market, on the other hand, they can also be a step towards a Bachelor degree (professionally oriented).

Beside the universities and university colleges (*Hogescholen*), there are also four postgraduate training institutions, offering also Master after Master programmes, and five non-statutory institutions (private institutions), in the Flemish higher Education system.

Table 2.2: Higher education institutions in the Flemish Community

Universities	6
Transnational university (Flanders – Netherlands)	1
University Colleges ('Hogescholen')	22
Theological institutions	2
Postgraduate training institutions (statutory)	4
Non-statutory registered institutions	5

Source: Database Higher Education (Department of Education and Training)

2. STRUCTURE OF HIGHER EDUCATION

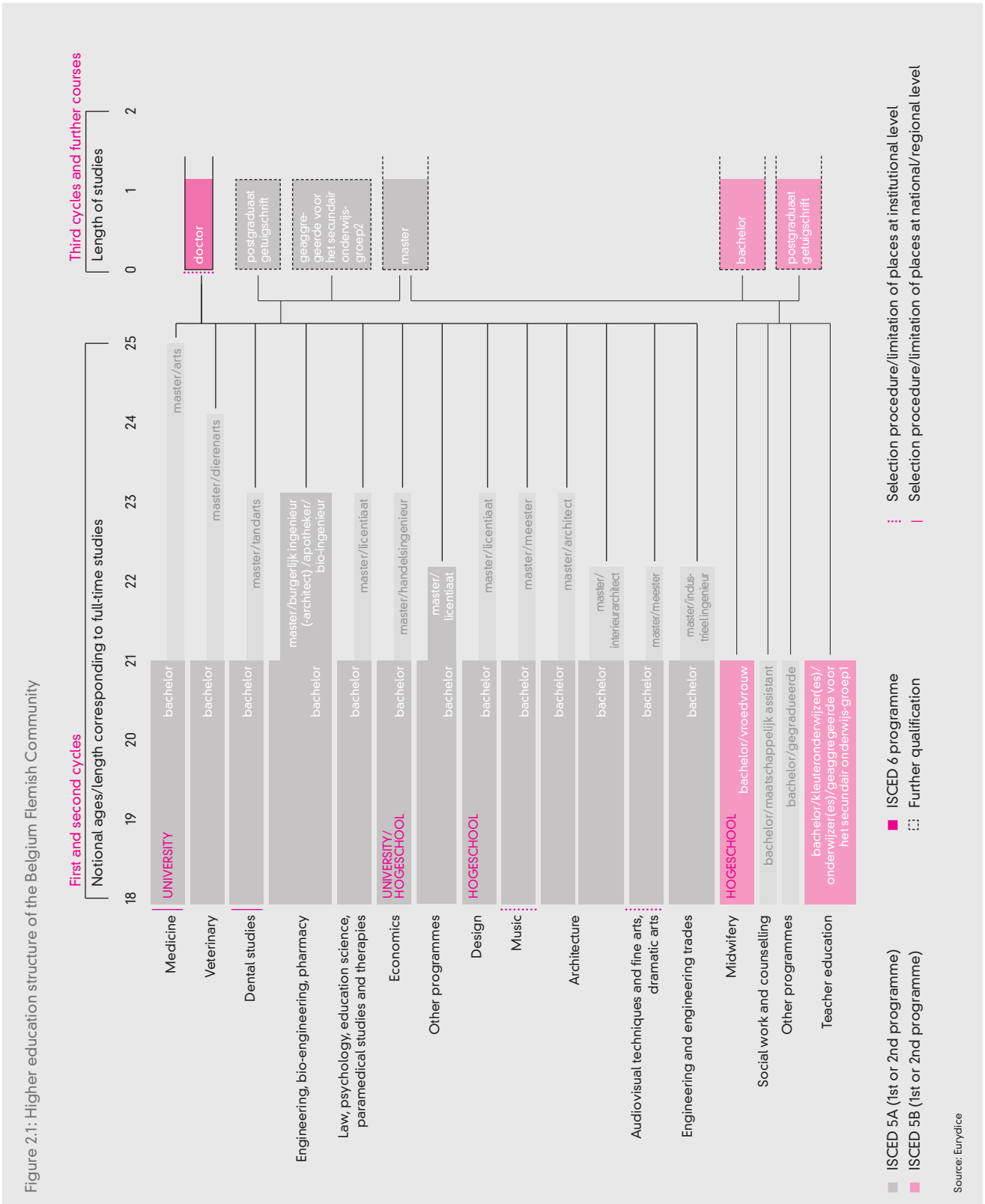


Figure 2.1: Higher education structure of the Belgium Flemish Community

Source: Eurydice

3. STUDENTS

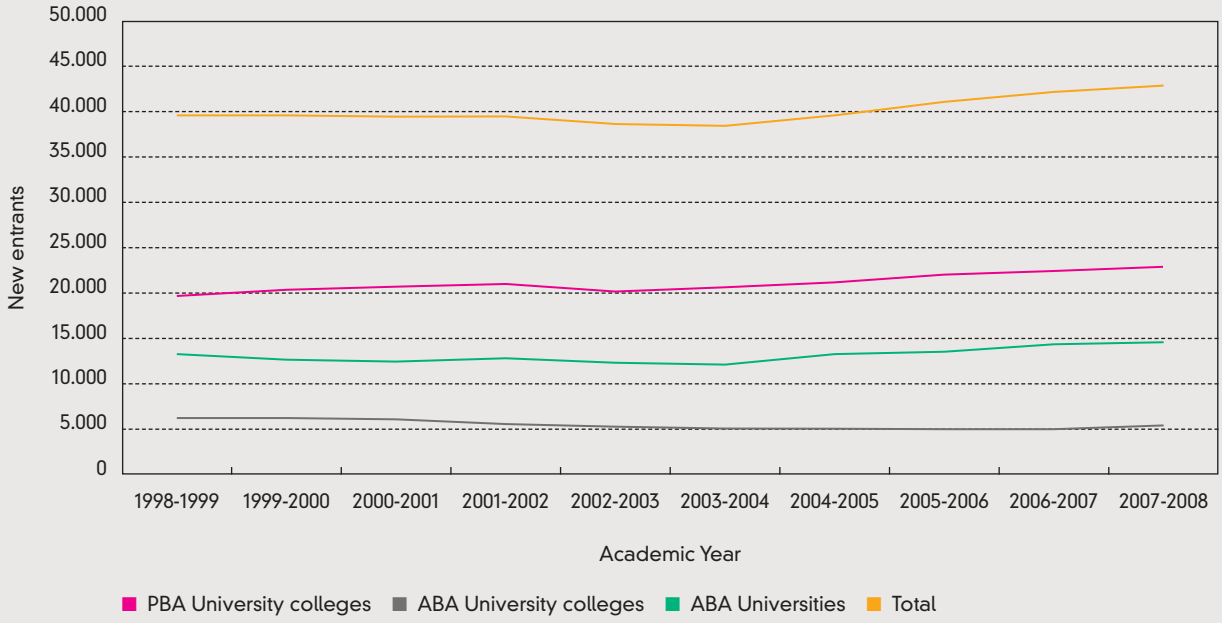
The higher education in the Flemish Community is characterized by a rather high level of participation of young people. Graph 3.1. gives an overview of the evolution of new (first time) entrants in the universities and the university colleges (*Hogescholen*). New entrants are students who enrol for the first time in a Bachelor programme. During the last 10 years, the number of new entrants has been growing (+9%). This is especially the case for the number of new students enrolled in professional Bachelor (PBA) programmes in the university colleges (*Hogescholen*) and in academic Bachelor (ABA) programmes at the universities. On the other hand, the number of new entrants in academic Bachelor (ABA) programmes at university colleges has been declining.

The numbers in table 3.1. give the relation between the new entrants and the number of persons of 18 years old in the Flemish Community. These numbers give an indication of the participation in the Flemish higher education system.

More than half of the population of 18 year old start a Bachelor programme at a university or a university college (*Hogeschool*). During the last 10 years, this participation rate has been growing: from 51,8% to 57,8%.

In table 3.2, new entrants to tertiary education are classified by fields of education based on their subject of specialisation. The majority of new entrants chooses to follow tertiary programmes in the field of Social Sciences, Business and Law. This field accounts for over one-third of new entrants. Females represent more than half of the population of new entrants in the tertiary education. The breakdown by gender varies considerably according to the field of education. Two fields are noteworthy for the strong representation of females, namely Health and Welfare and Education with 78% and 71%, respectively, of new entrants. Science and Engineering, Manufacturing and Construction attract a small number of female students.

Graph 3.1: New entrants: evolution



Source: Database Higher Education (Department of Education and Training)

3. STUDENTS

Table 3.1: Participation in higher education: evolution

	Population	Participation: number of new entrants divided by the number of persons of 18 year old			
Academic year	Age: 18 year	PBA University colleges	ABA University colleges	ABA Universities	Total
1998-1999	75.863	25,87%	8,17%	17,79%	51,82%
1999-2000	75.958	26,67%	8,54%	16,81%	52,02%
2000-2001	73.688	27,94%	8,38%	17,10%	53,43%
2001-2002	72.417	28,79%	7,87%	17,89%	54,55%
2002-2003	70.750	28,63%	7,60%	18,09%	54,32%
2003-2004	69.641	29,58%	7,55%	17,84%	54,97%
2004-2005	71.447	29,67%	7,33%	18,44%	55,44%
2005-2006	71.830	30,82%	6,99%	19,22%	57,03%
2006-2007	73.305	30,84%	6,98%	19,73%	57,55%
2007-2008	74.247	30,64%	7,28%	19,86%	57,79%

Source: Database Higher Education (Department of Education and Training)

Table 3.2: New entrants in tertiary education by field of education (academic year 2006-2007)

	Total			ISCED 5A[1]			ISCED 5B[2]		
Field of education	M	F	T	M	F	T	M	F	T
Total: All fields of education	21.569	26.006	47.575	10.174	10.655	20.829	11.395	15.351	26.746
Education	1.657	4.157	5.814	0	0	0	1.657	4.157	5.814
Teacher Training	1.657	4.157	5.814			0	1.657	4.157	5.814
Education Science	0	0	0			0			0
Humanities and Arts	1.808	2.706	4.514	1.779	2.660	4.439	29	46	75
Arts	815	996	1.811	786	950	1.736	29	46	75
Humanities	993	1.710	2.703	993	1.710	2.703			0
Social Sciences, Business and Law	8.010	8.216	16.226	3.538	4.483	8.021	4.472	3.733	8.205
Social and Behavioural Science	868	2.048	2.916	868	2.048	2.916			0
Journalism and Information	0	0	0			0			0
Business and Administration	6.276	4.886	11.162	1.804	1.153	2.957	4.472	3.733	8.205
Law	866	1.282	2.148	866	1.282	2.148			0
Science	1.262	935	2.197	1.262	935	2.197	0	0	0
Life Sciences	445	616	1.061	445	616	1.061			0
Physical Sciences	817	319	1.136	817	319	1.136			0
Mathematics and Statistics	0	0	0			0			0
Computing	0	0	0			0			0
Engineering, Manufacturing and Construction	5.950	1.491	7.441	2.430	675	3.105	3.520	816	4.336
Engineering and Engineering Trades	5.431	823	6.254	2.186	364	2.550	3.245	459	3.704
Manufacturing and Processing	0	0	0			0			0
Architecture and Building	519	668	1.187	244	311	555	275	357	632
Agriculture	414	540	954	119	266	385	295	274	569
Agriculture, Forestry and Fishery	335	306	641	40	32	72	295	274	569
Veterinary	79	234	313	79	234	313			0
Health and Welfare	2.222	7.700	9.922	822	1.375	2.197	1.400	6.325	7.725
Health	1.435	4.723	6.158	822	1.375	2.197	613	3.348	3.961
Social Services	787	2.977	3.764			0	787	2.977	3.764
Services	105	18	123	83	18	101	22	0	22
Personal Services	0	0	0			0			0
Transport Services	105	18	123	83	18	101	22		22
Environmental Protection	0	0	0			0			0
Security Services	0	0	0			0			0
Not known or unspecified	141	243	384	141	243	384	n	n	0

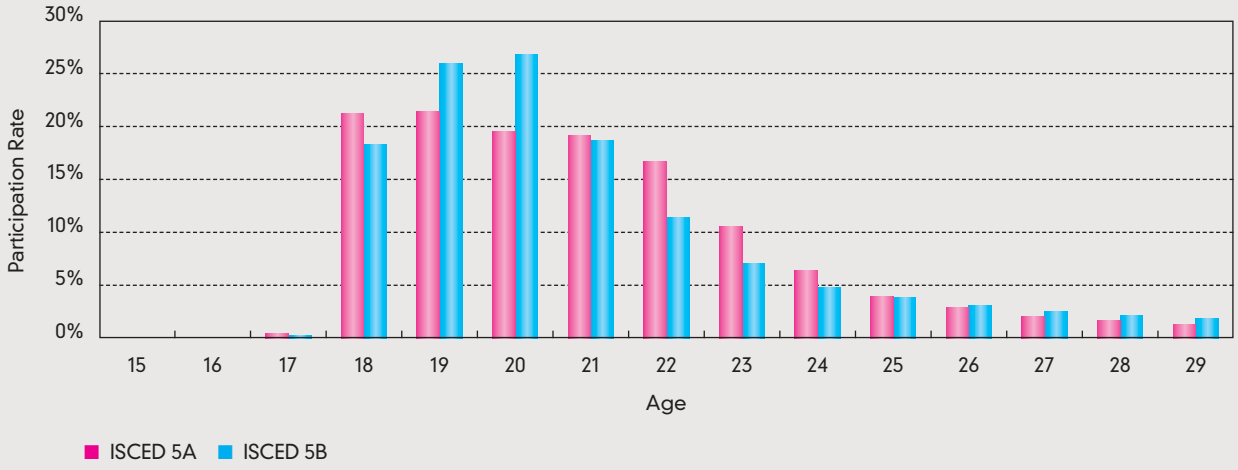
Source: Database Higher Education (Department of Education and Training)

1 ISCED 5A: academic Bachelors in university colleges, universities and other HEIs
2 ISCED 5B: professional Bachelors in university colleges and centres for higher vocational training (higher education for social promotion)

Graph 3.2. shows the participation rate for a specific age. This rate is obtained by dividing the number of enrolments at that age in each type of tertiary education by the total population in the corresponding age group. This graph shows clearly that most of the students in higher education are relatively young – between 18 and 22-23 years.

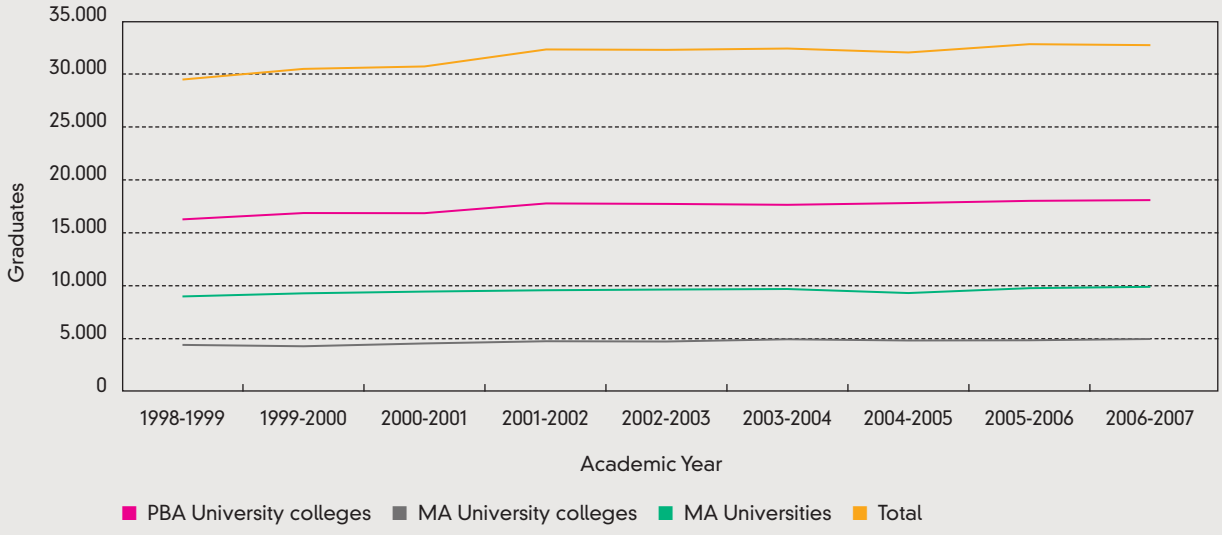
Graph 3.3. shows the evolution of the number of graduates at universities and university colleges. During the last 10 years, the number is growing, especially the number of graduates with a professional Bachelor degree at the university colleges (*Hogescholen*) and with an academic Master degree at the universities.

Graph 3.2: Participation rate (academic year 2006-2007)



Source: Department of Education and Training

Graph 3.3: Graduates: evolution



Source: Database Higher Education (Department of Education and Training)

3. STUDENTS

Table 3.3 classifies graduates by fields of education based on their subject of specialisation. Most graduates are found in Social Sciences, Business and Law, both in ISCED 5A en 5B. On average, the number of females who obtain a qualification is significantly higher than the number of males; female graduate rate is 59 % compared to 41 % for males. Education and Health and Welfare are the fields with a very strong representation of female graduates (71% and 78%).

Table 3.3: Graduates by field of education

	Total			ISCED 5A[3]			ISCED 5B[4]		
Field of education	M	F	T	M	F	T	M	F	T
Total: All fields of education	25.062	34.752	59.814	16.019	19.466	35.485	9.043	15.286	24.329
Education	2.677	7.662	10.339	625	2.086	2.711	2.052	5.576	7.628
Teacher Training	1.633	5.415	7.048	553	1.482	2.035	1.080	3.933	5.013
Education Science	1.044	2.247	3.291	72	604	676	972	1.643	2.615
Humanities and Arts	2.873	4.395	7.268	2.449	4.221	6.670	424	174	598
Arts	1.314	1.333	2.647	890	1.159	2.049	424	174	598
Humanities	1.559	3.062	4.621	1.559	3.062	4.621	0	0	0
Social Sciences, Business and Law	7.934	10.566	18.500	5.275	7.057	12.332	2.659	3.509	6.168
Social and Behavioural Science	1.191	2.675	3.866	1.160	2.391	3.551	31	284	315
Journalism and Information	480	836	1.316	280	614	894	200	222	422
Business and Administration	5.132	5.196	10.328	2.704	2.193	4.897	2.428	3.003	5.431
Law	1.131	1.859	2.990	1.131	1.859	2.990	0	0	0
Science	3.059	1.508	4.567	2.453	1.475	3.928	606	33	639
Life Sciences	816	1.042	1.858	816	1.042	1.858	0	0	0
Physical Sciences	319	196	515	319	196	515	0	0	0
Mathematics and Statistics	171	117	288	171	117	288	0	0	0
Computing	1.753	153	1.906	1.147	120	1.267	606	33	639
Engineering, Manufacturing and Construction	5.237	1.713	6.950	3.355	1.288	4.643	1.882	425	2.307
Engineering and Engineering Trades	4.425	925	5.350	2.885	808	3.693	1.540	117	1.657
Manufacturing and Processing	124	68	192	76	41	117	48	27	75
Architecture and Building	688	720	1.408	394	439	833	294	281	575
Agriculture	464	669	1.133	268	456	724	196	213	409
Agriculture, Forestry and Fishery	359	382	741	163	169	332	196	213	409
Veterinary	105	287	392	105	287	392	0	0	0
Health and Welfare	2.131	7.490	9.621	1.043	2.434	3.477	1.088	5.056	6.144
Health	1.424	4.906	6.330	994	2.274	3.268	430	2.632	3.062
Social Services	707	2.584	3.291	49	160	209	658	2.424	3.082
Services	687	749	1.436	551	449	1.000	136	300	436
Personal Services	475	614	1.089	356	320	676	119	294	413
Transport Services	74	18	92	74	18	92	0	0	0
Environmental Protection	97	89	186	80	83	163	17	6	23
Security Services	41	28	69	41	28	69	0	0	0
Not known or unspecified	0	0	0	0	0	0	0	0	0

Source: Department of Education and Training

3 ISCED 5A: academic Bachelor and Master graduates in university colleges, universities and other HEIs
4 ISCED 5B: professional Bachelor graduates in university colleges and centres for higher vocational training (higher education for social promotion)

4. STAFF

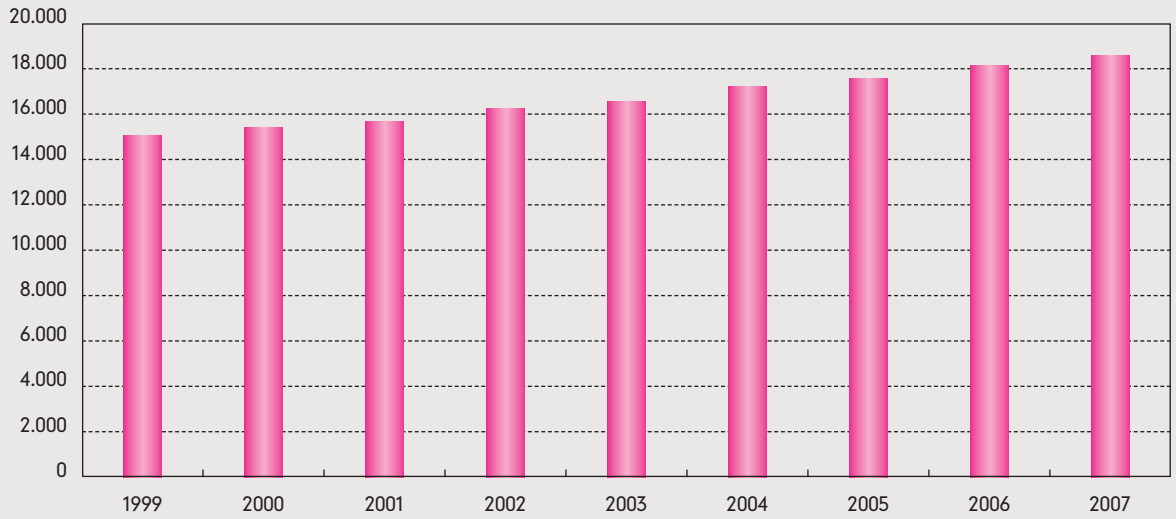
4.1 STAFF AT THE FLEMISH UNIVERSITIES

At the six Flemish universities, 18.542,6 full time equivalents (FTE's) or 22.997 people were employed in 2007. These figures include on the one hand the academic faculty (ZAP), the assistant academic staff (AAP) and the administrative and technical staff (ATPwu) financed by the Ministry of Education, and on the other hand the scientific staff or researchers (WP) and the administrative and technical staff (ATPbwu) paid from other financial sources. The research and technical personnel, who are paid by the scientific institutes FWO, IWT, VIB and IMEC but located on the universities, are also included.

Since 1999, there has been an increase in staff of 3.459,1 FTE which is mainly due to the growth of the scientific personnel. In 2007 almost 42% of the staff at the universities consisted of researchers.

The academic faculty on the other hand has remained more or less constant over the years.

Graph 4.1: Staff at the Flemish universities in FTE from 1999 till 2007



Source: VLIR

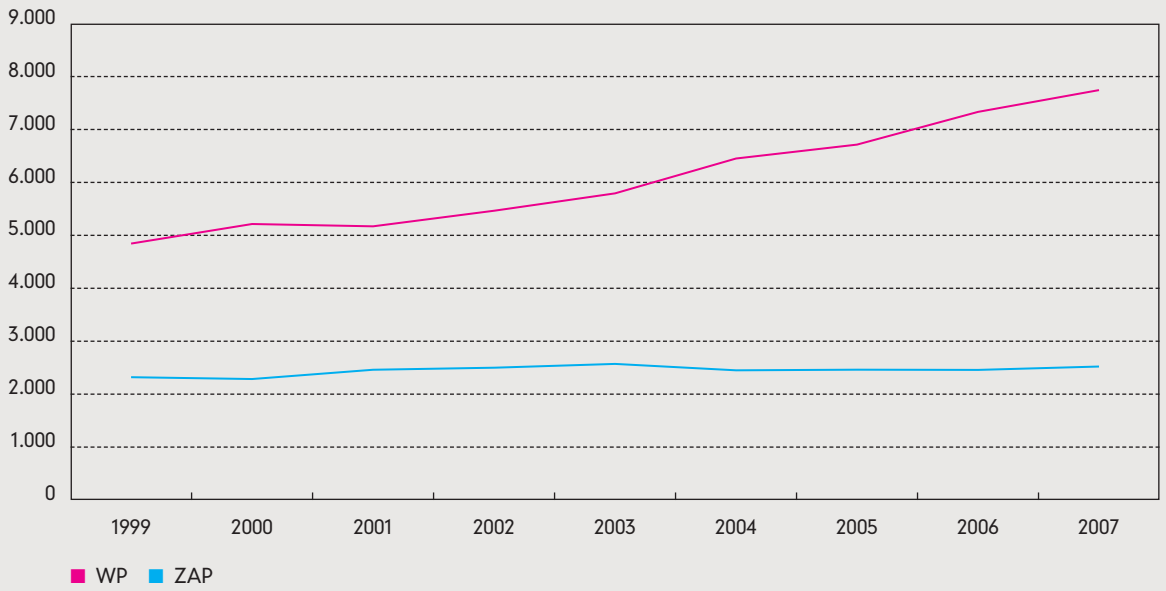
Table 4.1: University staff in FTE according to category since 1999

	ZAP	%	AAP	%	ATP wu	%	WP	%	ATP bwu	%	total
1999	2.331,6	15,5%	1.712,4	11,4%	3.623,1	24,0%	4.837,4	32,1%	2.579,0	17,1%	15.083,5
2000	2.360,5	15,3%	1.755,9	11,4%	3.707,6	24,0%	5.162,7	33,5%	2.429,8	15,8%	15.416,5
2001	2.508,1	16,0%	1.825,6	11,6%	3.716,7	23,7%	5.177,3	33,0%	2.467,1	15,7%	15.694,8
2002	2.532,4	15,7%	1.808,0	11,2%	3.809,1	23,6%	5.471,4	33,7%	2.549,5	15,8%	16.170,3
2003	2.532,5	15,3%	1.825,2	11,0%	3.840,4	23,2%	5.785,7	35,0%	2.551,1	15,5%	16.534,9
2004	2.516,6	14,6%	1.815,6	10,5%	3.894,1	22,6%	6.465,1	37,5%	2.543,2	14,8%	17.234,6
2005	2.515,5	14,4%	1.821,9	10,4%	3.866,9	22,1%	6.710,0	38,4%	2.569,0	14,8%	17.483,3
2006	2.513,1	13,9%	1.817,8	10,1%	3.823,9	21,2%	7.350,9	40,7%	2.561,6	14,8%	18.067,3
2007	2.542,1	13,7%	1.788,5	9,6%	3.863,3	20,8%	7.721,9	41,6%	2.626,9	14,8%	18.542,6

Source: VLIR

4. STAFF

Graph 4.2: Relation academic (tenured) staff - ZAP / scientific (non-tenured) staff - WP



Source: VLIR

In 2007 the majority of the (assistant) academic faculty was active in the Humanities and Arts, Social Sciences, Business and Law (table 4.2). The second group belonged to the category Science, Engineering, Manufacturing and Construction. The smallest group was to be found in the category Health and Welfare.

The scientific staff was mostly active in Science, Engineering, Manufacturing and Construction.

The following issues remain points of particular interest for the Flemish universities: nationality, age structure and relation men/women.

In 2007 more than 90% of the total staff was Belgian (table 4.3). 20% of the scientific staff came from abroad, especially from the neighbouring countries (Netherlands, France and Germany) and from China.

Table 4.2: Scientific disciplines in 2007

Discipline	ZAP	AAP	WP
Education	45,3	59,04	110,66
Humanities and Arts	409,75	246,9	742,4
Social Sciences, Business and Law	576,60	574,47	1.066,19
Science	520,85	249,90	2.537,66
Engineering, Manufacturing and Construction	447,75	236,75	2.025,62
Agriculture	31,4	48,7	85,5
Health and Welfare	482,05	344,65	1.070,49
Other	28,40	28,00	83,36
Total	2.542,10	1.788,41	7.721,88

Source: VLIR

Table 4.3: Nationality of staff according to category in 2007

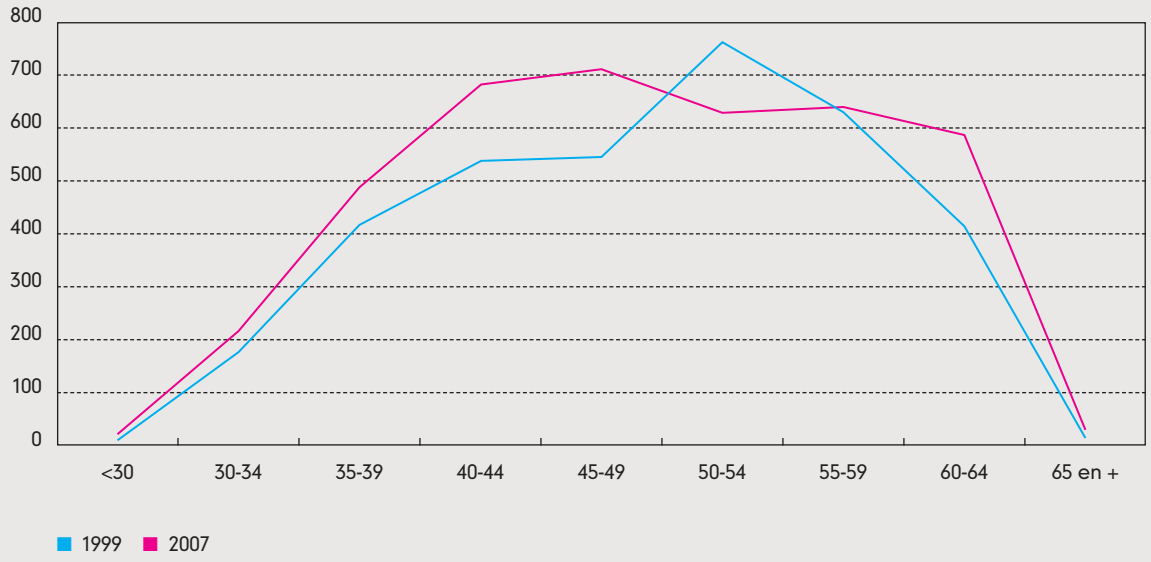
	Number of Belgians	%	Other EU	%	Non EU	%
ZAP	3737	93,9%	219	5,5%	23	0,6%
AAP	2607	95,3%	96	3,5%	32	1,2%
ATP	7616	97,9%	112	1,4%	49	0,6%
WP Doctoral	5153	82,2%	549	8,8%	567	9,0%
WP Postdoctoral	1656	74,0%	358	16,0%	223	10,0%

Source: VLIR

The Flemish universities have seen the academic faculty aging over the years (graph 4.3). 47% of the academic faculty is older than 50. More than a third belongs to the category 55+.

As a result of this, part of the more experienced academic faculty will soon leave the university and be retired. However, new opportunities are created and the gradual intake of lecturers from the age of 35 onwards guarantees more or less further continuity.

Graph 4.3: Age structure of the academic faculty (ZAP) in 1999 and 2007



Source: VLIR

4. STAFF

In 2007 the total number of female staff at the Flemish universities was 46%.

17,9% of the academic faculty was female.

The Flemish academic landscape remains characterized by the underrepresentation of female academic faculty. The actual figures could be improved and the universities could pay more attention to gender mainstreaming.

4.2 STAFF AT THE UNIVERSITY COLLEGES (HOGESCHOLEN)

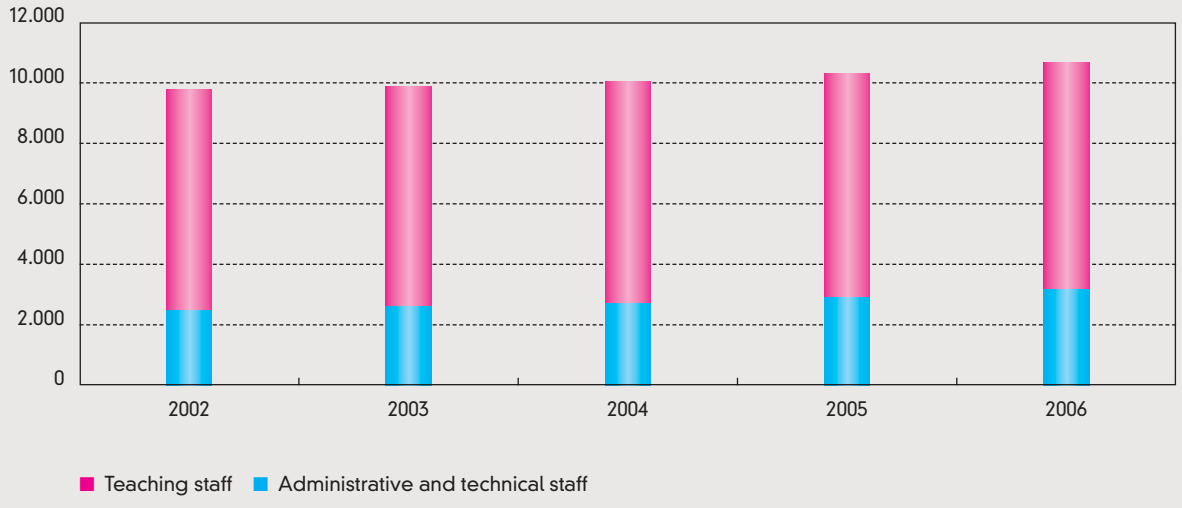
As shown in graph 4.4., the staff of university colleges consists of 2 categories: the teaching staff and the administrative and technical staff. Within both categories, there are a number of different statutes, such as academic staff, scientific staff, teaching members,… This graph shows that the staff in university colleges grows rather slowly.

Table 4.4: Relation men/women in FTE according to category in 2007

	M	%	F	%
ZAP	2.085,9	82,1%	456,3	17,9%
AAP	874,7	48,9%	913,7	51,1%
ATPwu	1.843,3	47,7%	2.020,2	52,3%
WP	4.364,9	56,5%	3.357,0	43,5%
ATP bwu	848,7	32,3%	1.778,3	67,7%
Total	10.017,4	54,0%	8.525,4	46,0%

Source: VLIR

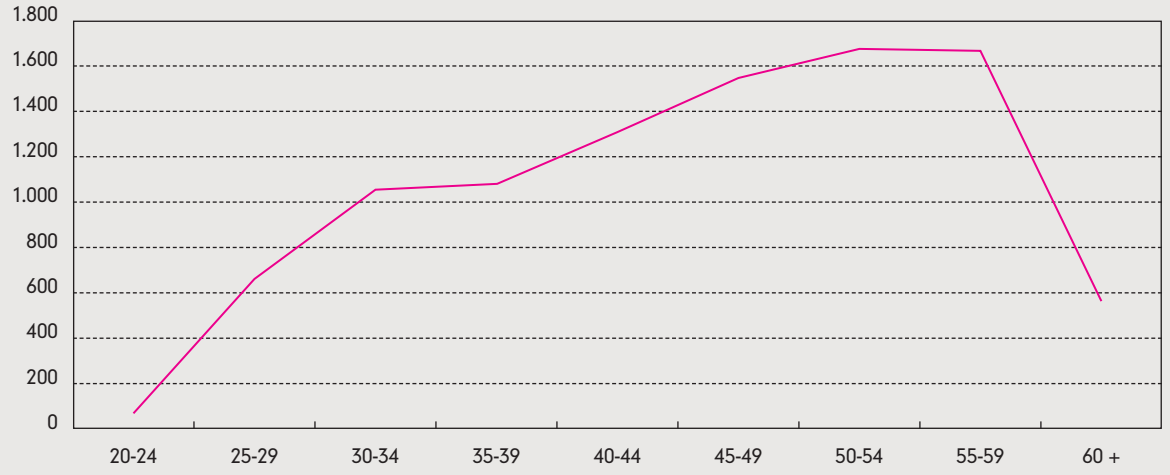
Graph 4.4: Staff at the Flemish university colleges (*Hogescholen*)



Source: Department of Education and Training

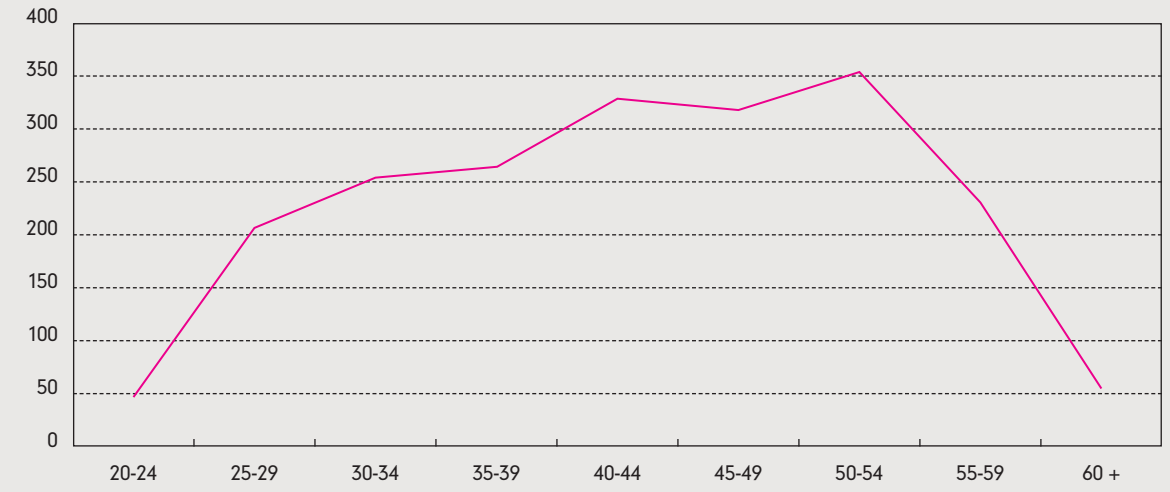
These graphs show the age structure of the staff at university colleges. It is clear that the largest part of the staff are situated between the age group of 45 - 60 years old, which means that the university colleges will face a big challenge in the renewal of the staff in the years to come.

Graph 4.5: Age structure teaching staff at university colleges (January 2007)



Source: Department of Education and Training

Graph 4.6: Age structure administrative and technical staff at university colleges (January 2007)



Source: Department of Education and Training

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

In Flanders, the European policy focus on doctoral education has been put into place by various government incentives and university initiatives. The number of early-stage researchers and awarded Ph.D. degrees has increased significantly over the last decade (see table 5.1), but also drop-out-rates, time-to-degree and the general experience of doctoral researchers have been given extra attention. While the majority of Flemish Ph.D. students enjoy professional recognition and a status with employee rights and excellent social security, many experience similar kinds of time pressure, loneliness and limited career options as their colleagues at international universities. A major study of this experience[5] has given rise to the establishment of Doctoral Schools at five Flemish universities[6].

One significant trend over the last 20 years is the dramatic increase in the number of female early-stage researchers commencing and completing Ph.D. research. While their share in awarded Ph.D. degrees was only 34% in 1999-2000, six years later 40% of all Ph.D. degrees in Flanders were awarded to female researchers (see table 5.1) – a figure which is expected to continue to rise.

Table 5.1: Number of doctoral degrees awarded

	1999-2000			2000-2001			2001-2002			2002-2003		
	M	F	T	M	F	T	M	F	T	M	F	T
Humanities and Arts	54	15	69	51	18	69	80	54	105	52	33	85
Education, Social Sciences, Business and Law	51	19	70	61	31	92	70	41	111	79	40	119
Science	141	79	220	161	83	244	156	89	242	180	68	248
Engineering, Manufacturing and Construction	123	56	179	133	43	176	143	55	198	152	67	219
Agriculture	2	2	4	3	6	9	4	5	9	11	10	21
Health and Welfare	66	57	123	78	50	128	58	78	136	88	74	162
Other	3	1	4	3	2	5	5	2	7	6	2	8
Total	440	229	669	490	233	723	516	324	811	568	294	862

Source: DHO

Table 5.1: Number of doctoral degrees awarded

	2003-2004			2004-2005			2005-2006			1999-2006
	M	F	T	M	F	T	M	F	T	Total
Humanities and Arts	66	39	105	76	43	119	85	32	117	669
Education, Social Sciences, Business and Law	62	47	109	76	54	130	98	70	168	799
Science	165	97	262	178	97	275	144	114	258	1.752
Engineering, Manufacturing and Construction	197	45	242	209	70	279	210	101	311	1.604
Agriculture	10	6	16	8	11	19	9	13	22	100
Health and Welfare	110	72	182	86	91	177	94	95	189	1.097
Other	2	6	8	6	2	8	2	3	5	45
Total	612	312	924	639	368	1.007	642	428	1.070	6.066

Source: DHO

5 VRWB, Doctoreren aan Vlaamse Universiteiten (1991-2002). Brussel, VRWB Studiereeks 15, 2006.
6 K.U.Leuven, UGent, UHasselt, Universiteit Antwerpen and Vrije Universiteit Brussel.

Table 5.2: Number of PhD students in FTE (1999-2007)

	Teaching assistants			Competitive and Project Funding		
	M	F	Total	M	F	Total
1999	768,43	615,20	1.383,63	2.156,07	1.478,11	3.634,18
2000	719,83	600,85	1.320,68	2.383,72	1.583,42	3.967,14
2001	729,46	605,24	1.334,70	2.523,96	1.735,20	4.259,16
2002	713,35	584,55	1.297,90	2.544,75	1.874,19	4.418,94
2003	673,15	561,35	1.234,50	2.670,08	2.058,48	4.728,56
2004	620,95	553,60	1.174,55	2.858,96	2.288,05	5.147,01
2005	569,55	546,65	1.116,20	2.919,46	2.382,35	5.301,81
2006	554,50	543,75	1.098,25	3.095,87	2.601,24	5.697,11
2007	508,05	539,55	1.047,60	3.110,99	2.680,11	5.791,10

Source: VLIR

In Flanders, funded Ph.D. researchers have a hybrid status: they are at the same time staff member and student at their institution. Their net monthly income is on average 1600€. There are various funding routes to obtain a Ph.D. degree in Flanders (see table 5.2):

- Ph.D. students with an **employment contract as "teaching assistant"**: these students spend a minimum of 50% of their time on research, and the remaining time on teaching support, lab support or administration. Their appointment generally lasts for 6 years.
- Ph.D. students with **competitive 4-year scholarships** from Flemish academic funding bodies (IWT, FWO) or from the university's own research funds (BOF). Their score for time-to-degree is among the best: 80% obtain their Ph.D. degree within 5 ½ years; drop-out rates are relatively low.
- Ph.D. students with a **4-year "project" scholarship**, who are recruited by the promoter of a particular research project, for example funded through FP7, national projects, the university's own research projects, or partnerships with industry or NGO's.

Some Ph.D. students have their **own private funding** or funding directly from **international funding agencies**. These students generally do not have an employment status at Flemish universities but are given the necessary research facilities on the basis of their student status. Their share in the total number of Ph.D. researchers is estimated at 20%[7].

At the end of 2008, the Flemish government launched a new funding scheme for Ph.D. research in collaboration with industrial partners, the so-called "**Baekeland programme**". Part of the research is to be carried out at university, and part within a private company, in order to foster maximum collaboration.

As more Ph.D. opportunities become available at the university colleges (*Hogescholen*) or within other research institutes (e.g. Flanders Marine Institute), further differentiation will be necessary to monitor Ph.D. progress, to assess the impact of funding on Ph.D. production rates, and to remain up-to-date with current Ph.D. policies. The Flemish Interuniversity Expertise Centre on R&D Indicators at Ghent University is monitoring these trends[8]. In addition, more and more Ph.D. graduates pursue careers outside academia. Universities are responding to these changing trends by providing specific events, training programmes and workshops preparing researchers for a non-academic career.

In order to ensure that every Ph.D. researcher receives the same quality of supervision and training, regardless of his/her funding situation, each university has introduced training opportunities and guidance by means of Doctoral Schools. The training programme is flexible although in some cases or institutions it is compulsory. It generally includes field-specific specialized courses as well as a transferable skills programme. In addition, the programme at each of the universities encourages students to take an active part in conferences and academic publications while they are working towards a Ph.D. degree. For example, most Ph.D. students in Flanders have publications in international refereed journals around the time they submit their Ph.D. thesis for examination.

7 VRWB, Doctoreren aan Vlaamse Universiteiten.
8 http://www.psw.ugent.be/sooi

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

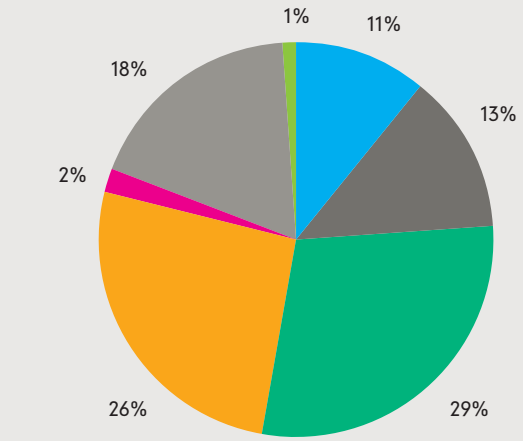
Ph.D. students at Flemish universities also have increasing access to international mobility schemes, such as joint Ph.D. programmes between their own institution and partner universities, international mobility grants, etc.

Likewise, a range of Flemish and international funding schemes are available to welcome international students to Flemish universities for part or the whole of their Ph.D. research period. As English is the lingua franca for academic research, the Dutch language at Flemish universities is no obstacle for international cooperation or international mobility at Ph.D. level.

More than 70% of the doctoral degrees are awarded in Science, Engineering, Manufacturing and Construction and Health and Welfare (see graph 5.1).

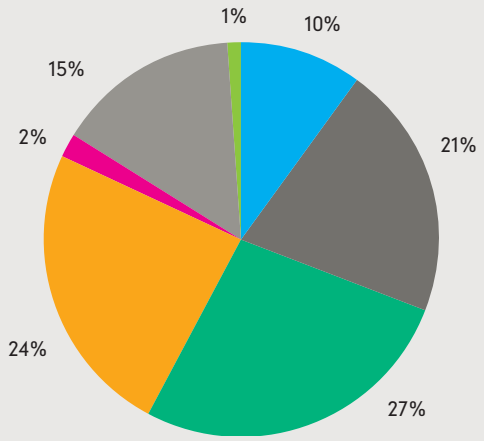
Currently, more than half of the PhD. students are registered in the fields of Science, Engineering, Manufacturing and Construction (see graph 5.2).

Graph 5.1: Doctoral degrees according to discipline (1999-2006)



Source DHO

Graph 5.2: PhD students according to discipline (2007)



Source DHO

6. FINANCING HE AND SOME FINANCIAL INDICATORS

This chapter describes the principles that underpin the allocation of the teaching and research funding in Flanders and explains the main budget components.

For the main part a rule-based system is used to determine how the budgets are allocated to the higher education institutions. A major component of research funding is the responsibility of the research councils of the universities and is based on the peer evaluation of research projects and PhD grant applications.

The allocation rules take into account a wide range of factors for each institution, including both input and output factors.

The basic resource unit for teaching is the study point and the credit. Other components are the type of student, the number of degrees (bachelor, master and PhD) awarded, the number of publications and citations related to ISI-indexed journals and the diversity of its research population. For some specific funding instruments, the rules take into account variables measuring knowledge transfer and innovation intensity: the number of spin-offs, the income from research contracts with industry, the revenue from licensing and IPR, the number of researchers paid by third stream funds.

Once the amount of funding has been determined, it is mainly provided as a block grant which institutions are free to spend according to their own priorities within broad guidelines. Institutions are not expected to model their internal allocations on this funding model.

Funds are allocated to each university or university college to support teaching, research and third stream activities. The aim is to:

- increase opportunities for students from all types of background to get access to higher education and to achieve academic success;
- maintain and enhance the quality of teaching and research;
- encourage universities and university colleges to work with business and society;
- support diversity;
- support lifelong learning;
- maintain and enhance efficiency and effectiveness of the higher education provision both at system level and institutional level.

The general funding principles are as follows:

Teaching and research block grant

When focusing on the teaching and research block grant, there are five overall budgets that are distributed to the institutions:

- an overall budget to be distributed as a fixed amount to the institutions, taking into account scale effects;
- a budget for the professional bachelor programmes which the university colleges offer;
- a budget for the academic bachelor and master programmes which the university colleges offer;
- a budget for the academic bachelor and master programmes which the universities offer;
- a budget for research at the universities.

Tuition fees are low. Tuition fees account for about 7% of the block grant allocated to the university colleges and for about 4.2% of the block grant allocated to the universities.

The overall budgets are adjusted for the increase of the volume of teaching activity. There is an increase of 2% if the volume of the resource units increased with at least 2% compared to a set reference volume.

Factors influencing the calculation of the block grants are:

1) Volume of teaching activity:
   - the number of study points which the newly enrolled student takes;
   - the number of credits awarded;
   - the number of bachelor and master degrees awarded which are converted to a number of credits (1 degree is equivalent to 30 credits).

2) Volume of research activity:
   - the number of master degrees awarded;
   - the number of PhD degrees awarded;
   - the number of publications and citations;
   - the diversity of the institution's research population.

3) Study programmes considered:
   - all initial bachelor and master courses are funded;
   - postinitial bachelor courses are partly funded;
   - postinitial master courses are not funded from the public purse.

6. FINANCING HE AND SOME FINANCIAL INDICATORS

4) Students taken into account:
   - Full-time and part-time students are funded equally. All study programmes are organized in a fully flexible way. Both degree students and single course students (lifelong learners, re-schooling and updating of skills) are funded. For the latter ones, only the number of credits awarded is taken into account in the funding rule.
     Note: for up to a share of 2% of the volume of teaching activity, students from abroad are taken into account for the allocation of public funding. With the exception of 1 or 2 HEIs, the number of foreign students in the funded study programmes remains under that limit.

5) Weights used:
   - Weights are applied to the study points and the credits related to the type of curriculum. The range of weights applied varies from 1 to 4,2.
     We also apply extra weighting to the study points and the credits related to the type of students: students from a lower socio-economic background receive an extra weighting of 1.5 and disabled students also receive an extra weighting of 1.5. The same extra weighting applies to students combining work and learning. Those extra weights recognize the extra costs of specific teaching provisions in terms of specific teaching materials, particular modes of delivery and evaluation arrangements, extra tutoring and counselling activities.
     The budget is adjusted yearly for increases due to inflation. The budget is also adjusted for increases due to collective pay agreements.

6) Block grant of a university college, consisting of two components:
   - A fixed allocation and an allocation varying according to the volume of teaching activity.

7) The block grant of a university, consisting of four components:
   - A fixed allocation for teaching;
   - An allocation varying according to the volume of teaching activity;
   - A fixed allocation for research;
   - An allocation varying according to the volume of research activity.

Smaller allocations are distributed to the university colleges for projects connecting teaching and the professional world as well as for strengthening the teaching-research nexus.

Second stream research funding allocations to universities

Universities do not only receive a block grant for teaching and research, but also a second funding stream for curiosity-driven research (BOF).

The interuniversity allocation rule includes the following factors:

- the number of researchers;
- the number of master and PhD degrees awarded;
- the number of publications and citations;
- the number of newly appointed external professors;
- the number of newly appointed female professors.

As can be seen, the formulae for research funding also includes a factor related to the mobility of researchers and professors: the number of professors appointed having done their PhD at another university or coming from another university. It also includes a factor related to the number of newly appointed female professors.

Innovation and knowledge transfer block grants

The minister responsible for Research and Innovation further allocates a block grant (IOF) to the universities aimed at encouraging universities to collaborate with business and industry and to foster innovation. The allocation rule includes the following factors:

- the number of patents;
- the number of spin-offs;
- the revenue from research contracts with industry;
- the income from the participation in EU framework programs;
- the number of researchers;
- the number of publications and citations.

Miscellaneous funding rules

There are various *smaller targeted allocations*:

- a targeted allocation to widen access and increase participation activities;
- a targeted budget supporting research in the humanities;
- a targeted allocation covering the additional costs associated with the concentration and rationalisation of the study programme supply and the teaching and research provisions: closing down small study programmes, collaboration between institutions, joint programmes, …

- a targeted allocation supporting the appointment of top researchers from outside Flanders (Odysseus programme);
- a targeted allocation supporting the highly performing professors for a longer period up to 7 years (Methusalem programme).

Investments

The Flemish government further provides funding for real estate and equipment investment:

- a yearly earmarked capital grant supporting investments in real estate;
- earmarked capital funding as an additional funding supporting investments in big science infrastructure; this funding is delivered by the Hercules Agency.

As mentioned above, public research funds are also provided by the Fund for Scientific Research (FWO). These funds are allocated through research projects, PhD grants and postdoctoral grants.

Budgets

- Teaching and research block grants to university colleges: 672,5 Meuro
- Teaching and research block grants to universities: 676,0 Meuro
- Second research block grant to universities: 104,6 Meuro
- Innovation block grant to universities: 17 Meuro
- Student facilities block grant to HEIs: 44,1 Meuro
- Capital funding real estate: 52 Meuro
- Capital funding big science: 15 Meuro
- Tuition fees: approx. 68 Meuro
- FWO: 183 Meuro
- Smaller targeted teaching allocations: 12,3 Meuro
- Smaller targeted research allocations: 47 Meuro

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

THE TRANSITION OF HIGHER EDUCATION TO THE LABOUR MARKET

This contribution will focus on the transition from education to the labour market and on the differences in labour market opportunities between school leavers with different educational backgrounds. First the labour market position of lower, medium and higher educated school leavers and people aged 15 to 34 will be examined. Next, a comparison will be made between the chance of getting work and the risk of becoming unemployed between professional bachelors, academic bachelors and masters. There will be a paragraph on the "value" of different educational levels. This will rely on information on education-based differences in monthly gross income.

7.1 LABOUR MARKET POSITION ACCORDING TO EDUCATIONAL LEVEL

Table 7.1 provides an overview of the percentage of low, medium and high educated school leavers (in 2001, 2003 and 2005) who had a job one year after graduating (in 2002, 2004 and 2006). Next, the percentage of low, medium and high educated people aged 15 to 34 who have a job is examined.

The figures show big differences in labour market opportunities. About 78% of highly educated school leavers in 2005 had a job in 2006. These percentages amount to 68,4% of medium educated school leavers and merely 45,3% of low educated school leavers. These differences are even more pronounced when the figures of the total population of people aged 15 to 34 are examined. More than 88% of highly educated people aged 15 to 34 is working, whereas employment rates among low educated people have dropped significantly from 36% in 2002 to a very low 28% in 2006 (despite an upward movement in labour market conjuncture in 2005 and 2006).

Table 7.2 provides more detailed information on the labour market position of all people aged 15 to 34 according to their educational background. The following conclusions can be drawn from these figures: (1) the risk of unemployment and inactivity is higher among low educated people compared to medium educated people; this risk is the lowest for high educated people; (2) the chance of being self-employed is higher among medium and high educated people compared to low educated people; (3) low educated people have a lower chance of having permanent work; (4) highly educated people are overrepresented in the tertiary and public/ government sector.

Table 7.1: Percentage of low, medium and high educated school leavers who work one year after graduating and percentage of low, medium and high educated people (aged 15-34) who work (Flemish Community, 2002-2004-2006)

	School leavers			All people aged 15 to 34		
	2002	2004	2006	2002	2004	2006
Low educated (maximum degree of lower secondary education; i.e. secondary education)	45,7	41,2	45,3	35,8	30,7	27,9
Medium educated (maximum degree of higher secondary education)	72,4	60,5	68,4	64,3	63,5	64,9
High educated (university college or university degree)	78,5	72,4	77,8	88,4	87,7	88,7

Source: FOD Economie – Algemene Directie Statistiek – EAK (Analysed by the Policy Research Centre Work and Social Economy - WSE).

Table 7.2: Labour market position of all people aged 15 to 34, according to educational background (Flemish Community, 2006)

	Low educated	Medium educated	High educated	Total
Total	427.100	637.434	415.108	1.479.643
Unemployed	19.609	26.897	16.779	63.285
Inactive	288.242	196.651	30.174	515.066
Employed	119.250	413.887	368.155	901.292
of which … self-employed	6.659	32.110	31.440	70.209
Permanent	87.369	335.202	294.658	717.229
Temporary	23.012	42.143	40.825	105.979
Primary sector	1.849	7.873	2.745	12.467
Secondary sector	48.085	149.889	61.922	259.896
Tertiary sector	52.270	171.727	136.912	360.909
Public/Government sector	17.046	84.293	166.576	267.915

Source: FOD Economie – Algemene Directie Statistiek – EAK (Analysed by the Policy Research Centre Work and Social Economy - WSE).

7.2 UNEMPLOYMENT AFTER GRADUATION

Whereas tables 7.1 and 7.2 provide an overview of the labour market position according to broad categories of educational background, Table 7.3 gives detailed information on unemployment rates for different student populations one year after graduating (e.g. general secondary education, (part-time) vocational secondary education, technical secondary education and secondary education in the arts among the low and medium educated; one cycle and two cycle higher education outside the university and university degrees among the highly educated).

The figures in table 7.3 also show that the risk of unemployment is particularly high among the low educated, more specifically among the graduates of vocational secondary education and secondary education in the arts. However, in the 2002-2007 time span there is a sharp decrease in the proportion of youngsters who are still job seeking and have had no work experience whatsoever in their first year after school leaving. No doubt this positive tendency is a reflection of the overall upward movement in economic and labour market conjuncture in the period mentioned. The overall 'competitive' labour market opportunities for professional bachelors are also worth noting.

Table 7.4 focuses on the labour market position of the highly educated, one year after graduation. A comparison is made between the results for higher education outside the university of one cycle (professional bachelor) and two cycles (academic masters of university colleges) and the labour market situation of university graduates (academic masters of universities). The figures indicate the unemployment risk in 2007, i.e. one year after graduation (in 2006).

A first conclusion is that, at an aggregated level, each of the three educational degrees (professional master, academic master outside university and university degree) show mutually comparable and consistently low unemployment risks. The arts programmes are the exception to the rule, with a high percentage of jobseekers one year after graduation. A second conclusion is that especially the Biomedical Sciences and Sciences and Engineering in general show excellent employment opportunities, a conclusion which holds for professional bachelors as well as academic masters. A third conclusion is that the differences in employment opportunities within one and the same educational domain (e.g. Sciences and Engineering or Commercial Sciences and Business Studies) are rather limited. Within the same educational domain, unemployment risks of professional bachelors and academic masters of both university colleges and universities are comparable. The direct competition between the respective categories of graduates seems rather limited, which indicates that their degrees are complementary instead of substitutive or overlapping.

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

Table 7.3: School leavers (2001 resp. 2006) and their labour market position one year later (2002 resp. 2007) according to educational background (Flemish Community; 2001-2002 and 2006-2007)

School leavers	2002	Still job seeking after one year (in %)	Still job seeking after one year, without any work experience (in %)	2007	Still job seeking after one year (in %)	Still job seeking after one year, without any work experience (in %)
Total	73.860	10,7	5,2	77.766	10,9	3,0
Low educated	10.223	27,5	12,3	11.567	24,7	6,7
Secondary education (only first two years completed)	1.380	36,2	22,7	1.581	20,9	6,5
Vocational training (leertijd)	/			1.625	7,8	1,2
Part-time vocational secondary education	2.421	28,6	10,1	2.636	30,9	6,7
General secondary education, not completed	426	13,8	8,7	331	14,2	4,8
Vocational secondary education, not completed	4.245	30,1	12,3	4.067	31,5	9,3
Technical secondary education, not completed	1.618	16,1	7,8	1.184	19,3	5,7
Secondary education in the arts, not completed	133	18,0	9,0	143	23,1	11,9
Medium educated	34.318	10,2	5,2	34.164	11,3	3,3
General secondary education	6.652	10,4	6,6	5.500	11,7	4,3
Vocational secondary education	13.571	11,0	4,8	14.829	11,9	3,1
Technical secondary education	13.363	9,1	4,7	13.017	10,1	3,2
Secondary education in the arts	732	16,1	9,4	818	15,3	4,6
High educated	29.319	5,5	2,8	32.035	5,7	1,3
Higher education, one cycle (professional bachelor)	15.411	4,8	2,0	16.534	5,6	1,0
Higher education, two cycles (academic master)	3.950	7,0	3,9	4.702	6,6	1,7
University (academic master)	9.958	6,0	3,7	10.799	5,4	1,5

Source: VDAB (Analysed by the Policy Research Centre Work and Social Economy - WSE).

Good examples supporting this conclusion can be found both in humanities (e.g. professional bachelors in Commercial Sciences and Business Studies compared to academic masters in Commercial Sciences and Business Studies and the university degrees in Economics and Applied Economics) as well as in Sciences (e.g. Industrial Sciences and Engineering at professional bachelor and academic master level compared to Applied Sciences and Sciences at university level).

Table 7.4: Highly educated school leavers and their labour market position one year later, according to their field of study (Flemish Community; 2006-2007)

School leavers 2006	Still job seeking after one year (in %)	Still job seeking after one year, without any work experience (in %)
Higher education, one cycle (Professional Bachelor)	5,6	1,0
Health Care	1,0	0,2
Commercial Sciences and Business Studies	4,7	1,3
Bionics	4,9	1,2
Industrial Sciences and Engineering	5,8	1,6
Social-agogic work	7,1	1,7
Education	7,6	0,4
Architecture	8,4	2,6
Higher education, two cycles (Academic Master)	6,6	1,7
Bionics	0,0	0,0
Industrial Sciences and Engineering	2,0	0,8
Architecture	2,1	1,0
Health Sciences	3,1	1,6
Commercial Sciences and Business Studies	3,3	1,0
Product Development	6,3	3,2
Applied Linguistics	9,0	1,2
Music and Dramatic Art	16,1	3,7
Audio visual and Expressive Art	23,1	5,2
University	5,4	1,5
Pharmaceutical Sciences	0,0	0,0
Social Health Sciences	0,0	0,0
Dental Surgery	0,0	0,0
Medical Sciences	0,3	0,3
Applied Sciences	1,3	0,8
Applied Bionics	2,8	1,2
Economics and Applied Economics	3,1	1,0
Sciences	4,1	1,5
Law, Notaryship and Criminological Sciences	5,0	1,9
Theology, Religious Studies	6,1	0,0
Physical Education, Kinesiology and Rehabilitation Sciences	6,3	0,8
Political and Social Sciences	7,3	1,9
Psychological and Pedagogical Sciences	7,4	2,0
Linguistics and Literature	7,9	1,6
Veterinary Sciences	8,4	3,9
History	10,6	3,3
Philosophy and Ethics	15,3	1,3
Archaeology and Art Sciences	15,8	4,6

Source: VDAB (Analysed by the Policy Research Centre Work and Social Economy - WSE).

7.3 WAGES ACCORDING TO EDUCATIONAL BACKGROUND

In competitive models such as the human capital theory, pay differentials are attributed to differences in initial schooling and (on the job) training. Schooling and education are seen as investments in human capital or productive capacity.

The willingness to invest is dependent on the expectation that the investment will lead to a higher pay level. Pay differentials based on educational differences thus encourage the willingness to invest.

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

Table 7.5: Difference in monthly gross wage (in %) according to educational level. Employees with a degree 'secondary education or lower' are the point of reference (Flemish Community, 2002-2008)

	2002	2004	2006	2008
Secondary education or lower (= reference)	0	0	0	0
Higher education, one cycle (professional bachelor)	+10,9%	+13,4%	+13,8%	+15,3%
Higher education, two cycles (academic master)	+20,9%	+23,4%	+25,4%	+26,4%
University (academic master)	+28,9%	+33,5%	+36,3%	+37,7%

Source: Salary Survey 2002-2004-2006-2008.

To gain insight into the "value" of different educational backgrounds, the Salary Survey 2008, carried out by the Research Centre for Organisation Studies is used. 86.782 workers responded. Table 7.5 gives an overview of the results of an extensive linear regression model with the logarithm of the monthly gross income as dependent variable. The discussion is limited to the effect of educational level.

The 2008 analysis shows that, if an employee has successfully completed a professional bachelor, his or her pay will be on average 15,3% higher than the pay of a (similar) worker with a secondary education (or a lower education). Employees who obtained an academic master degree from a university college (*hogeschool*) have a gross monthly salary which is on average 26,4% higher than that of an employee with a secondary education (or a lower education). Employees with a university degree (academic master), ceteris paribus, earn on average 37,7% more. It can therefore be concluded that the level of education retains an important predictive power, even when a number of career-related (e.g. seniority, career interruptions), job-related (e.g. functional domain, hierarchical position) and organisational (e.g. size, industry) characteristics are included in the explanatory model. Comparing the 2002 and the 2008 results it can also be concluded that the education-related pay differentials have become considerably larger throughout the past decade. This finding does not necessarily imply a confirmation of the human capital logic, since there is a wide range of competing explanations for this effect of educational level (e.g. signalling model, credentialist perspective).

Similar results are obtained in a separate analysis focusing on labour market entry wages (table 7.6). Although both the so-called two-cycle degrees in higher education outside the university (university colleges) as well as the university masters are considered to be 'academic masters', there are still significant differences in entry wage level (+22,2% versus +30,3%).

The entry wage effect sizes found for each educational domain separately (e.g. industrial engineering versus civil engineering; applied economics versus business administration) always confirm the existence of quite persistent education-related wage differentials. Table 7.7 elaborates on the differentiation within one educational domain: commercial sciences and business studies.

Higher education in the Flemish Community is moving towards a binary structure, differentiating between professional bachelors on the one hand and academic bachelors and masters on the other hand. The existing associations between universities and university colleges are preparing the integration of academic bachelors and masters from the university colleges within the university structures. However, the results on education based wage differentials, unemployment risks and differences in occupational structures consistently indicate that each of these educational levels has its 'raison d'être' on the Flemish labour market. Against the background of the forecast structural labour market shortages, it is of crucial importance that the unique and complementary profile of the academic masters outside the current university structures is safeguarded throughout the process of integration.

Table 7.6: Difference in entry wages (monthly gross wage; difference in %) according to educational levels. Employees who obtained a degree 'secondary education or lower' are the point of reference (Flemish Community, 2008, employees with at most 5 years of labour market experience)

	Employees with at most 5 years of working experience
Higher secondary education or lower (= reference)	0
Higher education, one cycle (professional bachelor)	+15,9%
Higher education, two cycles (academic master)	+22,2%
University (academic master)	+30,3%

Source: Salary Surveys 2002-2004-2006-2008.

Table 7.7: Difference in entry wages (monthly gross wage; difference in %) among employees who obtained a degree in the educational domain 'commercial sciences and business studies' to educational levels. Employees with a professional bachelor degree are the point of reference (Flemish Community, 2008, employees with at most 5 years of labour market experience)

	Educational domain commercial sciences and business studies
Business management (professional bachelor) (= reference category)	0
Commercial sciences / commercial engineer (academic master, university college, i.e. higher education outside university)	+8,9%
Applied Economics (academic master, university)	+16,9%
Applied Economics, commercial engineering (academic master, university)	+21,3%

Source: Salary Survey 2002-2004-2006-2008.

8. INNOVATION AND RESEARCH

The Flemish government has paid ample attention to the design and development of its science and innovation policy. Since 1991, science and innovation policy have to a large extent been devolved to the regional governments. This has enabled the creation of a Flemish science and innovation policy. In 2002 the "*Pact van Vilvoorde*" was signed. This agreement formalized the commitment of the various actors in the Flemish innovation landscape to attain the 3% norm of Barcelona by 2010 (i.e. 3% of the GDP of Flanders should be devoted to R&D). The 3% norm has become a focal point of the Flemish science and innovation policy ever since. It was reconfirmed with the "Pact 2020" that was signed by the Flemish government and the major socio-economic actors in January 2009. In 2007 the Flemish region achieved an R&D spending level (or Gross Expenditures on R&D, GERD) of 2,03% of its GDP. The BERD[9] component amounted to 1,40% of Flemish GDP, while the non BERD component was at 0,63%. During the period 2001-2007, there was a decline in R&D intensity, mainly on the corporate side, although the absolute amount of R&D spending remained almost constant. The BERD component (as % of GDP) thereby decreased from 1,83% in 2001 to 1,40% in 2007. The non BERD component increased steadily over the last fifteen years, reaching a stable pattern of about 0,63% of GDP over the last three years. As a consequence of this evolution, an all time high R&D intensity of 2,38% was reached in 2001. The objective now is to attain the 3%-norm by 2014.

Of course, the 3% norm does not in itself reveal the "content and substance" of the Flemish R&D and Innovation policy. However, it has been a rallying point around which "content and substance" have developed. In addition, "content and substance" have been on the agenda well before 2002. It is therefore necessary to have a closer look at the various *performers* and the major *funding agencies and mechanisms*, their aims and their achievements, of Flemish science and innovation policy.

The performers

Three major groups of performers can be distinguished on the Flemish innovation scene: (1) the higher education sector, (2) the public research institutes, and (3) the private sector.

In 2007, the R&D intensity of the higher education sector (=HERD[10]) amounted to 0,39% of GDP (or 739 million EUR in 2007, for the Flemish region). The higher education sector consists of the 6 Flemish universities and the 22 university colleges. The universities are the hotspots for curiosity-driven research in Flanders. In 2007, the universities accounted for 88% of the publication output reported in the Web-of-Science (Thomson-Reuters). Universities and university colleges, however, also play an active role in demand-driven research and innovation. It is interesting to note that, in 2007, 15,3% of the HERD expenditures originated from industry. This is the highest percentage amongst the OECD countries. It underlines the close and strong ties that exist between the Flemish industry sector and the higher education research base. It also stands witness to the fact that the Flemish higher education sector has fully embraced its threefold mission of education, research and contribution to innovation.

The Flemish public sector is marked by a dynamic R&D and innovation policy. Over the last 20 years, 4 major strategic research centers have been created and developed successfully (i.e. IMEC in the area of nano- and micro-electronics, VIB in the area of biotechnology, IBBT in the area of broadband technology and VITO in the area of engineering, energy, materials and environmental technology). Besides these 4 strategic research centers, a group of 10 competence poles has grown. These competence poles heavily focus on demand-driven innovation and technology diffusion across specific industry clusters. They operate in the sectors of automotive applications (Flanders Drive), materials (Flamac), mechatronics (FMTC), food (Flanders Food), geo-information (IncGeo), logistics (VIL), mobility (VIM), plastics (PlasticVision) and product development (Flanders Inshape).

9 BERD = Business Expenditures on R&D
10 HERD = Higher Education Expenditures on R&D

The strategic research centers typically receive an annual R&D allowance from the Flemish government ranging between 25 and 40 million euro. They significantly complement this amount of public funding through competitive project funding from European, national and regional agencies as well as from the private sector. The public sector research is thus by its very nature highly dynamic and diverse. New initiatives are proposed regularly, as the result of bottom-up actions that coalesce into more concentrated, innovation focused, programs and efforts. The aforementioned initiatives hence are an important part of the GOVERD[11], which amounts to 0,22% of the Flemish GDP (or 418 million EUR in 2007, for the Flemish region). The other major part of the GOVERD is mainly achieved through grants to industrial R&D and innovation provided by IWT, the Flemish agency that supports R&D and innovation in industry.

The third performer in the Flemish R&D and innovation landscape is, of course, industry. As mentioned above, the BERD as a percentage of GDP, in general, showed a decline over the period 2001-2007, reaching a 1,40% level in 2007. The total BERD spending amounted to 2.650 million EUR in 2007 which is a slight increase from 2005/2006. Of course, this industry R&D spending is highly heterogeneous. First, there is significant sector variety. About half of corporate R&D spending is done by companies belonging to either the pharmaceutical or ICT sector, while services account for about one fifth of R&D spending. Furthermore, there are, as is to be expected, significant differences between large and small companies, leading to a quite skewed BERD distribution. The top-50 companies in terms of R&D expenditures, account for more than 65% of total BERD spending. However, we have to mention that R&D expenditures at SMEs have shown a steady increase over the last decade, although their share of the BERD is still low.

Taking an international perspective, Flanders (2,03% - 2007) outperforms the EU27 average (1,76% - 2006) in terms of GERD per GDP. The non BERD component (0,63% - 2007) is almost equal to the EU27 average (0,65% - 2006). The BERD component (1,40% - 2007) outperforms the EU27 average (1,11% - 2006). However, the region still has some way to go in order to reach the 3% norm. Moreover, it lags behind countries like Finland, Sweden and Denmark that often serve as a role model to Flemish science and innovation policy.

11 GOVERD = Government Expenditures on R&D

The funding agencies and mechanisms

The budget for the Flemish science, technology and innovation policy is allocated through different ministries and totals 1.782 million EUR in 2008. Applying the Frascati Manual classification, there are three main destinations for the funding: Research and Development (1.122 million EUR, 2008), Education and Training (580 million EUR, 2008) and Scientific and Technological Services (80 million EUR, 2008). Four major Flemish funding agencies and mechanisms, especially geared towards science and innovation policy, are to be mentioned here: (1) FWO, (2) BOF & IOF, (3) the Hercules Foundation, and (4) IWT.

FWO is the agency that supports curiosity-driven research at Flemish universities. The 2008 budget amounted to 183 million EUR, of which 117 million EUR financed by the Flemish Government. FWO assesses, selects and awards proposals for funding on a competitive, interuniversity, basis using a high quality standard, highly visible, international peer review process (including bibliometric assessment of the submitters' track record). Two major funding instruments are (1) fellowships and (2) projects. Fellowships occur both at doctoral and postdoctoral level. Thanks to a very active policy to stimulate and increase the number of fellowships, FWO has succeeded in significantly increasing both the number of doctoral and postdoctoral researchers at Flemish universities. The objective is to reach a success rate of 35% amongst applicants for fellowships. Projects are selected on the basis of their scientific merit and relevance. Over the last five years, competition for project funding has strongly increased. In 2008, about 52% of FWO funding went to supporting curiosity-driven, scientific research projects. Alongside those two activities, FWO also supports conferences, symposia and scientific communities, and provides ample funding for international mobility of researchers.

In addition to the categories just mentioned, FWO has also been the agency through which the novel mechanism of Odysseus fellowships was institutionalized. The Odysseus fellowships intend to be highly visible internationally, aimed at attracting top scientists, who are now working at universities and research institutes abroad, to Flemish academic research centers. This "reverse brain drain" or "brain gain" program is highly competitive and has so far succeeded in attracting a first cohort of top scientists to Flanders. Finally, it is obvious that an agency as FWO plays a very active role on the international science scene, participating in various international science programs and networks, amongst which the European Science Foundation figures prominently.

8. INNOVATION AND RESEARCH

BOF (*Bijzonder Onderzoeksfonds*) and IOF (*Industrieel Onderzoeksfonds*) are two funding mechanisms that allocate research money to universities based on an interuniversity distribution rule. The level BOF funding (2008) amounted to 126 million EUR. The bulk of this money (105 million EUR) is allocated (by the research council of the receiving universities) to fellowships and projects (both smaller and larger projects). The intra-university allocation is based on a peer-review process, involving an assessment of the (bibliometric) performance of the submitters as well as a detailed review and assessment of the substance of the work proposed. The evaluation and the selection of the specific fellowships and projects within the university is the task of the research council. The distribution of the funds amongst the Flemish universities is based on a rule taking into account both input variables (staff & funding shares amongst the universities) and output variables (Ma&Ph.D. degrees awarded by the Flemish universities, publication and citation output shares as recorded in the Web-of-Science (SCIE, SSCI, AHCI) and the ISI Proceedings databases). It is also worth noting that by 2011, a Flemish Academic Bibliography will be developed for the social sciences and humanities. This will help solving the issue of a better representation of those scientific disciplines in the distribution rule. Besides allocating money to fellowships and projects, BOF also supports highly successful and internationally visible scientists, having built their careers at a Flemish university, with 7-year grants so as to make them less dependent on short-term competitive funding. These "Methusalem" grants amounted to 15 million EUR in 2008 and will increase in the years to come. Finally, a significant amount of money (5 million EUR and increasing in the future) is allocated to tenure track professorships with a focus on research.

Besides BOF, the universities receive money to support strategic basic research that should lead to innovation and an increased exploitation of their research results. This is the so-called IOF, amounting to a total budget of approximately 17 million EUR in 2008. The distribution of IOF funds among the Flemish universities is also based on a competitive allocation rule, including not only the scientific output of the universities, but also their performance on patenting, spin-off creation, income from industrial research contracts, as well as their participation in international R&D projects within the framework programs of the EU.

IOF money can be allocated both to projects and to permanent mandates for IOF officers. The assessment and the selection of projects and officers is also based on a peer review process, supervised and monitored by the IOF council of the university. Like the research council, the IOF council is institutionalized within each Flemish university, in accordance with the government decisions that regulate the functioning of both BOF and IOF. The peer review process monitored and concluded by the IOF council is not only based on criteria of scientific and technical excellence, but also on criteria pertaining to the future exploitation potential of the proposals made. To this end, there is a close involvement of the technology transfer agencies of the universities in the IOF selection and decision process.

In 2007, the Hercules Foundation was created. Its current budget amounts to 15 million EUR. The mission of the Hercules Foundation is to support the purchase and the installation of dedicated, high-end research equipment at academic research groups. Equipment projects are selected and awarded to academic research groups on a combination of (partially) an interuniversity allocation rule, and (partially) a competitive interuniversity assessment of proposals submitted. In creating the Hercules Foundation, the Flemish government explicitly wanted to support the renewal and rejuvenation of research infrastructure in its academic research groups. It is worth noting that an explicit business plan should accompany the equipment proposals submitted, including the active participation of industrial partners to the equipment proposal.

IWT is the Flemish agency that supports innovation in industry through a wide variety of strategic basic research and innovation funding instruments. In 2008, the total IWT budget, covering the various instruments and mechanisms deployed, amounted to approximately 300 million EUR. The major IWT funding instruments can be summarized as follows:

- General subsidy program to support R&D and innovation in companies, on a project basis;
- SME innovation program;
- Strategic basic research funding, open to research groups from academia, public research institutes and companies;
- Doctoral and post-doctoral fellowships with a focus on R&D leading to innovation, including fellowships for researchers from industry (Baekeland program);
- TETRA program to support innovation activities at university colleges in cooperation with industry, most often geared towards the SME segment;

- Flemish Innovation Partnerships (VIS) and Flemish Innovation Network (VIN), a variety of programs, instruments and mechanisms to support the diffusion of innovation across the multiple performers of R&D and innovation in Flanders. The Technology & Innovation Partnerships (TIS-program), bundling innovation efforts on a cross-sector technology basis, and the Regional Innovation Centers (RIS-program) serving the innovation needs of local firms with a special focus on SMEs, deserve special attention;
- Dedicated programs for applied biomedical research, agricultural research & innovation, and innovative media;
- Active participation in European innovation programs (Framework Programs, EUREKA, ERA-Net).

Besides these funding mechanisms, the role of IWT in assessing and monitoring the strategic research centers and competence poles deserves attention. IWT has developed much appreciated and highly visible competencies and methodologies in this area. IWT is at present involved in the assessment of a number of novel strategic research center initiatives, amongst which an initiative on materials research and translational medicine. The process and criteria on which IWT assessment and judgment of proposed initiatives are based, can be summarized as follows:

- Bottom-up process, originating with (groups of) performers on the research & innovation scene, coupled to a professional expert process of evaluation and selection;
- Scientific and technical excellence criteria;
- Economic and societal potential criteria, including the presence of a fair return to the Flemish economy;
- Additionality criteria, based on specific incentives to be provided either sector-related (e.g. aerospace & automotive), company-related (e.g. involvement of, or, with SMEs), or collaboration-related (e.g. collaboration amongst companies, collaboration with universities and university colleges).

These four mechanisms are the major vehicles the Flemish government deploys in order to articulate its science and innovation policy. However, the *federal level* still has an important funding mechanism that also benefits the Flemish academic environment, i.e. the IAP or the Interuniversity Attraction Poles. These networks of excellence enable the funding of consortia of academic research groups within the three regions of the Belgian federal state. Its budget amounts to 143 million EUR for the period 2007 – 2011. Academic research groups value this funding mechanism as highly attractive, given its high international visibility and its unambiguous ambition of excellence.

To conclude, the Flemish government has thus developed an interesting array of funding mechanisms and instruments. They support a rich and equilibrated mix of curiosity-driven research, strategic basic research and demand-driven research & innovation.

The policy actors

Science and innovation policy in Flanders is supported by EWI, the government department for Economic, Science and Innovation policy. EWI is responsible for the implementation of the development, the monitoring and the maintenance of science and innovation policy in Flanders. It also plays a significant role in the international networks that are relevant to Flemish science and innovation policy. It gives advice to the minister on these matters and executes the policy decisions of the Flemish government. It is also responsible for the development and the implementation of an indicator-based monitoring system to assess the effects of the various policy decisions taken.

Alongside EWI and the various funding agencies and instruments highlighted earlier in this section, the Flemish Science Policy Council (VRWB) acts as the official, high-level advisory body to the responsible ministers and the Flemish government. Finally, since 2001, the Flemish government created 14 dedicated policy support centers. Their mission is to provide data, statistical analyses and indicators to the government to monitor the efficiency and the effects of its decisions across its various policy areas.

New instruments

Over the last five years, there has been a further evolution of the mechanisms deployed to support science and innovation policy. Fiscal policies, for instance, have complemented subsidies as a relevant incentive for R&D and innovation, across all sectors of activity. Innovative procurement policies have been institutionalized since last year. A starting budget of 10 million EUR was made available to support this instrument. Finally, the Flemish government has provided innovation capital instruments as part of its policy portfolio (i.e. VINNOF, the Flemish Innovation Fund, & the Arkimedes Funds in collaboration with the major financial institutions).

9. INTERNATIONALIZATION OF HIGHER EDUCATION

Most data in this chapter cover the mobility within the Erasmus exchange programme, because these are coherent data that give a good indication of the trends in inward and outgoing student mobility. These figures do not cover the complete 'mobile community'. For instance the number of free movers, students who took part in a Leonardo exchange, students in other programmes or in a bilateral agreement are not included. Nor are data available of the non statutory registered institutions. More structured data collection is therefore needed.

9.1 OUTGOING MOBILITY

1. Ratio of female to male students

Table 9.1: ERASMUS outgoing student mobility by gender

Academic year	men	women	total
1999-2000	1.059	1.582	2.641
2000-2001	1.016	1.559	2.575
2001-2002	1.048	1.680	2.728
2002-2003	1.047	1.615	2.662
2003-2004	1.055	1.620	2.675
2004-2005	1.087	1.641	2.728
2005-2006	1.099	1.746	2.845
2006-2007	1.143	1.774	2.917
Total	8.554	13.217	21.771

Source: EPOS

The figures show that both in universities and university colleges (*Hogescholen*) female students tend to be more mobile in the frame of the Erasmus programme than their male colleagues. This was already the case in 1999, and the gap has widened a little since then. For the year 2006-2007 the ratio female to men was 1774:1143. Taking into account that women constitute a bigger part of the total student population, we still find a difference in mobility level: one in every 56 registered female students (in any programme in any one year) participated in an Erasmus exchange (in the academic year 2006-2007), while 'only' one out of every 72 male students tended to be mobile.

Cause or consequence, in any case it is no coincidence that we find a high percentage of mobile students in the Humanities and Social Sciences, where female students outnumber the male students.

2. Ratio of students at universities to university colleges

Table 9.2: ERASMUS outgoing student mobility by type of educational institution

Academic year	university colleges	universities
1999-2000	1.328	1.313
2000-2001	1.245	1.330
2001-2002	1.400	1.328
2002-2003	1.406	1.256
2003-2004	1.482	1.193
2004-2005	1.481	1.247
2005-2006	1.504	1.341
2006-2007	1.415	1.502
Total	11.261	10.510

Source: EPOS

At first glance the mobility seems to be well spread between both types of Higher Education Institutions. On closer inspection and considering that the university colleges ('Hogescholen') account for a larger total amount of students (105.825 for 2006-2007 to 76.316 in the universities), it becomes clear that the average mobility of this group is well below that of universities.

A possible explanation is that most of the courses at the university colleges only count 180 ECTS-credits (three years), which leaves students little room in their programme to undertake an Erasmus exchange. Or can the fact that more lower income class students are studying at the university colleges account for this? Further research has to be undertaken to reveal the obstacles preventing these students from going abroad.

3. Number of mobile Flemish students according to educational field

In real numbers the amount of Flemish Erasmus students is highest in the fields of Social Sciences, Humanities and Economics.

4. Destination countries of Flemish Erasmus Students

Large numbers of Flanders' exchange students choose southern destinations for their Erasmus stay. Spain, France and Italy attract half of them. More qualitative research is required to find out why students choose a particular country for their study abroad.

Table 9.3: Number of outgoing Flemish Erasmus students according to educational field

Educational field	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	total	%
Humanities	506	457	452	432	433	458	488	481	3.707	17,03%
Social Sciences	653	665	805	758	782	787	868	869	6.187	28,42%
Law	203	202	208	197	197	172	175	206	1.560	7,17%
Economics	574	544	525	476	478	530	512	535	4.174	19,17%
Agriculture	81	79	103	94	75	64	60	60	616	2,83%
Sciences	85	111	101	105	111	115	97	110	835	3,84%
Engineering	273	260	269	313	321	327	370	336	2.469	11,34%
Health	229	211	219	256	260	244	244	282	1.945	8,93%
Other	37	46	46	31	18	31	31	38	278	1,28%
Total	2.641	2.575	2.728	2.662	2.675	2.728	2.845	2.917	21.771	100,00%

Source: EPOS

Table 9.4: Number of outgoing Flemish Erasmus students according to host country

	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	total	%	% 06/07
Austria	62	57	56	54	64	84	59	60	496	2,28%	2,06%
Bulgaria		1	8	3	10	10	13	10	55	0,25%	0,34%
Cyprus				3		3	7	3	16	0,07%	0,10%
Czech Republic	12	14	14	27	33	34	51	55	240	1,10%	1,89%
Germany	243	219	214	189	177	165	183	207	1.597	7,34%	7,10%
Denmark	55	51	56	67	41	69	49	63	451	2,07%	2,16%
Estonia		3	8	4	1	2	6	10	34	0,16%	0,34%
Spain	471	536	583	645	672	701	699	677	4.984	22,89%	23,21%
Liechtenstein								1	1	0,00%	0,03%
France	558	554	559	534	533	561	577	544	4.420	20,30%	18,65%
United Kingdom	303	248	209	171	156	131	160	141	1.519	6,98%	4,83%
Greece	40	50	52	50	49	37	51	29	358	1,64%	0,99%
Hungary	8	9	26	20	17	22	34	38	174	0,80%	1,30%
Ireland	56	67	53	49	44	45	52	50	416	1,91%	1,71%
Iceland	2		3	3	3	4	3	3	21	0,10%	0,10%
Italy	187	177	212	203	212	192	201	240	1.624	7,46%	8,23%
Lithuania		1	4	2	4	5	3	10	29	0,13%	0,34%
Luxembourg					3				3	0,01%	0,00%
Latvia	4	1	7		4	0	4	5	25	0,11%	0,17%
Malta		2	2	5	8	8	8	10	43	0,20%	0,34%
The Netherlands	261	208	245	202	188	150	141	161	1.556	7,15%	5,52%
Norway	38	36	28	29	24	23	51	45	274	1,26%	1,54%
Poland	22	21	33	33	34	55	55	54	307	1,41%	1,85%
Portugal	92	100	125	126	136	144	129	151	1.003	4,61%	5,18%
Romania	3	6	5	9	14	7	11	13	68	0,31%	0,45%
Sweden	96	90	98	97	87	110	118	128	824	3,78%	4,39%
Finland	127	120	123	127	148	142	140	144	1.071	4,92%	4,94%
Slovenia	1	2	4	4	7	12	8	15	53	0,24%	0,51%
Slovak Republic		2	1	6	6	5	7	9	36	0,17%	0,31%
Turkey						7	25	41	73	0,34%	1,41%
Total	2.641	2.575	2.728	2.662	2.675	2.728	2.845	2.917	21.771	100,00%	100,00%

Source: EPOS

9. INTERNATIONALIZATION OF HIGHER EDUCATION

5. Outgoing teacher mobility

No recent data exist on teacher mobility. During the academic year 2003-2004, 610 teachers of universities and university colleges took the opportunity to teach abroad. Their number had remained more or less stable in 2004-2005, when 639 of all teachers crossed the borders. They represent less than 5% of the total teaching staff.

(Source: 'Vlaamse Onderwijsindicatoren in international perspectief', ed. 2005, p.77)

9.2 INCOMING STUDENTS

1. Incoming Erasmus students, by country of origin

At first glance the countries of origin of the Erasmus students coming to Flanders are not very surprising: big countries send most students out, and Spain, France, Italy, Germany, and Poland are ahead (table 9.5). It seems to be more useful to know how many students in a given country choose Flanders as their place to study (table 9.6).

For the seven countries that send out most Erasmus students (Germany, France, Spain, Italy, Poland, UK and Turkey) we have looked at how many of them have chosen Flanders as their destination (table 9.6).

Table 9.5: Number of students according to country of origin

	03/04	04/05	05/06	06/07	total 2003/4-2006/7
Austria	41	34	57	45	177
Bulgaria	38	42	41	67	188
Cyprus	0	2	1	4	7
Czech Republic	88	91	119	124	422
Denmark	35	40	40	32	147
Estonia	5	6	4	12	27
Finland	132	97	104	120	453
France	230	185	208	207	830
Germany	207	174	188	188	757
Greece	79	85	82	93	339
Hungary	71	83	114	119	387
Iceland	4	3	3	6	16
Ireland	25	11	34	23	93
Italy	220	217	229	253	919
Latvia	23	28	37	57	145
Liechtenstein	0	0	0	3	3
Lithuania	58	46	96	93	293
Luxembourg	0	0	0	1	1
Malta	1	6	4	8	19
Norway	18	12	22	12	64
Poland	254	320	342	420	1.336
Portugal	141	114	135	113	503
Romania	78	67	94	76	315
Slovak Republic	45	55	63	50	213
Slovenia	21	25	28	30	104
Spain	576	568	689	710	2.543
Sweden	36	39	52	49	176
The Netherlands	150	177	144	171	642
Turkey		48	141	210	399
United Kingdom	72	64	86	100	322
Total	2.648	2.639	3.157	3.396	11.840

Source: EPOS

Table 9.6: Flanders relative position in outgoing Erasmus mobility of the seven largest sending countries 2006-2007

Country	total Erasmus outgoing	with destination Flanders	%
Germany	23.884	188	0,78%
France	22.981	207	0,90%
Spain	22.322	710	3,18%
Italy	17.195	253	1,47%
Poland	11.219	420	3,74%
United Kingdom	7.235	100	1,38%
Turkey	4.438	210	4,73%

Source: official LLP-website: http://ec.europa.eu/education/erasmus/doc/stat/table107.pdf

2. Total amount of foreign students in the student population of Flanders

In the academic year 2006-2007 the Flemish HEIs hosted 9.550 students with a foreign nationality or 5,24 % of the total student population. These students are not exclusively Erasmus students, but include also free movers.

Understandably the Dutch are way ahead, due to language and distance reasons. They also benefit from lower tuition fees in Flanders, and medical students avoid the numerus clausus in the Netherlands. After the Dutch, the Chinese, Russians, Germans and French are most frequently found amongst the foreign students.

(Source: 'Statistisch jaarboek van het Vlaams onderwijs, schooljaar 2006-2007')

Higher education in the French Community of Belgium

1. PRIORITIES

1.1 INTRODUCTION

Internationalisation of higher education (HE) and scientific research in the French Community of Belgium is an inherent component of the HE sector due to the territory size, the location in the heart of Europe, the academic legacy as well as our close links within Europe and worldwide. When considering HE and scientific research, higher education institutions (HEIs) have been playing a key role in fostering cooperation thanks to bilateral agreements, exchanges of students and staff, collaboration in programmes, etc. The Bologna process and the Lisbon strategy have fostered important reforms in the (HE) system. The "Europeanization" of (HE) policies – traditionally prepared, defined and implemented at national level only – has also re-launched the internationalisation and the necessity to integrate the national system within a knowledge-based global society.

The HE system of the French Community comprises, on the one hand, the university institutions that rank at the top internationally and, on the other hand, HEIs (other than university institutions) that offer professionally-oriented programmes.

The 9 university institutions are part of one of the three university Academies (the Academy of Louvain, the Academy of Wallonia-Brussels, the Academy of Wallonia-Europe) where high-quality educational activities are offered and scientific research is carried out. The excellence of our universities attracts around 20% of foreign students and up to 40% foreign doctoral candidates. The universities have become quite a fixture in the top level European research landscape. Many research laboratories participate in the European networks of excellence in various fields such as life sciences, nanotechnologies, information technologies, etc. Moreover, international surveys confirm the quality of their work at world-wide level. The French Community has also developed a very comprehensive network of other HEIs. These institutions focus on preparing students for specific professions or artistic careers. Foreign students account for 15% of enrolments for these programmes. Last but not least, our institutions tackle the challenges of internationalisation: nowadays hundreds of cooperation agreements have been signed with foreign HEIs.

To conclude, there is no doubt that the French Community of Belgium is an education hub in the heart of Europe, proud of its strong scientific tradition and bursting with projects for the future. Three reasons that will appeal to young people eager to build on their knowledge or to take their first steps in research.

Concerning the future development in the field of HE, several priorities have been put forward, not only with a view to the 2010 Belgian presidency of the European Union, but also to enhance what could be regarded as contradictory features: accessibility and attractiveness.

1.2 ACCESSIBILITY FOR ALL

In Belgium as in other European countries social and economic conditions still determine access to HE. Discrimination starts early between those pupils whose parents and environment favour a high level of education and those who do not benefit from the same conditions because of their milieu, their parents' jobs or unemployment status, their mother tongue, their schoolmates or their school district. The Act of 18 July 2008 adopted by the French Community of Belgium provides for several financial and non financial measures aiming at democratizing higher education and enhancing success in studies.

Aid should not only be financial: there is an urgent need to elaborate and implement an information strategy in order to "demystify" HE and make it look possible, whatever the background. Such a strategy should target the families and the pupils at an early stage of education. At the same time, HEIs should develop new dynamics in welcoming new students from different social and economic backgrounds. Help should not be limited to the first-year students, though it is important. The number of drop-outs should be questioned and steps should be taken to reduce it to the minimum, by struggling against the very reasons for not finishing studies. Here again, the Act of 18 July 2008 provides for the creation of the Observatory of Higher Education, whose aims are to collect, analyse and communicate to the relevant authorities full data on the success rates in higher education as well as to suggest tracks for improvement.

Social subsidies have been increased in the last few years and they are indexed to the cost of living. Facilities of all kinds for students (first generation and others) have been improved and the amount of tuition fees has been capped. However, even if the grants and loans system is an essential tool for democratization, much remains to be done.

Finally, HEIs should adapt their programmes for the working population and generalize the recognition of non-formal and informal learning in the context of lifelong learning.

1.3 PROMOTION OF SCIENCES AND TECHNOLOGY AMONG WOMEN

Our knowledge-based society fails in attracting women in the fields of Sciences and Technology. The reasons of that disaffection have been pointed out in several studies. Again, they are linked to mentalities, basic education and culture. Therefore, there is a need for developing new measures and tools to promote those studies and career opportunities. The Government of the French Community has adopted a Programme of Action for the promotion of equality women/men and multi-cultural and social integration.

1.4 QUALITY

Globalization is not only for business but it also concerns education. In this context, we are facing a multiplication of education and training providers, some of whom are only working for profit. Such development threatens the quality of our HE system. The Act of 22 February 2008 which has substituted the Act of November 2002 regulates the internal and external evaluation of quality in institutions and guarantees the independence of the Quality Agency. Financial help, in the form of time periods for academics to devote to quality analysis and implementation, contributes to maintaining the level of our higher education.

While ensuring the quality of the institutions and of the programmes offered and promoting culture, we have to be conscious that the demands for education and training will increase. Our ageing population has new needs of all kinds. It is the responsibility of the authorities and public institutions to respond positively to this demand. Adult Education ("Social Promotion Courses") is particularly helpful in this field, as it responds to the cultural, training and educational needs of a population that has passed the age of compulsory education. 30% of all Adult Education programmes are at higher education level and the student population in these programmes increased by 50% in the last decade. Their flexibility and modular structure allow people to learn on their own rhythm and to validate the experience acquired outside school. The degrees obtained are equivalent to those acquired in other HEIs and sanction learning outcomes that have been defined as such by the Government.

1.5 A MOBILITY OF QUALITY

Even if an increasing number of students and academics become mobile every year, there is still a long way to go before reaching the objectives set at EU or Bologna levels (20% of mobile students, doubling joint programmes, enhancing access to mobility, etc.). The HEIs are encouraged to sign more cooperation agreements with partner institutions, not only within the EHEA but also outside Europe. Language training and better information is essential for those wishing to be mobile in order to show the added-value of a period spent abroad. However, the initiatives are often taken at university level. The structure of HE in the French Community, with its high number of non-university HEIs, does not allow for every unit to devote part of its budget to international departments encouraging mobility or organising language courses. The collaboration and merger of several of these institutions is, however, improving perspectives in this field. HEIs, government as well as the other HE stakeholders should cooperate to enhance a mobility of quality for all.

1.6 DIVERSIFICATION OF FUNDING RESOURCES

HE should find new financial resources in order to remain accessible to all. While some initiatives of private financing are encouraged, notably in the field of doctoral and post-doctoral studies, the public authorities must remain the main sources of funding and control. Besides, the Ministry should also reinforce its functions as designer of long-term strategies and orientations and act as a quality provider while enhancing the HEIs' autonomy.

2. STRUCTURE OF HIGHER EDUCATION

Following the adoption of the Act of 31 March 2004 (hereunder mentioned as the "Bologna Act"), the three-cycle structure leading to the graduation of Bachelor, Master and Doctorate degrees has been progressively implemented in all HEIs. From the academic year 2008-2009 on, only Bachelor, Master and Doctorate degrees will be granted by HEIs so that the structure is now fully implemented. Programmes in all cycles are defined in credits (which are legally defined) and nearly all HEIs have started to base their programmes on learning outcomes.

We distinguish university from non-university HE:

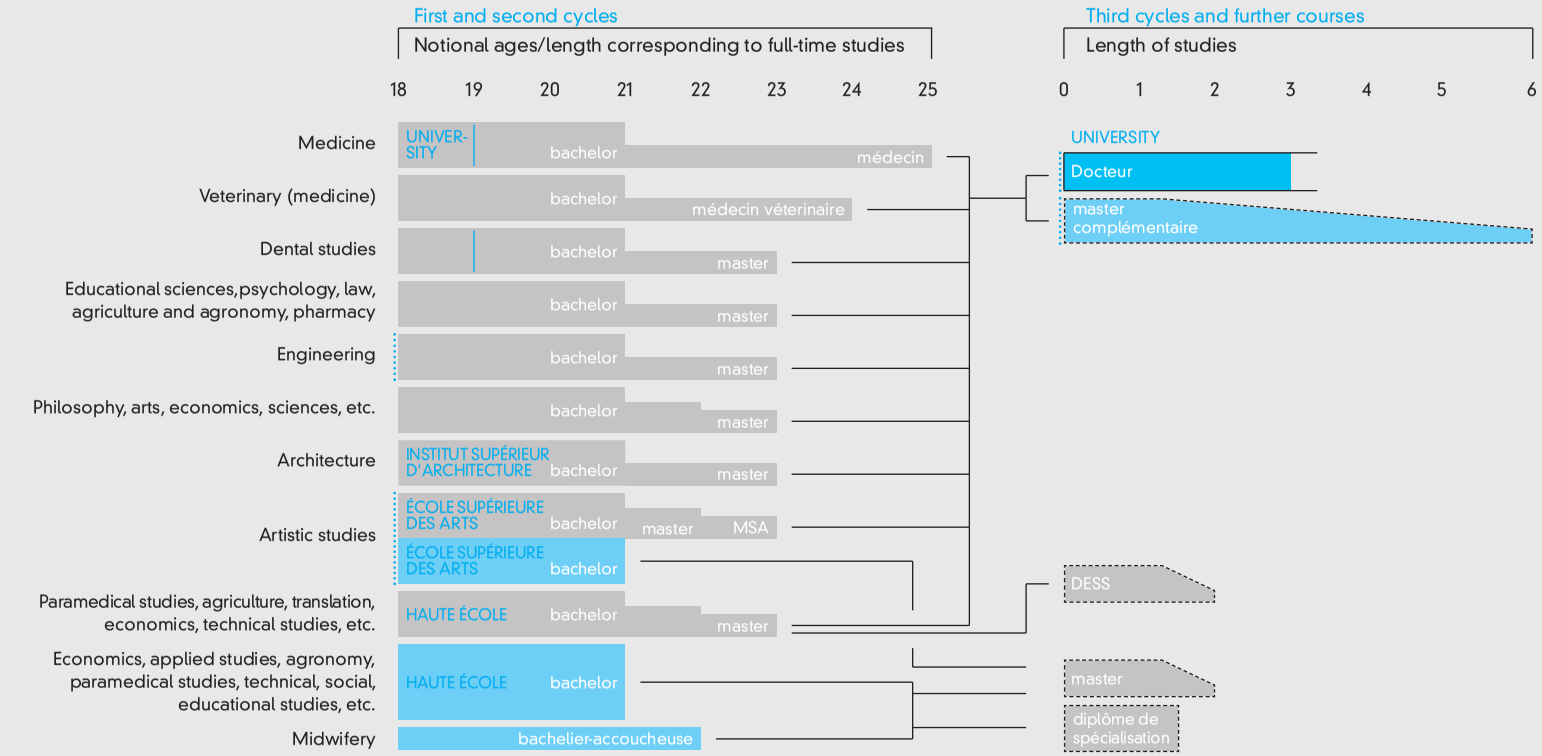
- At university level, all programmes are structured in two cycles: the first cycle (or 1st cycle of transition) leads to the academic degree of Bachelor; the second cycle (or 2nd professional cycle) leads to the academic degree of Master after one year (60 credits) or two years (120 credits) at least. It leads to a Medical Doctor degree after four years at least (240 credits) and to Veterinarian Doctor after three years at least (180 credits). The Master degree (120 credits or more) includes at least 30 optional credits which give this training one of the following objectives: (1) *teaching objective* which includes specific pedagogic education; (2) *in-depth study objective* preparing for scientific research; (3) *specialization objective* in a particular discipline.
- At non-university level, the HE provided is of either short- or long-type. Short-type programmes are organized in a single professional cycle sanctioned by the academic degree of Bachelor, including 180 to 240 credits. Long-type programmes are of a university level. The degrees awarded have therefore the same effects as the degrees awarded by universities.

In order to promote and facilitate flexible study paths, the Government has adopted several Acts allowing automatic bridging procedures (*passerelles* in French). Bridging is not only possible between different study fields, but also from one type of HEI to another. In general terms, there are two possibilities of bridging:

- The student must follow a preparatory year including 60 credits maximum before accessing the second cycle programme;
- The student must undergo an admission procedure in which the required knowledge, competences and skills are examined. The admission procedure can be organised through a university or inter-university examination. Depending on the results of the examination, the student will be granted direct access to the second cycle with the possibility of 15 additional credits maximum, or will not be granted access to the second cycle and must follow a preparatory year.

The third cycle is exclusively organized by universities through the Academies (associations of universities). Three Academies have been created: the Louvain Academy, the Wallonia-Brussels Academy and the Wallonia-Europe Academy. The third cycle is accessible to holders of master's degrees or any equivalent training of 300 credits at least. The third cycle corresponds arbitrarily to 180 credits but lasts generally over 3 years. It includes, on one hand, a doctoral training (60 credits) under supervision of teams associated in a Graduate College and leading to the research training certificate; and, on the other hand, the work related to the preparation of the doctorate thesis. The academic degree of doctor is conferred after the public defence of a thesis demonstrating the doctoral candidate's capacities of creativity, of undertaking scientific research and distributing its results.

Figure 2.1: Higher education structure of the French Community



- ISCED 5A (1st or 2nd programme)
- ISCED 5B (1st or 2nd programme)
- ISCED 6 programme
- Further qualification
- Selection procedure/limitation of places at institutional level
- Selection procedure/limitation of places at national/regional level

DESS Diplôme d'Études Supérieures Spécialisées MSA Master spécialisé artistique

Only the new system introduced in 2004/05 is shown in the diagram. Higher education is currently in a transitional phase; two systems will coexist until 2009.

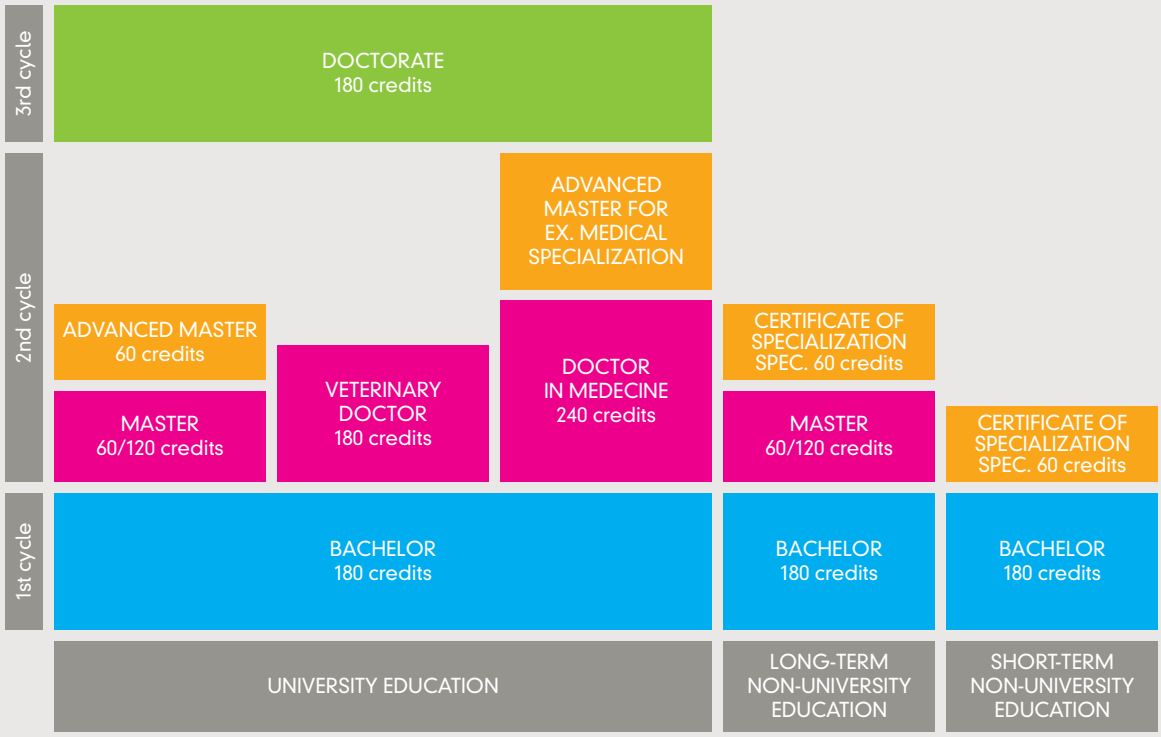
In accordance with the requirements set out by the Belgian federal government to establish a numerus clausus for access to the professions of physician and dentist, a selection process has been introduced at the close of the first year of studies to determine who should continue with the programmes in medicine and dentistry.

Graduates (bacheliers) of the ISCED level 5B first cycle programmes can access Master's programmes, provided they successfully complete a year of preparatory studies or via an additional, supplementary study programme.

Source: Eurydice, Focus on the Structure of the Higher Education in Europe 2006/2007, p.91

2. STRUCTURE OF HIGHER EDUCATION

Figure 2.2: Higher education structure of the French Community



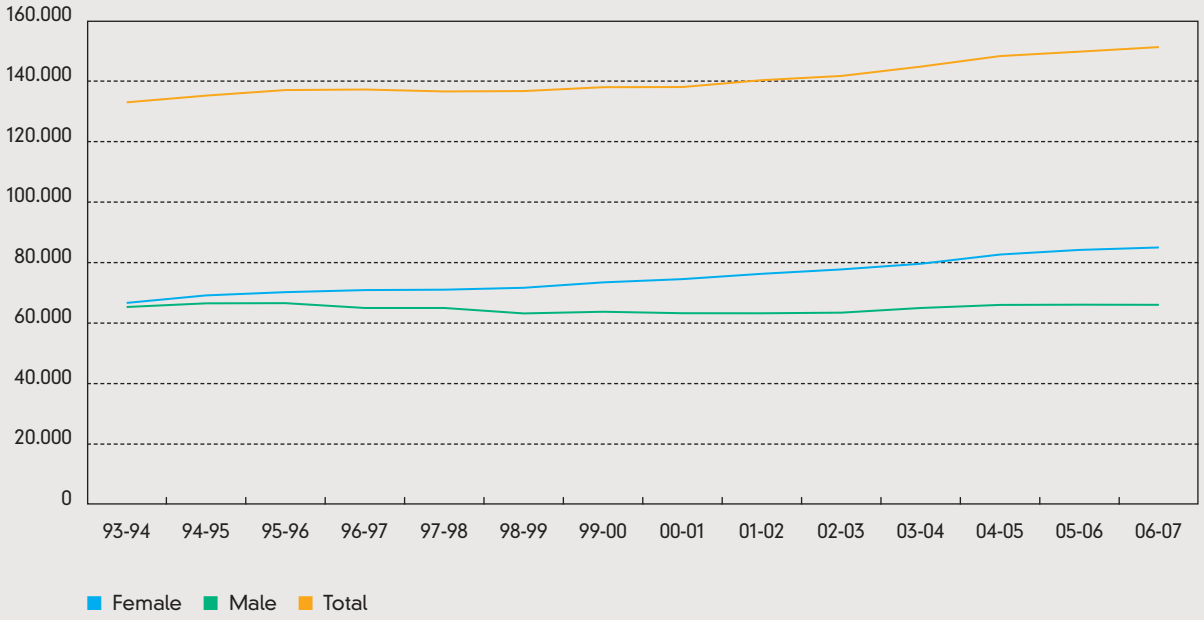
Source: CGRI-DRI, Study in the Heart of Europe, p.5

Table 2.1: Recognized higher education institutions in the French Community

Universities	9
Hautes Écoles	26
Higher Institutes of Architecture	4
Arts Schools	17

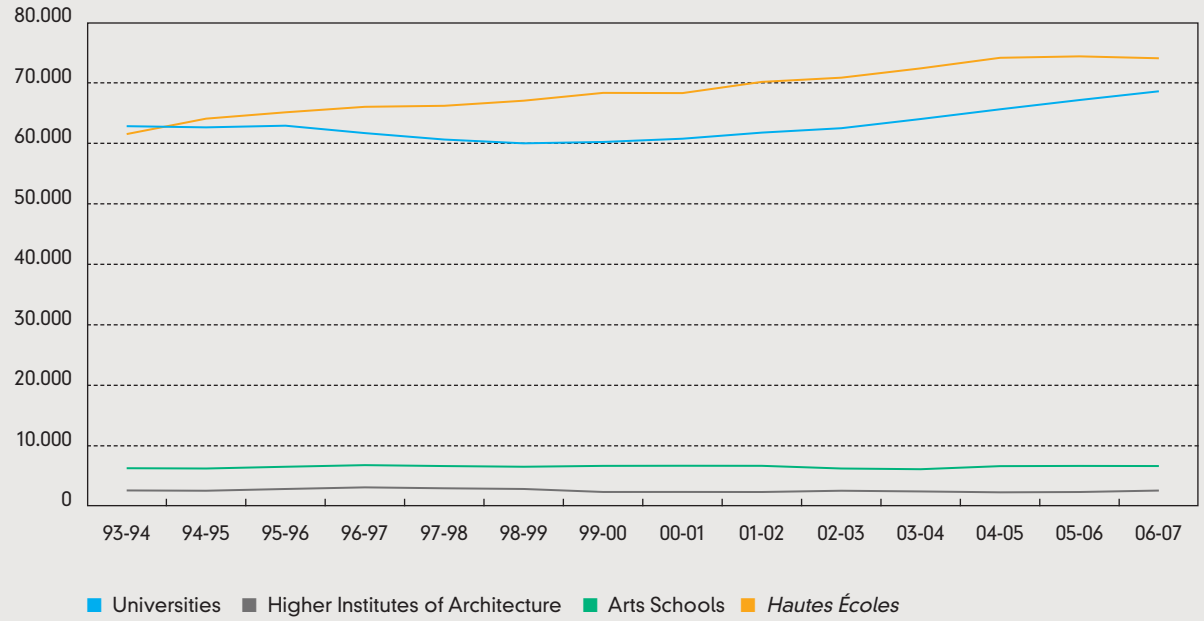
Graph 2.1 and Graph 2.2 describe the evolution of the student population by gender and by type of HEI from 1993 to 2007. We can observe that the student population has increased to some extent since 2003. The evolution is largely due to the female population: the number of female students entering HE has increased by more than 25% between 1993 and 2007. Looking at the evolution of the student population by type of HEI, we can observe that the Arts Schools and the Higher Institutes of Architecture are attracting fewer students (due to the restricted number of programmes offered) and that the evolution is quite stable. The population at universities decreased between 1994 and 2000, and since then the number has increased by 13%. In the *Hautes Ecoles*, the situation is quite different as the student population has almost constantly increased, attracting new female students.

Graph 2.1: Evolution of the student population by gender



Source: ETNIC/Ministère, Statistiques de l'enseignement de plein exercice et budget des dépenses d'enseignement (2006-2007), p.109

Graph 2.2: Evolution of the student population by type of HEI



Source: ETNIC/Ministère, Statistiques de l'enseignement de plein exercice et budget des dépenses d'enseignement (2006-2007), p.109

3. STUDENTS

Table 3.1: Student population by field of study (higher education for social promotion not included)

		2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 5B									
Education	Male	3.671	3.846	3.746	3.493	3.071	2.747	2.622	2.590
	Female	10.650	10.861	10.775	10.269	9.646	8.824	8.126	8.030
Humanities and Arts	Male	2.824	2.907	2.948	2.991	1.992	3.737	3.213	3.141
	Female	1.859	2.005	2.030	2.360	2.187	3.775	3.411	3.607
Social Sciences, Business and Law	Male	6.769	6.700	6.520	6.494	6.466	6.252	6.055	6.163
	Female	8.674	8.707	8.761	8.981	9.390	9.328	9.150	8.609
Sciences	Male	3.304	3.542	3.888	4.280	4.016	4.214	4.002	3.724
	Female	386	389	453	510	598	611	578	623
Engineering, Manufacturing and Production	Male	2.490	2.490	2.591	2.790	2.961	2.999	2.801	3.067
	Female	198	181	218	717	525	608	538	535
Agriculture	Male	749	747	802	833	745	745	775	808
	Female	248	253	235	247	237	243	267	257
Health and Welfare	Male	3.906	3.729	3.548	2.849	3.061	2.984	3.149	3.874
	Female	16.073	16.021	14.852	13.328	13.371	12.480	13.330	13.810
Services	Male	935	945	903	756	753	715	975	902
	Female	1.209	1.161	1.220	1.248	1.061	1.110	1.449	1.574
Not Known or Unspecified	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
Total		63.945	64.484	63.490	62.146	60.080	61.372	60.441	61.314
ISCED 5A									
Education	Male	763	809	805	635	543	429	447	456
	Female	1.314	1.319	1.370	1.123	902	775	785	747
Humanities and Arts	Male	4.378	4.304	4.131	3.924	3.387	2.477	2.523	2.510
	Female	8.432	8.164	7.879	7.457	6.622	5.194	5.205	5.142
Social Sciences, Business and Law	Male	14.383	13.919	14.067	13.871	13.668	13.732	13.865	14.131
	Female	18.224	17.315	17.428	17.148	16.604	16.344	16.111	16.050
Sciences	Male	3.625	3.804	3.899	3.866	4.163	4.124	4.142	3.623
	Female	2.091	2.239	2.327	1.988	2.052	1.995	1.915	1.590
Engineering, Manufacturing and Production	Male	7.361	7.519	7.706	8.048	7.870	8.062	8.060	8.126
	Female	2.225	2.237	2.316	2.288	2.172	2.197	1.992	2.003
Agriculture	Male	1.929	1.993	2.091	2.085	2.098	2.015	2.198	2.193
	Female	2.055	2.088	2.182	2.216	2.256	2.004	1.899	1.756
Health and Welfare	Male	6.206	6.125	5.680	5.193	5.145	5.642	5.959	5.880
	Female	9.130	9.090	8.446	7.538	7.245	7.506	7.798	7.549
Services	Male	559	432	413	978	1.006	1.188	739	830
	Female	328	240	232	1.194	1.162	1.178	551	517
Not Known or Unspecified	Male	2	95	0	0	0	0	0	0
	Female	9	68	0	0	0	0	0	0
Total		83.014	81.760	80.972	79.552	76.895	74.862	74.189	73.103

Sources: UOE database except figures in blue from the statistical service of the Ministry of the French Community of Belgium

Table 3.1: Student population by field of study (higher education for social promotion not included)

		2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 6									
Education	Male	13	12	12	33	36	49	25	22
	Female	9	8	7	23	21	34	22	18
Humanities and Arts	Male	298	293	292	251	238	287	232	226
	Female	292	271	270	209	182	230	160	179
Social Sciences, Business and Law	Male	561	577	556	547	433	401	392	405
	Female	443	410	392	369	290	273	257	265
Sciences	Male	665	712	727	652	624	646	605	848
	Female	444	440	435	373	367	363	326	446
Engineering, Manufacturing and Production	Male	366	366	340	355	323	313	259	308
	Female	108	111	97	100	85	83	63	65
Agriculture	Male	239	248	264	241	209	232	230	249
	Female	147	137	120	124	103	113	101	109
Health and Welfare	Male	285	286	282	253	204	205	191	203
	Female	308	263	246	255	233	215	171	181
Services	Male	33	15	17	60	52	57	22	31
	Female	32	19	19	31	22	39	14	13
Not Known or Unspecified	Male	1	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
Total		4.244	4.168	4.076	3.876	3.422	3.540	3.070	3.568

Sources: UOE database except figures in blue from the statistical service of the Ministry of the French Community of Belgium

Table 3.1 classifies the student population enrolled in HE by field of study.

ISCED 5B includes students enrolled in the first cycle at non-university HEIs, what we call short-type professional programmes. In this type of HE, Health and Welfare programmes are the most popular, accounting for one-third of the student population enrolled. We can also observe that females represent around two-thirds of the student population but they are mainly enrolled in Education as well Health and Welfare fields of study.

ISCED 5A includes students enrolled in the second cycle at universities and non-university HEIs. Therefore, it concerns university master programmes as well as long-type programmes organized by the non-university HEIs. More than one-third of the student population is enrolled in Social Sciences, Business and Law related programmes. The proportion of females is slightly higher than male students. Engineering, Manufacturing and Production attract mostly male students while Education and Humanities and Arts are more frequently chosen by female students.

ISCED 6 includes the doctorate students. The most popular fields of study are Social Sciences, Business and Law, Sciences as well as Health and Welfare.

3. STUDENTS

Table 3.2: Graduates by field of study (higher education for social promotion not included)

		2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 5B									
Education	Male	n/a	587	583	505	507	505	469	664
	Female	n/a	2.231	2.296	2.102	2.141	2.133	1.845	2.333
Humanities and Arts	Male	n/a	498	572	525	286	459	609	595
	Female	n/a	419	443	621	250	528	806	811
Social Sciences, Business and Law	Male	n/a	1.146	1.194	1.098	1.089	1.220	1.131	1.087
	Female	n/a	1.993	2.026	2.044	1.997	1.870	1.831	1.462
Sciences	Male	n/a	722	835	754	723	638	559	519
	Female	n/a	103	217	178	197	196	129	84
Engineering, Manufacturing and Production	Male	n/a	488	543	544	631	599	593	634
	Female	n/a	50	59	86	107	107	58	376
Agriculture	Male	n/a	170	178	158	128	123	154	146
	Female	n/a	59	56	74	40	43	60	40
Health and Welfare	Male	n/a	577	486	510	484	687	805	923
	Female	n/a	3.235	2.749	2.783	2.685	3.235	3.357	3.099
Services	Male	n/a	192	130	169	122	116	161	229
	Female	n/a	251	328	314	368	207	378	437
Not Known or Unspecified	Male	n/a	0	0	0	3	0	0	0
	Female	n/a	0	0	0	0	0	0	0
Total		0	12.721	12.695	12.465	11.758	12.666	12.945	13.439
ISCED 5A									
Education	Male	n/a	32	33	22	27	45	32	32
	Female	n/a	73	57	52	35	84	56	47
Humanities and Arts	Male	n/a	546	520	487	301	329	337	331
	Female	n/a	1.301	1.138	997	801	814	781	801
Social Sciences, Business and Law	Male	n/a	1.854	1.758	1.594	1.727	1.821	1.779	1.794
	Female	n/a	2.667	2.567	2.244	2.331	2.407	2.278	2.230
Sciences	Male	n/a	544	537	525	492	581	550	496
	Female	n/a	307	308	269	300	278	245	240
Engineering, Manufacturing and Production	Male	n/a	1.198	1.108	1.153	990	1.027	1.049	961
	Female	n/a	330	370	356	262	277	237	199
Agriculture	Male	n/a	237	284	250	214	205	329	261
	Female	n/a	351	307	253	219	132	198	186
Health and Welfare	Male	n/a	584	570	690	773	751	488	465
	Female	n/a	990	991	901	1.094	1.040	790	727
Services	Male	n/a	33	33	119	129	154	112	74
	Female	n/a	34	37	211	203	219	82	81
Not Known or Unspecified	Male	n/a	16	0	31	0	0	0	0
	Female	n/a	0	4	78	0	0	0	0
Total		0	11.097	10.622	10.232	9.898	10.164	9.343	8.925

Sources: UOE database

Table 3.2: Graduates by field of study (higher education for social promotion not included)

		2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 6									
Education	Male	n/a	5	3	8	4	18	4	6
	Female	n/a	2	1	7	2	11	2	1
Humanities and Arts	Male	n/a	39	28	36	38	33	49	29
	Female	n/a	25	32	15	35	24	27	24
Social Sciences, Business and Law	Male	n/a	70	69	60	48	42	59	43
	Female	n/a	39	27	48	34	33	37	27
Sciences	Male	n/a	134	135	133	123	165	147	123
	Female	n/a	71	80	55	80	73	67	64
Engineering, Manufacturing and Production	Male	n/a	71	57	54	46	40	59	48
	Female	n/a	17	11	15	7	7	9	7
Agriculture	Male	n/a	40	33	30	43	37	42	38
	Female	n/a	14	11	19	14	20	17	16
Health and Welfare	Male	n/a	58	46	41	48	48	41	29
	Female	n/a	55	55	25	39	37	28	22
Services	Male	n/a	3	2	4	5	8	6	0
	Female	n/a	3	4	5	4	6	0	0
Not Known or Unspecified	Male	n/a	0	0	0	0	0	0	0
	Female	n/a	2	0	0	0	0	0	0
Total		0	648	594	555	570	602	594	477

Sources: UOE database

Table 3.2 classifies the graduates by field of study.

ISCED 5B includes students who graduated in the first cycle at non-university HEIs, what we call short-type professional programmes. As for the student population, graduates in Health and Welfare account for one-fourth of the total.

ISCED 5A includes students who graduated in the second cycle at universities and non-university HEIs. Therefore, this concerns university master programmes as well as long-type programmes organized by the non-university HEIs. About 40% of the students were graduated in the field of Social Sciences, Business and Law.

ISCED 6 includes the doctors. One-third are doctors in the field of Science but even in this field there is a significant difference between females and males.

3. STUDENTS

Table 3.3: Complementary Degrees awarded by field of study

		2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 5B									
Education	Male	n/a	0	0	0	0	0	0	0
	Female	n/a	0	0	0	0	0	0	0
Humanities and Arts	Male	n/a	0	0	0	0	0	0	0
	Female	n/a	0	0	0	0	0	0	0
Social Sciences, Business and Law	Male	n/a	1	1	3	1	12	2	0
	Female	n/a	5	2	3	4	17	7	4
Sciences	Male	n/a	0	0	0	0	0	0	0
	Female	n/a	0	0	0	0	0	0	0
Engineering, Manufacturing and Production	Male	n/a	0	0	0	0	3	9	0
	Female	n/a	0	0	0	0	2	0	0
Agriculture	Male	n/a	0	0	0	0	0	1	2
	Female	n/a	0	0	0	0	0	0	0
Health and Welfare	Male	n/a	61	80	79	69	6	16	36
	Female	n/a	518	503	488	457	25	69	179
Services	Male	n/a	0	0	0	23	8	1	4
	Female	n/a	0	0	0	3	3	3	1
Not Known or Unspecified	Male	n/a	0	0	0	0	0	0	0
	Female	n/a	0	0	0	0	0	0	0
Total		0	585	586	573	557	76	108	226
ISCED 5A									
Education	Male	n/a	396	378	300	244	218	280	267
	Female	n/a	836	865	652	511	534	646	606
Humanities and Arts	Male	n/a	116	110	132	155	105	145	104
	Female	n/a	193	258	233	241	203	238	155
Social Sciences, Business and Law	Male	n/a	554	718	861	796	716	701	663
	Female	n/a	788	893	966	922	747	717	689
Sciences	Male	n/a	253	280	355	341	365	334	221
	Female	n/a	172	167	202	189	205	177	136
Engineering, Manufacturing and Production	Male	n/a	154	173	210	194	177	188	121
	Female	n/a	50	74	59	62	69	46	40
Agriculture	Male	n/a	122	141	138	141	125	129	126
	Female	n/a	75	91	85	83	45	62	60
Health and Welfare	Male	n/a	395	475	358	313	281	401	304
	Female	n/a	457	464	389	353	327	410	257
Services	Male	n/a	10	17	186	207	176	18	16
	Female	n/a	10	13	186	166	162	16	8
Not Known or Unspecified	Male	n/a	7	20	0	0	0	0	5
	Female	n/a	21	25	0	0	0	0	2
Total		0	4.609	5.162	5.312	4.918	4.455	4.508	3.780

Sources: UOE database

Table 3.3 classifies the graduates with complementary degrees i.e. certificates of specialisation (ISCED 5B) and complementary master (ISCED 5A). For the short-type programmes in non-university HEIs, this concerns mainly Health and Welfare, more specifically midwifery.

Concerning ISCED 5A, we can observe that there is a greater diversity in the complementary programmes offered by universities and non-university HEIs.

Table 3.4: Student population in higher education for social promotion

	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 5B								
Male	n/a	15.738	15.654	17.319	16.390	15.625	14.774	16.203
Female	n/a	15.632	16.206	15.450	14.123	13.060	12.546	13.445
ISCED 5A								
Male	n/a	188	184	166	122	210	89	0
Female	n/a	4	3	5	4	6	3	0
Total	0	31.562	32.047	32.940	30.639	28.901	27.412	29.648

Sources: ETNIC website and UOE database

Table 3.5: Graduates in higher education for social promotion

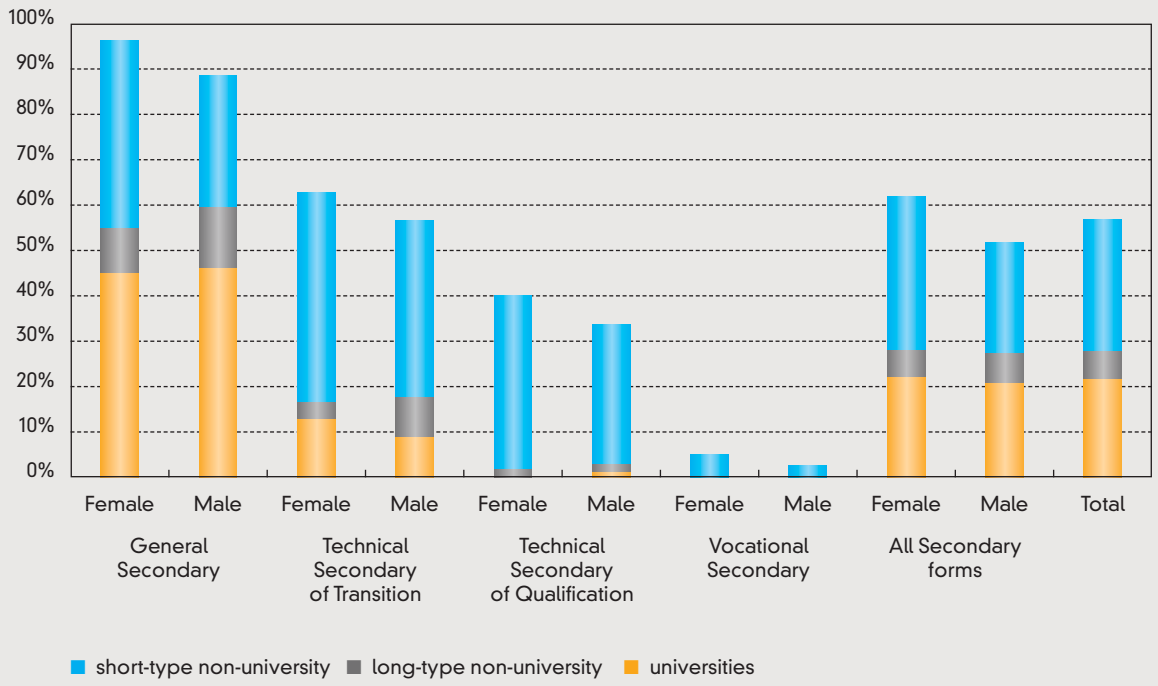
	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
ISCED 5B								
Male	n/a	n/a	1.732	1.653	1.430	1.492	1.225	1.284
Female	n/a	n/a	1.942	1.922	1.485	1.509	1.398	1.347
ISCED 5A								
Male	n/a	n/a	19	11	17	18	0	0
Female	n/a	n/a	0	0	0	0	0	0
Total	0	0	3.693	3.586	2.932	3.019	2.623	2.631

Sources: ETNIC website and UOE database

Table 3.4 and Table 3.5 classify student population and graduates in HE for social promotion, what we commonly call Adult Education. In a few words, Adult Education ("Social Promotion Courses") aims at helping adults (those who have passed the age of compulsory education) to find their personal fulfilment by better professional, social, educational and cultural integration; it also responds to the needs and requirements for training coming from businesses, industries, administrations, the teaching world, etc. Thirty percent of all programmes are at HE level, whether short or long type, in the following seven categories: technical, economic, agricultural, paramedical, social, pedagogical and maritime. Its flexibility and modular structure allow people at work to benefit by lifelong learning at their own rhythm and those with experience acquired outside school to validate it. The degrees obtained are equivalent to those acquired in day classes at university or non-university HEI. Up to now, only industrial engineering programmes are offered at the level of ISCED 5A.

3. STUDENTS

Graph 3.1: Entry rate in higher education of 17 years old pupils – generation of 1983



Source: ETNIC/Ministry, Les indicateurs de l'enseignement 2007, p.43

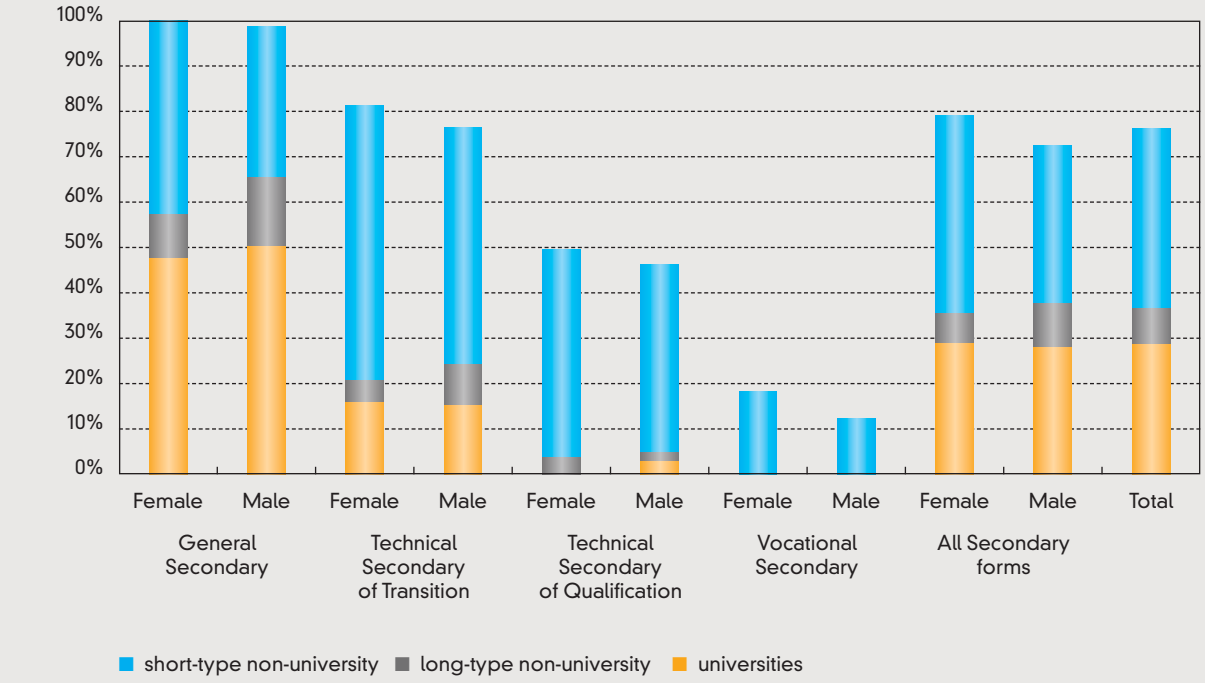
Graph 3.1 describes the proportion of children born in 1983 and enrolled in a secondary school of the French Community in 2000-2001, who entered HE between 2001 and 2006. Within the HE, we distinguish short-type non-university HEIs, long-type non-university HEIs and universities. The entry rates are classified by gender and by type of secondary education.

In total, 56% of those pupils enter the HE with a higher proportion of females (61%). Quite obviously, the entry rate is higher for those pupils in the general secondary education (91%) than for those in other types of secondary education.

Graph 3.2 describes the proportion of pupils with a secondary school leaving-certificate (*Certificat d'enseignement secondaire supérieur – CESS*) awarded in 2002-2003, who entered higher education between 2001 and 2006. Again, within the higher education, we distinguish short-type non-university HEIs, long-type non-university HEIs and universitie. The entry rates are classified by gender and by type of secondary education.

If we consider pupils with the CESS which gives access to higher education, the entry rates are higher than the ones in Graph 3.1. In total 75% of the pupils holding the CESS enter a HEI, 78% are females and 72% are males. We can also observe significant differences between the types of secondary education, for example: 99% of the pupils from general secondary education are enrolled in higher education while only 14% of the pupils from professional secondary education go to a HEI.

Graph 3.2: Entry rates for the pupils with a secondary school leaving-certificate awarded in 2002-2003



Source: ETNIC/Ministry, Les indicateurs de l'enseignement 2007, p.43

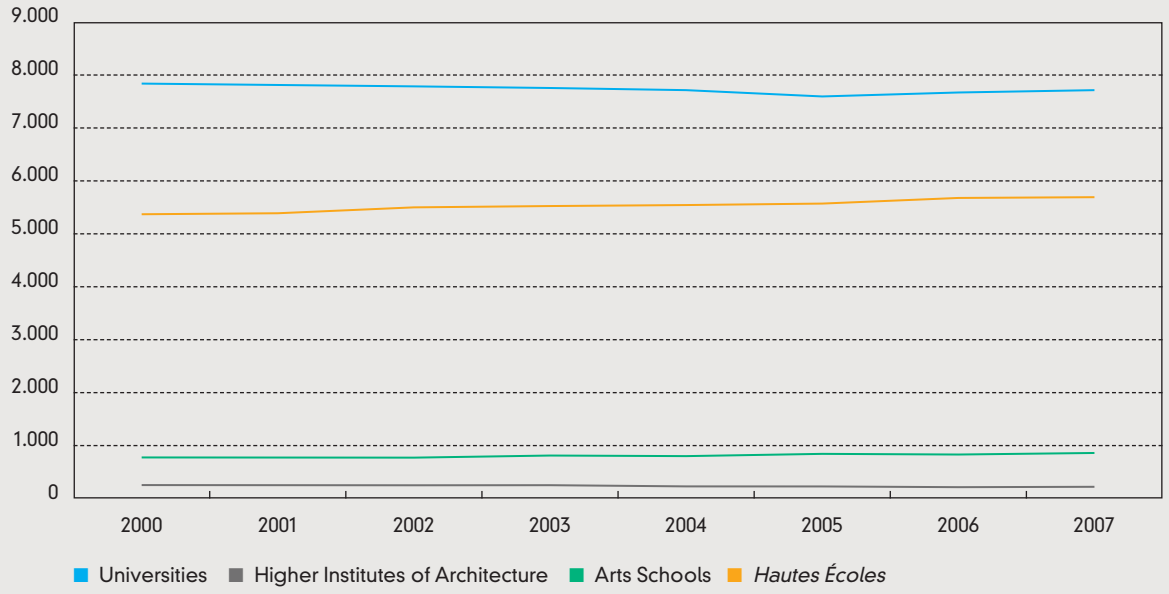
4. STAFF

Table 4.1: Staff population in higher education by gender (in FTE)

	2000	2001	2002	2003	2004	2005	2006	2007
Hautes Ecoles								
Female	3.155,2	3.176,2	3.259,6	3.299,1	3.326,8	3.374,0	3.476,4	3.504,2
Male	2.183,4	2.190,5	2.209,9	2.202,9	2.183,2	2.167,3	2.188,6	2.153,8
Subtotal	5.338,7	5.366,7	5.469,4	5.502,0	5.510,0	5.541,3	5.665,0	5.658,0
Arts Schools								
Female	292,4	296,2	298,4	309,1	306,8	317,7	330,3	333,7
Male	480,5	487,1	493,6	500,9	509,6	510,9	515,6	521,1
Subtotal	772,9	783,3	792,0	810,0	816,4	828,6	845,9	854,8
Higher Institutes of Architecture								
Female	81,8	80,9	84,9	86,6	82,7	83,6	84,7	87,9
Male	173,7	169,9	160,4	155,1	156,3	151,6	151,9	152,2
Subtotal	255,4	250,8	245,3	241,8	239,0	235,2	236,6	240,0
Universities								
Female	3.274,4	3.315,4	3.351,6	3.376,0	3.444,1	3.384,6	3.453,9	3.558,9
Male	4.558,6	4.491,0	4.411,6	4.355,5	4.268,8	4.159,7	4.168,2	4.126,5
Subtotal	7.832,9	7.806,5	7.763,2	7.731,4	7.712,9	7.544,3	7.622,0	7.685,4
Total	14.200,0	14.207,2	14.269,9	14.285,2	14.278,2	14.149,4	14.369,6	14.438,3

Source: Council of Rectors of the French-speaking Universities of Belgium (CREF) and ETNIC/Ministry

Graph 4.1: Evolution of staff population in higher education (in FTE)



Source: Council of Rectors of the French-speaking Universities of Belgium (CREF) and ETNIC/Ministry

Table 4.1 and Graph 4.1 provide an overview of the evolution of the staff full time equivalents (FTEs) by gender from 2000 until 2007. All categories of staff are included in the table and the graph. Over the last 7 years, we can observe that the FTEs have remained quite constant. Looking at each type of higher education, some differences appear. Staff at universities and higher institutes of architecture have slightly decreased while the most significant increase has taken place in the *Hautes Ecoles*. Moreover, the positive evolution concerns mainly female FTEs who have been employed in HEIs.

Table 4.2 describes the evolution of the non-university HE staff by category. Legally, we distinguish six categories of staff defined by the Act of 17 May 1999:

- Academic staff (teachers, assistants, laboratory heads, etc.);
- Management/Director staff (directors-president, directors of category, etc.);
- Administrative staff ;
- Supply teachers staff (educators, librarians, etc.);
- Supervisory staff, professionals and service providers (technical staff);
- Paramedical, social and psychological staff.

Table 4.2: Non-university HE staff by category (in FTE)

	2000	2001	2002	2003	2004	2005	2006	2007
Academic staff								
Female	2.661	2.714	2.798	2.860	2.893	2.949	3.062	3.085
Male	2.332	2.361	2.381	2.401	2.404	2.403	2.429	2.410
Subtotal	4.993	5.075	5.179	5.261	5.297	5.352	5.491	5.494
Management/Director staff								
Female	42	37	37	39	41	44	40	41
Male	118	115	108	110	99	95	95	91
Subtotal	160	152	145	149	139	139	134	131
Administrative staff								
Female	461	459	479	488	488	494	510	521
Male	170	168	175	174	180	177	178	173
Subtotal	631	627	654	662	668	671	687	694
Supply Teachers staff								
Female	174	165	155	149	137	134	123	119
Male	67	62	65	56	52	47	43	39
Subtotal	240	227	221	205	189	181	166	158
Supervisory staff, Professionals and Service Providers								
Female	191	176	171	156	156	153	153	156
Male	151	142	135	118	114	108	111	114
Subtotal	341	318	305	274	270	261	265	270
Paramedical, Social and Psychological Staff								
Female	2	3	2	2	2	3	4	4
Male	0	0	0	0	0	0	0	0
Subtotal	2	3	2	2	2	3	4	4
Total	6.367	6.401	6.507	6.554	6.565	6.605	6.748	6.753

Source: ETNIC/Ministry

Table 4.2 shows a clear trend: while more administrative and academic staff has been needed to respond to the growth of the student population, there has been a rationalisation in other categories of staff.

4. STAFF

Table 4.3: *Personnel au cadre* at University staff by category (in FTE)

	2000	2001	2002	2003	2004	2005	2006	2007
Academic staff								
Female	238	248	261	297	311	322	356	383
Male	1.509	1.504	1.497	1.526	1.522	1.499	1.506	1.497
Subtotal	1.748	1.752	1.757	1.823	1.833	1.821	1.862	1.880
Scientific staff								
Female	842	854	870	851	858	876	909	943
Male	1.186	1.153	1.111	1.050	998	1.005	1.014	1.011
Subtotal	2.028	2.007	1.981	1.901	1.855	1.881	1.923	1.955
Administrative, Technical and Managerial staff								
Female	2.194	2.213	2.221	2.228	2.275	2.186	2.190	2.233
Male	1.864	1.834	1.804	1.780	1.749	1.656	1.648	1.618
Subtotal	4.058	4.047	4.025	4.007	4.024	3.842	3.837	3.851
Total	7.833	7.806	7.763	7.731	7.713	7.544	7.622	7.685

Source: Council of Rectors of the French-speaking Universities of Belgium (CREF)

Table 4.3 describes the evolution of the *Personnel au cadre* at university institution by category. The *personnel au cadre* comprises the staff that is financed by the operation allowances (*allocation de fonctionnement*), the social budget (*budget social*) and the non-allocated capital (*patrimoine non-affecté*). We distinguish three categories of staff:

- Academic staff (lecturers, external lecturers, associate professors, etc.);
- Scientific staff (assistants, librarian, curators, etc.);
- Administrative, technical and managerial staff (directors, managers, administrators, technical staff, etc.)

As in Table 4.2, we can observe the same trends: increase of female staff, increase of administrative, technical and managerial staff and slight decrease of scientific staff.

Table 4.4 describes the evolution of the *Personnel hors cadre* at university institutions by category. The *personnel hors cadre* comprises the research staff that is financed by research contracts, research funds and scholarships.

Table 4.4: *Personnel hors cadre* at University staff by category (in FTE)

	2005	2006	2007
Contractual academic and scientific staff			
Female	1.062	1.079	1.193
Male	1.575	1.551	1.645
Subtotal	2.638	2.630	2.838
Doctoral staff			
Female	717	749	756
Male	853	911	885
Subtotal	1.570	1.659	1.641
Technical staff and assimilated			
Female	587	250	230
Male	556	302	309
Subtotal	1.143	552	539
Other staff			
Female	n/a	306	307
Male	n/a	176	230
Subtotal	n/a	483	538
Total	5.350	5.323	5.556

Source: Council of Rectors of the French-speaking Universities of Belgium (CREF)

Table 4.5: Non-university HE staff by status (in FTE)

	2000	2001	2002	2003	2004	2005	2006	2007
Appointed								
Female	2.339	2.313	2.352	2.338	2.309	2.378	2.448	2.476
Male	2.053	2.049	2.027	1.961	1.920	1.941	1.923	1.877
Subtotal	4.392	4.362	4.378	4.299	4.230	4.319	4.371	4.353
Temporary								
Female	1.167	1.222	1.274	1.349	1.398	1.391	1.440	1.447
Male	759	775	818	881	916	879	928	946
Subtotal	1.926	1.997	2.092	2.230	2.313	2.270	2.369	2.393
Trainees								
Female	23	19	18	8	9	7	3	3
Male	26	24	19	17	13	9	4	4
Subtotal	49	43	37	25	22	16	7	7
Total	6.367	6.401	6.507	6.554	6.565	6.605	6.748	6.753

Source: ETNIC/Ministry

Table 4.6: University staff by status (in FTE)

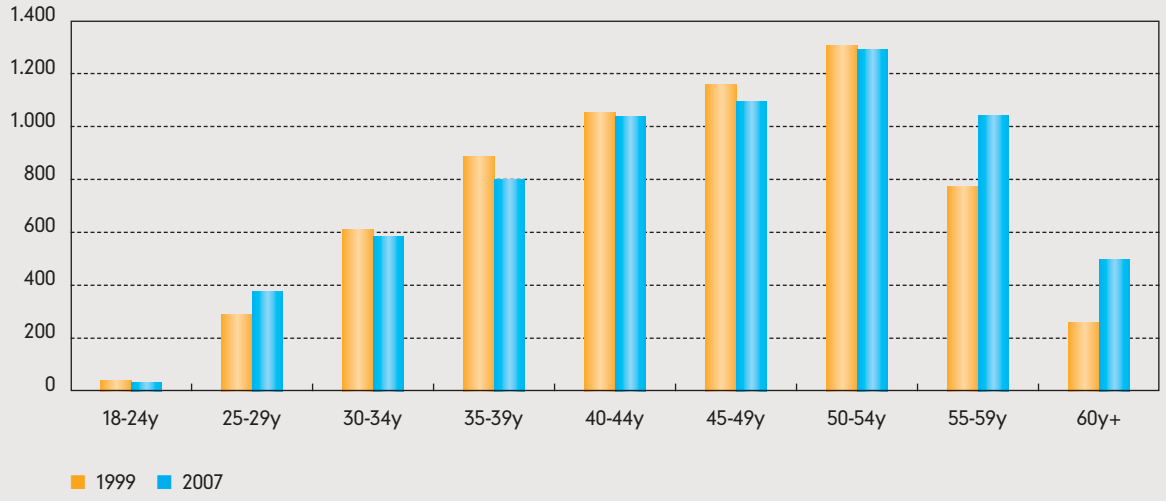
	2000	2001	2002	2003	2004	2005	2006	2007
Appointed								
Female	2.559	2.579	2.570	2.581	2.599	2.526	2.580	2.696
Male	3.643	3.560	3.468	3.391	3.287	3.163	3.145	3.087
Subtotal	6.202	6.139	6.038	5.972	5.886	5.689	5.726	5.783
Temporary								
Female	716	736	782	795	845	859	874	863
Male	916	931	944	964	982	997	1.023	1.040
Subtotal	1.631	1.668	1.726	1.759	1.827	1.856	1.896	1.902
Total	7.833	7.807	7.763	7.732	7.713	7.544	7.622	7.685

Source: Council of Rectors of the French-speaking Universities of Belgium (CREF)

Table 4.5 and Table 4.6 describe the evolution of the staff at university and non-university HEIs by status. We distinguish the appointed staff, the temporary staff and the trainees working in non-university HEIs. Both for university and non-university HEIs, there is a clear tendency towards employing more temporary staff to replace the appointed staff.

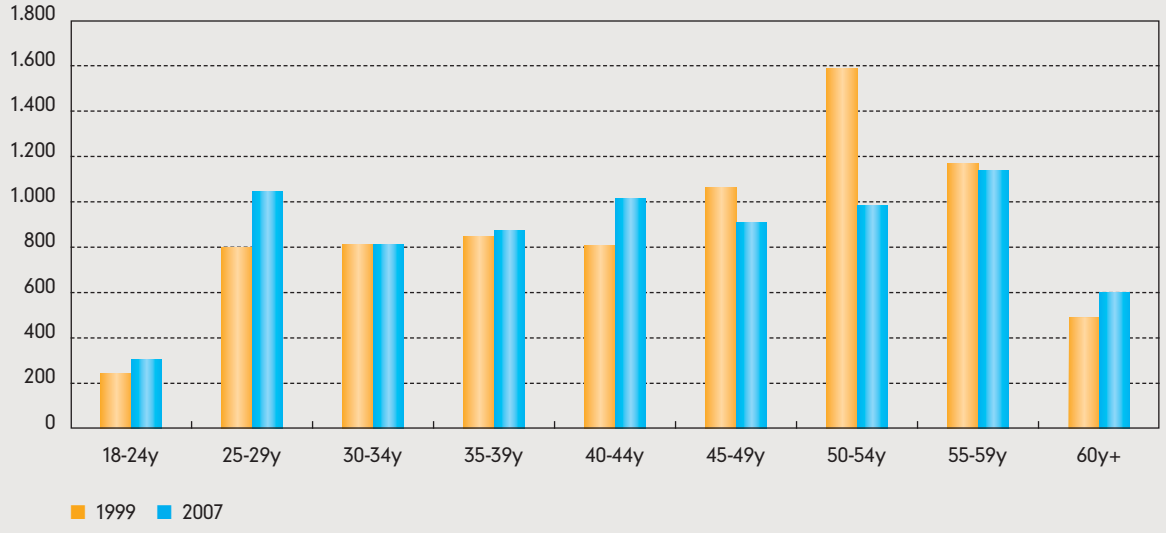
4. STAFF

Graph 4.2: Age structure of non-university staff in 1999 and 2007



Source: ETNIC/Ministry

Graph 4.3: Age structure of university staff in 1999 and 2007



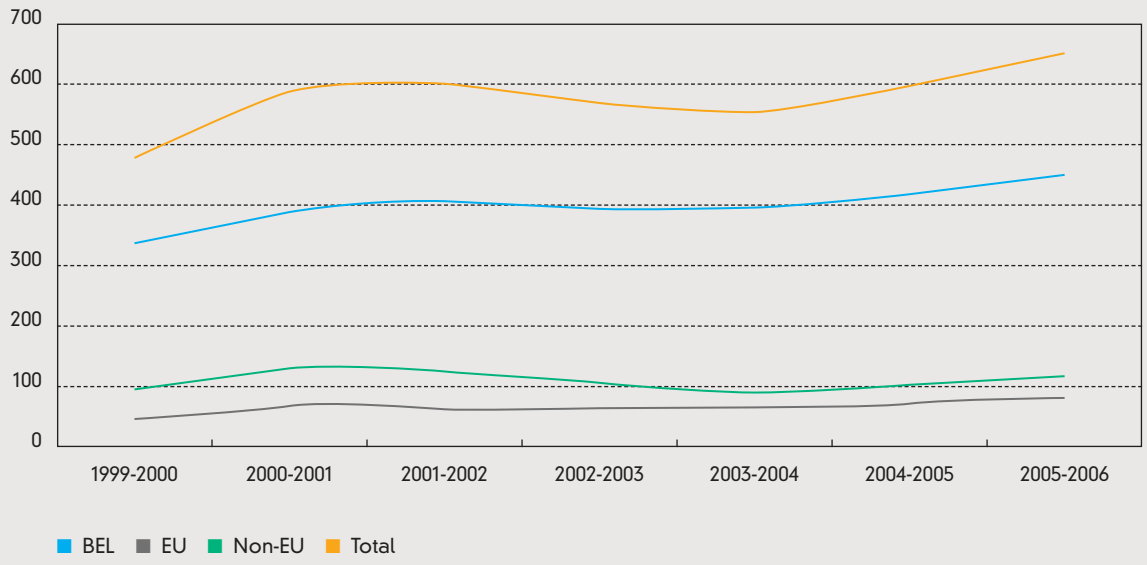
Source: Council of Rectors of the French-speaking Universities of Belgium (CREF)

Graph 4.2 and graph 4.3 indicate the age structure and its evolution amongst the staff in university and non-university HEIs. Quite clearly, we can conclude that the evolution is quite different from one type of HEI to another. In the non-university HEIs, the structure is pyramidal but since 2007 we can observe an ageing staff population.

In the university institutions, the structure is better balanced and also the staff is becoming younger. Even if this difference seems very important, we have to remind that university staff also includes researchers, doctoral students, assistants, etc. while staff at non-university HEIs comprises mainly the teaching, administrative and management staff.

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

Graph 5.1: Evolution of doctoral degrees by region of origin



Source: Scientific Research Funds (FNRS)

Table 5.1: Number of doctoral degrees awarded by research field

	1999-2000				2000-2001				2001-2002			
	BEL	EU	Non-EU	Total	BEL	EU	Non-EU	Total	BEL	EU	Non-EU	Total
Exact and Natural Sciences												
Female	81	12	33	126	101	13	37	151	98	11	52	161
Male	51	2	11	64	50	11	6	67	53	13	10	76
Subtotal	132	14	44	190	151	24	43	218	151	24	62	237
Engineering Sciences												
Female	38	4	6	48	36	7	16	59	33	8	12	53
Male	5	2	0	7	4	1	4	9	10	2	0	12
Subtotal	43	6	6	55	40	8	20	68	43	10	12	65
Medical Sciences												
Female	25	6	7	38	34	2	11	47	48	1	11	60
Male	22	5	2	29	24	3	3	30	33	7	3	43
Subtotal	47	11	9	67	58	5	14	77	81	8	14	103
Agricultural Sciences												
Female	18	3	10	31	22	3	13	38	15	2	14	31
Male	8	0	1	9	11	2	2	15	13	0	4	17
Subtotal	26	3	11	40	33	5	15	53	28	2	18	48
Social Sciences												
Female	3	1	2	6	8	0	6	14	9	0	5	14
Male	4	0	2	6	3	1	4	8	5	0	2	7
Subtotal	7	1	4	12	11	1	10	22	14	0	7	21
Human Sciences												
Female	42	7	18	67	52	14	26	92	43	13	15	71
Male	35	7	4	46	41	12	2	55	46	9	0	55
Subtotal	77	14	22	113	93	26	28	147	89	22	15	126
Total	332	49	96	477	386	69	130	585	406	66	128	600

Source: Scientific Research Funds (FNRS)

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

Table 5.1: Number of doctoral degrees awarded by research field

	2002-2003				2003-2004				2004-2005				2005-2006			
	BEL	EU	Non-EU	Total	BEL	EU	Non-EU	Total	BEL	EU	Non-EU	Total	BEL	EU	Non-EU	Total
Exact and Natural Sciences																
Female	69	17	26	112	91	12	16	119	98	10	16	124	88	19	13	120
Male	59	13	6	78	42	8	4	54	62	16	4	82	52	13	7	72
Subtotal	128	30	32	190	133	20	20	173	160	26	20	206	140	32	20	192
Engineering Sciences																
Female	45	3	9	57	46	12	10	68	44	7	10	61	44	11	19	74
Male	6	0	4	10	11	2	4	17	4	3	4	11	11	2	6	19
Subtotal	51	3	13	67	57	14	14	85	48	10	14	72	55	13	25	93
Medical Sciences																
Female	48	4	13	65	41	5	8	54	44	3	8	55	57	3	10	70
Male	42	3	2	47	30	3	1	34	45	5	7	57	49	9	3	61
Subtotal	90	7	15	112	71	8	9	88	89	8	15	112	106	12	13	131
Agricultural Sciences																
Female	16	2	14	32	17	3	4	24	18	0	15	33	18	3	20	41
Male	8	0	1	9	8	2	3	13	5	3	3	11	6	1	1	8
Subtotal	24	2	15	41	25	5	7	37	23	3	18	44	24	4	21	49
Social Sciences																
Female	7	1	4	12	11	0	4	15	12	2	6	20	16	2	5	23
Male	2	1	3	6	10	1	2	13	6	0	1	7	6	0	3	9
Subtotal	9	2	7	18	21	1	6	28	18	2	7	27	22	2	8	32
Human Sciences																
Female	40	14	23	77	49	13	24	86	42	11	27	80	55	9	28	92
Male	52	9	4	65	41	7	10	58	36	14	4	54	46	9	4	59
Subtotal	92	23	27	142	90	20	34	144	78	25	31	134	101	18	32	151
Total	394	67	109	570	397	68	90	555	416	74	105	595	448	81	119	648

Source: Scientific Research Funds (FNRS)

Graph 5.1 and Table 5.1 indicate the number of doctoral degrees awarded from 1999 until 2006 by research field, as well as by gender and region of origin. The total number of doctoral degrees has constantly grown since 1999, reaching a 35% increase during the last 7 years. We can observe this trend in any research field. The internationalisation of the third cycle is quite important since the proportion of non-Belgian PhDs has risen by 37% between 1999 and 2006. However, this evolution follows the general trend of growth in the third cycle and we can notice that the proportion Belgian/non-Belgian PhDs has remained constant i.e. around 30% of non-Belgian graduates.

Table 5.2 shows the number of doctoral and post-doctoral students and researchers who are financed by research funds, public entities, European and international funds, HEIs and the industry sector in 2007. More than 60% of the researchers are financed by the Scientific Research Funds (FNRS). The French Community is also an important provider of funds through Actions of Concerted Research. For further information on the financing of research, please see chapter 8.

Table 5.2: Non-university HE staff by category (in FTE)

			Doctoral grant holders		
			Male	Female	Total
1.	F.R.S.-FNRS, Associated Funds and Télévie				
1.1	Staff directly paid by the F.R.S.-FNRS				
	1.1.1	F.R.S.-FNRS and associated funds	196,00	177,00	373,00
	1.1.2	F.R.S.-FNRS - Plan d'expansion	0,00	0,00	0,00
	1.1.3	FRIA	299,00	251,00	550,00
	1.1.4	Télévie	0,00	0,00	0,00
1.2	Staff under convention				
	1.2.1	Associated Funds (all subsidies, Loterie Nationale included)	18,98	17,00	35,98
	1.2.2	Télévie	2,00	7,00	9,00
2. Federal Resources					
2.1	PAI and impulsion programmes				
	2.1.1	PAI	19,00	5,00	24,00
	2.1.2	Impulsion programmes	5,00	3,00	8,00
2.2	Conventions with federal ministries				
	2.2.1	Conventions "agriculture"	2,00	0,00	2,00
	2.2.2	Other federal ministries	7,00	14,00	21,00
3. French Community					
3.1	Special research funds		63,19	66,00	129,19
3.2	Actions de recherche concertées (ARC)		59,00	57,00	116,00
3.3	Ministerial initiatives and others		0,00	0,00	0,00
4. Regions					
4.1	Walloon Region		5,00	3,00	8,00
4.2	Brussels Capital Region		1,00	0,00	1,00
4.3	Flemish Region		1,00	0,00	1,00
5. Other Belgian Public Funds					
5.1	German-speaking Community		0,00	0,00	0,00
5.2	Others		1,00	1,00	2,00
6. European And International Public Funds					
6.1	European Union				
	6.1.1	FEDER / ERDF	0,00	0,00	0,00
	6.1.2	FSE / ESF	0,00	0,00	0,00
	6.1.3	Programme cadre de R&D (PCRD) / Framework Programme (FP)	27,81	14,50	42,31
	6.1.4	Others	12,00	8,00	20,00
6.2	Other international funds				
	6.2.1	Foreign governments	0,00	0,00	0,00
	6.2.2	International organizations	6,00	7,00	13,00
6.3	Other financial resources from abroad		2,00	1,00	3,00
7. Entreprises and Other Financing Sources					
7.1	Belgian and foreign enterprises				
	7.1.1	Belgian enterprises			
		7.1.1.1 Private enterprises	6,00	7,00	13,00
		7.1.1.2 Public enterprises	0,00	1,00	1,00
		7.1.1.3 Research centres	0,00	1,00	1,00
	7.1.2	Foreign enterprises	6,00	2,00	8,00
7.2.	Other external resources		88,02	74,00	162,02
7.3.	Proper income		58,00	39,00	97,00
TOTAL			885,00	755,50	1.640,50
8. University Grants / Assistantship					
			726,11	671,51	1397,62

Source: Scientific Research Funds (FNRS)

6. FINANCING HE AND SOME FINANCIAL INDICATORS

In the French Community of Belgium, there are several networks of education: the Official Network, managed by the French Community and the Free Network, whose education system is organized by the French Community but whose management is assured by an organizing authority other than the French Community. HE is mainly financed by the French Community of Belgium and covers all the networks.

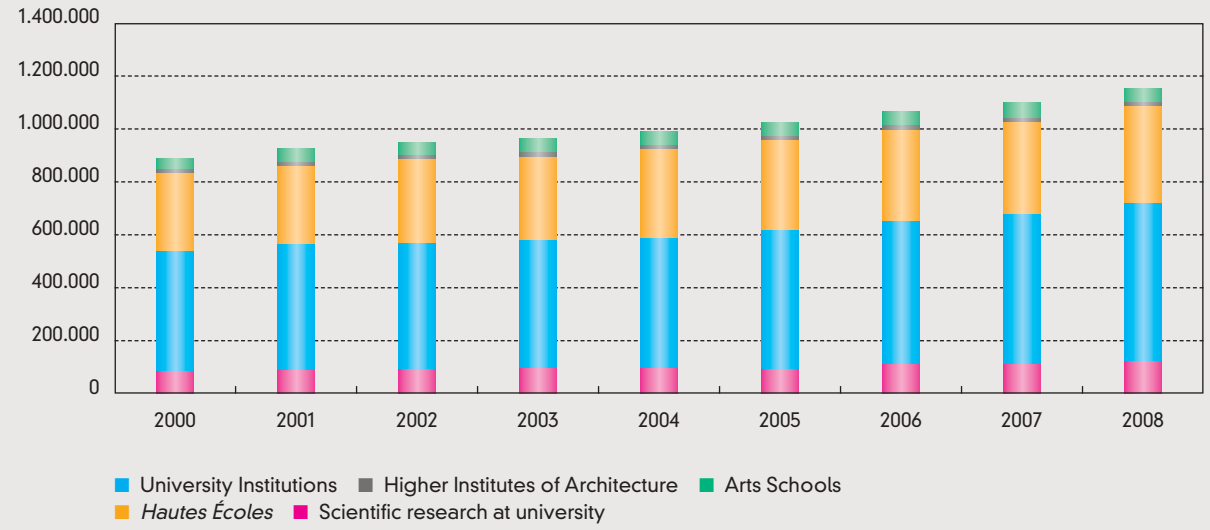
The operation budgets granted to HEIs are calculated on the basis of a fixed envelope which varies with the number of students, the expenses inherent to the organization of the study field in question and the cost of living index. Besides these basic subsidies, other allowances have been granted to specific ends, such as maintenance costs, interest of loans, social subsidies, the promotion of success, continued education, quality, the financing of HE non profit-making organizations and of some centres of excellence, contribution to expenses for student mobility, etc. The Government has also given financial incentives for HEIs to merge and become more visible.

Table 6.1: Higher education Budget in the French Community of Belgium (in thousands Euros)

Financial year	Scientific research at university	University Institutions	Hautes Ecoles	Higher Institutes of Architecture	Arts Schools	Total budget HE	Annual Growth Rates
2000	86.180	454.659	284.073	12.665	42.895	880.472	
2001	88.555	471.422	298.674	13.007	44.718	916.376	4%
2002	91.144	478.784	311.954	12.724	45.407	940.013	3%
2003	92.840	487.162	313.504	12.672	50.047	956.225	2%
2004	94.294	500.326	321.469	12.637	52.687	981.413	3%
2005	96.658	519.544	331.675	12.881	54.770	1.015.528	3%
2006	105.015	543.109	342.103	13.440	55.906	1.059.573	4%
2007	110.765	559.371	351.590	14.139	57.714	1.093.579	3%
2008	120.342	591.636	363.866	14.587	60.844	1.151.275	5%

Source: Ministry of the French Community

Graph 6.1: Repartition of higher education Budget in the French Community of Belgium (in thousands Euros)



Source: Ministry of the French Community

After a strong growth in 2000, the budgets have undergone sudden constraints which gave fewer means of growth in HE. It is also to be noticed that the budgets have grown by 5 % since 2007. This results from the new acts on the refinancing of tertiary education.

Table 6.2: Share of HE budget with regard to the total budget for Education and Training in the French Community (in thousands Euros)

Financial year	Scientific research at university	University Institutions	Hautes Ecoles	Higher Institutes of Architecture	Arts Schools	Total budget HE	Total budget Education and Training
2000	2,00%	10,55%	6,59%	0,29%	1,00%	20,44%	4.308.563
2001	1,99%	10,58%	6,70%	0,29%	1,00%	20,56%	4.457.002
2002	2,00%	10,51%	6,85%	0,28%	1,00%	20,63%	4.556.137
2003	1,99%	10,42%	6,71%	0,27%	1,07%	20,46%	4.673.926
2004	1,94%	10,32%	6,63%	0,26%	1,09%	20,23%	4.850.191
2005	1,89%	10,16%	6,48%	0,25%	1,07%	19,85%	5.116.058
2006	1,98%	10,26%	6,46%	0,25%	1,06%	20,02%	5.291.881
2007	2,03%	10,26%	6,45%	0,26%	1,06%	20,05%	5.454.234
2008	2,17%	10,68%	6,57%	0,26%	1,10%	20,78%	5.540.176

Source: Ministry of the French Community

From 2000 to 2008, some stability of the balance between the various types of HE is to be noticed, with a slight rising trend for the non-university HEIs in the early 2000s. At the same time, the number of students in these institutions was growing more dramatically, which led to some discontent. It is to be noticed that the budget for HE grew less rapidly (1 %) than the whole budget of Education and Training in the French Community.

Table 6.3: Tertiary education budget allocations 2000-2008 (in thousands Euros)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Scientific research	86.180	88.555	91.144	92.840	94.294	96.659	105.015	110.755	118.490
Teaching	854.681	886.309	907.750	923.239	950.050	986.444	1.020.744	1.051.968	1.086.407
Financial aids to students	14.787	15.343	16.235	16.688	17.078	17.838	21.227	20.880	22.736

Source: Ministry of the French Community

While the budget for teaching increased by 27,1%, a special effort was made for scientific research (37,5%) and, above all for different types of financial aids to students: 53,75%.

Table 6.4: Proportion of the expenditure for tertiary education and the GNP of the French Community (in thousands Euros)

Year	Total Budget HE	GNP Walloon Region	GNP Brussels Region (80%)	GNP French Community	HE/GNP
2000	880.472	59.412.500	38.298.480	97.710.980	0,9011%
2001	916.376	60.928.200	39.699.920	100.628.120	0,9107%
2002	940.013	62.586.200	41.563.040	104.149.240	0,9026%
2003	956.225	64.211.600	42.375.840	106.587.440	0,8971%
2004	981.413	67.284.400	44.500.000	111.784.400	0,8780%
2005	1.015.528	70.071.185	45.706.477	115.777.662	0,8771%
2006	1.059.573	73.331.457	47.365.988	120.697.445	0,8779%

Source: Ministry of the French Community

The proportion of tertiary education in the GNP remains stable around 0,9%. However, a slight erosion is to be noticed.

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

7.1 EMPLOYABILITY AND HIGHER EDUCATION

Article 2 of the Act of 31 March 2004 describes the main objectives of HE. Amongst others, it underlines the societal role of HE which contributes to the development of a pluralistic, open, sustainable and democratic world. HE has also the fundamental function of transmitting knowledge, skills and competences to individuals allowing them to become active and autonomous citizens in our society. Employability and lifelong-learning are also two fundamental aspects of higher education. HE should provide individuals with knowledge, skills and competences which will enable them to get in, remain and renew their position on the labour market. Therefore, HE programmes should be designed from a lifelong learning perspective.

As explained in Chapter 2, the French-speaking HE system comprises university and non-university (*hors-université*) education. The short-type programmes organised by the non-university HEIs are professionally-oriented. Teaching is theoretical as well as practical. In general, work placements are compulsory in the study programmes. Therefore close links do exist between institutions and employers and the student is well prepared to enter the labour market. Even if university education is traditionally more academic and research-oriented, the employability of graduates is essential for university institutions. Work placements, internships and traineeships are possible in most programmes, especially in business, economics and engineering, fields where partnerships with the private sector exist.

Besides the structural aspects of HE enhancing the employability of young graduates, other measures have been taken recently to facilitate, promote and support the development of knowledge, skills and competences preparing individuals for the labour market:

1) The Act of 18 July 2008, for example allows the creation of new curricula (a master's in social engineering and actions; one year of specialization in anaesthesia, in Arts therapy, in management of distribution; a Bachelor's in construction – option wood technology, in Biotechnics). Other specialisations (maximum 60 ECTS credits) are possible in some fields after the Bachelor's degree.
2) Employers are represented in the management councils of HEIs and many take part in the juries set up during the examinations. These employers often hire graduates who made their training period(s) in their organization.
3) Academics have launched various projects to enhance employability, such as Erasmus and Erasmus Belgica programmes, the *Printemps des Sciences*, the *Jeunesses Scientifiques* projects, the Kurzweil software (to help dyslexics succeed in their studies), robotics prizes, and so on.
4) At the institutional level, cooperation with the professional world is often maintained through seminars, mock job interviews, common work projects and research carried out in the HEIs in collaboration with businesses, hospitals or other research centres.

7.2 LABOUR MARKET POSITION AND HIGHER EDUCATION

Due to the federal structure of Belgium, employment is a regional competence while education is a Community competence. Therefore, as the French Community, the Walloon Region and the Brussels-Capital Region are three different entities, it is up to now still difficult to provide aggregate statistics and data which would cover the whole population enrolled or graduated from the French-speaking HE. However, the following tables and graphs give a clear overview of the situation in the French Community.

Table 7.1: Employment rate by level of education in the Brussels-Capital Region and Walloon Region

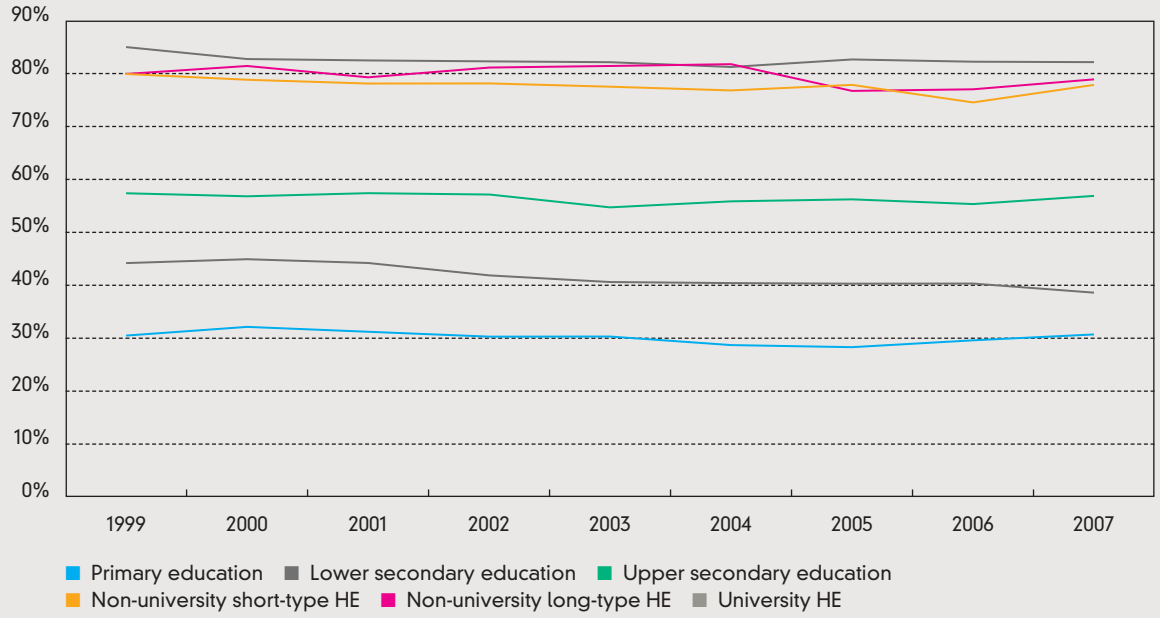
	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total									
Female	46,6%	47,7%	46,2%	46,9%	47,4%	47,4%	48,1%	47,6%	49,0%
Male	62,4%	63,3%	63,1%	62,6%	61,3%	61,8%	62,8%	62,0%	62,8%
Total	54,5%	55,5%	54,6%	54,7%	54,3%	54,6%	55,5%	54,8%	55,9%
Primary education									
Female	20,4%	21,1%	20,7%	20,0%	20,9%	19,9%	18,9%	20,3%	22,0%
Male	40,2%	42,8%	41,1%	40,3%	39,2%	37,7%	37,5%	38,5%	39,9%
Total	30,2%	31,6%	30,7%	30,1%	29,9%	28,6%	27,9%	29,3%	30,7%
Lower secondary education									
Female	33,3%	34,3%	32,8%	31,4%	32,2%	31,4%	31,1%	30,9%	30,1%
Male	53,5%	53,8%	54,3%	51,4%	48,2%	49,1%	49,5%	48,7%	45,7%
Total	43,6%	44,5%	43,8%	41,8%	40,5%	40,4%	40,6%	40,3%	38,2%
Upper secondary education									
Female	48,7%	48,9%	47,5%	47,7%	46,5%	47,1%	47,3%	46,5%	47,5%
Male	65,5%	64,4%	66,3%	66,0%	62,5%	63,9%	64,3%	63,7%	65,8%
Total	57,2%	56,7%	57,0%	57,0%	54,6%	55,7%	56,1%	55,1%	56,8%
Non-university short-type HE									
Female	75,7%	75,2%	74,9%	76,1%	74,5%	73,5%	75,0%	70,9%	74,6%
Male	85,9%	84,2%	82,9%	80,7%	81,6%	80,8%	81,4%	79,4%	82,1%
Total	79,6%	78,6%	78,0%	77,8%	77,2%	76,4%	77,6%	74,2%	77,7%
Non-university long-type HE									
Female	76,1%	77,2%	74,3%	76,1%	77,9%	75,2%	71,7%	72,9%	76,9%
Male	82,3%	85,1%	83,3%	85,7%	84,3%	86,9%	81,4%	80,3%	80,2%
Total	79,5%	81,4%	78,9%	81,2%	81,2%	81,3%	76,6%	76,7%	78,6%
University HE									
Female	81,2%	77,5%	77,1%	76,3%	77,7%	77,0%	76,9%	77,6%	77,9%
Male	87,7%	86,2%	85,9%	85,9%	85,0%	83,9%	86,9%	85,5%	85,3%
Total	85,0%	82,6%	82,2%	81,9%	81,9%	80,9%	82,4%	82,1%	82,0%

Source: IWEPS, Institut Wallon de l'Evaluation, de la Prospective et de la Statistique

Table 7.1 and Graph 7.1 indicate the evolution of the employment rate by level of education in the Walloon Region and the Brussels-Capital Region since 1999. It shows that the level of education has an important impact on the employment rate so that highly-educated individuals are more likely to find jobs. This trend has been constant, showing a gap with those with upper secondary education only. When analysing the case of individuals holding a HE degree, we can observe that the employment rate has decreased for all types of degrees. The most important decrease concerns university education. Finally, from the recent years' statistics, we can underline that individuals with short-type HE degrees (which are professionally-oriented) are as employable as those with long-type HE.

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

Graph 7.1: Evolution of the employment rate by level of education in the Brussels-Capital Region and Walloon Region



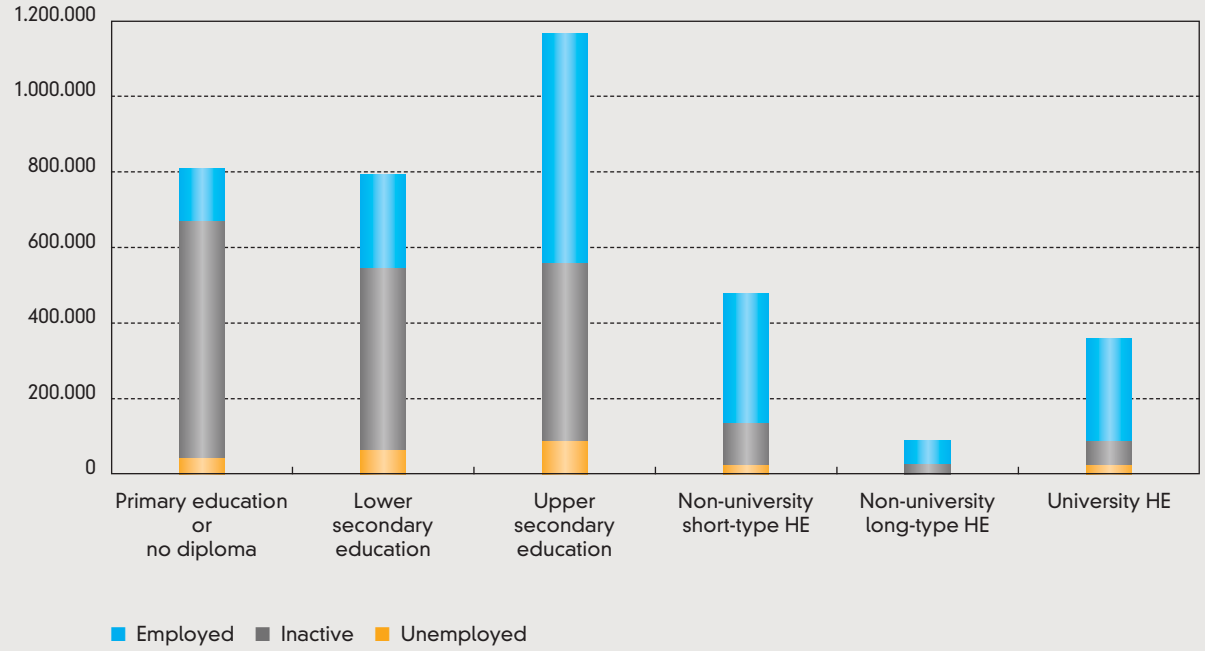
Source: IWEPS, Institut Wallon de l'Evaluation, de la Prospective et de la Statistique

Table 7.2: Labour position by level of education in the Brussels-Capital Region and Walloon Region in 2007 (number of people)

	All degrees	Primary education or no diploma	Lower secondary education	Upper secondary education	Non-university short-type HE	Non-university long-type HE	University HE
Unemployed	230.553	38.990	61.951	88.276	21.065	4.089	16.183
Inactive	1.768.401	625.050	474.320	464.849	113.153	18.791	72.238
Employed	1.682.966	139.575	255.570	612.768	342.751	63.363	268.938
Total	3.681.920	803.615	791.841	1.165.893	476.969	86.243	291.409

Source: Ministry of the French Community

Graph 7.2: Labour position by level of education in the Brussels-Capital Region and Walloon Region in 2007



Source: IWEPS, Institut Wallon de l'Evaluation, de la Prospective et de la Statistique

Table 7.2 and Graph 7.2 indicate the labour position by level of education of the population of the Brussels-Capital and the Walloon Regions in 2007. As stated in the previous table and graph, the level of education is a key element on the labour position: the higher educated the individual is, the more easily he/she will get in the labour market.

8. INNOVATION AND RESEARCH

8.1 MAIN FINANCING MECHANISMS AND INSTRUMENTS

1. **The allocation for the functioning of universities**
   The French Community endows the universities of a block funding allocation intended to assure their missions of education and scientific research. Universities dedicate approximately 25 % (138 million Euros in 2007) of this allocation to scientific research.

2. **The financing bodies FRS-FNRS/FRS-FNRS/FRIA and three associated Funds (IISN, FRSM and FRFC)**
   The mission of the Scientific Research Fund (FNRS in French) is to develop buttom-up scientific research within the framework of initiatives presented by the researchers (Bottom-up). On one hand, it supports the researchers individually and on the other hand, research programmes pursued within laboratories and services situated mainly in the universities of the French Community of Belgium. The three associated Funds (IISN, FRSM, and FRFC) subsidize research programmes presented by laboratories. The French Community brought the FNRS up to 89.2 million Euros in 2007. The FNRS also benefits from private capital (sponsorship) and from federal capital. The Fund for the Training in Industry and Agriculture (FRIA) grants scholarships to university graduates who intend to make a career in research for industry or agriculture.

3. **Special Funds for Research (FSR)**
   The FSR give universities subsidies in favour of their basic research activities in fields that they have chosen. The FSR budget amounts to 13.8 million Euros.

4. **The Interuniversity Attraction Centres (PAI)**
   The scheme of the Interuniversity Attraction Centres is a federal mechanism which aims at supporting basic research led by the university research teams of the various regions of the country working in a network within the framework of collaboration projects; these may include foreign universities situated close to the border. This mechanism works according to the "bottom up" principle, all the research fields being entitled to funding. The projects are financed for 5 years. The budget of the PAI amounts to 143 million Euros (2007-2011).

5. **Actions of Concerted Research (ARC)**
   The ARCs are another instrument of financing research in universities. These research programs are developed over five years and chosen after advice from outside experts. They allow the development of university or interuniversity research centres of excellence. 13.8 million Euros were dedicated to the research projects led within the framework of the ARC in 2008.

6. **FIRST Actions**
   The objective of the FIRST programme is to promote the exchanges between the academic and industrial worlds by allowing researchers to learn about the industrial environment while keeping their university status. It consists in covering, for two years or more, the salary of a young researcher in charge of leading, in the university or higher education institution, a project of directed research which may have an impact on the economic and social development of Wallonia.

   In 2007 the DGTRE (General Direction for Technologies, Research and Energy) financed:

   - 20 mandates FIRST spin-off, aiming at inducing university researchers to study the industrial and commercial possibilities of implementing the outcome of their research and, if possible, to create a business in the Walloon Region.
   - 20 mandates FIRST post-doc, in order to train young university researchers to emerging technologies, in the framework of post-doctoral research; to develop and transfer this potential in a Walloon company or an approved research centre which co-finances the research; to increase the scientific and technological potential of a research unit through the carrying out of research susceptible to have a positive impact on the Walloon economic and social development.

7. **The excellence schemes**
   Through their universities, the Walloon Region and the French Community have developed fields of excellence whose potential of technological transfer is high. To facilitate the blooming of future new poles of competitiveness, the Plan of Priority Actions for the Future of the Walloon Region (Marshall Plan) plans to support schemes of excellence, at the rate of one programme a year. To this end, the proposed mechanism is a fixed dowry over 5 years, mobilising important means on a precise theme.

The budget amounts to 5 million Euros per year and per programme, half of which is the responsibility of the Walloon Region. It is spread over 5 years. The topics retained for the programmes of excellence are chosen by the Walloon Government (Top-down principle).

8. **EUREKA**
The General Direction for Technologies, Research and Energy (DGTRE) financially supports the EUREKA projects, up to 100% of the direct costs of research.

9. **Mobilising Programmes**
Through its mobilising programmes, the Region aims at two objectives: strengthening the scientific potential of its universities and its higher education institutes and valuing it in the Walloon industrial context. This double objective is pursued by the financing of projects of applied research that is susceptible to eventually result in the implementation of findings in existing or to-be-created companies. The programmes are generally thematic ones and centred on fields which are very interesting for the Walloon industrial fabric.

In their selection procedure these programmes present the peculiarity of leaning on an evaluation of each project proposed by two independent foreign experts. Furthermore, they emphasize the interdisciplinary collaboration between research teams and privilege, even impose, the implication in the projects of several research institutions.

8.2 MAIN ACTORS OF RD&I

1. **The fund for Scientific Research (FRS-FNRS)**

2. **The universities and university hospitals.**
The French Community has nine universities: the Faculté Polytechnique de Mons, The Faculté universitaire des Sciences agronomiques de Gembloux, the Facultés universitaires catholiques de Mons, the Facultés universitaires Notre-Dame de la Paix à Namur, The Facultés universitaires Saint-Louis à Bruxelles, the Université catholique de Louvain-la-Neuve, The Université libre de Bruxelles, the Université de Liège, the Université de Mons-Hainaut. There are also three university hospitals (CHU Liège, the Clinique universitaire Saint-Luc, the Hôpital Erasme) which carry out scientific research work.

3. **The General Direction for Technologies, Research and Energy (DGTRE)**
Through multiple mechanisms, the DGTRE assures the financing of research projects within universities and higher education institutions to improve their scientific and technical level and contribute eventually to the economic and social development of Wallonia. Its policy also aims at strengthening the synergies between the industrial and the academic worlds and allowing the public research organizations to reach a sufficient critical mass.

4. **The Directorate General for Non Compulsory Education and Scientific Research (DGENORS)**
The DGENORS finances organisations such as the FNRS and universities. It also takes part in elaborating the Belgian position in the field of European research policy while taking into account the universities' advices as they are actors on the field. The DGENORS informs universities about European recommendations and encourages them to apply them.

8.3 NETWORKING POLICY

1. **European Cooperation in the field of Scientific and Technical Research (COST)**
COST is an intergovernmental structure of scientific cooperation which aims at funding and organising Networking activities on precise research topics (COST actions). In 2007, researchers from French-speaking universities were involved in nearly half of the actions launched in the framework of COST.

2. **The Inter-university Centres of Attraction (PAI)**
One of the objectives of this mechanism is to reinforce the links between the various universities of the country.

8. INNOVATION AND RESEARCH

8.4 POINTS OF CONVERGENCE BETWEEN HERD AND GOVERD POLICIES

1. **The Ulysse programme**
   The objective of the fund granted in the framework of "Mandate of Scientific Impulse – ULYSSE mobility" consists in encouraging Belgian or foreign highly qualified researchers (3 research mandates were foreseen in 2008 but this number is to grow in the following years) who lead a scientific career abroad to come and develop it in a university of the French Community of Belgium.

2. **The centres of competitiveness**
   A centre of competitiveness is a cluster of businesses, training centres and public or private research units (university research teams) or private research engaged in a partnership approach aiming at creating synergies around common projects with an innovative character.

This partnership gets organised around a market and around a technological and scientific field attached to it and must try to grow enough in order to reach both competitiveness and international visibility. There are at present five centres of competitiveness in Wallonia: SKYWIN Wallonie is the centre of competitiveness of aeronautics and special sectors, BioWIN plans to unite all the Walloon actors of innovation and training in the field of biotechnologies and health; Logistics in Wallonia is the centre of competitiveness created to develop the transport and logistics fields; the Agro-industrial centre has as its main objective to strengthen competitiveness of the businesses of the Agro-food industry, Mechatech concerns mechanical engineering. Through this policy the Walloon Region wishes to emphasize the convergences between the research policies of the universities, the businesses and the public authorities.

Table 8.1: Innovation and Research: number of publications

	1999	2000	2001	2002	2003	2004	2005
French-speaking university institutions	3.796	3.490	3.647	3.470	4.012	3.701	4.394
Federal French-speaking scientific institutions	104	93	96	95	157	116	157
French-speaking research centres	237	274	197	273	262	284	561
TOTAL	4.137	3.857	3.940	3.838	4.431	4.101	5.112

Source: Ministry of the French Community

Table 8.2: Innovation and Research: budget components and evolution (million euro)

	1999	2000	2001	2002	2003	2004	2005
BERD							
Belgium	3.307,12	3.588,61	3.921,10	3.662,35	3.607,89	3.731,81	3.775,62
Brussels-Capital Region	286,69	296,37	322,97	316,61	300,14	310,60	315,04
Walloon Region	815,42	850,15	921,49	873,48	931,81	1.032,54	962,76
GOVERD							
Belgium	286,18	312,14	330,89	372,64	354,45	418,59	464,25
Brussels-Capital Region	47,05	53,97	55,48	65,12	66,70	70,74	71,25
Walloon Region	19,08	23,81	25,11	26,64	26,93	12,53	13,28
HERD							
Belgium	969,71	1.004,74	1.059,46	1.100,43	1.150,01	1.175,71	1.238,84
Brussels-Capital Region				241,95	231,57	233,02	238,81
Walloon Region				317,79	318,08	318,40	332,95
Walloon Region + Brussels (80%)				511,35	503,33	504,82	524,00
Walloon Region + Brussels (85%)				523,45	514,91	516,47	535,94
GERD							
Belgium	4.617,53	4.963,95	5.373,38	5.200,74	5.177,44	5.403,62	5.551,55
Brussels-Capital Region				652,73	627,27	654,98	659,82
Walloon Region				1.217,92	1.276,81	1.363,46	1.309,00

Source: Ministry of the French Community

9. INTERNATIONALIZATION OF HIGHER EDUCATION

Table 9.1: Overview of the participation of HEIs and students in the Erasmus programme

	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	Total
Number of HEIs	42	42	42	42	46	48	49	51	n/a
Number of Students	1.776	1.856	1.793	1.945	2.131	2.141	2.110	2.195	15.947
Female	n/a	n/a	n/a	1.100	1.223	1.222	1.185	1.286	6.016
Male	n/a	n/a	n/a	845	908	919	925	909	4.506
Number of months	9.282	9.547	9.166	10.690	10.896	10.993	11.107	11.197	82.878
Average Stay (in months)	5,2	5,1	5,1	5,5	5,1	5,1	5,3	5,1	n/a

Source: Erasmus Agency (AEF) based on the annual report of HEIs

The number of male students being mobile seems to be less important than that of female students. Yet we lack information on the years before 2002 so the difference may not reflect the reality.

What we can say is that the number of mobile students is growing very slowly in the French Community. Not all students or academics are yet convinced of the benefits of mobility. Some fear that they would miss part of the training; some wrongly say they are not convinced that the credits obtained elsewhere can be recognized as being equivalent to those they would have acquired in their home country; some others are afraid of not being able to manage in a foreign country where the language is different; finally, some think mobility is reserved for the well-off; etc.

A great information campaign is necessary that would lead mobility promoters and mobile students for example to visit HEIs and exchange views about their experience; again, such action requires time and money. Mentalities also have to change and everyone knows how hard it is to change them. But with the evolution of the last few years, all university and non-university HEIs have now out-going and in-coming mobile students. No doubt that their number will grow in the years to come.

Higher education in Luxembourg

1. THE HISTORY OF THE UNIVERSITY OF LUXEMBOURG

A look at the past shows us that Luxembourg has always shied away from having full university provision on its territory and the first part of this chapter will pinpoint the reasons thereof.

Let us go back to Louis XIV who was the first of a number of foreign rulers to decide against a university on Luxembourg territory. A territory whose main characteristic was agriculture was to send its students to the only university in the Belgian provinces, i.e. Leuven. In order to facilitate access to this university, the "*Collège de Luxembourg*" was to create the "*cours philosophiques*".

This situation of having a one-year provision was to last until 1996, but the name changed: the "*cours philosophiques*" became the "*cours académiques*" in the 19th century and the "*cours universitaires*" in the 20th century.

However, the underlying motive changed and it is worth having a look at the years 1848 and 1851.

1848 saw the first Luxembourgish constitution and one of its articles gave the students the right to attend any university of their own choosing. Unlimited mobility, freedom of choice – what a remarkable pair for an era when nationalism was an ascending intellectual and political current of thought.

It is thus not surprising that this situation was not to last very long since the 1851 constitution restricted this provision by creating a system called "*la collation des grades*". This system meant that the students would have to attend a foreign university but would have to pass their exams in Luxembourg. This system reflects the attitude of conservatism of the major part of the 19th century. If the 1848 constitution, with its liberal attitude towards student mobility, reflected the spirit of the bourgeois revolutions throughout Europe, the 1851 constitution is a step back towards a more conservative way of running the State. At first, the "*collation des grades*" was devised to soothe the Dutch king's anxiety that free mobility of students would contribute to spreading the liberal zeitgeist throughout his kingdom.

Indeed we must not forget that these times were also the ones when Luxembourg was the private domain of the King of the Netherlands. However, the 2nd half of the nineteenth century became the dawn marking the independence of the country. The "*collation des grades*" was maintained and it became the means of the national élite to control access to the professions such as medicine, pharmacy, law and teaching.

A system that had first been the result of a ruler's suspicion and misgivings was to become a means closely linked with the construction of a national identity. It reflected the need of the nation state to control access to the professions. Humboldt's ideal of the freedom of teaching and research was one thing, the need to set higher education within the framework of the nation state was the prevailing doctrine of the times which were the heyday of nationalism. Luxembourg followed suit, but we should not be oblivious to the fact that the "*collation des grades*" had been devised by a country that still lacked an identity and whose independence was accidental before it was a voluntary act pushed forward by an impatient population to be free. Still, censorship and the denial of civil liberties gave way to a proud assertion that the right to finally establish standards of academic excellence are among the prerequisites of an independent state. Even without a university, Luxembourg and above all the Luxembourg academia, were not to forego that right.

The "*collation des grades*" was to last until 1969. In tune with the spirit of the times, i.e. the one of liberalism, the one of rejection of all form of authority, a student protest march demanded freedom of mobility and the right to sit exams at the university where the student was actually registered. The government gave way and in 1969 abolished the "*collation des grades*" replacing it by the "*homologation des titres*". Homologation essentially means recognition of diploma and it still regulates access to the professions. It does so by defining lengths of study courses to be successfully completed if a student is to enter law, medicine, teaching. This system is still in operation today.

As in the past, student mobility and the criteria defining access to the professions are felt to be key elements in the definition of Luxembourg identity. Studying abroad not only broadens the horizon, it fosters an attitude of understanding in a society that is increasingly multicultural. Each Luxembourg student has after all been a foreigner at least once in his lifetime. Besides, having a professional workforce educated and trained in various countries enhances the competitive edge of any Luxembourg based firm.

Considering these elements, it is not surprising that Luxembourg had no proper university until 2003. The last time the issue was discussed was at the beginning of the 90s of the previous century when Parliament started a debate on it, the result of which was the 1996 act. It said that the Centre Universitaire could provide a first cycle modelled on the French or Belgian systems, which means that there could be a two-year provision.

All subsequent cycles were to be organised in cooperation with partner universities and the spirit of the act asked Luxembourg students to pursue their studies abroad after their first year or their first two years in Luxembourg.

The 1996 act reflected a zeitgeist which said that in terms of higher education that era was one of transition. Indeed, the democratisation process of higher education, which had seen the successful creation of the neighbouring universities of Trier, Metz, Nancy II, was stalling, because the ever increasing number of students heavily taxed the financial means available. At the same time, it was felt that the international dimension of Luxembourg lacked an essential element, i.e. a university, which is why the debate was started in the first place.

So why has this situation changed? What accounts for this change of paradigm? A number of factors need to be considered.

First, we should recall what the economic success of Luxembourg of most of the twentieth century was founded upon.

On the one hand, Luxembourg was ready to forego some of its sovereignty rights when other European countries still designed their policies in exclusively national contexts. Luxembourg sold its broadcasting rights to a commercial provider in return for services being operated from Luxembourg. Land with iron ore was leased to foreign companies in return for iron to be cast in foundries and mills in Luxembourg. In the 1980s the same principle was applied to satellite transmission with the resulting creation of SES Astra.

Another way forward was through tax incentives given to companies so that they would set up business in Luxembourg. This policy was targeted at American corporations, but also in later years at other companies and at the banking sector. It largely contributed to the diversification of the Luxembourg economy in the second half of the twentieth century, an economy that had been heavily dependent on steelmaking alone.

So in the mid-1980s, Luxembourg became very rapidly a service oriented economy. Steel industry lost its predominance. At a European level, the European Internal Market, laid down by the Single European Act, which entered into force in 1987, opened the borders of Luxembourg's economy dramatically and boosted it forward. Since 1985 our population has increased from merely 365.000 people to almost half a million.

Our jobs have doubled from 150.000 to almost 340.000. Only the number of Luxembourgers has stayed almost the same, having risen from 268.000 to 278.00.

By the change of the millennium, a number of paradigms had thus changed drastically. Tax policies across Europe started to converge more and more and the sovereignty rights of the EU member states had become fewer. Moreover the shift from an era of industrialization, to an era of a service based economy was giving way to a new shift towards a knowledge based economy. All of a sudden, Luxembourg risked being left out in the global race of knowledge production.

At a societal level too, the 1990s led to important transformations. In spite of immigration waves throughout the twentieth century, Luxembourg had remained a relatively homogeneous society, which had managed to integrate the immigrants into its social fabric. The 1990s saw a reinforcement of immigration and also saw the rise of a phenomenon which we now label "*les frontaliers*", i.e. a reliance of the Luxembourg labour market on the man or woman power of the wider region ("*la Grande-Région*"). Immigration increased in scale and in momentum but it also reached all walks of life. With a population of which roughly 40% is of non Luxembourgish origin and with a daily cross - border movement of 150.000 people, questions of social cohesion started to arise.

It is the combination of those two challenges that served as a rationale for the creation of the university, which incidentally was also an act based on the sovereignty rights of the country. Luxembourg had to become a player in the world of knowledge production and it had to give itself the think tank to analyse and further its own development. Moreover, the creation of the university is also a way of attracting more young people into higher education. Luxembourg continues to perform at unsatisfactory levels in this respect and this issue is all the more urgent since more than half of the new positions now created go to holders of higher education degrees.

However, the creation of the University of Luxembourg is also imbued with an international dimension. It is fully "*en phase*" with the Bologna agreements and it relies on student mobility since a semester of mobility is compulsory during the first cycle. This requires specific agreements with partner universities. At the same time, the University should be attractive to foreign students. Students from Luxembourg should continue to be educated abroad, while students from abroad should be educated and trained in Luxembourg.

2. THE UNIVERSITY OF LUXEMBOURG TODAY

The University of Luxembourg was founded by a law of August 12, 2003, with the aim of creating a national university with a clear profile and mission: a specialised university of modest size, based upon the symbiosis between teaching and research, striving for an international status but at the same time adapted to the social and economic needs of Luxembourg. The University was charged with the tasks of emphasizing interdisciplinarity, mobility and multilingualism. The university has three languages, French, German and English and all degree courses must be bilingual, the secondary language representing at least 25% of the course. Mobility is mandatory during the first cycle and at least 30 ECTS credit points must be obtained at a partner institution. Besides these important characteristics, the University of Luxembourg is by law a public institution that is managed under private law, enjoying financial, administrative and educational independence. It is free to set its own policies for student selection; it receives its funding in a lump sum, which it may distribute according to its own decisions; it is free to hire and compensate staff according to its own rules; and it defines its academic programmes.

The University currently offers 11 bachelor programmes and 20 master programmes in its three faculties, (a) the Faculty of Sciences, Technology and Communication, (b) the Faculty of Law, Economy and Finance, (c) the faculty of Language and Literature, Humanities, Arts and Education. The University was also given the mandate to create three Interdisciplinary Centres of teaching and research. Research is organized in research units around a number of priority areas.

The following tables show the development of the University of Luxembourg, (a) in terms of overall staff employed by the University, broken down into the number of academics (professors, assistant professors) and doctoral students & postdocs, (b) in terms of student enrolment figures.

Table 2.1: University of Luxembourg: staff

Year	Staff	Academics	PhD students& Postdocs
2006	447	145	93
2007	549	154	120
2008	653	160	137

Table 2.2: Student enrolment

Student enrolment	2005/2006	2006/2007	2007/2008	2008/2009
Total	2.692	3.341	4.137	4.517
Full time			3.404	3.860
Part time			733	687

Table 2.3: Students by programme

Students by programme	2005/2006	2006/2007	2007/2008	2008/2009
Bachelor	1.005	1.784	2.350	2.719
Master	125	259	442	557
Doctorate	-	148	186	250
Others	1.562	1.150	1.159	991

Graph 2.1: Evolution number of students

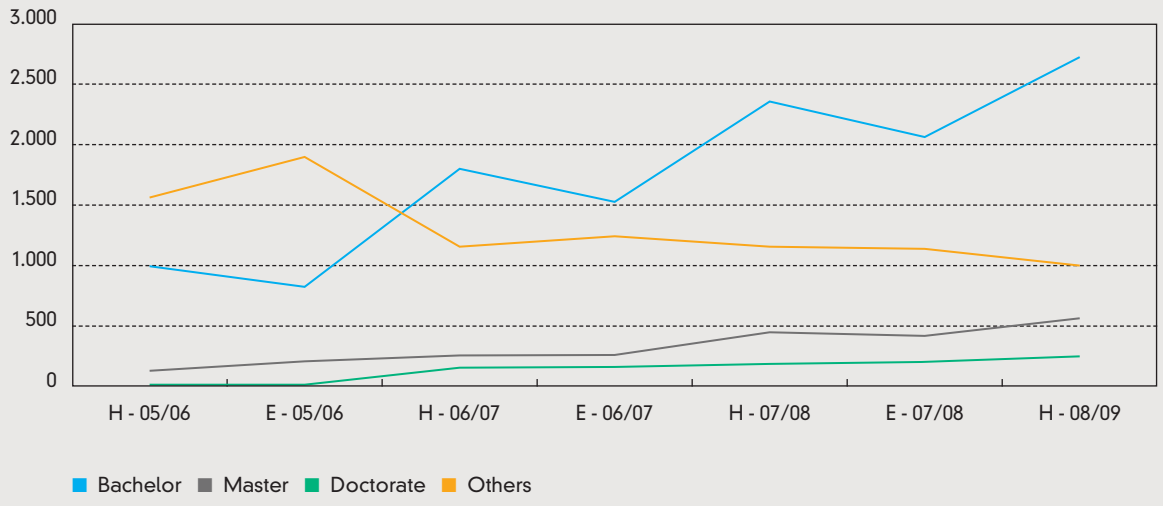


Table 2.4: Number of students by programme and citizenship

Programme/Citizenship	2005/2006	2006/2007	2007/2008	2008/2009
Bachelor	1.005	1.784	2.350	2.719
Luxembourg	-	1.113	1.531	1.760
Europe	-	514	667	801
Other countries	-	157	152	188
Master	125	259	442	557
Luxembourg	-	84	110	160
Europe	-	135	252	281
Other countries	-	40	80	116
Doctorate	-	148	186	250
Luxembourg	-	32	37	49
Europe	-	97	123	160
Other countries	-	19	26	41
Others	1.562	1.150	1.159	991
Luxembourg	-	584	507	300
Europe	-	518	619	662
Other countries	-	48	33	29

3. THE RESEARCH ENVIRONMENT

The University of Luxembourg is embedded in a research environment that comprises four public research institutes. The first steps were taken in 1987 and continued over the following years when Luxembourg passed a framework law on public sector research, which led to the establishment of the CRP Gabriel Lippmann, the CRP Henri Tudor and subsequently the CRP Santé. As regards their thematic profile, the former two reflect mainstream technological fields like information and communication technologies, materials, energy and environment. 1999 saw the creation of the National Research Fund (Fonds National de la Recherche, FNR), whose mission is twofold and addresses two separate areas.

Its primary mission is to receive, manage and use funds and donations of public or private sources to promote public-sector research and technological development at national level. In its core mission of funding research the FNR operates exclusively on the basis of multi-annual programmes. At the same time, it is an active player in Luxembourg's research system through its participation in ongoing discussions of the orientation of national R&D policy.

Table 3.1: GERD by sector and total GDP - June/July, 2008

	2001	2002	2003	2004	2005	2006	2007
GERD (euro million)	na	na	426	448	472	497	na
BERD (euro million)	na	na	379	393	408	422	na
GOVERD (euro million)	33	38	45	49	57	63	na
HERD (euro million)	2	na	2	6	7	12	na
PNP (euro million)	-	-	-	-	-	-	na
GDP (euro million)	22.572	23.992	25.726	27.439	30.032	33.854	36.137
R&D intensity (GERD as % of GDP)	na	na	1,66	1,63	1,57	1,47	na
BERD as % of GDP	na	na	1,47	1,43	1,36	1,25	na
GOVERD as % of GDP	0,14	0,16	0,17	0,18	0,19	0,19	na
HERD as % of GDP	0,01	na	0,01	0,02	0,02	0,04	na

(na = not applicable)

Table 3.2: GERD by sector and total GDP - January, 2009

	2001	2002	2003	2004	2005	2006	2007
GERD (euro million)	na	na	426	448	472	564	591
BERD (euro million)	na	na	379	393	408	485	495
GOVERD (euro million)	33	38	45	49	57	67	78
HERD (euro million)	2	na	2	6	7	12	18
PNP (euro million)	-	-	-	-	-	-	-
GDP (euro million)	22.572	23.992	25.834	27.520	30.237	33.921	36.278
R&D intensity (GERD as % of GDP)	na	na	1,65	1,63	1,56	1,66	1,63
BERD as % of GDP	na	na	1,47	1,43	1,35	1,43	1,36
GOVERD as % of GDP	0,14	0,16	0,17	0,18	0,19	0,20	0,22
HERD as % of GDP	0,01	na	0,01	0,02	0,02	0,04	0,05

(na = not applicable)

The following multi-annual research programmes have been launched since 2000:

Table 3.3: Multi-annual R&D Programmes as funded by the FNR

Duration	Programme Title	Budget (in EUR)
2000-2008	Security and Efficiency of New Practices in E-Commerce for All Socio-Economic Actors (SECOM)	7.500.000
2000-2008	New Materials and Nanotechnology (NANO)	6.700.000
2000-2007	Sustainable Management of Water Resources (EAU)	5.000.000
2000-2011	Health and Biotechnology + ext. Ageing Process (BIOSAN-PROVIE)	10.500.000
2002-2011	Living Tomorrow in Luxembourg (VIVRE)	12.000.000
2003-2009	Surface Treatment (TRASU)	6.000.000
2003-2010	Food Safety (SECAL)	7.500.000
2006-2014	Promotion of International Cooperation (INTER)	17.700.000
2006-2012	Attract Researchers to Luxembourg - Opportunities for Outstanding Young Researchers in Luxembourg (ATTRACT)	6.000.000
Started in 2008	Thematic Programme CORE	2008 Call: 22.000.000 2009 Call: 28.000.000 2010 Call: 31.000.000

4. FINANCIAL AID FOR STUDENTS

Luxembourg has a financial aid system for students comprising grants and loans. The financial aid is fully portable without any restrictions. It is complemented by financial incentives ("*primes d'encouragement*") paid on completion of a programme within the official duration.

Table 4.1: Number of students benefiting from financial aid since 2000/2001

Year	Aid
2000/2001	5.017
2001/2002	5.688
2002/2003	6.288
2003/2004	6.723
2004/2005	6.997
2005/2006	7.095
2006/2007	7.222
2007/2008	7.800

Table 4.2: Evolution of students benefiting from financial aid by gender since 2005/2006

Year	Female	Male
2005/2006	3.777	3.318
2006/2007	3.897	3.325
2007/2008	4.233	3.567

Table 4.3: Evolution of total amount of grants and loans since 2000/2001

Year	Grants	Loans
2000/2001	5.874.390 €	29.055.640 €
2001/2002	6.852.040 €	33.917.130 €
2002/2003	7.878.200 €	38.662.410 €
2003/2004	8.224.205 €	38.577.090 €
2004/2005	8.865.075 €	42.352.990 €
2005/2006	9.884.350 €	42.808.545 €
2006/2007	10.388.640 €	44.244.180 €
2007/2008	12.314.360 €	48.678.840 €

Table 4.4: Students benefiting from financial aid by gender and by programme (2007/2008)

Programme	Female	Male
Architecture	123	123
Arts	295	210
Law	258	215
Economics	517	725
Information-Communication	86	62
Informatics	35	313
Language-Literature	398	156
Engineering	46	411
Medicine/Paramedical	574	286
Education	761	182
Natural Sciences	280	402
Humanities & Social Sciences	762	376
Sports	29	71

Table 4.5: Spread of Aid by programme/comparing 2006/2007 and 2007/2008

Programme	2006/2007	2007/2008
Architecture	234	246
Arts	485	505
Law	414	473
Economics	1.099	1.242
Information-Communication	134	148
Informatics	301	348
Language-Literature	557	554
Engineering	414	457
Medecine/Paramedical	761	860
Education	862	943
Natural Sciences	761	682
Humanities & Social Sciences	1.061	1.135
Sports	109	100

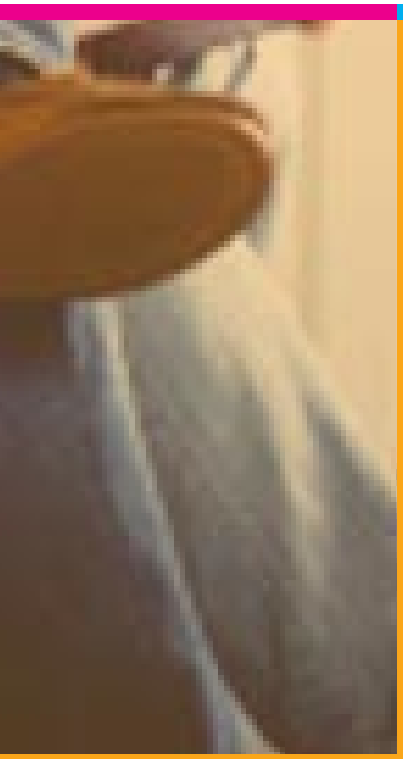
Table 4.6: Number of Luxembourg students abroad benefiting from financial aid (2007-2008)

Country	Students
Austria	385
Belgium	1.605
Canada	25
Denmark	12
France	1.392
Germany	1.645
Ireland	15
Italy	65
Luxembourg	1.393
Netherlands	74
Portugal	138
Spain	60
Sweden	5
Switzerland	218
United Kingdom	700
United States	54
Other countries	14

Table 4.7: Luxembourg students benefiting from financial aid by towns in which they pursue their studies (2007-2008)

Town	Students
Aachen	195
Bastogne	193
Brussels	746
Innsbruck	203
Liège	250
Louvain	271
Luxembourg	1.393
Nancy	202
Paris	248
Trier	356
Strasbourg	499
Vienna	151

Higher education in the Netherlands



1. PRIORITIES

1.1 CURRENT CONTEXT OF DUTCH HIGHER EDUCATION

A complex society requires people who are able to deal with this complexity. Progress is achieved particularly by the results of scientific breakthroughs and innovative activity introduced by people performing at a high level. A well-educated population, an enterprising attitude and high-quality services and products are therefore conditions for a vigorous society which is both competitive and successful in tackling social problems.

Our knowledge institutions play a central role in the competitive and societal success of the Netherlands. As many changes are taking place at the moment, there is still a great deal that needs to be done.

1. The social success is fragile. Safety, clean energy, medical care and sound education all require our attention. Moreover, social problems are acquiring an increasingly international dimension. Changes in society, on the labour market and in international relations result in uncertainty. Those failing to innovate will be swept aside by the competition, because relationships in the global economy are shifting.

2. It is striking that the Dutch labour productivity growth is lagging behind countries such as the US and Germany. This slower growth might be related to a lack of innovation in important industrial activities and the public sector. The link between education and knowledge institutions, businesses and civil organisations must therefore be reinforced. In addition, the number of start-up companies in the Netherlands is too low. In the progression towards a more knowledge-driven economy, start-ups and enterprising employees, in particular, have a positive influence on economic growth and innovative power.

3. The international context determines our playing field and will continue to do so even more in the future. This is evident from various facts. Firstly, students are becoming more mobile internationally. Secondly, within the European Union, the Netherlands and the group of countries taking part in the Bologna process are striving for a European Higher Education Area (EHEA). But in addition to cooperation, there is increasing competition in Europe to attract both these students and the financial resources that are required. Thirdly, the labour market and society are rapidly becoming more international.

4. The basis of a sound knowledge society is a well-educated working population. If we wish to ensure prosperity and well-being for the future, as many people as possible must be able to perform work at a high knowledge level. The percentage of people with a higher level of education is increasing in the Netherlands, but in order to meet the demands of the labour market, more students will have to participate in higher professional [HBO] and university [WO] education. Fortunately, the percentage of pupils gaining a senior general secondary education [HAVO], pre-university education [VWO] or senior secondary vocational education level 4 [MBO-4] diploma is still increasing. A large proportion of these pupils proceeds to higher education. However, there are concerns about the quality of the intake, particularly as regards the command of the Dutch language and arithmetic and maths skills. There is also concern (expressed, for instance, by the OECD) regarding the opportunities for progression within the education system for pupils from vulnerable groups from a socio-economic point of view. In addition to satisfactory progression within the education system, reducing the drop-out rate in higher education will increase the percentage of people with a higher level of education.

5. Prosperity and well-being are becoming increasingly dependent on the production of knowledge and new, innovative insights. For this reason, Dutch scientific research must be able to compete with the best in the world. It is therefore necessary to strengthen the global position of Dutch universities and autonomous institutes with a university affiliation. The starting position for achieving this is good, partly due to a satisfactory quality assurance system that results in a high average quality. But a high average level is not enough; innovation demands the very best. After all, you can be the first to make a discovery only once. Innovative researchers, working individually or in groups, are responsible for huge breakthroughs and for setting the worldwide research agenda. Research groups including leading researchers act as magnets for young talent, hotspots for the creation of new economic activities and the growth of existing businesses. But they also act as centres for an innovative approach to social problems.

1.2 FUTURE PERSPECTIVES AND STRATEGIC PRIORITIES

The central challenge in our higher education system is to create an ambitious learning culture. Important considerations in this respect are:

1. **Intensity of education**
   The quality agendas of universities and higher professional education are intended to encourage more enthusiasm among students, to challenge them and to increase the bond between them and their educational surroundings, so as to improve their performance. Small-scale educational surroundings and intensive study supervision (as evident from the number of contact hours and the staff/student ratio) are prerequisites in this respect. Conversely, institutions must make clear agreements with students concerning effort and progress. In this way, students become more motivated and less likely to drop out. Students will have better opportunities to make more effective choices regarding their studies and to be critical of the quality of education.

2. **The lecturer in the spotlight**
   It goes without saying that it is not just the number of contact hours that are important, but rather the quality of those hours. An inspiring and inspired tutor makes a great deal of difference in this case. In the first place, this requires good tutor training courses and more interest in the profession of tutor. In line with the advice of the Rinnooy Kan policy advisory committee[1], more higher professional education tutors should have followed a master course, including a greater number of tutors with doctorates. University tutors should be greatly appreciated and well-trained for the subjects they teach and not just for their research. Action must be taken in cases where bureaucracy inhibits the primary process of education and research.

3. **Differentiation**
   Many students wish for a greater challenge. 25-30% of students desire excellent education. More differentiation is therefore required between and within courses: demanding for excellent students, inspiring for good students and providing structure for those students who are now dropping out. In addition to excellence in education and research, a broad quality basis is required.

4. **International mobility**
   The international mobility of students and tutors contributes not only to an international learning environment, but also to an excellent learning culture. The presence of foreign students often has a positive effect on the learning behaviour of Dutch students. Portable student grants and Huygens Scholarships[2] are instruments in this respect.

5. **Good links within the education system**
   An excellent learning culture must not be restricted to higher education. In secondary and vocational education too, pupils should be given more encouragement to perform to best effect. Pupils progressing from senior secondary vocational education and secondary education must be well prepared to continue their studies in higher education. After all, the quality of higher education partly depends on the quality of the intake.

6. **More people trained to a higher level**
   More people should be trained to a higher level. In addition to a reduction of the drop-out rate, this increase will have to be achieved by a greater progression of pupils from senior secondary vocational education. The universities of applied sciences in particular can make a substantial contribution in this respect. Even more than universities, they are faced with the challenge of attracting more students and supervising their progress towards a diploma, without concessions being made to the level and quality of education. For this purpose, government policy must provide support.

7. **Bridges between knowledge and practice**
   Links between educational courses and employers must be strengthened. Excellent cooperation between courses and employers can improve education and make it more enjoyable. In addition, this cooperation facilitates the application of high-quality knowledge and increases the innovative capacity of the various professional sectors. People with a higher level of education must build bridges between knowledge and practice. It is therefore necessary to strengthen the enterprise and research capacity of students.

1 A committee under chairmanship of Mr Rinnooy Kan advised the minister on the future policies to be set out to attack the quantitative and qualitative shortage of teachers in all education levels.
2 www.nuffic.nl/home/redirect/huygens-scholarships-programme

1. PRIORITIES

8. **An excellent research climate**
   Science has to extend boundaries, as a basis for innovation, for a competitive economy, prosperity and well-being and as an important item of cultural significance. For this reason, Dutch scientific researchers must be able to compete with the best in the world. The research groups in which they work act as magnets for young talent, hotspots for the creation of economic activities and new approaches to social problems. We should be at the forefront of interesting developments, with the broadest impact on specific applications. In addition, we should continue to excel in areas where we have a reputation to uphold.

In order to extend boundaries, the Dutch cabinet wishes to strengthen the leading role of independent and pure scientific research, and will therefore provide targeted incentives for university research. The cabinet particularly wishes for talented research to have a more central role. This will be achieved by strengthening research funds provided by institutions, which are relatively limited in the Netherlands, and, even more than is the case at present, by distributing resources in competition. Universities and research institutes contribute to the creation of those centres of excellence by attracting scientific talent and offering facilities for the best research. The basis for this lies in research funds provided by the government, which facilitate long-term choices due to their secure nature. This approach may be encouraged even further by a stricter selection of researchers at a national level. In this context, leading researchers – in accordance with the American model – are allowed to opt for the places with the most stimulating research climate. This approach also encourages powerful choice and selection processes within the institutes.

Relationships between knowledge institutes and professional practice must be intensified. This will facilitate a greater exchange of knowledge and specific cooperation in the development of new insights and products. Universities of applied sciences and lecturers play an important role in this process. They perform research with a practical focus and cooperate closely in the region with small and medium-sized enterprises and with public sector institutions. The Dutch cabinet wishes to strengthen this practical research of universities of applied sciences.

1.3 HOW TO ACHIEVE THE STRATEGIC PRIORITIES?

We wish to create an excellent learning culture by making extra investments in academic success, quality and excellence and by introducing new systems of funding and assessment. The intended approach is as follows:

1. extra investments on the basis of long-term agreements concerning academic success (drop out reduction) in the bachelor phase, greater quality and excellence;
2. extra quality incentives in the system;
3. a transparent management philosophy and evidence of practice.

For innovation and economic growth, it is important to keep focus on the stimulating function of education. Where the Bologna Process emphasises transparency, the strategy in the Netherlands focuses on what and how to attain higher education knowledge , skills, and attitude.

2. STRUCTURE OF HIGHER EDUCATION

As a result of the Bologna process, the higher education system in the Netherlands is organised around a three-cycle degree system, consisting of Bachelor, Master and PhD degrees.

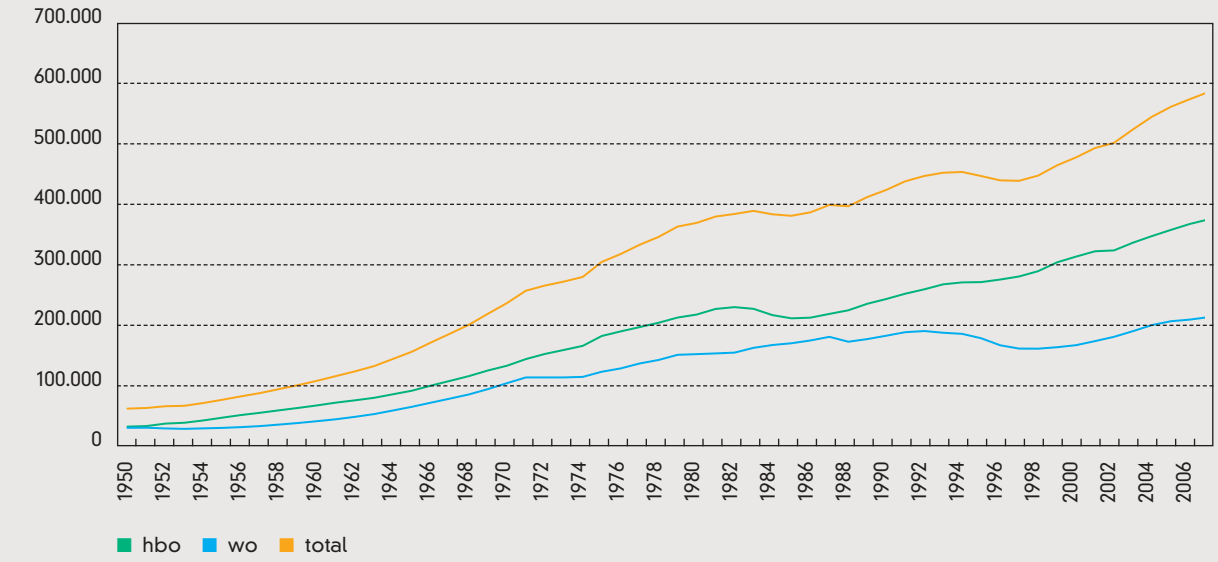
Two types of programmes are offered in higher education: research-oriented degree programmes offered primarily by research universities, and professional higher education programmes offered primarily by universities of applied sciences.

Research universities include general universities, specialized universities (Engineering, Agriculture), and the Open University. Universities of applied sciences include general institutions as well as institutions specialized in a specific field such as Agriculture, Fine and Performing Arts, or Teacher Training. Whereas research universities are primarily responsible for offering research-oriented programmes, universities of applied sciences are primarily responsible for offering programmes of higher professional education, which prepare students for particular professions. These tend to be more practically oriented than programmes offered by research universities.

In this binary and three-cycle system, Bachelor, Master and PhD degrees are awarded. Short-cycle higher education leading to the Associate degree is offered by universities of applied sciences. Degree programmes and periods of study are quantified in terms of the ECTS credit system.

The third cycle of higher education, leading to the PhD, is offered only by research universities. The major requirement is completion of a dissertation based on original research that is publicly defended. All research universities award the PhD. In addition to the doctorate, the three engineering universities offer (technological) designer programmes consisting of advanced study and a personal design assignment in a number of engineering fields.

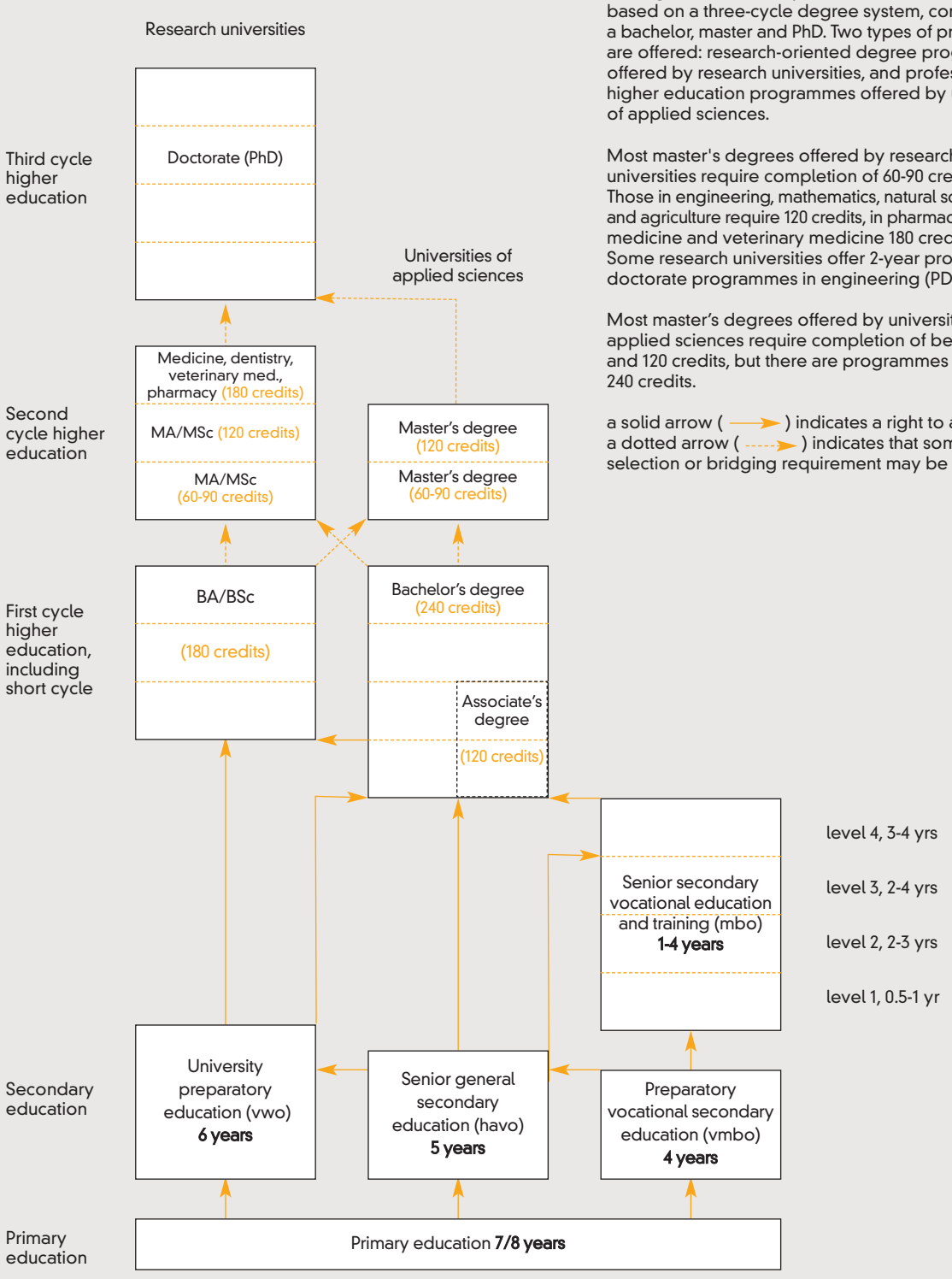
Graph 2.1: The number of enrolments in Higher Education since 1950



Source: Statistics Netherlands (Statline)

2. STRUCTURE OF HIGHER EDUCATION

Figure 2.1: The Dutch education system



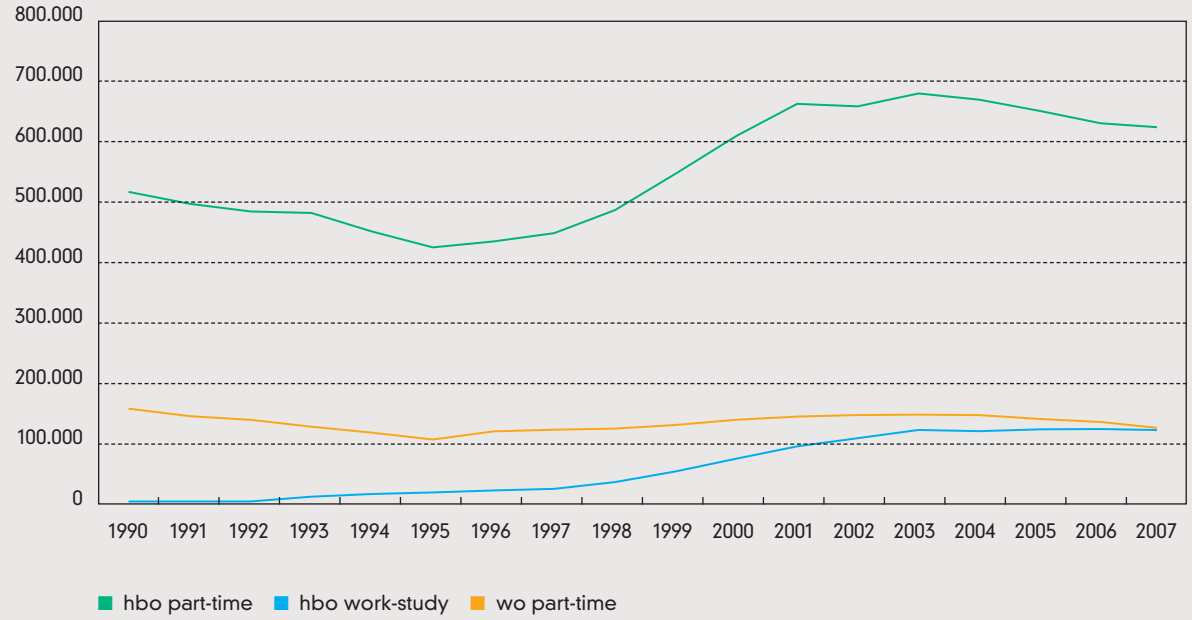
The higher education system in the Netherlands is based on a three-cycle degree system, consisting of a bachelor, master and PhD. Two types of programmes are offered: research-oriented degree programmes offered by research universities, and professional higher education programmes offered by universities of applied sciences.

Most master's degrees offered by research universities require completion of 60-90 credits. Those in engineering, mathematics, natural sciences, and agriculture require 120 credits, in pharmacy, dentistry, medicine and veterinary medicine 180 credits. Some research universities offer 2-year professional doctorate programmes in engineering (PDEng).

Most master's degrees offered by universities of applied sciences require completion of between 60 and 120 credits, but there are programmes requiring 240 credits.

a solid arrow (→) indicates a right to access
a dotted arrow (⇢) indicates that some form of selection or bridging requirement may be applied.

Graph 2.2: The number of enrolments in Higher Education in various types of part-time programmes



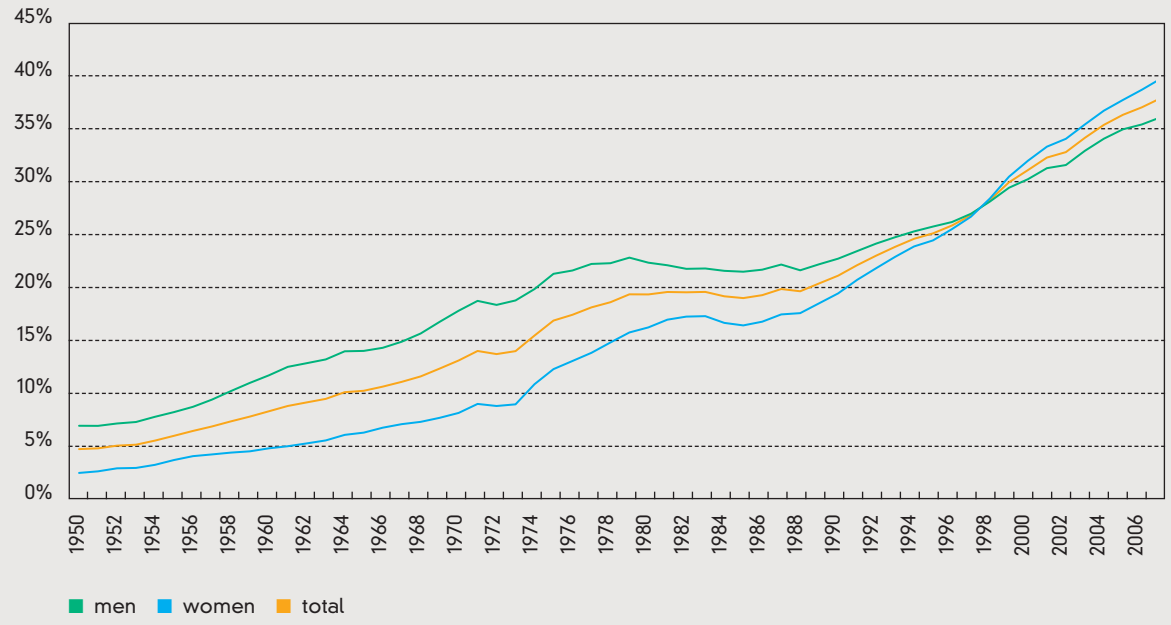
Source: Eén-cijfer HO (database of the Ministry of Education, Culture and Science)

3. STUDENTS

For access to research-oriented Bachelor programmes, students are required to have a (6 year) VWO diploma or to have completed the first year (60 credits) of a Bachelor programme at a university of applied sciences. The minimum access requirement to universities of applied sciences is either a (5 year) HAVO diploma or a diploma of secondary vocational education (MBO diploma). The VWO diploma also grants access to universities of applied sciences. For access to both types of higher education, pupils are required to have completed at least one of the subject clusters that fulfils the requirements for the higher education programme in question. A quota, or numerus fixus, applies for access to certain programmes, primarily in the Medical Sciences, and places are allocated mainly using a weighted lottery. Potential students older than 21 years of age who do not possess one of the qualifications mentioned above can qualify for access to higher education on the basis of an entrance examination and assessment (recognition of prior learning). For access to certain programmes, particularly those in the Fine Arts, students have to demonstrate the required artistic abilities. The only access requirement for the Open University is that applicants be at least 18 years of age.

For access to all Master programmes, a Bachelor degree in one or more specified disciplines is required, in some cases in combination with other requirements. Graduates with a Bachelor degree in the Applied Arts and Sciences may have to complete additional requirements for access to a research-oriented Master degree programme.

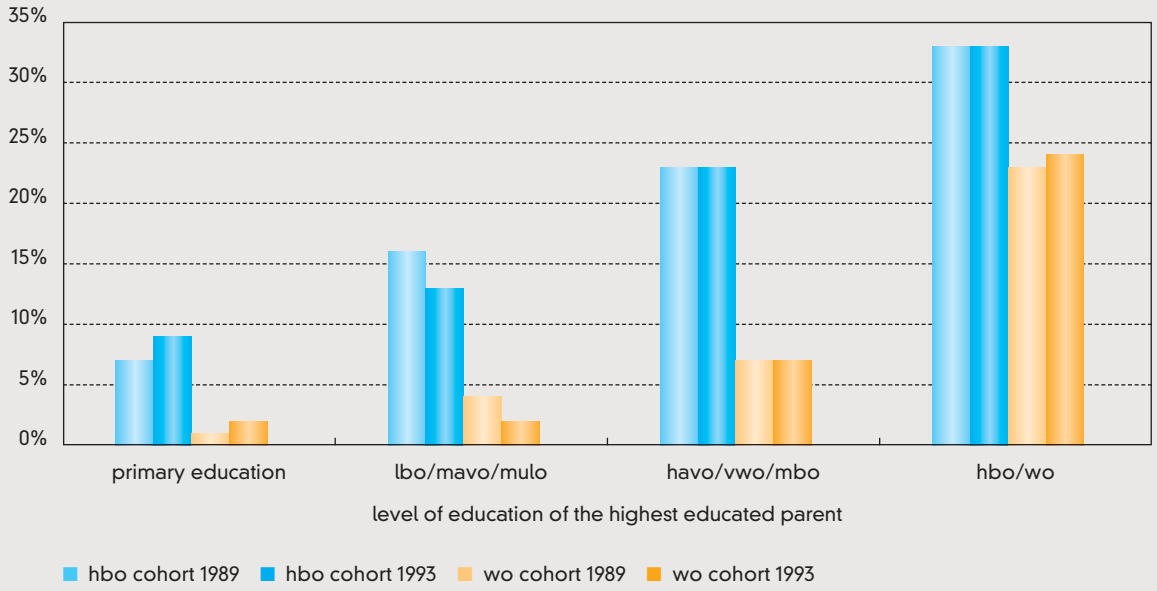
Graph 3.1: The share of the population of 18-to-25 year olds entering higher education



Source and explanatory notes: basic data: Statistics Netherlands (Statline).

The number of WO and HBO students was totalled and divided by the numbers of 18-to-25 year olds in the total population in the corresponding years.

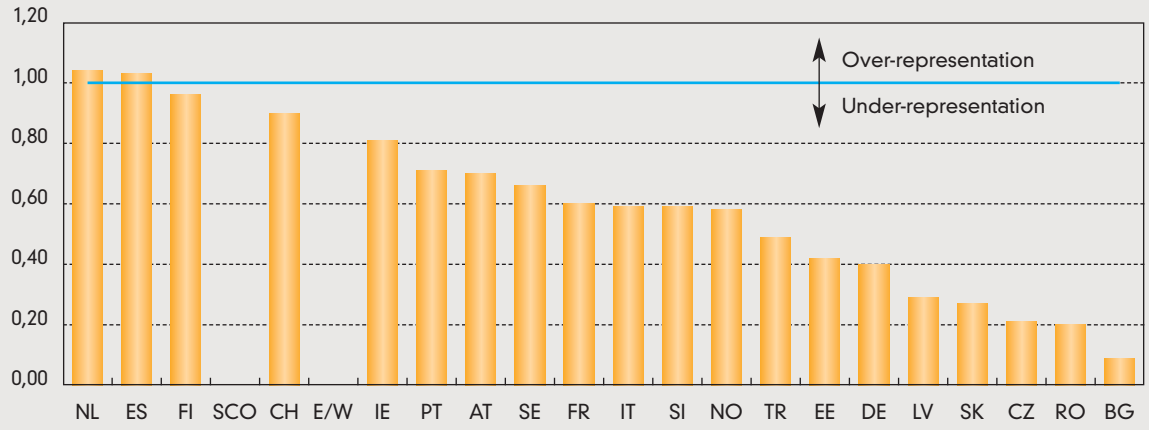
Graph 3.2: Entrance into higher education in relation to the highest parental schooling, separated for both orientations of higher education (HBO and WO)



Source: Kennis in Kaart 2008

The figures show that HBO attracts relatively many students both from highest educated parents and from lowest educated parents.

Graph 3.3: International comparison of educational level of students and their parents

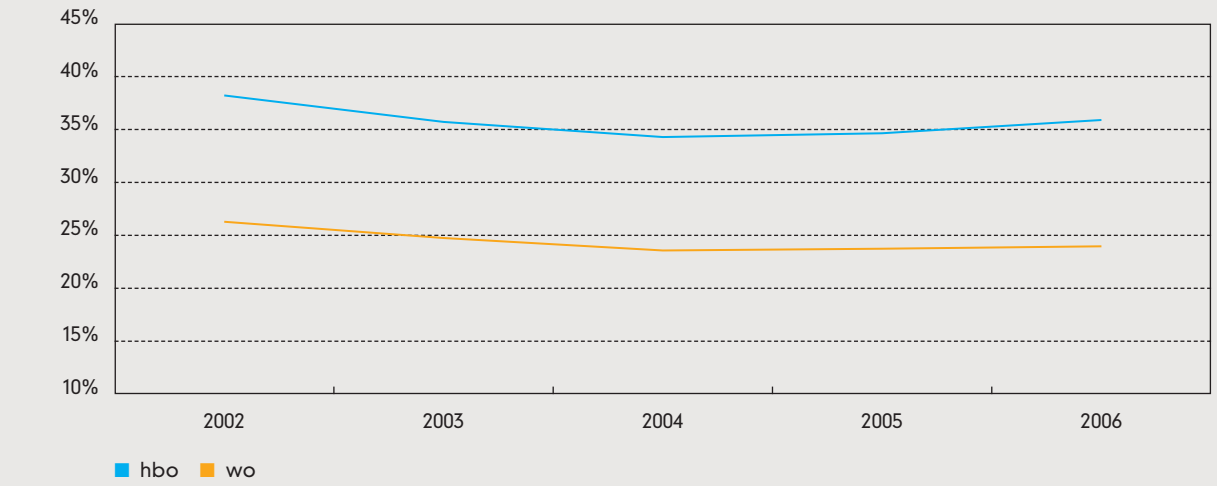


Source: Kennis in Kaart 2008

This graph shows that in the Netherlands the ratio for students with low educational background is 1.04. The Netherlands is seen to be a relatively open system with a near-to perfect representation of the low education group in the student body.

3. STUDENTS

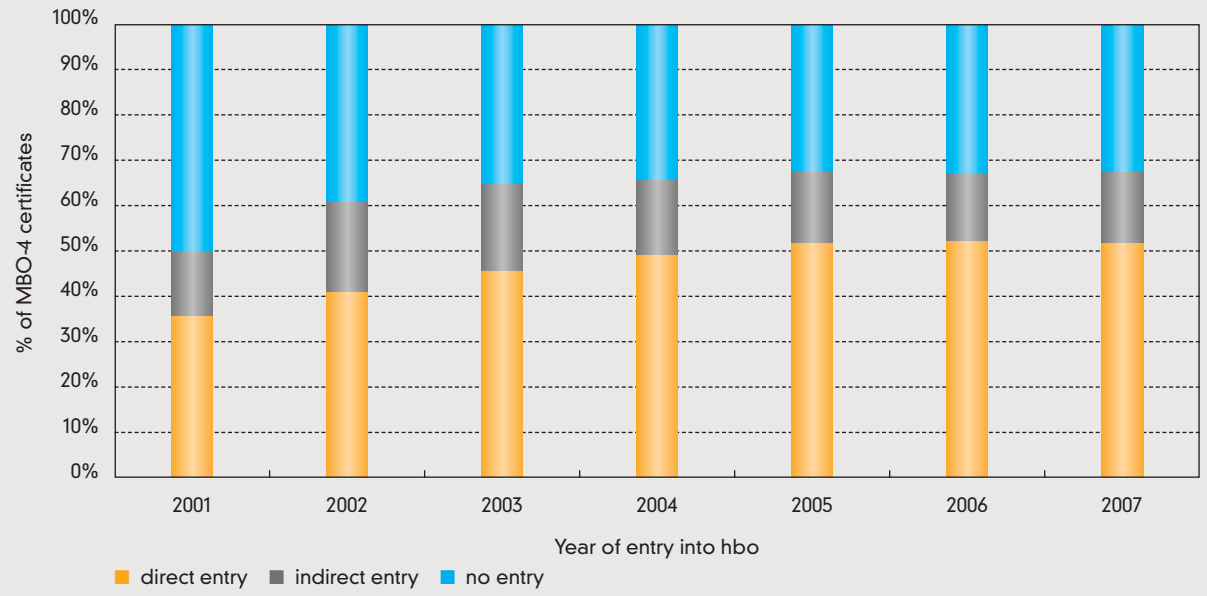
Graph 3.4: Percentage of students with additional grants in HBO and WO



Source: Key Figures OCW-2007

A basic student grant is provided to all students entering higher education before their 30st birthday. If parents' income is below a certain level, students receive an additional grant. The graphs show the percentage of students with additional grants. More students in HBO than in WO receive additional grants.

Graph 3.5: Entry from MBO into HBO



Source: Kennis in Kaart 2008

The direct entry from MBO into HBO is increasing over the years. Indirect entry is rather stable and the category "no progression" from MBO to HBO is stagnating or decreasing.

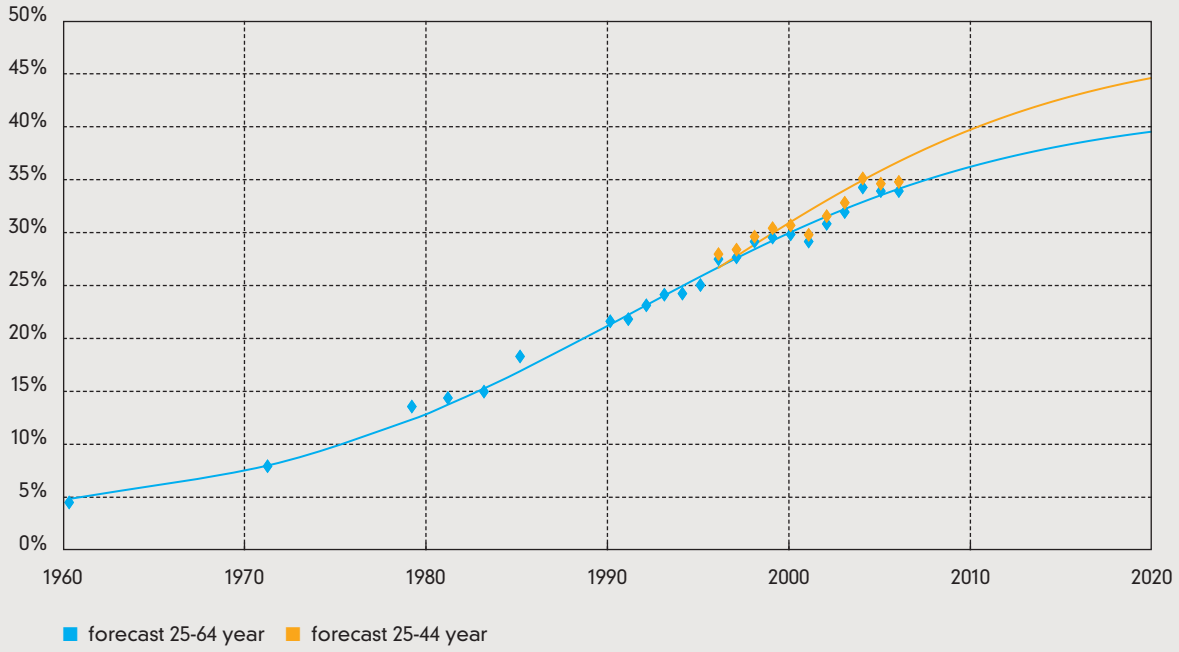
Table 3.1: Characteristics of privately funded Higher Education

Absolute number of students in non-subsidized education aged between 17 and 65	1.100.000
In percentages of the age group	11%
Number of students in certificate-based programmes (MBO, HBO, WO, AVO)	230.000
Annual investment	€ 3-3,5 billion
Number of non-subsidized educational institutions	7.818
of which MBO and HBO	69
Number of participants in non-subsidized part-time HBO	170.000
of whom enrolled for full certificate-based programme	70.000

Source: PAEPON

Privately funded education plays a role as well, especially in short courses. Enrolments for regular degree courses are 70.000 versus 560.000 in publicly funded higher education.

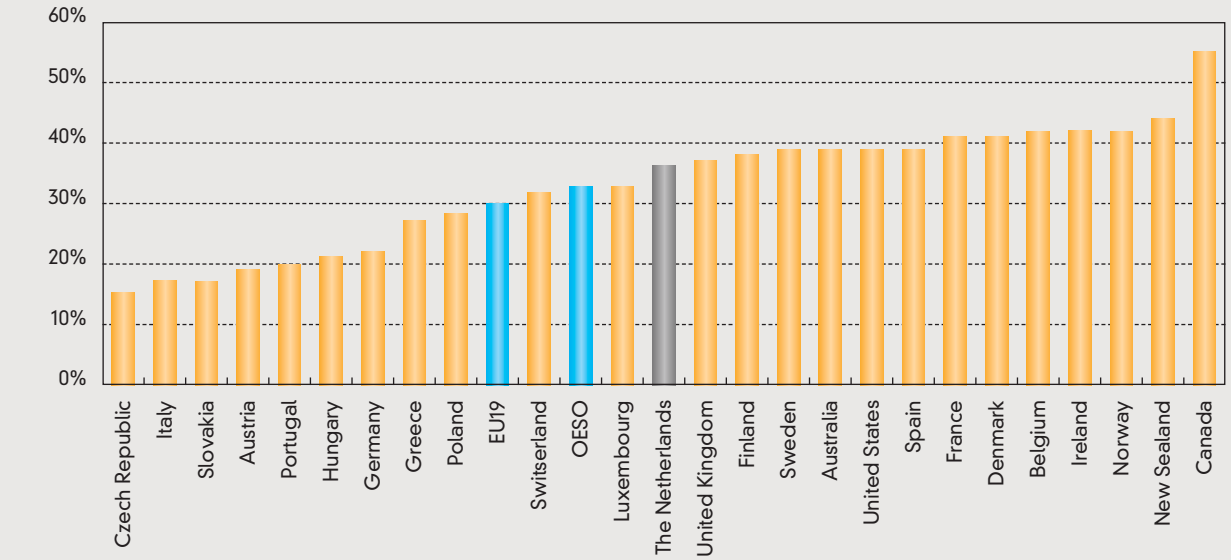
Graph 3.6: Percentage of higher educated persons in the labour force



Source: OECD

3. STUDENTS

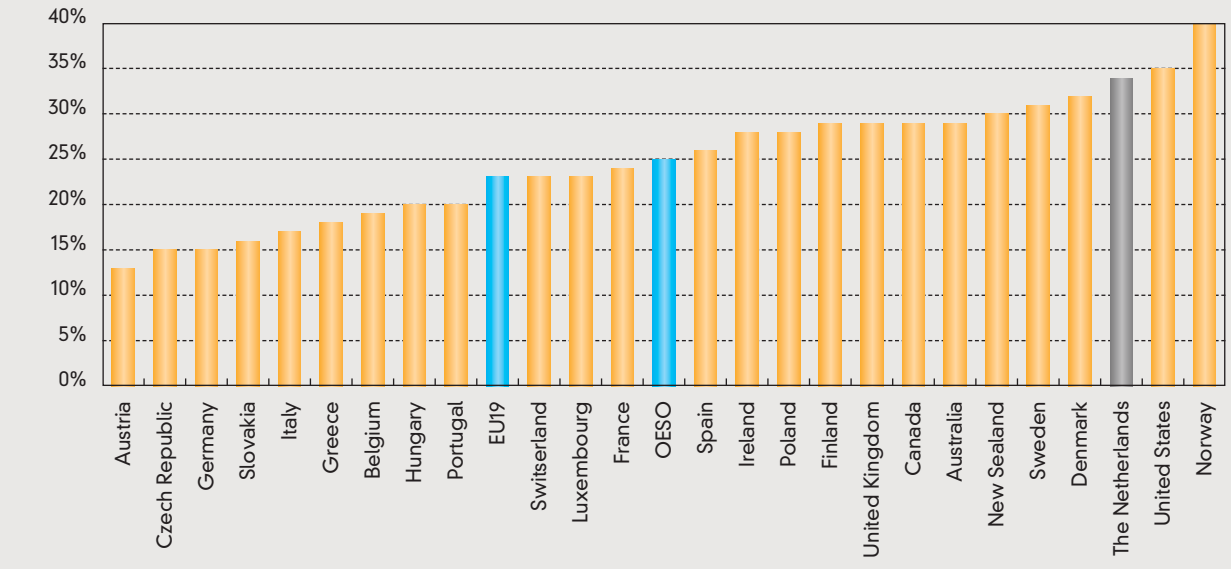
Graph 3.7: Percentage of higher educated persons of the age group 25-34 years in 2006, having completed at least a bachelor or master degree



Source: OECD

The percentage in the Netherlands slightly exceeds the average for EU 19 and the OECD countries, but is below that of the US and Canada.

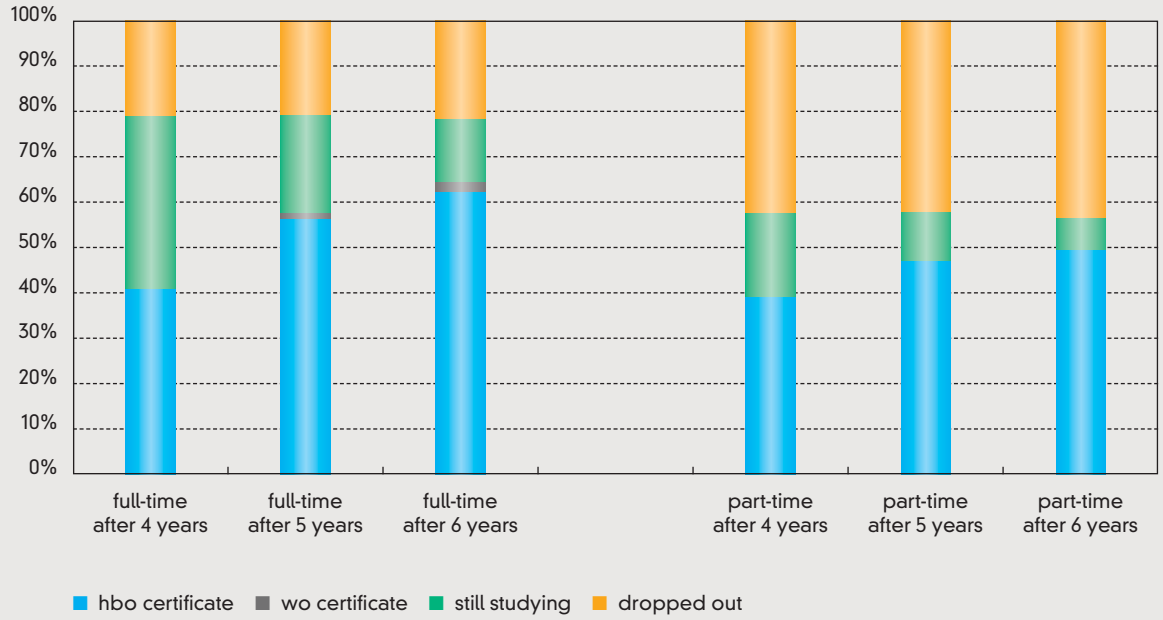
Graph 3.8: The percentage of higher educated persons of the age group 25-34 years in 2006, including higher education below bachelor level



Source: OECD

In this case the Netherlands scores very high, meaning that nearly 35 % of the age group 25-34 years is higher educated.

Graph 3.9: Completion rate of HBO of the 2000 cohort

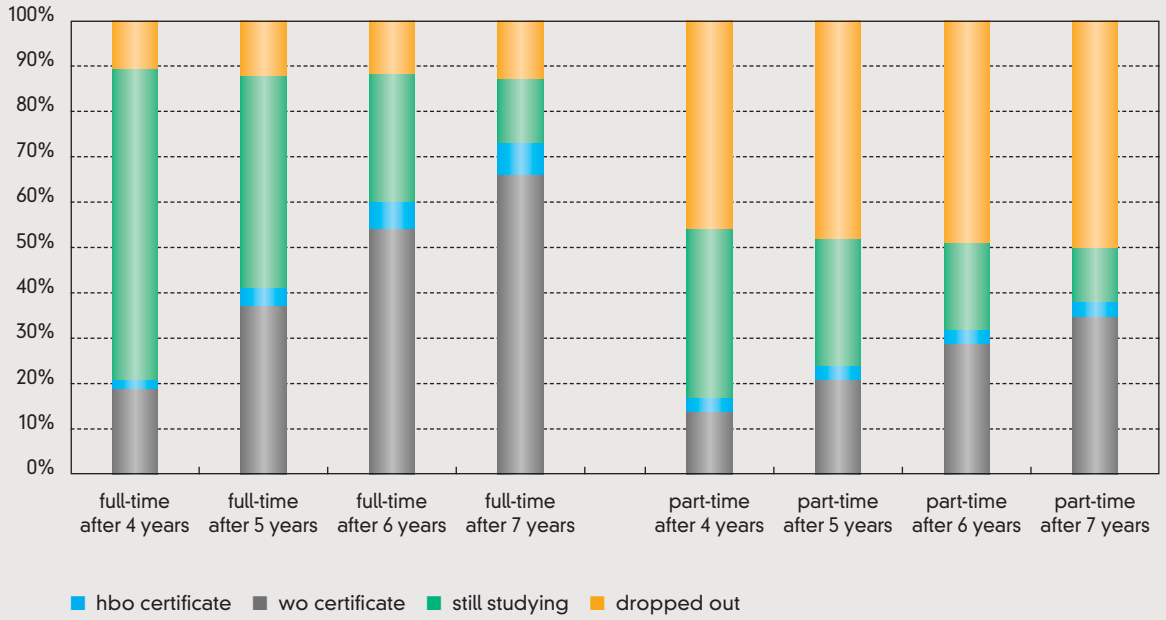


Source: Statistics Netherlands (Statline)

The proportion of graduated persons enrolled in either full-time or part-time programmes at universities of applied sciences (HBO certificate) after various years of study. Four years is the nominal duration.

3. STUDENTS

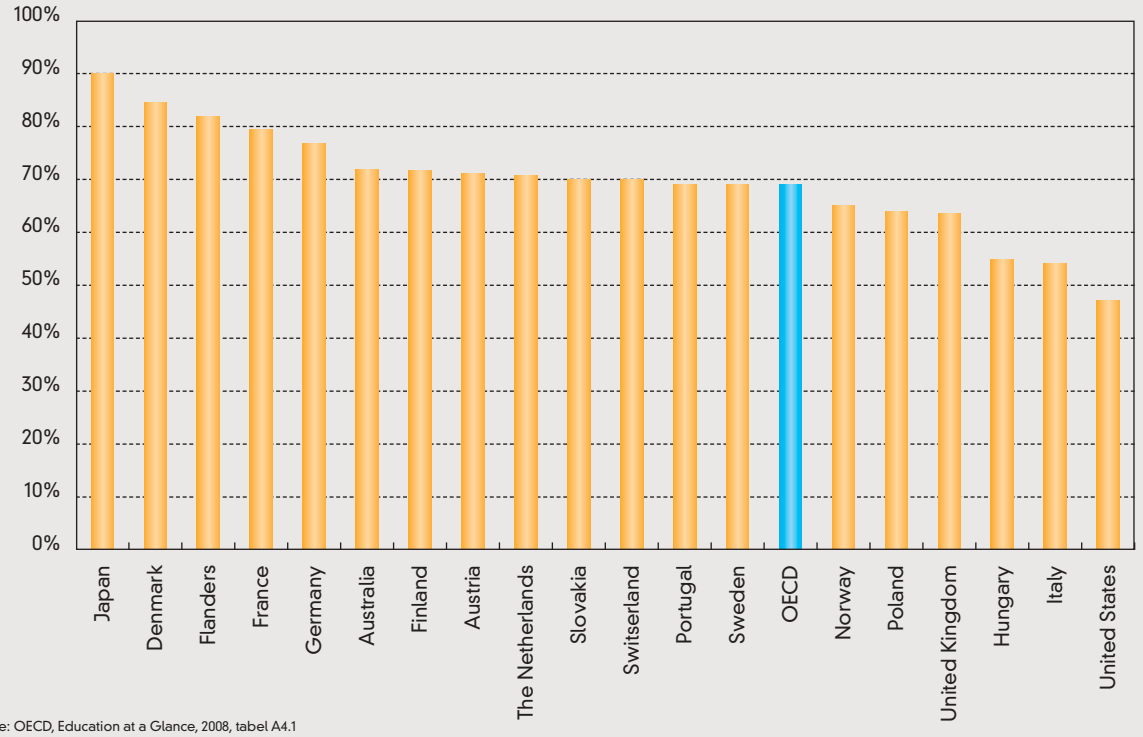
Graph 3.10: Completion rate of WO of the 2000 cohort



Source: Statistics Netherlands (Statline)

The proportion of graduated persons enrolled in either full-time or part-time programmes at research universities (WO certificate) after various years of study. Four or five years is the nominal duration.

Graph 3.11: International comparison of the success rates on higher education, 2005



Source: OECD, Education at a Glance, 2008, tabel A4.1

In the OECD comparison, success rates in the Netherlands are comparatively high.

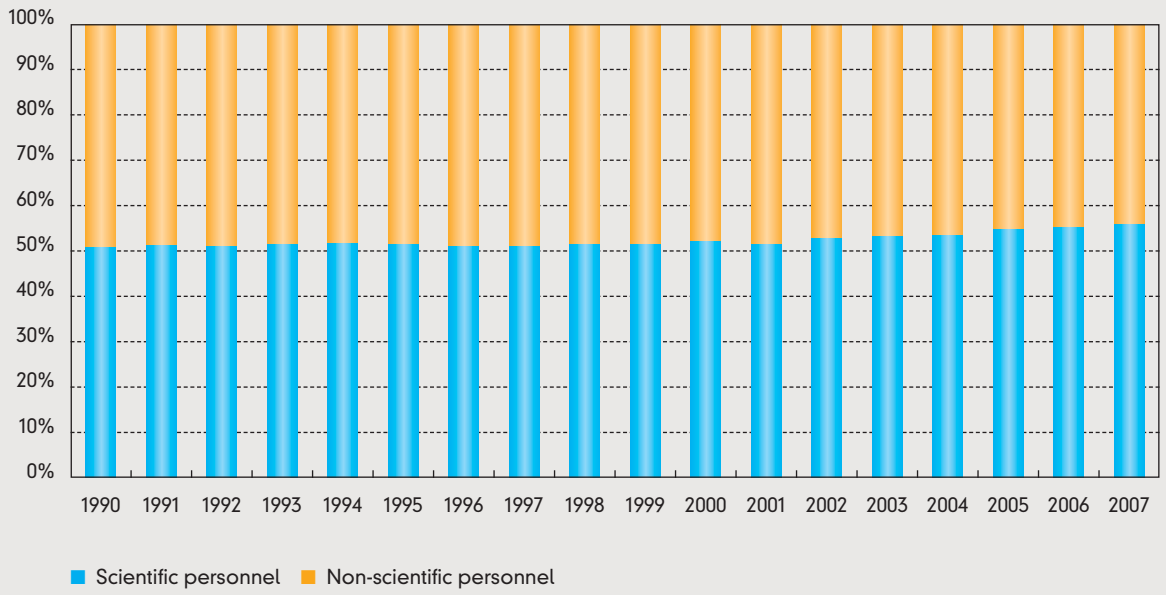
4. STAFF

In 2007 39.800 FTE staff were employed at the Dutch research universities, with a female share of 40%. At universities of applied sciences 27.175 FTE were employed, with a female share of 47%.

Until 1990 academic staff at universities of applied sciences spent all their time on teaching. This changed in the beginning of the 1990s, when universities of applied sciences started contract-research activities. Estimates based on the income flows of universities of applied sciences imply that academic staff spend about 8% of their time on research activities.

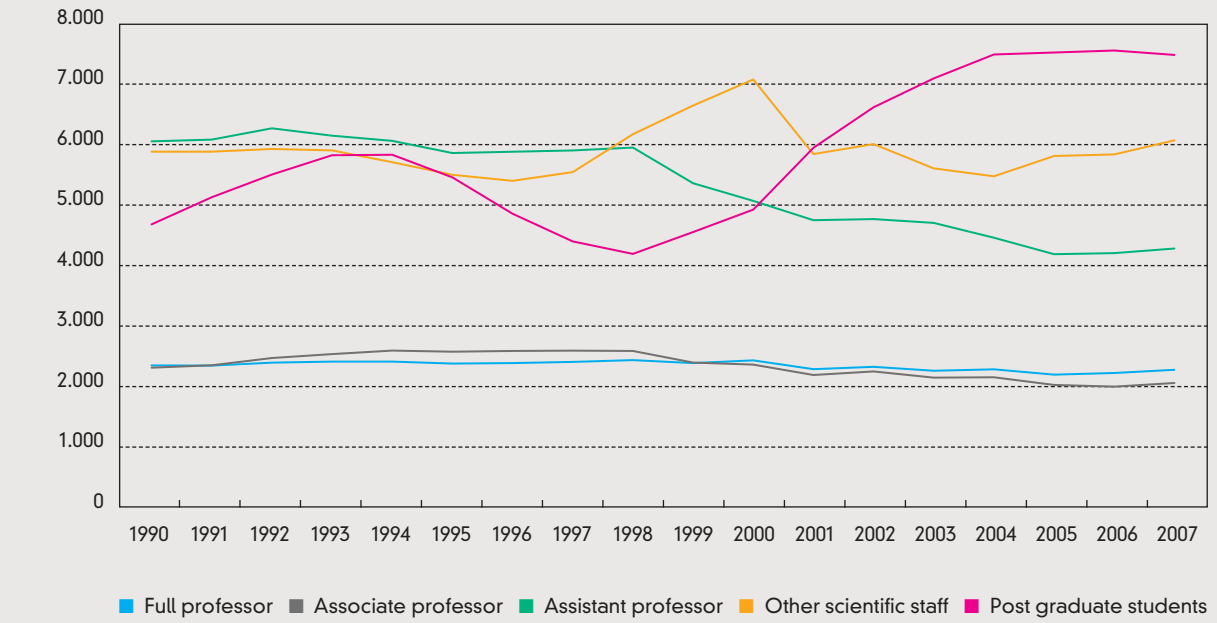
In 2007, 56% of total FTE staff at research universities were academic. This percentage gradually increased since the nineties. While total female staff as a proportion of total staff was 40%, the proportion of female non-academic staff is much higher (49%) than the proportion of female academic staff (33%). Over the past decade, the gender balance has improved continuously.

Graph 4.1: Staff at the universities by category, in percentages of total



Source: the Association of Dutch Universities

Graph 4.2: Scientific staff at universities by category, in FTE



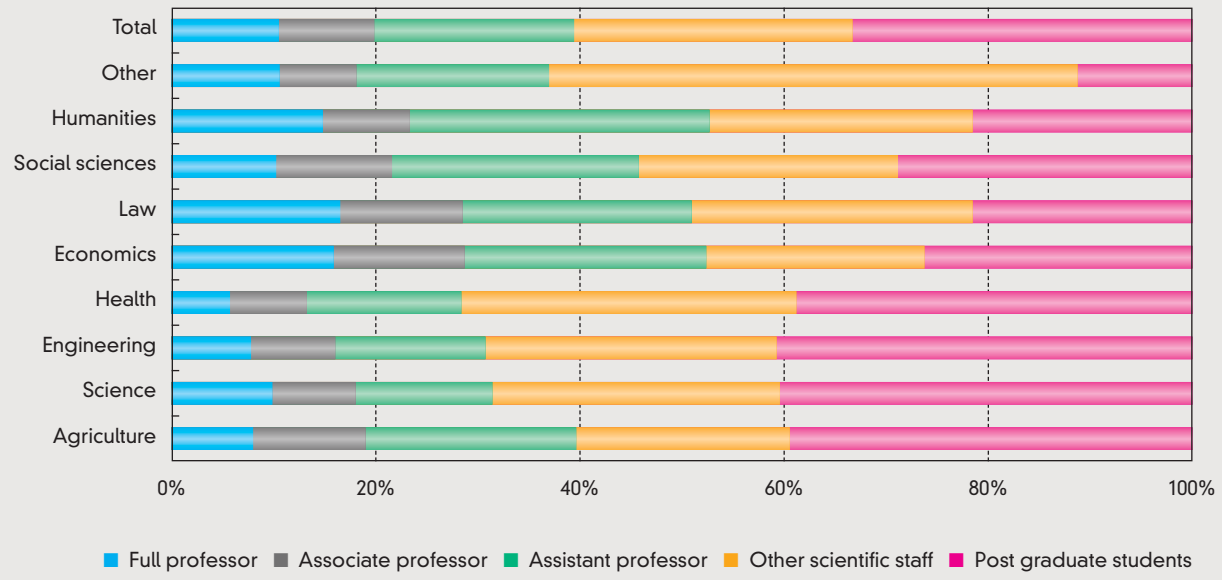
Source: the Association of Dutch Universities

In 2007 most academic staff were employed in the disciplines Engineering (24%), Science (19%), Social Sciences (16%) and Humanities (12%). The other disciplines account each for less than 10%. The figures show a diverse pattern with regard to the composition of categories between the disciplines.

The figures on scientific staff at universities show a quite diverse pattern for the different categories. The pattern is influenced by two factors: 1) since 1999 the universities became the employer of all postgraduate students: a shift in responsibility for new postgraduates from the research council NWO to the universities; 2) since 1998 the personnel of the medical faculties was gradually transferred to the academic hospitals, which causes a decrease in university personnel.

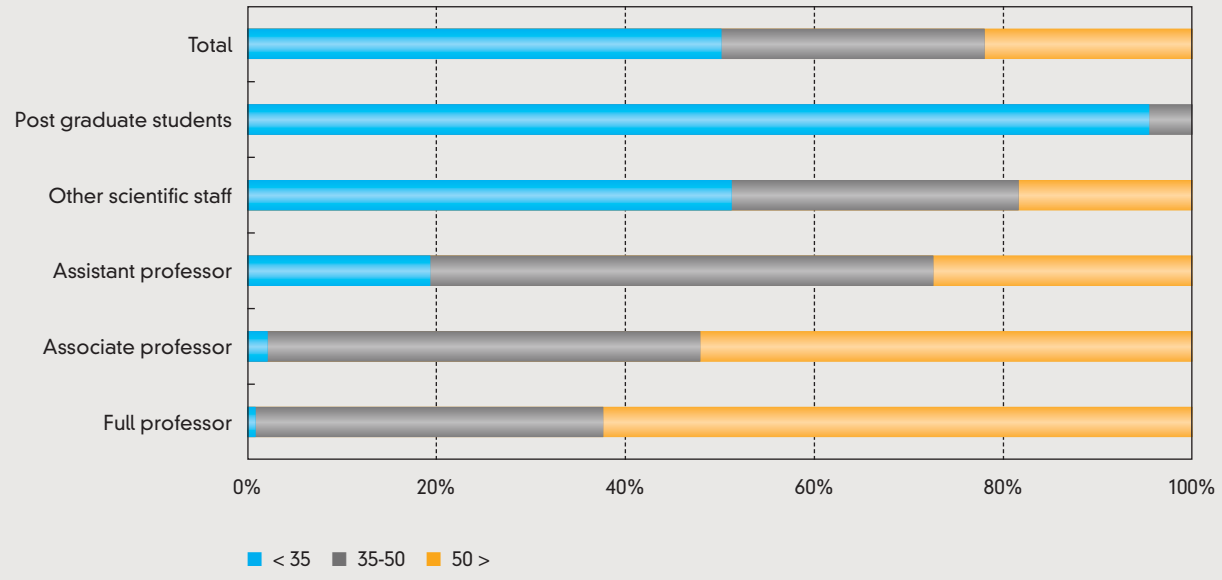
4. STAFF

Graph 4.3 Academic staff according to discipline and category, 2007



Source: the Association of Dutch Universities

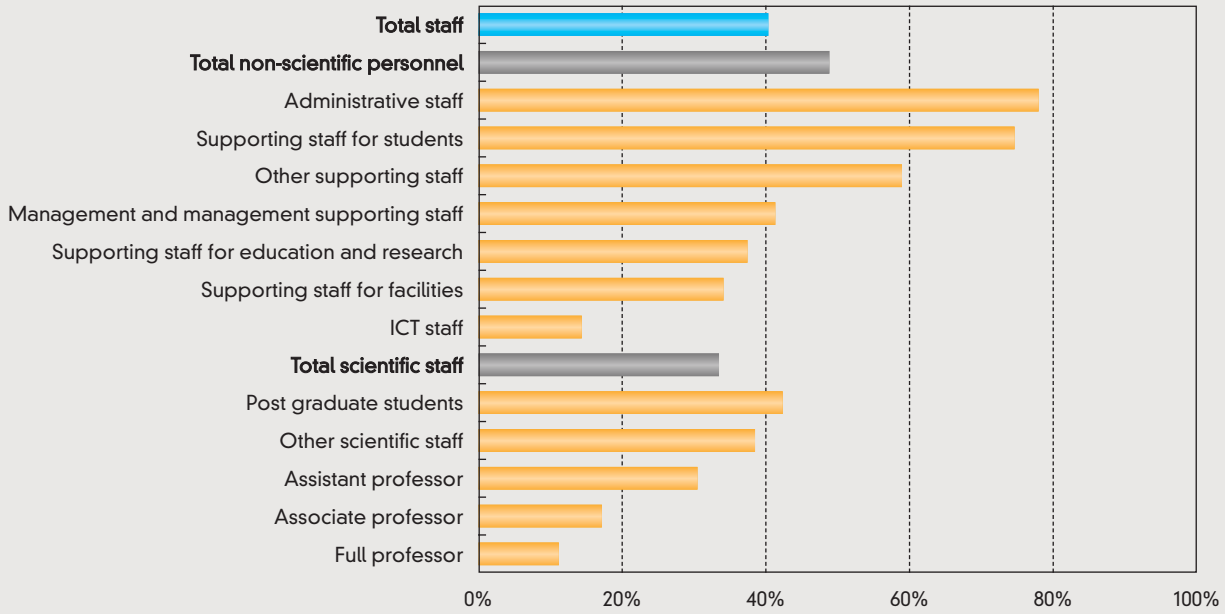
Graph 4.4: Age structure of academic staff, 2007



Source: the Association of Dutch Universities

The graphs show that the higher the function is on the scientific ladder, the higher the average age of the academic staff.

Graph 4.5: Share of female staff at universities, 2007



Source: the Association of Dutch Universities

Women are relatively underrepresented in the staff of universities with the exception of administrative staff. There are large differences within female scientific staff, ranging from 11% to 42%, as well as within female non-scientific staff, ranging from 14% to 78%.

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

In the Netherlands, on average roughly 60% of doctorates are awarded to doctoral candidates who have followed their doctoral programme in a graduate or research school as an employee of the research university. The other 40% is awarded to so-called 'external PhDs', who have been working on their PhD-thesis at home or while employed by an organization outside the university. The normal length of a PhD-programme is 4 years and candidates take on average 5 years and 3 months to complete their programme. The programmes comprise a few taught courses (6-12 months). The major part of the programme is devoted to independent and guided research.

While the PhD-programmes contain only partly taught courses, credit points are not used, nor is a Diploma Supplement issued for the third cycle. In the near future an ECTS- system will not be introduced here. The candidate is supervised by his promotor (professor) and by other experts within the field of research. The programme and the mutual agreements are laid down in the Training and Guidance Plan for each PhD at the university. A serious assessment of the PhDs progress and ability to complete the programme is carried out by the promotor after the first year of the programme. The final assessment of the doctoral programme is carried out by the promotor, a team of peers and finally concluded by the approval of the Doctorate Board of the institution.

As part of the discussion about differentiation of the 3rd cycle, a further introduction of transferable skills has been argued. Also, the majority of universities have introduced graduate schools for doctoral candidates and research master students. Through the graduate schools, inter-disciplinary training, transferable skills and the cohesion of Master- and PhD-training will be stimulated and strengthened. A small number of universities have created these 'graduate programmes' of Master+PhD and other universities are discussing this opportunity.

In 2009, the discussion on differentiation of the 3rd cycle will be continued. It concerns amongst others, the relation with the second cycle (master) and the diversity in doctoral programmes as a means to meet the societal demand for researchers trained more for the broader labour market (and less only focused on academic careers). Concerning this last item, an initiative is taken by the universities to further explore the possibilities for 'dual PhD's', which are employed partly by the university and another organisation.

The Universities of Technology in the Netherlands offer, besides the conventional 4-year research oriented (doctoral) study leading to a doctoral degree, a post-graduate (professional doctorate of engineering, PDEng) programme. This programme within the third cycle has a very different philosophy and objective and is focused on solving complex real-life industrial tasks taking into account the necessary integration of knowledge and modern computer skills for such purpose. This 2-year full-time program results in a Professional Doctorate in Engineering (PDEng) degree.

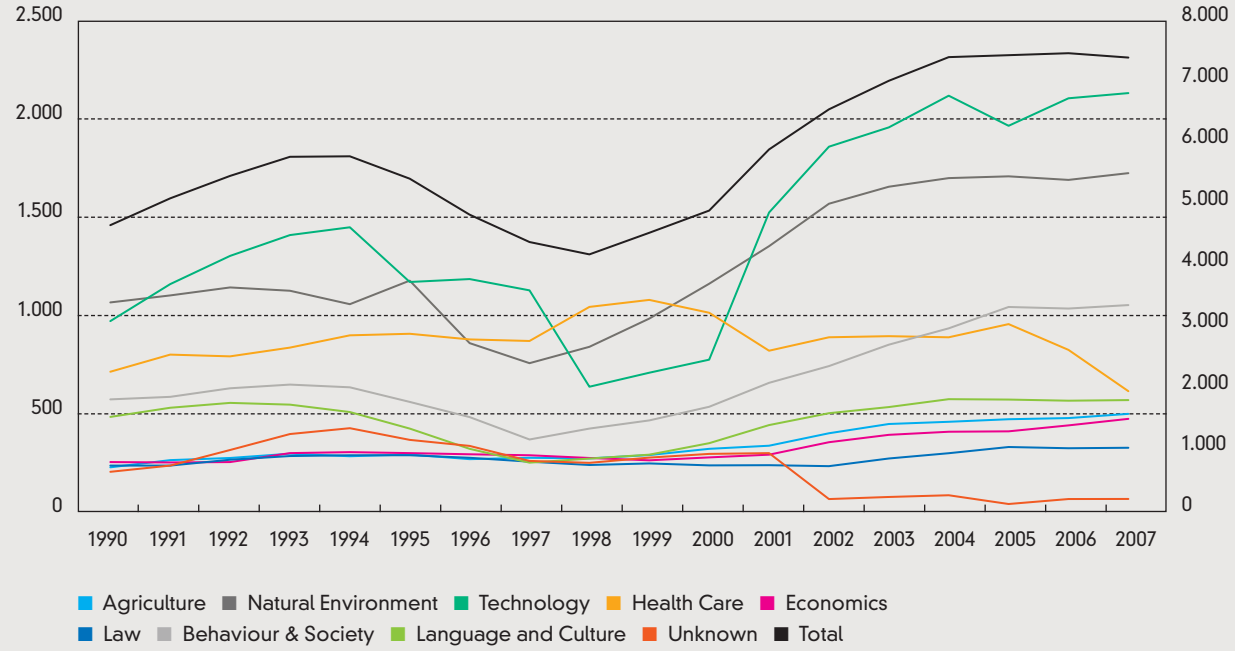
On a small scale the government would like to experiment with research training paths via "graduate schools that are in line with the American model". This means: a fixed time of entry, a strong focus on training in the curriculum and an orientation year within the research school, followed by the choice of a doctoral subject and a professor.

The number of PhDs has been growing since 1990, with strong increases in the science and technology sector. The number of PhDs in the health sector is influenced by the transfer of personnel from the medical faculties to the university medical centres.

Over the years females have been catching up with regard to the number of doctoral degrees awarded. While the total number of doctoral degrees awarded increased by 66% between 1990/'91 and 2006/'07, this increase was only 18% for men, but 290% for women.

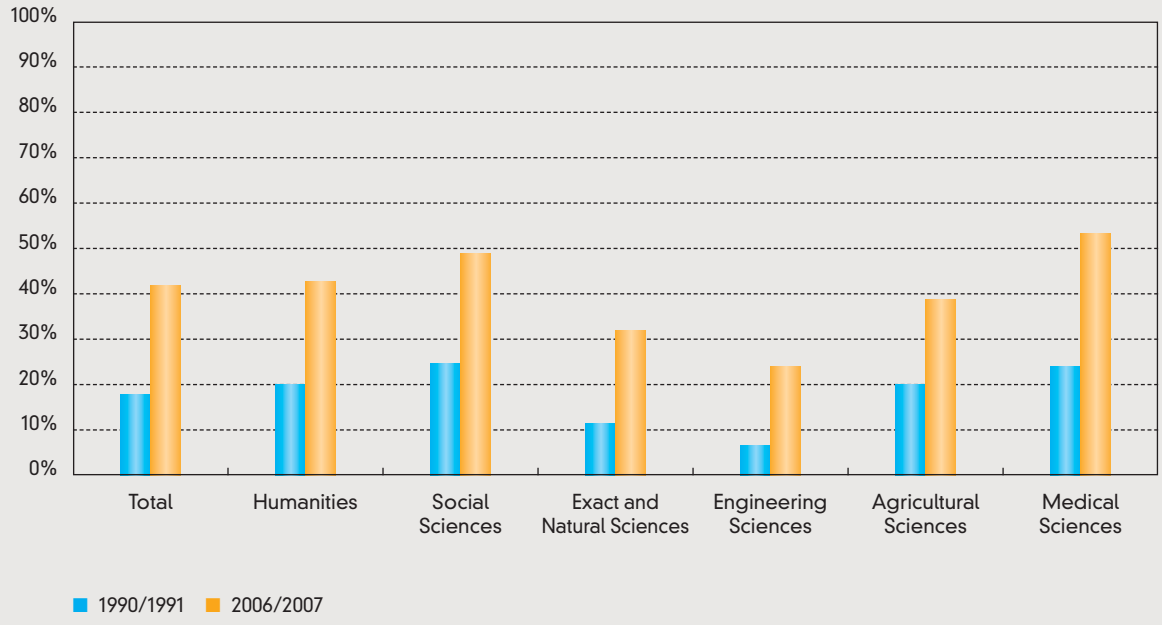
This led to more than a doubling of the percentage of women with doctoral degrees awarded (from 18 to 42%). This percentage tripled in the Exact and Natural Sciences and in the Engineering Sciences.

Graph 5.1: Evolution of the number of PhDs since 1990



Source: VSNU, WOPI, the association of Dutch Universities

Graph 5.2: Female percentage of doctoral degrees awarded



Source: Statistics Netherlands (Statline)

5. DOCTORAL EDUCATION AND RESEARCH TRAINING

The main trends in the role of HEIs in research in the Netherlands are:

- The Strategic Agenda for Higher Education, Science and Research (Nov 2007)[3] emphasizes the creation of an excellent research climate by strengthening the leading role of independent and pure scientific research in a limited amount of disciplines;
- Increase of research funds provided by research councils and distribution of resources on the basis of competition, with excellence as the sole criterion;
- Increase the central role of the talented researcher by giving more freedom on deciding their subject, their institution and their professor;
- Dutch research universities tend to score very well in European Research Schemes for grants (eg. ERC programmes);
- In conversation with government authorities, businesses and civil organizations research at HEIs will be brought in line with social and economic needs in view of a knowledge economy, also in an international context;
- Proper interaction between courses, research and employers improves the quality of education and professional practice. Also, entrepreneurship in education is encouraged via Centres of Entrepreneurship;
- HEIs give attention to so called 'valorisation' (measures to utilize or exploit scientific knowledge and measures to stimulate demand-driven research);
- Practically-oriented research by universities of applied science is stimulated by government. Practical-oriented professors (lectoren) are appointed to connect knowledge with conceivable consumers from business and society. Via the RAAK-investment[4] knowledge exchange is encouraged between HEIs and research intensive SMEs.
- Universities of applied sciences agreed among themselves on a code of conduct for assessing via peers the quality of practical-oriented research within their universities, comparable to the existing quality assurance of research universities.

3 www.minocw.nl/documenten/StrategicAgenda.pdf
4 The RAAK-programme means Regional Attention and Action for Knowledge circulation-programme

6. FINANCING HE AND SOME FINANCIAL INDICATORS

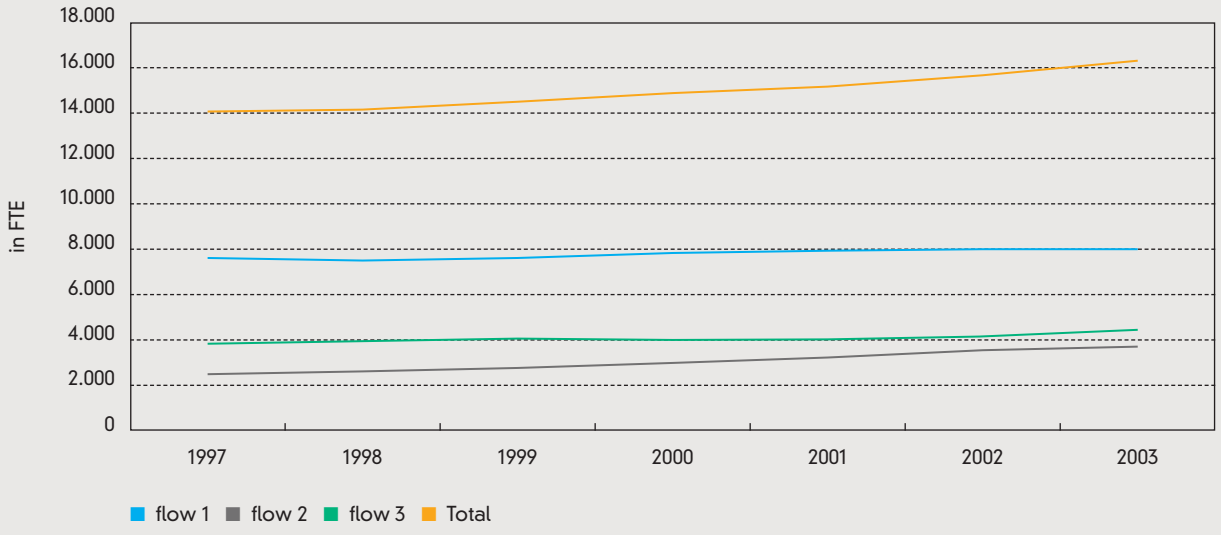
Public funding is the largest contribution to the income of HEIs. Funding the tertiary system is primarily a governmental task. There are two major sources of income for HEIs; public funding and private contributions from students and businesses. The universities speak of three budget streams: two public ones and one private one:

- Public formula funding goes directly to HEIs for all their tasks (first flow)
- Another stream of public funding goes via the research council to research proposals in competition (second flow);
- Private income for commissioned research or other tasks (third flow), business.

In terms of budget the figures of 2004 show that the first, second and third flow of money are € 1,7 billion, 0,3 billion and 0,9 billion. The figures, expressed in FTE personnel, clearly show that the first stream hardly changed over the years. There is a slow increase in the third stream but the main changes are found in the second stream of money.

This total increase of more than € 600 million in this period was 11,2%. However, the increase in the number of students was more substantial: 16% more students. Thus the budget per student dropped. Education at a glance 2005 (OECD) gives a clear insight in the expenditure on education in general and tertiary education (with or without R&D activities). The Netherlands' investment in primary, secondary and tertiary education is quite average in absolute terms[5]. Related to the gross national product however the Netherlands scores below 5% while the average for all OECD countries is above 6%. However, public expenditure for R&D in the Netherlands is above average

Graph 6.1: Development of money streams 1997-2003



Source: Ministry of Education, Culture and Science. graphic by EIM.

5 OECD Education at a glance 2005 page 162. Figures are from 2002.

6. FINANCING HE AND SOME FINANCIAL INDICATORS

Graph 6.2: Total public expenditure on the sectors of tertiary education system (in million euro)

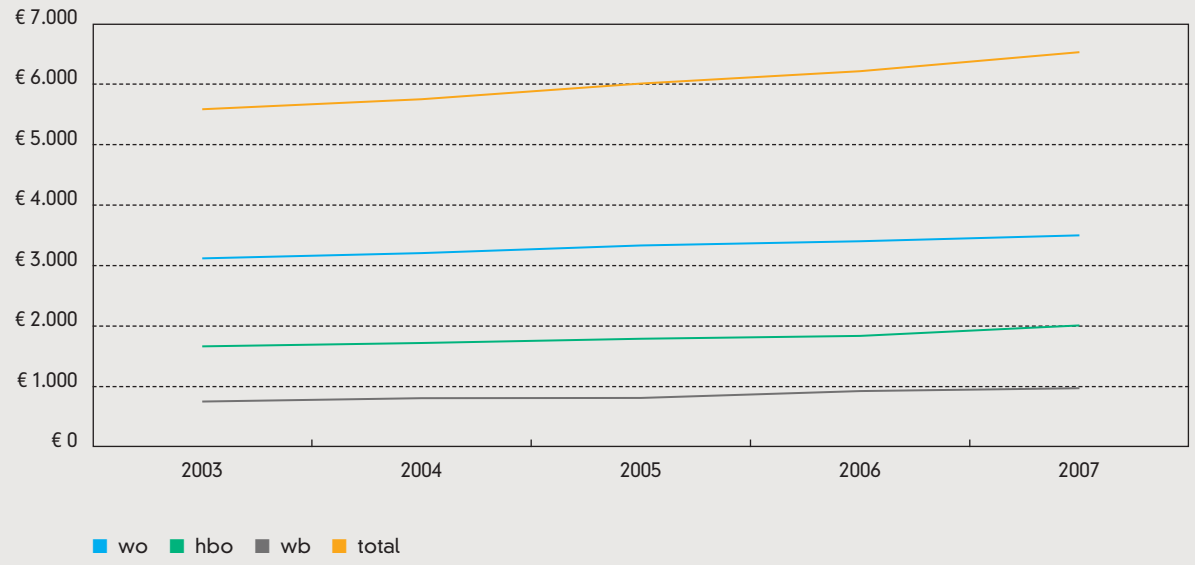


Table 6.1: Total public expenditure on the sectors of tertiary education system (in million euro)

	2003	2004	2005	2006	2007
wo	€ 3.132	€ 3.216	€ 3.338	€ 3.397	€ 3.512
hbo	€ 1.634	€ 1.720	€ 1.803	€ 1.882	€ 2.031
wb	€ 773	€ 813	€ 839	€ 926	€ 972
total	€ 5.539	€ 5.749	€ 5.980	€ 6.205	€ 6.515

Source: Key Figures 2003-2007 OCW

Total R&D expenditure as a percentage of GDP:
1,70% (2007), of which:
- from public funds: 0,62% (government) (estimate)
- from private funds: 0,87% (estimate)
- from other sources: 0,21% (estimate) (other national sources and abroad).

Total annual national R&D expenditure:
€ 9,666 billion, of which:
- from public funds: € 3,499 billion (estimate)
- from private funds: € 4,939 billion (estimate)
- from other sources: € 1,227 billion (estimate) (other national sources and abroad)

Percentage of research carried out in HE institutions: 27%.

Graph 6.3: The price of higher education per student HBO

Source: OCW budget 2008

The price of higher education per student HBO has slightly decreased over the years. Some 1/5 of the price is paid by students themselves as fees.

Graph 6.4: The price per student in WO

Source: OCW budget 2008

The price per student in WO has more or less remained at the same level. Some 1/5 of the price is paid by the students themselves as fees.

7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

In view of the knowledge economy and a larger employability of all students, relationships between HEI's and professional practice must be intensified. Links between educational courses and employers must be strengthened. Excellent cooperation between courses and employers can improve education and make it more enjoyable. In addition, this cooperation facilitates the application of high quality knowledge and increases the innovative capacity of the various sectors. People with a higher level of education must build these bridges between knowledge and practice. It is therefore necessary to strengthen the entrepreneurial and research capacity of students.

With, among others, the aid of two interdepartmental programme departments (Knowledge and Innovation Programme and Learning and Working), this cabinet is working on an overall, inter-departmental strategy to strengthen the relationship between knowledge (education and research), innovation, entrepreneurship and employability.

The Netherlands orients its policy in this respect along three lines:

1. Learning and Working

A project directorate Learning & Working has been initiated to start efforts to advance lifelong learning. The knowledge economy demands that people continue to learn and work throughout their lives and that these two activities support each other. Employers, employees, job seekers, the government, Centres for Work and Income (CWI) and education institutions in 44 regions have demonstrated since 2006 that much can be achieved with cooperation and ambition. Alongside this the Council for Work and Income (RWI) reports there is a danger of a shortage of highly educated workers. For the government, this is a reason to continue to invest in lifelong learning in the coming years, with even more ambitious goals. In order to achieve this, the infrastructure created since 2006 in the regions and sectors must be expanded. But the number of trajectories completed each year must also be stepped up. Together with municipalities, Centres for Work and Income, the Social Security Agency (UWV), employers and educational institutions, efforts are being made to achieve lifelong learning in the region.

Unfortunately, public educational institutions are still inadequately equipped to organize customised programmes for adults. There is much to be gained here. The government wants 10,000 more people between the ages of 27 and 40 to be following higher education in four years' time. In this context more attention will be drawn to the short cycle, the Associate Degree Programme and its accelerated introduction in 2008. This is a two year programme within the first cycle that leads to a legally recognized degree: the Associate Degree. This makes the step towards further study easier for workers and people with an MBO (Secondary Vocational Education) diploma.

Efforts will also be made to create customised programmes in higher education attuned to APL. Citizens and employers are often not aware of training opportunities for adults. Nor is there enough of a sense of urgency about lifelong learning. In 2006 the project directorate Learning & Working started bundling the information and making the opportunities for work and training more transparent. A publicity campaign will be started aimed at increasing the sense of urgency for lifelong learning and improving awareness of the promotion website and the learning and working desks.

In addition to active efforts for lifelong learning, the government also wants to continue to call attention in the coming years to a great many questions surrounding lifelong learning. Why is adult education slow to take off? What do we know of the effectiveness of the instruments? Who plays what role? For this kind of key questions a think-tank is set up. In dialogue with the government the think-tank will focus on creative concepts to get more adults learning. Specific topics that will be investigated are financial incentives, literacy, application of the concept of the learning organization and the role that skill brokers can play.

2. Stimulating Innovation

Apart from innovation in businesses, the cabinet focuses on innovation in social sectors, within government and in entrepreneurship. Priority in the Strategic agenda for Higher Education, Science and Research is to make use of research results. Investments in demand-driven education and valorisation improves the relation between science- and innovation policy.

Concrete measures for this are:
- demand-driven research ('vraagsturing') will be fully introduced at TNO and the large technical institutes (LTIs);
- the establishment of a federation of three technical universities to stimulate cooperation by the creation of centres of excellence and competences;
- stimulating practice-based research within universities of applied sciences in order to improve innovation at SME's. Practical-oriented professors (lectoren) are appointed to connect knowledge with conceivable consumers from business and society. Via the RAAK-investment knowledge exchange is encouraged between HEI's and research intensive SME's.
- the creation of Centres of Entrepreneurship. The Dutch government decided to take action to foster and support entrepreneurship in the Netherlands. In these efforts the Dutch government puts a lot of emphasis on fuelling entrepreneurial attitudes in the population, where the Dutch educational system is to play a crucial role. That is why an interdepartmental program on entrepreneurship and education has been started. In 2007 the subsidiary scheme "entrepreneurship and education" was launched. The scheme has two pillars:
  a. Seed money for the Partnership Entrepreneurship and Education: stimulating projects from primary school up to vocational training;
  b. Stimulating the establishment of Centres for Entrepreneurship in higher education.

The vision of the Centres of Entrepreneurship was to support higher education institutions (HEI's) in creating a hub for entrepreneurship activities – a hub where all entrepreneurship activities could be created, organised and coordinated within the existing institutional frames and infrastructure. Many HEI's already offered several courses on entrepreneurship which included case studies, team projects, activities with entrepreneurs and incubators. But the majority of entrepreneurship courses were offered in the more economic faculties. Entrepreneurship needed to be expanded across the university, for example to the technology and science departments where many innovative ideas and companies originate. Therefore the Centres of Entrepreneurship offered universities to exchange knowledge and teachers, work together to improve their courses on entrepreneurship and their effectiveness. And the centres make it possible for all students to follow a course on entrepreneurship. Eventually six centres started in January 2008. The first results are quite promising, considering the number of students attending a course on entrepreneurship.

The centres are closely monitored. In November 2008 the Dutch government launched a new program from 2008-2012. One of the important pillars of this program is qualitative research. A lot of promising American literature exists about the effectiveness of these programs, but there is little Dutch literature about the effectiveness of entrepreneurship. That's why the Dutch government will invest in research on effectiveness for the next years.

3. Employability

Higher education can make a substantial contribution to the employability of all students. From a qualitative perspective, an accreditation procedure is obligatory for all new and existing programmes since 2003. NVAO accreditation is necessary for all bachelor (including short cycle) and master degrees. Within the accreditation procedure the link between educational programme and labor market perspectives is assessed.

The Dutch government monitors the progression to the labour market of bachelor, master and doctorate graduates. If these data show societal problems in any sectors, policy could be set up. One could think of specific incentives for students to choose for technological studies, but also about the introduction of the short cycle and master programmes at universities of applied sciences.

The most recent statistical data on the employment status of graduates show that for research universities 96.6% of the total graduates are employed. 64% of graduates at research universities are employed 1.5 year after graduation at least at the qualification level of their studies.

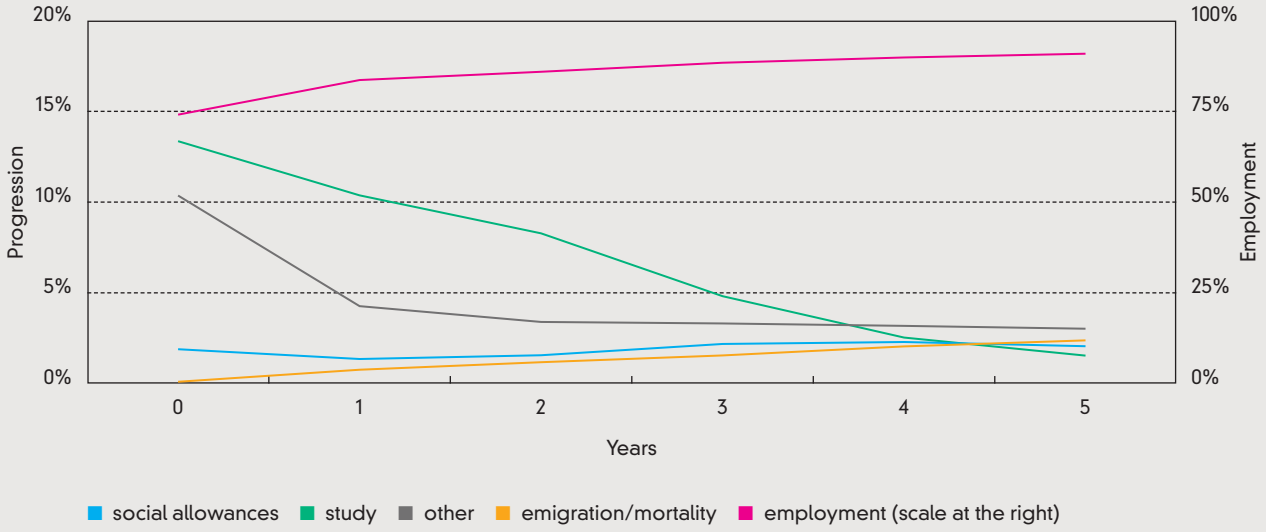
For universities of applied sciences, 96.9% of the total graduates are employed. 85% of graduates at universities of applied sciences are employed 1.5 year after graduation at least at the qualification level of their studies

Graduates of Higher Education in the Netherlands do well on the labor market. These two figures show the position on the labor market of the cohort graduates 1999/2000 until five years after graduation. The number of graduates from universities of applied sciences who work (employed or independent) increases in this period from 74% to 91%.

The number of graduates from research universities (employed or independent) increases in this period from 73% to 91%, but decreases afterwards to 88%.

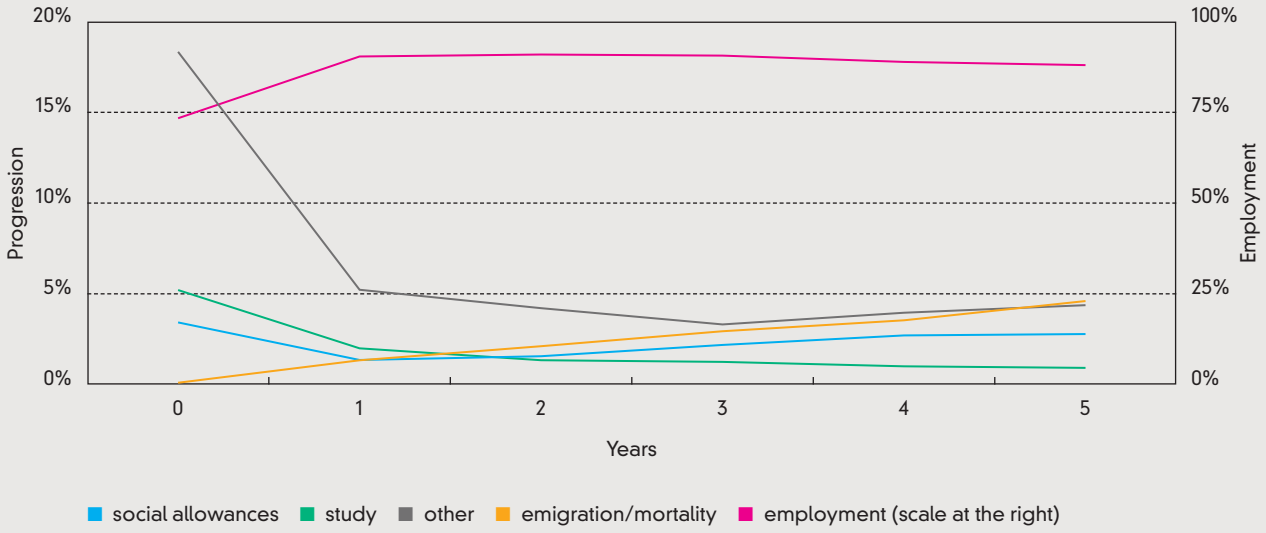
7. DEVELOPMENT OF COMPETENCES AND EMPLOYABILITY

Graph 7.1: Progression of the graduates of 1999-2000 after 5 years of graduation in universities of applied sciences



Source: Statistics Netherlands (Statline)

Graph 7.2: Progression of the graduates of 1999-2000 after 5 years of graduation in research universities



Source: Statistics Netherlands (Statline)

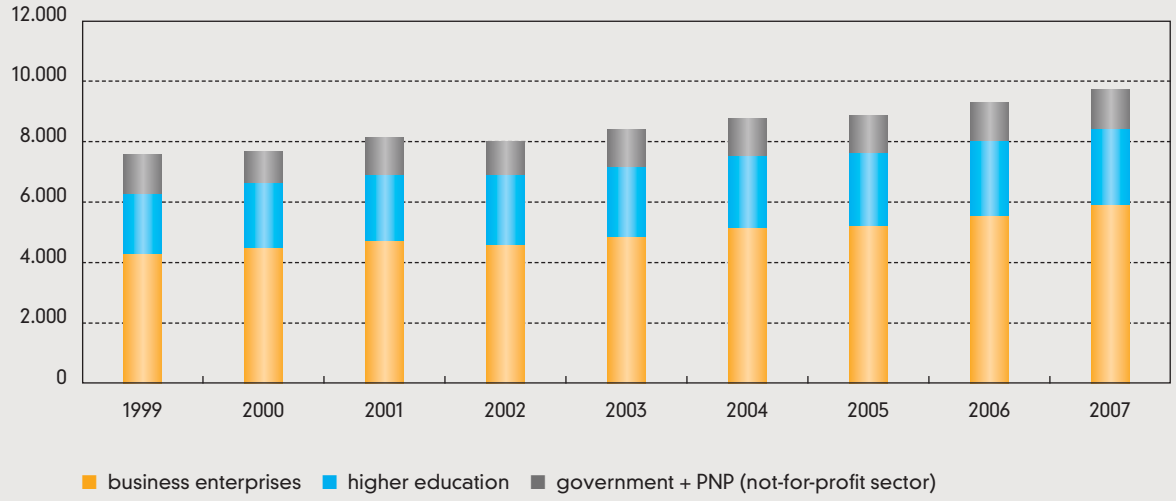
Surprising is the high number of graduates from universities of applied sciences who continue studies immediately after graduation: 14% instead of 5% of research universities graduates. This trend is most probably a result of the introduction of the bachelor-master structure.

8. INNOVATION AND RESEARCH

The Netherlands spent some 9,7 billion euros on R&D in 2007. It is spent in three main sectors. Most of it is spent in the business enterprise sector: 60%. A quarter is spent by the higher education sector and some 15% in the government and private non profit sector.

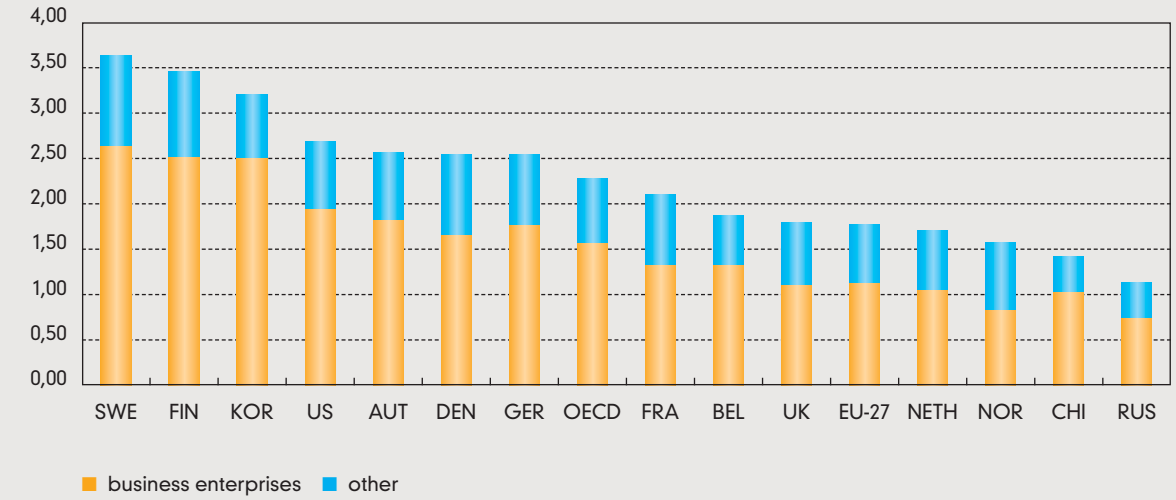
In terms of percentage of GDP the R&D expenditure corresponds with 1,7 %. Compared to other countries, the Netherlands scores below most of the West-European countries and also below the EU-27 average. The main reason is the relative low performance of the business enterprises in the Netherlands.

Graph 8.1: R&D expenditure by sector of performance, in million euro, 2007



Source: Statistics Netherlands (Statline)

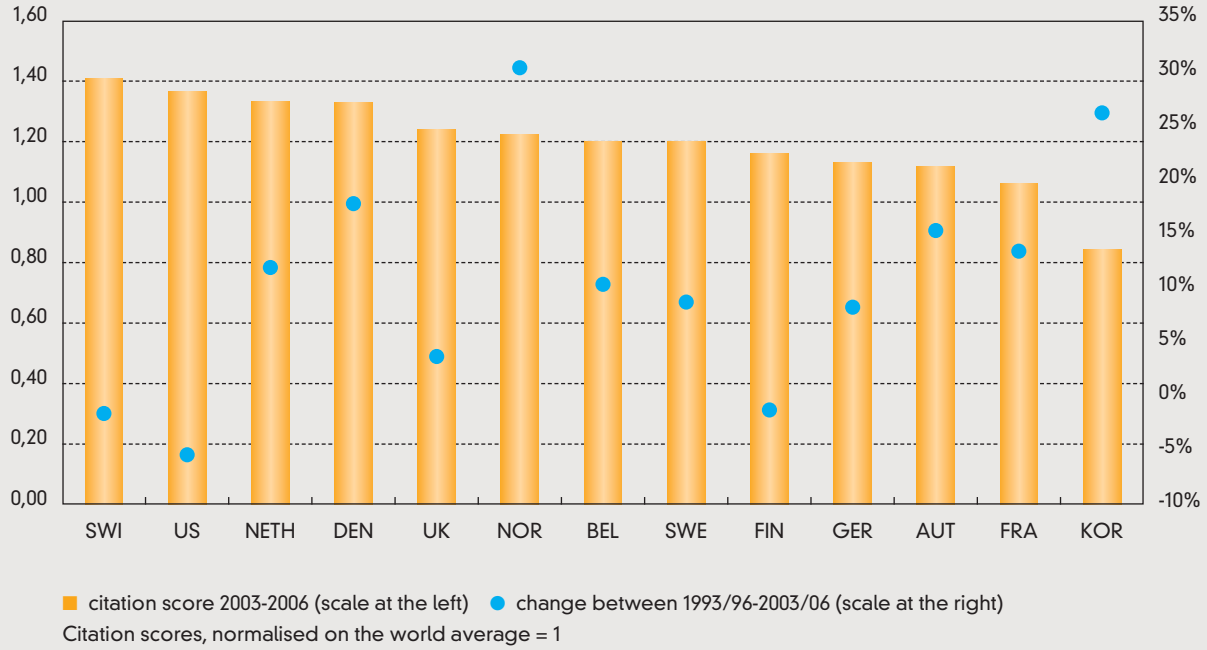
Graph 8.2: R&D expenditure as a percentage of GDP, by sector of performance, 2007



Source: OECD

8. INNOVATION AND RESEARCH

Graph 8.3: Citation scores 2003-2006 and change between 1993/'96 and 2003/'06



Source: Netherlands Observatory of Science and Technology, indicators report 2008

However, when looking at the performance in terms of scientific publications and the citations to these publications, the Netherlands score well and rank among the top in the world.

This graph shows the field-normalised citation impact scores that are defined as the quantity of citations received by research publications (right side) relative to the worldwide average citation impact (left side) per field. The world average score is 1.0.

9. INTERNATIONALIZATION OF HIGHER EDUCATION

Global developments affect our higher education and research. Measures on a national level are needed to add impetus to internationalization among students, researchers and institutions and thus further improve the quality of higher education, research and science.

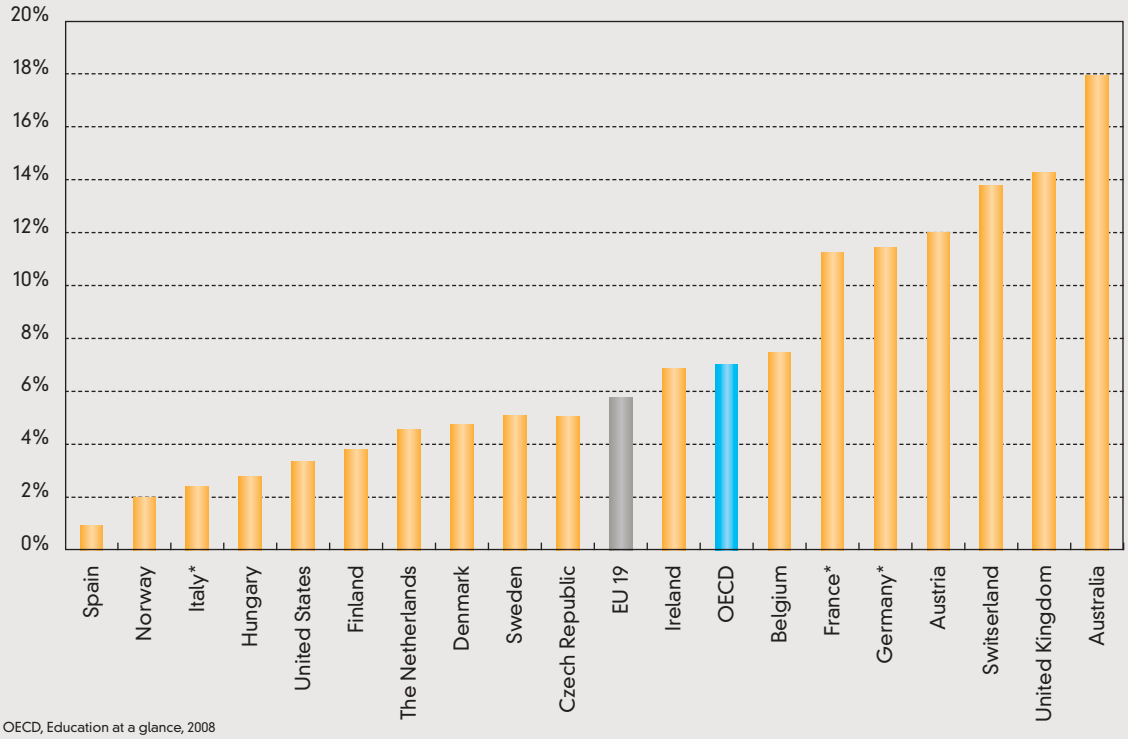
Four major developments intensify the urgency for the internationalization of education, research and science.

- Competition for 'knowledge workers' on the labour market is increasing.
- Global problems demand global solutions.
- The Dutch labour market is becoming increasingly more international.
- Competition with institutions abroad to 'acquire' the best students, researchers and lecturers is increasing.

The Strategic Agenda for Higher Education, Research and Science Policy (Nov 2007) is the answer to the global developments outlined above: not changes to the system but rather a move towards improving quality. Within the framework of internationalization, the government can contribute to the realization of this improvement in quality, particularly by encouraging mobility and transparency. Quality, mobility and transparency therefore constitute the government's contribution to international ventures such as the Bologna process and the European Union. At the national level, the following actions in the field of internationalization are taken, in order to improve quality:

- Increasing the mobility of Dutch students.
- Encouraging a more international orientation at education institutions.
- Expanding so-called brain circulation.
- Improving the attractivity of the Netherlands for students, partners from HEI's and research institutes.

Graph 9.1: Foreign nationals enrolled in Higher Education per country, 2006

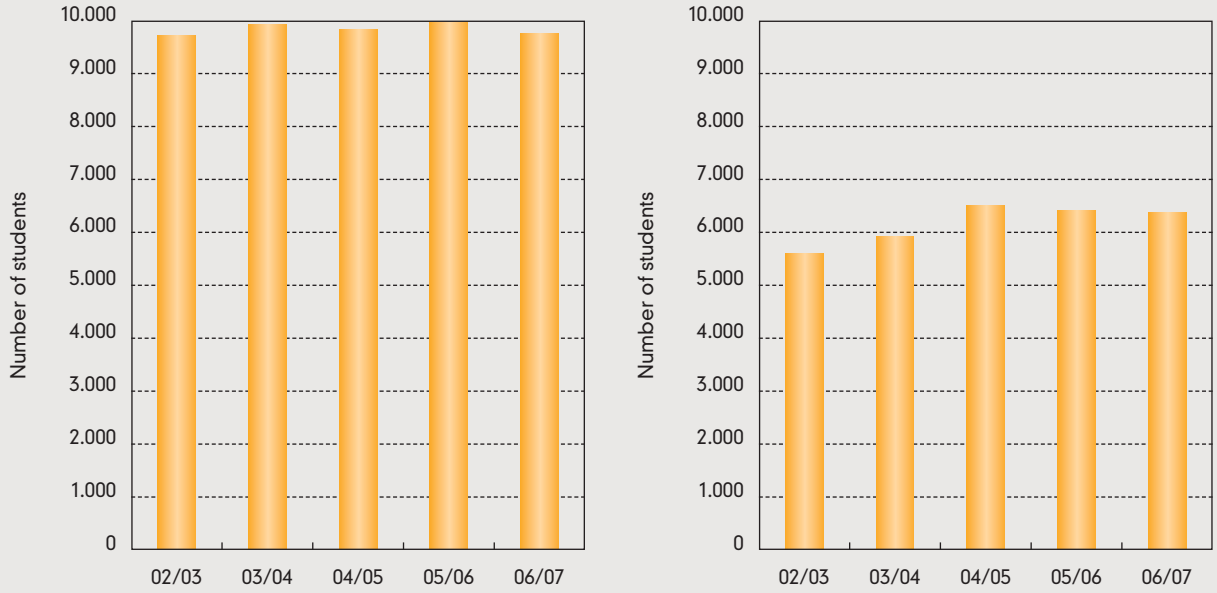


Source: OECD, Education at a glance, 2008

The figure shows the proportion of international students by international comparison. The percentage of foreign students enrolled in Dutch Higher Education is increasing but still under OECD-average.

9. INTERNATIONALIZATION OF HIGHER EDUCATION

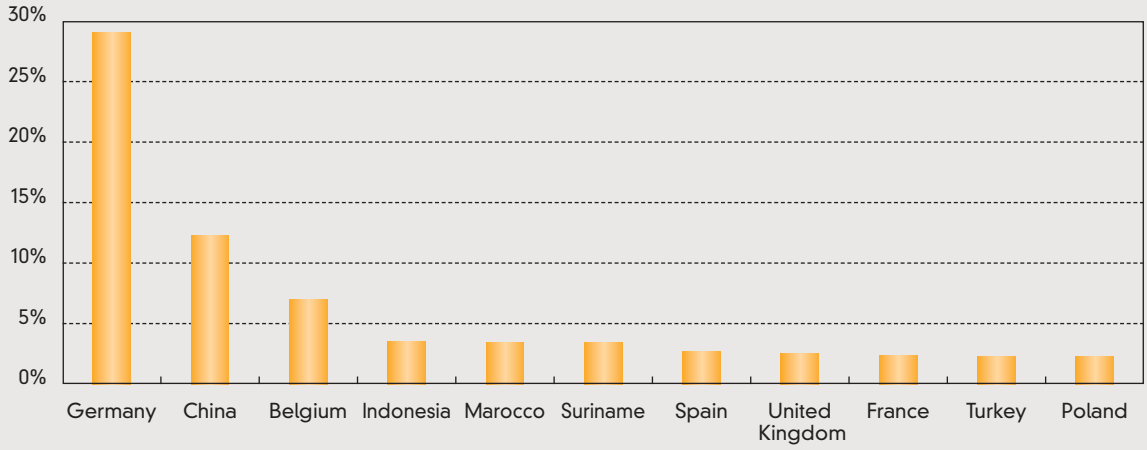
Graph 9.2: Incoming (left) and outgoing (right) mobility via (exchange) programmes



Source: Nuffic

Incoming and outgoing mobility structured in mobility financed by mobility programmes. The mobility is stable over the years and shows more incoming than outgoing students.

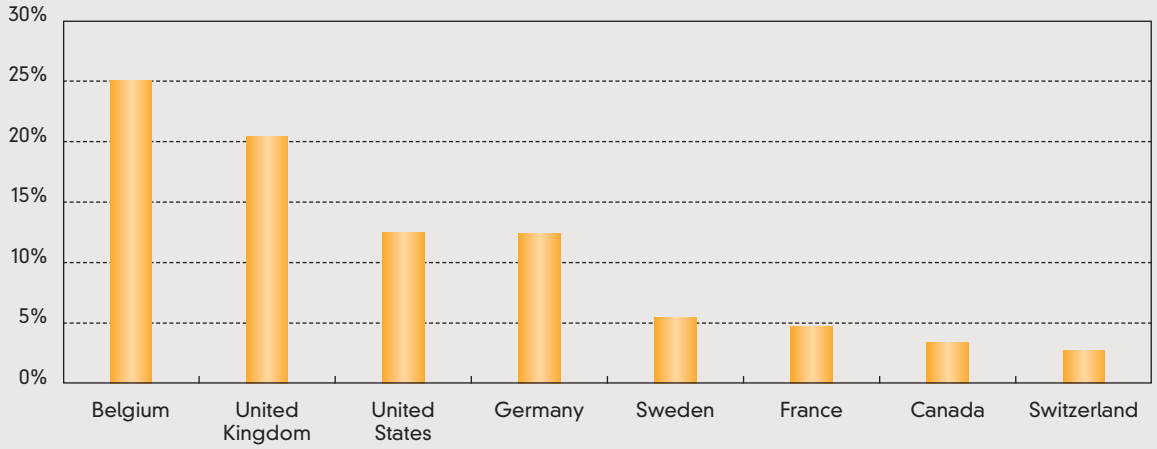
Graph 9.3: Foreign students in the Netherlands



Source: Eén-cijfer HO (database of the Ministry of Education, Culture and Science)

Most foreign students in the Netherlands come from Germany, China, Belgium, Indonesia, Maroc and Suriname.

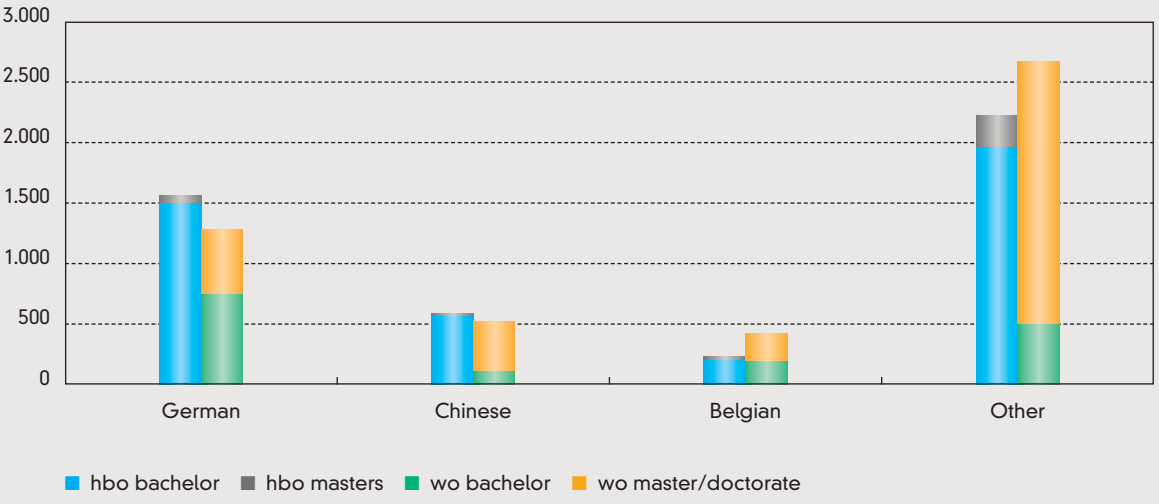
Graph 9.4: Outgoing Students from the Netherlands



Source: OECD, Education at a glance, 2008

Most Dutch students go to Belgium, UK, Germany, US and Sweden.

Graph 9.5: Nationality upon graduation



Source: Eén-cijfer HO (database of the Ministry of Education, Culture and Science)

With regard to the nationality upon graduation, most foreign graduates are German, Chinese, Belgian, Polish and Indonesian.

EPILOGUE

The Bologna process has triggered important and significant reforms throughout the European higher education area. Program curricula were rethought and reformed in quite fundamental ways. The Bologna reform has highlighted the crucial role of higher education in creating societal and cultural diversity and wealth, in supporting the knowledge economy of the 21st century, in mobilizing every talent in society. It has propelled the careful scrutiny and the development of high-quality, accessible and internationally competitive higher education systems to the forefront of both societal and economic concerns. Educators and students, policy makers and politicians, business representatives and citizens at large all feel concerned by the opportunities, but also the challenges, those reforms have triggered.

In this book, a rich and diverse collection of authors has tried to provide basic insights into the higher education systems of their respective countries and regions. The picture that emerges is an interesting and challenging one. It shows similarities but also differences. In this epilogue, we just want to focus on a few of them. First, it highlights the concerns just mentioned. How do we design and develop high-quality, but at the same time highly accessible and relevant, higher education systems? How do we make sure that social equity and fairness are at the heart of those systems? How do we make sure that participation is maximized, taking into account the need for each talent to find the program and education best fitted to its needs, in ways as efficient as possible? Indeed, higher education does not only provide young people with expertise, skills and competencies, but it also helps people to become responsible citizens who will contribute to develop and maintain the rich European social and cultural texture. Second, it highlights the need to view learning as a lifelong endeavor, a challenge, but also a pleasure rather than a burden. All the countries and regions surveyed in this book pay significant attention to improve both the quantity and the quality of their lifelong learning systems. Third, money is important. A good system needs to be sufficiently funded in order to acquire and to access the resources required to live up to these challenges. The evidence listed in this book shows how the different countries and regions have developed funding mechanisms and systems that try to come to grips with this allocation process. Transparency, accountability and social equity are important dimensions of this process.

Fourth, a well-funded system can only function when the people serving and developing it are up to level. Teacher education, across all segments of the education system, therefore receives ample attention in the countries and regions surveyed. The role of the higher education system in training and educating teachers can never take a minimalistic perspective. Fifth, the higher education system is one of interwoven activities. Education can only thrive when linked to and embedded in a context of research and innovation. It is therefore impossible to discuss higher education without highlighting the attention paid to research and innovation. Funding and funding mechanisms, doctoral training, active involvement in innovation: they are all very much present and actively pursued, as one has been able to observe, throughout the various chapters of the book. Finally, internationalization and globalization are characteristic of the 21st century. The rich pallet of initiatives listed throughout the various chapters in the book stands witness to the efforts and results obtained with policies and instruments that support international mobility of students, researchers and teachers.

These focal points also highlight some of the challenges that the next Bologna era will have to cope with. Just to name a few. How do we further build and develop this educational system in a rational and optimal manner? New programs and flexibility are needed and desired. However, how do we avoid unnecessary proliferation and duplication? How do we strike a balance between accessibility, flexibility and affordability? How do we stimulate further participation, especially among students from immigrant populations? And, this leads to the next challenge: how do we provide optimal levels of financial resources for our higher education systems, particularly in times of deep economic crisis and recession. Plus, how do we further shape the integrative nexus between teaching, research and innovation? And, how do we measure and monitor the results of the various instruments and policies deployed to this end? Of course, all these issues should be viewed not only in a European, but in a broader international perspective. Enough challenges, then, to be turned into opportunities if we want our European society to become a beacon of knowledge and learning in the 21st century. We hope this book has contributed and helped to highlight the status, the mechanisms and the challenges awaiting us.

LIST OF ABBREVIATIONS

AAP	Assisterend Academisch Personeel - Assistant academic staff - Assistant research and teaching staff
ABA	Academic Bachelor
AMA	Academic Master
ATPwu	Administratief en Technisch Personeel betaald met de werkingsuiterkingen - Administrative and technical staff paid with the block grants
ATPbwu	Administratief en Technisch Personeel betaald met andere bronnen - Administrative and technical staff paid with other financial sources
BERD	Business Expenditures on R&D
BOF	Bijzonder Onderzoeksfonds- Specific Research fund
DHO	Database Higher Education
ECTS	European Credit Transfer System
EHEA	European Higher Education Area
EPOS	Europese Programma's voor Onderwijs, Opleiding en Samenwerking
ERC	European Research Council
EU	European Union
FTE	Full time equivalent
FWO	Fonds voor wetenschappelijk onderzoek - Vlaanderen - Fund for Scientific Research - Flanders
GERD	Gross Expenditures on R&D
GDP	Gross Domestic Product
GOVERD	Government Expenditures on R&D
HAVO	Hoger algemeen voortgezet onderwijs - Senior general education
HBO	Hoger Professioneel Onderwijs - Higher professional education
HE	Higher Education
HEI	Higher Education Institution
HERD	Higher Education Expenditures on R&D
IMEC	Interuniversitair Micro-Elektronica Centrum - Interuniversity Center for Micro-Electronics
IWT	Instituut voor de aanmoediging van Innovatie door Wetenschap en Technologie in Vlaanderen - Institute for the Promotion of Innovation by Science and Technology in Flanders
MBO-4	Middelbaar beroepsonderwijs niveau 4 - Senior secundary vocational education level 4
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek - Dutch organization for scientific research
OECD	Organization for Economic Cooperation and Development
PBA	Professional Bachelor
R&D	Research & Development
SMEs	Small and Medium sized Enterprises
VIB	Vlaams Instituut voor Biotechnologie - Flemish Institute for Biotechnology
VLHORA	Vlaamse Hogescholenraad - Flemish Council of University Colleges
VLIR	Vlaamse Interuniversitaire Raad - Flemish Interuniversity Council
VRWB	Vlaamse Raad voor Wetenschapsbeleid - Flemish Science Policy Council
VWO	Pre-university education
WO	Wetenschappelijk onderwijs - University education
WP	Wetenschappelijk Personeel - Scientific staff or researchers paid with other financial sources
ZAP	Zelfstandig Academisch Personeel - Tenured Academic Faculty

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