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Reforms in Higher Education and Active Labour Market Policies within the Context of a European Knowledge Society

Synthesis Report on the Netherlands

Erik de Gier | John Warmerdam



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February 2009

This report was co-financed by the European Commission's Socrates Programme (NESOR project nr. 2006 – 2817/001 S02 61 OBGE). The content of this report is the sole responsibility of the authors. The Commission is not responsible for any use that may be made of the information contained herein.

We thank Michelle Mellion for editing this report.

ISBN 978-90-5554-369-4
NUR 840, 740



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Preface

This report is a synthesis report of various Dutch national reports which have been produced in the context of the EU Socrates project *Globalised Knowledge Society, New Social Risks and Higher Education (NESOR project)*. This project was carried out from 2007 to 2009 in six EU member states, respectively: Austria, Hungary, Italy, Poland, Spain and The Netherlands.

The aim of the NESOR project is to analyze the state of the debate in these different European countries, to examine the approach of social-economic and (higher) educational reforms and to revise the findings about the consequences of the reforms in order to derive a description of the role of higher education in the European Social Model. The analyses are focused on some of the basic components of the European Social Model: employability and social inclusion. They particularly address the contributions of higher education to the mitigation of social risks and social inequalities which evolve with the rise of a globalised knowledge-based economy. The results might be used as input for debates regarding the future role of higher educational institutes between new social and economic imperatives.

This report builds upon previous work done within the framework of the NESOR project, research materials, policy documents, expert interviews and conferences with experts and stakeholders in the field. We thank all the experts that have shared their views, opinions and expertise with us.

The NESOR-project as a whole was coordinated by dr. Laureano Jimenez and dr. Karsten Krüger of the University of Barcelona. We especially would like to thank them and the other NESOR partners for the fruitful cooperation during the project.

Jeroen Winkels
Director ITS Nijmegen

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List of abbreviations:

AWT	Advisory Council for Science and Technology Policy
CHEPS	Center for Higher Education Policy Studies
ESHE	European Space of Higher Education
EU	European Union
GKS	Global Knowledge Society
HAN	HAN University of Applied Sciences
HBO-raad	The Netherlands Association of Universities of Applied Science
HE	Higher Education, system of higher education
IP	Innovation Platform
MBO-raad	The Netherlands Organization of VET Colleges
NAP	National Action Plan E-learning
NOW	The Netherlands Organization for Scientific Research
Nuffic	The Netherlands Organization for International Cooperation in Higher Education
OU	Open University
PAEPON	Umbrella organization for privately funded education in the Netherlands
SER	Social and Economic Council of the Netherlands
SURF	Collaborative organization for higher education institutions and research institutes
SURFNet	Subsidiary of SURF organization for ICT innovation
VET	Vocational Education and Training
VSNU	Association of Universities in the Netherlands
WP	Work Package

Executive Summary

This report is a syntheses report of various Dutch national reports which have been produced in the context of the EU Socrates project *Globalised Knowledge Society, New social risks and Higher Education*. This project was carried out from 2007 to 2009 in six EU Member States, respectively: Austria, Hungary, Italy, Poland, Spain and The Netherlands.

The main objective of the syntheses report is to determine how institutions of higher education -universities and universities of professional education- are currently dealing with the following three issues:

- 1) The European knowledge society and the Lisbon Strategy
- 2) New social risks and the European social model
- 3) The European dimension and global responsibility

The report consists of four consecutive chapters.

Chapter 1 summarizes the debate concerning the rise of a knowledge-based society and related social risks. In Chapter 2 the findings are summarized regarding the policy strategies used by socio-political actors and higher education institutes geared at mitigating social risks. Chapter 3 places higher education in the Netherlands in a wider international context by not only paying attention to the Bologna process, but also to international student mobility and institutional responses to internationalization. In Chapter 4 the main conclusions of the report are drawn.

In the Netherlands many developments and transformations are taking place in the Higher Education system which has anticipated the knowledge economy and the Lisbon goals. However, a blueprint describing how the future system of Higher Education should look is absent, except for the idea that the HE system, to a large extent, should contribute to the innovative capacity and competitiveness of the Dutch economy. As a result, reforms are found essentially in isolated cases.

From a comparative viewpoint, the research and educational performance of Dutch universities ranks among the best performances found in the EU, such as those found in the Scandinavian countries and in the UK. However, compared to the US, the Dutch system lags behind. One of the problems is the relatively low level of funding allocated for higher education and research based on a percentage of GDP. Another problem is that the innovation capacity of the Dutch economy is lagging behind due

to the ever-present Dutch innovation paradox. Despite having an excellent record in achieving knowledge creation, the innovation capacity of the Dutch economy continues to be mediocre.

Finally, the Dutch system of Higher Education has failed to some extent to mitigate the new social risks caused by the knowledge economy. An inability to provide equal opportunities for specific groups such as immigrants, women and elderly workers has contributed to the counter-productive, exclusionary tendencies regarding access to the Higher Education system. Unfortunately, a well-developed second chance institution, such as lifelong learning, still needs to be further developed.

Introduction

This country report on the Netherlands consists of the Dutch contribution to Work Package 5 of the NESOR-project, *Globalised Knowledge Society, New Social Risks and Higher Education*, which has been conducted in the framework of the Socrates program. For the project, a partnership of research teams in 6 EU countries was constructed. The consortium is being coordinated by the University of Barcelona.

Work Package 5, a synthesis of the work done in anterior work packages, is focused on finding out what institutions of higher education (universities and polytechnics or professional universities) are doing with respect to the following three issues:

- 1) The European knowledge society and the Lisbon Strategy
- 2) New social risks and the European social model
- 3) The European dimension and global responsibility

Special attention has been paid to the international dimensions of higher education itself, in particular to the issues of trans-nationality and international mobility, as these issues are the central focus of the Lisbon and Bologna processes.

Work Package 5 is being coordinated by *Navreme Knowledge Development* in Vienna, Austria. Because Work Package 5 is primarily a summarizing and synthesizing study, previously conducted studies in the framework of NESOR, research materials, interviews and conference outcomes will be used.

Issue-1 addresses the Lisbon strategy with its focus on creating more and better jobs by upgrading the innovative capacities and qualification levels of the EU working population through an increased participation in higher education. Issue-2 refers to the debate concerning emerging European Social Models, with social welfare policies and lifelong learning as key elements. The third issue addresses the Bologna process which aims to make uniform the HE-qualification structures within the European field of higher education..

Structure of the report

Chapter 1 summarizes the debate concerning the rise of a knowledge-based society and related social risks, against the backdrop of the Lisbon agenda. An important

point of attention in the Netherlands in this debate is the question of how to solve the so-called *innovation paradox*.

The second chapter summarizes the findings regarding the policy strategies used by socio-political actors and higher education institutes to mitigate social risks jointly. Here, special attention is paid to labour market risks of 'knowledge workers' and the connections formed between demand-side actors and higher educational institutes. They are set within the context of a discussion concerning European social models.

Chapter 3 looks at the international dimension of higher education, in particular at the role of universities in developing a European higher education and research area. The first point of reference here is the Bologna process. Secondly, international student mobility and institutional responses to internationalization will be discussed.

The final chapter draws conclusions in the light of risks and challenges facing HE institutions in the areas of governance, external relationships and curricular design in the future. A point of departure is the scenarios, which have recently been developed by the Dutch Centre for Higher Education Policy Studies, concerning how experts expect the higher education systems to evolve during the next decade.

1 The European knowledge society and the Lisbon strategy

1.1 Policies and strategies

The first issue to be dealt with here is which policies and strategies do universities and polytechnics use when designing a model of higher education in the global and European knowledge society? Do they for example organise and provide lifelong learning, continuous training, reform curricula, etc.? And, furthermore, what is the role of Higher Education institutions in the achievement of greater social justice and how do they respond to new challenges in this respect?

First of all, the Netherlands has a great ambition to belong to the top league of best performing knowledge economies in the EU. However, it is not the production of knowledge that needs to be applied for innovation purposes which is the problem. The real problem is the rather large gap that exists between the knowledge production generated by research institutions on the one hand, and the practical knowledge applied in industry, on the other hand. This so-called *innovation paradox* hinders the innovative powers of Dutch industry, namely small and medium-sized businesses.

The main explanation for the existing gap is threefold:

- the dominance and persistence of conservative vesting interests both in industry and in higher education,
- an inwardly focused and also conservative attitude of a large section of Dutch industry, and finally,
- a sustaining persistence of a binary, divided and more or less obsolete institutional system of higher education in the Netherlands (at least according to some of the experts interviewed).

All this brings the Government, as well as all of the societal and scientific parties involved, to the conclusion that in order to surmount these problems a strong strategy of activating talents, inclusive top talents, in Dutch society first must be developed.

As a consequence of the unproductive innovation paradox, the Dutch economy is comparatively lagging behind with respect to innovation. It is the task of the Innovation Platform (IP), which was established a few years ago and chaired by the Prime Minister, to tackle this problem by proposing new policy initiatives to the Government. The IP sees five causes for the relatively backward position of the Netherlands:

- 1) Low public and private investments in knowledge. The Netherlands annually invests 12 billion euros less than the top three investors and also remains behind the OECD average.
- 2) On the whole there is not a very favourable climate for innovation because vesting interests are strong. Because of this, innovative entrepreneurship has not been sufficiently stimulated. The same holds for the influx of young talent in science and industry.
- 3) There is still a strong egalitarian culture in the country, implying uniformity in education, work payment and work place performance.
- 4) Improvements are needed to link the knowledge and innovation systems, particularly between public and private players. An important success factor in this respect is mutual trust.
- 5) An integral strategy with respect to knowledge and innovation is lacking. In the past decade much public effort has been put into 'activating the labour force' and reducing unemployment. This has to be supplemented first and foremost, by 'activating talents' (Innovatieplatform, 2006).

To be able to combat the above-mentioned deficiencies, the IP proposes that a strategy be directed at the whole chain of knowledge, from pre-education until innovation and entrepreneurship. This strategy should consist of the following three parts:

- a) a maximal educated working population during the whole working career and life course;
- b) an outstanding knowledge base, including a prominent research infrastructure and adequate provisions for young scientific talent;
- c) a stimulating entrepreneurial climate created by taking measures with respect to management skills and organizational culture (social innovation), lowering administrative burdens and rules and stimulating innovation by investment in R&D.

The Knowledge Investment Agenda (KIA) prepared by the IP contains a number of practical proposals relevant for all stakeholders involved, but in particular for the current government. The Government plans to increase investments for education and research to an additional annual level of 3 billion euros in the coming eight years, spanning two cabinet terms.

The money to be invested is to be spent on four themes:

- 1) Financial means for universities should be distributed more on the basis of quality, and less on the basis of the number of students per university. At the same time, more money should be invested in research infrastructure; the influx of young scientific talent, also from abroad, should be increased, and finally science and industry will have to expand and interact more with one another.
- 2) The Netherlands must choose to build large research facilities that can compete internationally.

- 3) The accessibility of the country for foreign knowledge workers needs to be increased.
- 4) Scientific knowledge has to be used more effectively.

It seems obvious that one of the main conditions required for solving the innovation paradox in Dutch society will also be to overcome the deficiencies, or at least to improve the existing binary system in higher education (universities and polytechnics). A potentially promising approach proposed by one of the experts who was interviewed might be to greatly de-institutionalize the existing system of higher education and to transform it subsequently, from a rather homogeneous system of comparable universities and polytechnics, into a real network structure. In this way, both universities and polytechnics would be connected because of their top performing research and educational knowledge centers. In this context, knowledge could be defined as a productive factor. A flexible network structure in this view would be better equipped to teach students in a more dynamic and challenging context how to deal with complex knowledge and innovation. A far-reaching reform of the higher education system would also contribute to preventing the recent social risk of not being able to deal properly with the increasing availability of knowledge in society.

However, this is not the only problem with respect to the higher education system. Nauta, a former participant who was involved with the Innovation Platform and who is a lecturer in Innovation at the polytechnic, Hogeschool Arnhem-Nijmegen (HAN), otherwise known in English as a University of Applied Sciences, has criticized the actual incentive structure, as well as the financial system with which universities in the Netherlands are financed. If we examine this very important system, we see what is referred to as the so-called primary source of funding. This funding is meant to stimulate scientific academic research and scientific education at universities. To a large extent, the existence and continuity of universities is dependent on this money which is delivered and distributed by the state. In addition, universities compete for public research funding that is redistributed via the Netherlands Organization for Scientific Research (NWO) and for funding used for contract research that flows from private sources (industry, services) and from other more specific public sources (ministries, municipalities). In contrast to the even less important additional funding, universities do not have to deliver a more precisely circumscribed research and educational output. Thus, according to Nauta, this part of the output is debatable from the viewpoint of the knowledge society because it hardly contributes to solving the existing innovation paradox. At the same time, in his view, polytechnics are caught in educational commitments and therefore they can hardly contribute to innovative education, research and applications. A second deficiency in higher education is the lack of incentive for stimulating entrepreneurial and risk-taking behavior in the teaching and research staff. In Nauta's opinion, this type of behavior is a crucial require-

ment for technological innovation. Apart from the incentive structure, a proper infrastructure for achieving effective technology transfer from universities to industry is fairly absent in the Dutch higher education system. Compared to Oxford University, Cambridge University, Stanford University and Louvain University, Dutch universities appear to be rather lethargic.

The 2007-OECD thematic review of the educational system in the Netherlands pointed at another deficiency in the system of tertiary education in the Netherlands (OECD 2007). This is the almost total absence of programs which are geared towards lifelong learning. The tertiary system is focused on the age group from between 18-30 years old and hardly serves older age groups at all. There are a few exceptions with respect to some part-time initiatives and there is also a possibility to attend the Open University which is specialized in distance learning. Enrolment in higher education beyond the age of 30 is roughly half of the OECD average.

About 15 percent of the working population actually participates in activities that might be classified as belonging to life long learning. This corresponds to the European average. At the same time countries such as Sweden, Denmark, Finland and the UK are performing substantially better. An additional problem in the Netherlands is that the majority of the courses offered has a functional and applied character and does not really contribute to the acquisition of legally recognized certificates or diplomas. Therefore, their significance in terms of investing in sustainable lifelong learning activities is still rather limited. The main explanation for this is twofold. Firstly, a national future-oriented strategy with respect to lifelong learning is almost absent, and secondly, companies as a rule do not stimulate their workforce to enroll in training courses while working (Platzer 2007).

The need for both government and industry to play a more active role in this field is increasing because for the next decade a shortage of higher educated is forecast. In 2020 there will probably be a shortage of higher educated people in the Dutch economy of 200,000. Apart from that, more extensive lifelong learning activities could contribute to providing better work opportunities for the low educated, immigrants and older workers. This could also improve their mobility on the labour market.

In the same context, the infrastructure for technology transfer needs to be greatly improved. The best precondition for accomplishing this would be to introduce a more rewarding incentive structure for teaching and research staff at universities and polytechnics. The incentive structure would have to catalyze a more entrepreneurial and risk taking attitude of knowledge workers in the higher education system. Much can be learned in this respect from foreign universities and from other countries as well.

The existing system of higher education has contributed to maintaining important social inequalities such as unequal access to knowledge, the unequal position of eth-

nic minorities and the almost total exclusion of the elderly members of society. This waste of talent is another reason for to transform the system of higher education as soon as possible and to make it conform more to the exigencies of the future knowledge society. This would involve mobilizing all of the talent available in Dutch society.

In sum, the system for higher education in the Netherlands does not seem to be ready yet for the global and European knowledge society from the perspective of knowledge production and knowledge application. On the one hand, the system must confront and deal with the innovation paradox in the Dutch economy; and on the other hand, the HE-system must also tackle quite a few 'internal' deficiencies, such as a binary system which is not optimally functioning, an incentive and finance structure which is not completely effective and an almost total disregard for lifelong learning programs intended for groups that are elderly in age. In addition, the Dutch HE-system, and in particular the universities, are less accessible for ethnic minorities and older workers than the colleges of professional education or polytechnics. As a consequence, human talent is wasted to some extent.

The Dutch government is aware of these problems and for the time being it has invested in a strategy that can repair the innovation paradox in the near future. The core focus of this strategy is to activate all of these talents, including the top talents in the Netherlands by for example, increasing R&D-expenditure in HE and creating new large scale research and data facilities.

1.2 Higher Education and work

The second issue to be addressed in Part-I is the question regarding the role and function of the Dutch system of Higher Education in transforming society and in particular, what the role of Higher Education institutions is when it comes to creating better work places, more flexibility and greater mobility with respect to work. Should universities adapt to the recent demands from the labour markets and the knowledge society? What is the importance of professional preparation and employability when designing the curricula of Higher Education institutions, etc.?

Three types of programs can be distinguished in this respect:

- Programs to stimulate transitions from secondary to higher education
- Programs to reinforce employability and mobility of graduates
- Programs to improve access to higher education for new 'target groups'.

These programs are in line with the Lisbon objectives. They try to make HE more accessible for a wider range of young people and for people who are older in the context of lifelong learning.

1. Stimulation of transitions from secondary to higher education

The first type of program aims at creating a better transition from secondary to higher education. These programmes cover both general as well as professional education. They are directed towards transitions from secondary general education to academic education, from secondary vocational education to higher professional education and from higher professional education to the polytechnics or the regular universities. We describe some typical initiatives, here.

The Government is running a long term programme directed at *increasing the number of students in the beta- and technical disciplines* jointly with HE-colleges and VET-schools. It consists of a mix of public education, targeted information campaigns, subsidies for school initiatives, special projects, practical traineeships for students, etc. The programme is aimed at helping students enter medium-level vocational education, but it continues on through to higher technical education. The initiative accomplishes two objectives at once: a) the technical study programme provides graduates with a good starting point for professional careers later in their lives and, b) having more graduates from technical study programmes eases the tension on the labour market due to the shortages of qualified technical personnel.

Universities and polytechnics have also developed their own programmes in order to attract more students to study in beta and technical disciplines. These programmes consist of measures aimed at *improving the relationships with secondary schools*, such as the following examples:

- information campaigns at secondary schools in a particular region;
- open house for students and parents at technical faculties;
- short practical traineeships for students in a real-life context;
- better collaboration with secondary schools, for example, study projects;
- training teachers and counsellors of secondary schools at the university;
- establishing local networks of school teachers and academic researchers;
- deployment of students as (assistant) teachers in secondary schools.

Furthermore, within the HE institutes themselves, measures are taken. Guidance counselling of Bachelor students has improved. Tutoring and mentoring systems have been introduced. In some institutes special 'linking' courses were developed in order to prevent students from dropping out early because of problems with certain subjects such as mathematics.

Several colleges for higher professional education (called HBOs in Dutch) have introduced a *new type of qualification, called the 'shortened HBO'*. This is a two-year curriculum which normally takes four years to complete and which qualifies students to work in assistant positions in higher occupations. It is an intermediate qualification between secondary Vocational Education and Training (VET) and the full four-year tertiary HBO qualification. It is meant to give better VET students the opportunity to obtain a higher education certificate. By having such a qualification, medium-qualified technicians have improved their chances of promoting to management positions or specialist functions later in their career.

Recently, the *Bachelor-Master system* was introduced into higher education, covering both professional colleges for higher education (HBO) and the universities (WO). A four -year HBO-Bachelor programme is comparable to a three-year WO Bachelor. This three-year WO Bachelor programme is intended to help WO students qualify for labour market entrance and is intended for those who are not able or not interested in completing a Master study programme.

2. Reinforcement of employability and mobility of graduates

A second type of programme aims at reinforcing the labour market position of graduates by increasing their employability and mobility. These programmes might include labour market monitoring and counselling and guiding instruments. But what is even more relevant to this particular study are the measures that have been taken to redesign the curriculum so there is an 'employability-effect'.

Universities, polytechnics and professional colleges are increasingly stressing the need for *multi-disciplinary* courses in their curricula. They are creating more opportunities for flexibility when designing educational programmes which receive a more modular structure, with an emphasis on specific blocks of courses. Students have more opportunities to design their own learning route. They get more options to take courses outside disciplinary boundaries. They can take courses in other disciplines, at other institutes, within the framework established in shared agreements concerning the general curricular structure and content so that they can broaden their scope and qualification profile.

Universities, polytechnics and professional colleges have developed *new integrated study programmes* that combine knowledge from different disciplinary fields. These might be new interdisciplinary studies, crossing traditional boundaries, such as bio-physics, biomedical sciences, and bioinformatics. But combinations of traditional disciplines within integrated curricular programmes are also possible, such as for instance, qualifications as 'management and law' or 'health and sports' in higher

professional education. Such ‘double’ qualifications improve the graduates’ opportunities on the labour market.

Universities, polytechnics and professional colleges create programmes with broad Bachelors and further *differentiations in the Master phase*. These differentiations might also *cross traditional boundaries* and thus provide a better fit between the qualifications and labour market demands. Differentiations are usually developed after having consulted actors in the professional fields of the disciplines and on the labour market.

Differentiation of master in physics

A university has split its master in physics into 4 differentiations: a) a research master, qualifying for traditional jobs in scientific and applied research; b) a management master, qualifying for jobs in the management of research labs, technical departments, projects; c) an educational master, qualifying for traditional jobs as teacher in physics at secondary and tertiary education; and d) a communications master, qualifying for jobs in scientific marketing, communications, journalism. Each of these 4 masters qualifies for a different segment of the occupational labour market, but they build upon the same basic disciplinary knowledge. The differentiations were developed when research into labour market careers of graduates revealed that physicists not only are employed in traditional fields like research and teaching, but also in less traditional fields like management, marketing and communication. Career paths in these directions might be interesting for students who otherwise would not have chosen a physics study.

These innovations in curricular design, educational programming and pedagogical practices have led to a visible improvement regarding the role of teaching in academic practice. Although research performance is still seen as the main criteria for determining the accountability of HE staff, teaching has also acquired a new status. At many universities and polytechnics, special career paths have been set out for teaching staff, with a distinct division having been made between tasks, performances and career paths in research. Personnel management currently takes specific requirements and competences involving teaching into account, for example in job performance evaluations, course evaluations, staff training, and career development.

3. Better access for ‘target groups’

A third type of programme aims at improving the opportunity to receive a higher education for ‘target groups’, such as women, older members of the community and migrants, who tend to be underrepresented in higher education. Programmes such as these are meant to reduce this inequality. They also could create extra opportunities for lifelong learning. However, such programmes are less commonly found in higher

education. Reducing inequalities is not seen as a top priority for universities and professional colleges. Nevertheless, several initiatives should be mentioned here.

An important theme in the debate is the *access of female students* to higher education. Though the total number of female students is rather high, they are underrepresented in the natural sciences and the technical disciplines. In close collaboration with the universities and the polytechnics the government has launched several campaigns and projects during the past few years in order to increase the number of female students who study these disciplines. Campaigns included measures such as career orientation, career consultancy, public education, road shows, female scientific role models, etc. Thus far, however, initiatives have not been very successful. The number of female students in natural and technical sciences remains rather low. They are still clearly overrepresented in the humanities and social sciences. Higher education continues to be segregated along gender lines.

Recently, more attention has been given to *promoting the academic careers of female scientists* as an instrument for breaking through gender segregation in higher education. Several universities have defined concrete strategies and objectives in order to increase the number of female employees in (higher) research and teaching positions. Though the number of women in higher academic positions is still quite low, they have more chances now to be appointed to hold chairs previously reserved for male colleagues. A side-effect is that they serve as role models in order to attract more female students. Again, these measures are particularly relevant for the natural and technical sciences, and to a lesser degree for the humanities and the social sciences.

In the future, older members of the community will become a target group for institutes of higher education, as lifelong learning gains in importance. Actually, the *supply of courses for the older members of the community* is somewhat limited, however. There are programmes for the older members of the community at some universities, but they usually do not qualify them for the labour market or for occupational careers.

One exemption is the Dutch *Open University*, with its supply of courses for distance learning. These courses can be targeted to the needs of older people, who wish to have another opportunity to pursue an academic study, take a step further in their careers or improve their positions on the labour market. It is expected that opportunities for open learning and distance learning at a later age will increase with the rise of facilities for lifelong learning (interview Leijnse 2007).

Open University and life long learning

Recently, the Open University has taken some initiatives to stimulate life long learning e.g. learning of people at a later age, a later stage in life. The OU wants to establish a network with schools for higher professional education to develop tailor-made educational programmes that can be used as a 'second learning route'. Older people can get a bachelors degree with this arrangement. Prognoses point to large deficits of bachelors on the labour market in the future and better and more flexible acces for older people to this type of higher education might contribute to solve this problem. The OU also develops e-learning facilities, that make it easier for older students to connect their study with their work situation. The aim in the long run is to develop a broad open source learning environment, with free access to a package of services in the sphere of counseling, assessment and certification.

Less attention has been paid to *migrant students* in higher education. Migrants are clearly underrepresented at the universities. Some experts state that this is a matter of unequal access. Others believe that it is not a problem of higher education as such, but that it is a fundamental problem of education as a whole, starting as early as primary and secondary education. It is felt that solutions should first be found in these realms (interview Noorda 2007).

As previously mentioned, the initiative to make changes in this area does not play a major role when developing the policies and practices of institutes for higher education. Attracting students in technical disciplines and improving the labour market position of graduates have more priority.

Therefore, we end up paying more attention to the professional colleges for higher education and the polytechnics. These institutes appear to be more inclined to establish connections with the economic environment than the regular universities. Here, the demand side plays a more important role. Private companies and networks are involved for example in the joint financing of projects and teaching chairs, consultations regarding research programmes, contributions to curricula and courses, development of collaborative study projects, supplying work experience periods for students, etc. This is less commonly the case at regular universities. If these universities do look outside their perimeters, they usually decide to establish connections first with other actors within the scientific system itself. This could, of course, also include economic actors such as private research labs.

Joint interuniversity research and education networks

A few years ago the 3 technical universities in the Netherlands decided to establish a foundation - called 3TU - for joint education and research. Goals of the foundation are to qualify excellent scientists and to generate innovations that strengthen the competitiveness of the Dutch knowledge economy. Three fields are covered by the initiative: education, research and valorisation of knowledge.

For education the universities cooperate in a joint graduate school, which offers a number of joint masters. Courses of different departments and research groups of the participating universities were combined to arrange master programmes that qualify for new interdisciplinary fields of knowledge, like for instance sustainable energy technology. After a bachelor study at their 'home' university, students can easily switch to such a joint master programme. A broad spectre of technical master programmes is available for students now.

In the field of research the universities cooperate in 'centres of competence' and 'centres of excellence'. Here, researchers of the participating universities as well as researchers from outside can join collaborative research projects. The centres of excellence organize top-research in rather new fields, like intelligent mechatronics, sustainable energy and bio-nano applications. They aim at research which is relevant for society and have established systematic relationships with institutes for applied technological research. They provide extra career opportunities for graduates who want to continue their master study with a ph degree.

For the valorisation of knowledge the participating universities have established special units, called 'valorisation centre', 'innovation lab' or 'knowledge park'. These units organize several kinds of activities: support of technical business start-ups, innovation projects with companies in the region, cooperation with research labs of larger companies in R&D projects etc. Start-ups and joint projects provide opportunities for exchange of researchers between faculties and companies and extra career opportunities for graduates.

(see: www.3TU.nl)

4. Various policies and practices to improve connections

Actors and agencies in the field have developed various policies and practices for improving the connections between higher education and the demand side, e.g. the economic or business community. Again, we should emphasize that it is not an exhaustive overview, but it provides an impression of the type of practices that have been developed during the past few years. The following practices are particularly favoured and supported by the government and the field of science and technology.

- a. entrepreneurship in HE programmes;
- b. lectureships for applied research in HE institutes;
- c. small business centres at HE institutes;
- d. start ups and spin offs;
- e. establishment of research networks;
- f. contract research and consultancy services;
- g. mobility of researchers;
- h. informal contacts.

There is a focus on the formal mechanisms of knowledge transfer. However, formal mechanisms form only the 'top of the iceberg', as a Dutch technology council has concluded. Below the surface, informal contacts between users and producers are often far more important (AWT 2003).

a. Entrepreneurship in HE programmes

Stimulation of entrepreneurship in higher education is a highly-favoured instrument of policy agents in the field of technology and economy. An entrepreneurial attitude is considered to be an essential qualification for graduates who wish to find their way in a dynamic and flexible knowledge economy. During their study, students should have already started developing their entrepreneurial skills. Several HE colleges, polytechnics and universities have introduced special courses to learn 'entrepreneurial skills' in the regular curricula. Courses often combine theoretical modules with experience in actual practice, for example, in projects to start up a fictitious business, develop a scientific finding into a marketable product, explore the process of licensing and selling products, etc. At several professional colleges and universities special teaching chairs for 'entrepreneurship' have been installed in order to stimulate and coordinate efforts in this field and to establish relationships with interested parties.

b. Lectureships for applied research

A new phenomenon at the professional colleges for HE are the lectureships for applied research. This is a programme which is supported by the government in order to better equip the colleges for knowledge development regarding applied research. Each college has been given the facilities to establish a number of lectureships, which could cover the whole spectre of disciplines: alpha, beta, and gamma. They are usually focussed on current topics and trends that have a high priority in the professional field. One of the functions of the lectureships is to provide a platform for research and reflection about new developments in the profession such as knowledge, methods, and practices. Lecturers have facilities to organize 'knowledge circles' with teachers, researchers, students and practitioners in the field. Lecturers should become a kind of link between the institute and the demand side, e.g. the professional environment of the discipline involved. This, in turn, should lead to more interaction and a better circulation of knowledge; from education to practice and vice versa.

c. Small business centres at HE institutes

Some professional colleges have established small business centres in order to provide an extra service to important actors who are on the demand side, i.e. small and medium-sized companies. These centres also serve as a kind of link in that they work

from two different directions, from the inside and from the outside. They coordinate initiatives, projects, training programmes, knowledge, etc. within the colleges that might be relevant for SMEs and focus their attention in an efficient way. They maintain contact with the local business community and observe the problems and questions that companies must cope with and which colleges might provide solutions. Business firms and colleges can be brought together and subsequently set up joint projects to tackle problems. Students can then participate in these projects and thus, receive extra opportunities to experience working in a real business environment.

d. Start-ups and spin-offs

A new instrument, one which has been promoted at professional colleges, polytechnics and universities, are spin-offs and start-ups, e.g. new small business firms of former students, graduates and/or researchers to exploit a specific scientific finding on a commercial basis. Academic research often generates spin-offs, which have commercial market potential. This potential cannot be realized within the institutes themselves, so instead they establish start-up firms under their umbrella. The firms are provided with facilities such as housing, marketing, administration, accountancy, juridical support, promotion, communications, etc. The institutes can also participate by using financial start-up grants. Researchers can be deployed to assist the new firms. If start-ups succeed on the commercial market, they can become independent in the long run. Start-ups can provide extra labour market opportunities for graduates from the disciplines involved. They can serve as a steppingstone in order to secure more permanent jobs in larger companies. In this sense, they have a specific role in a transitional labour market.

e. Establishment of research networks

There is a strong tendency towards more networking in several sectors of the Dutch economy, for example the food industry, medical research, agribusiness, and energy technology. Besides the traditional public and private R&D institutes, new organisational forms are emerging with a hybrid network-like character.

Three types of R&D networks can be distinguished (AWT, 2003):

- outsourcing of constructions (from large companies to institutes for contract research)
- public-private partnerships (cluster projects, programmatic structures, sectoral pps)
- pre-competitive research consortia.

Initiatives to establish a network might come from the scientific community, but often initiatives are also taken by the business community itself. Usually, experts from different disciplines and different institutions (universities, knowledge centres, and in-company R&D labs) work together to generate new knowledge and further de-

velop this knowledge into applicable industrial innovations. Within these networks, traditional borders between fundamental and applied research appear to be fading away, as well as the borders between the institutions in these fields. These networks can provide extra labour market opportunities for graduates. But they are typically transitional labour markets. Networks are usually temporary constructs; the jobs are usually temporary jobs. This requires a lot of flexibility on the part of the workers.

f. Contract research and consultancy services

Contract research and consultancy done in commission for external parties, such as in the economic sectors or companies, is quite the common practice in Dutch HE. For HE institutes, it provides an extra source of income, besides the funding received from the government and the scientific councils. Contract research and consultancy services are usually conducted by the research staff. They may be connected with regular research, but contract and regular research are usually separate, with contract research often being a mere by-product of fundamental research. However, in several institutes and disciplines, where contract research has become a substantial source of income, special departments have been established to facilitate contract research. This is because contract research requires another way of operating than regular research does. These departments can also function as transitional labour markets, thus offering graduates steppingstones to a career in science and technology.

g. Mobility of researchers

The mobility of researchers is particularly relevant when it crosses the boundaries of the scientific and the economic system. This takes place when, for example, scientists cross over to positions in companies or when specialists from companies receive appointments at universities or polytechnics, as managers, as teachers or as researchers. These crossovers are actually stimulated, by both the government as well as the business community. Another form used in promoting mobility of researchers is in the setting up of joint projects, which are partly executed at the HE institute and partly at a company that is participating in the project. Furthermore, connections can be established when in-company researchers receive the opportunity to pursue a doctorate study at a university.

h. Informal contacts

As previously mentioned, informal contacts between HE staff and business people provide good opportunities for establishing better connections. Researchers in specific fields meet each other regularly at conferences, seminars, expositions, etc. The

internet highly facilitates further contacts. Both HE institutes and large companies stimulate these kinds of informal exchange.

In summary, overseeing the arguments, we can state that several initiatives are taken to bridge the gap between institutes for higher education and research and the business community, especially in the technical disciplines at professional colleges and polytechnics. Initiatives first of all are aimed at solving problems due to the innovation paradox. But in doing so, they can also contribute to labour market entrance and the employability of students and graduates.

In addition, three types of programs help universities adapt to the new demand from labour markets and the knowledge society. These are programs which stimulate transitions from secondary to higher education, which are directed at reinforcing employability and mobility of graduates and which improve the access to higher education for new target groups.

1.3 Reform in higher education

After having described Issue-2, higher education and work, in the previous section, we will now discuss several of the approaches that have been used by Dutch HE institutes in order to reform their programs in light of the paradigm of change from education to learning. First, we focus on two approaches: a) dual or work-based learning, as introduced in academic education; and b) competence-oriented learning, as practiced in a number of professional HE colleges. Each of these two approaches characterizes a shift from a more passive to a more active way of learning and from learning inside to learning outside specific educational contexts. Afterwards, we will discuss a third approach (c) which is also relevant, namely, digital learning or e-learning. E-learning is becoming increasingly popular in higher education at the moment.

(a) Dual learning in higher education

Dual or work-based learning has a long tradition in the Netherlands, especially in the field of (medium level) *Vocational Education and Training*. In the VET-system, dual learning is one of the major paths which can be taken in order to achieve full fledged craftsmanship in different branches of industry, trade, technique, business administration, the services and the health and care sector. What is specifically characteristic of dual learning is that the study program has two components: a more theoretically oriented school-based component and a more practically oriented work-based component. The practical part of the program is usually organized by companies or by special practice training centers. There are two varieties of dual learning: a) the ‘theo-

retical' variant, with a maximum of up to 40% of practical training, usually in the form of work experience periods; and b) the practical variant, with a maximum of up to 80% of practical training, usually at the workplace within a company itself, on the basis of a formal labour and learning contract. Dutch VET-programs are all organized according to one of these dual structures.

During the nineties, dual learning was also introduced in *higher professional education* in the Netherlands. It was promoted as a strategy for improving the relationships between HE colleges and the business community, particularly small and medium-sized companies (SMEs). This was done in order to create a better fit between educational programs and the qualification demands made on the labour market and to provide opportunities for students to perform tasks in actual practice. It was also meant to facilitate the transition phase in which students would leave school and enter the workforce. Subsidy schemes were developed to stimulate the HE colleges to implement dual learning trajectories.

SME road

The so-called SME-road, which was introduced in the nineties in higher professional education, is a combined trajectory of learning and work in actual practice. It provides students first with 3 years of fulltime education at their institute. They acquire their basic professional competences in this period. After the 3rd year, however, they can go out looking for a job in a small or medium sized company in the environment. They can complete the 4th year of the study within that company, with a tailor made program adapted to the demands of the job. The company takes care of the practical part of the program. The institute provides additional courses. For instance, students can opt for courses in logistics, marketing, administration, company management, etc., which are complementary to the technical tasks and projects they conduct at their workplace. The SME-road was particularly promoted to improve the connections between HE colleges and small and medium sized firms in their local environment.

In the late nineties dual learning was also introduced in *academic education*, firstly on an experimental basis, supported by extra grants. A number of universities actually took this opportunity to rearrange study programs on a dual basis. Dualization could cover complete programs, such as biology, geography and econometrics or certain doctorate specializations. These might include for instance corporate training specialization in pedagogies, a labour law specialization in Dutch law and a minor in journalism and communication in language studies. Dual learning was advocated by experts and policy makers as a way in which flexibility and diversity in academic education could be augmented (cf. Geurts & Meijers 2003).

The introduction of dual learning was not undisputed in academic circles. A major concern was the quality of the practical component involved in the programmes. It was questioned whether it was possible to uphold academic standards if learning was

organized outside the universities, since the opportunities to learn would be partly determined by the requirements of the workplace. Hence, the experiments were evaluated by the Inspectorate for Education precisely with regard to this question: “Can academic standards be guaranteed in dual learning?”

The evaluation revealed that dual learning is clearly considered as ‘academic plus’ by all of the actors involved. According to the Inspectorate, it can be enriching for higher education and it offers interesting perspectives with the Bachelor-Master cycles providing new opportunities in the future. Dual learning could particularly be applied in the Master phases of higher professional education, with introductory courses involving dual learning in the Bachelor’s programme (Inspectie OCW, 2002).

(b) Competence-oriented learning

During the nineties, competence-oriented learning became popular among policy makers, educational experts and consultants, as it was seen as a new concept for designing educational programmes, as it applied the principles of active or constructivist learning. During the past decade, schools for medium level vocational education have implemented the concept on a large scale, first on an experimental basis, and later under general policy directives. It is currently the objective of the Government for all VET-schools to have introduced competence-oriented learning by 2010.

The schools for medium level VET were later followed by a number of colleges for higher professional education and by a few faculties at several universities. At the universities, however, competence-oriented learning has not yet found many applications. Universities are less used to working with extended systems of competences, and they appear to be less inclined to use them as guidelines for their study programmes.

In the Dutch debate about competence development and competence-oriented learning, in general, two approaches can be distinguished:

- a) a more differentiated approach, which considers competences as a kind of ‘generic skills’ (social, communicative, etc.) which can be added to the body of professional knowledge and expertise a student must acquire in order to be a competent worker in his or her discipline;
- b) a more integrated approach, which considers competences as a fundamental part of the professional knowledge and expertise that a student must acquire if he or she wants to be able to solve key disciplinary problems effectively.

In the Netherlands, both approaches have supporters, but advocates in higher education have particularly emphasized the integrated approach. Mulder, for instance, an expert on corporate training and competence development, defines competence-oriented education as 'education which integrates disciplinary professional knowledge with professional capabilities, corresponds with later professional practice, gives application and integration of professional knowledge a more central place and stimulates the development of learning capabilities of students'. Only factual knowledge is not sufficient any longer, as students need a broad basis of competences in order to be able to execute concrete tasks and solve key problems in their later professional practices (Mulder 2000). Onstenk, an expert on work-based learning, also connects competences with key problems in professional practice. In his opinion, a competent professional is someone who can effectively cope with the concrete tasks and problems he or she will encounter later during professional practice. Therefore, he needs a broad basic education which combines four types of competences (Onstenk 2001):

- professional and methodical competences: abilities to execute professional tasks and solve key professional problems connected with the products and services to be delivered;
- organizational and strategical competences: abilities to deal with organizational contexts and problems connected with working as a professional in organizations;
- social-communicative and normative-cultural competences: abilities to collaborate in the working communities in the professional field and to deal with the expectations rising within these communities and the wider environment;
- learning and development competences: abilities to contribute to self development and development of the organization and the profession.

In the Netherlands, there are no general prescriptions, standards or formats for implementing competence-oriented education at HE institutes. There is some standardized input from consultants, of course, but the institutes are free to develop their own policies and strategies. In practice, one can see a variety of only minor adaptations that have been made to the existing curricula instead of a complete redesign of study programmes and didactical methods. However, the number of colleges that actually has implemented an integrated approach has been rather limited up until now. Furthermore, implementation is restricted to only certain study programmes, which perhaps lend themselves more to applying concepts such as competence-oriented learning and integrated learning, for instance the social studies, management studies, health and care programmes.

Student companies

Entrepreneurial competences are highly valued nowadays in many services sectors in the Netherlands. Some schools for professional education (medium and higher level) have introduced 'student companies' to provide better opportunities to develop these competences. Groups of students start a real business, in the market, on a commercial basis, and thus get acquainted with all aspects of entrepreneurship under real life conditions. For instance: students of a sports college (medium level) organize a large public fitness event, every year, to promote and demonstrate different sports. It is run on a commercial basis, as a separate foundation, in collaboration with fitness companies and schools, sports clubs, suppliers, sectoral organizations, advertising agencies, local communities, the media. Teams of pupils are responsible for different aspects: programming, organization, management, marketing, public relations, advertising, logistics, catering, security etc. Another example is a group of sports students at a school for higher professional education, who established a commercial bureau for mediation between certified fitness instructors who search for a job and fitness clubs and companies that have a job to offer. Still another examples are some health care students who started a business to support older, handicapped people: visit them at home, have a talk, take a little walk with them and if necessary let their dog out, if they are not able to do it themselves any longer. In this way, in real life, they learn the competences required to establish and run a small business in a specific market niche.

Despite the full endorsement it received from policy makers and educational experts in the past, competence-oriented learning is still a disputed issue in the Netherlands nowadays. There are advocates of the new approach, but also fierce critics. Within education itself criticism is heard from various sides: students, teachers, parents. But also representatives of the professions and the business community express their concern about the reforms made at the schools and colleges. Critics usually stress one or more of the following as having negative consequences:

- the knowledge base of professional qualifications becomes too small;
- professional knowledge becomes too fragmented and dispersed over 'modules'
- students do not obtain a coherent picture of the body of knowledge any longer;
- there is a proliferation of tailored, even 'individualized' learning trajectories;
- qualifications become opaque for external stakeholders due to proliferation;
- students receive too little structure, which causes the weaker students to suffer
- the profession of the teacher is degraded into a kind of educational counsellor;
- teachers become overloaded with routine work due to new assessment procedures;
- reforms are often just paper work, bureaucratic or even 'cosmetic' exercises.

It appears, in the current situation, that HE institutes have become more careful when implementing competence-oriented learning in their educational programmes in view of the growing criticism. However, no systematic evaluations have been made available as of yet, which could provide better insight into the state of affairs, the scale and

problems of implementation, the added value, the positive and negative results and the effects of this new approach.

(c) Digital learning in primary, secondary and higher education

E-learning in higher education (HE) is a concept which can be defined in many ways. However, these definitions always contain the elements of ICT-usage in combination with the internet and are focused on hardware (infrastructure) as well as on learning processes. An authoritative circumscription is given by the OECD: '*E-learning refers to the use of information and communications technology (ICT) to enhance and/or support learning in tertiary education. E-learning refers to both wholly online provision and campus-based or other distance-based provision supplemented with ICT in some way.*'

The past few years, e-learning has been perceived as important in the context of HE as well in the Netherlands.

In March 2005, the Government published a first white paper on e-learning in HE (MinOCW 2005). On the basis of the strategy revealed in this paper, the Government and other relevant parties involved in the context of HE (VSNU, HBO-raad, Open University, and others) jointly developed a National Action Plan E-learning in HE, which is still currently in use today and intended for use in the future.

It should be mentioned beforehand, that the Netherlands is not a front-runner in the world of e-learning as far as renewing learning processes is concerned. On the other hand, when viewed in a comparative perspective, the Netherlands performs better than average with respect to the implementation of ICT and Internet infrastructure in HE. Therefore, a paradigm shift from education to learning still seems far removed from the reality in HE. A second conclusion is that the development of e-learning and more, in particular, the changing of learning processes in primary, secondary and vocational education is substantially more outspoken than in HE. In the long term this will also have far reaching consequences for the way learning processes take place in HE. In the future, this will even be more so since the world of HE has become more competitive and HE institutions must compete much more actively when trying to attract domestic and what is also increasingly the case, foreign students (Boezerooij 2006)

The Government sees e-learning as being supportive of its strategic HE-policy. In this perspective, e-learning will have to facilitate the necessary transition that must be made to a knowledge society and to achieve the Lisbon-goals. Moreover, it should reinforce the international positioning of HE by making Dutch HE more attractive for foreign students. Finally, e-learning can further improve and usher in the participation of new target groups in HE, such as the employed and the unemployed. Attention will

be devoted to stimulating those who have completed their vocational education at the secondary level to further their vocational education at the tertiary level. In the future, enrollment in HE should have increased by 50 percent and should also have become more diverse than it is at present.

In a broader context the Government wants e-learning also to play a prominent role in new demand-oriented forms of innovative education, and they would like it to fit in well with the requirements of the network society, such as competence learning, co-operative learning with ICT-support, and distance learning. Generally speaking, the quality of education should be improved.

At the moment of writing its white paper (2005), the ICT- and internet infrastructure of Dutch HE-institutions proved to be in good order. Each Dutch HE-institution has its own advanced ICT-network and network of computers and in addition, each institution receives a certain amount of ICT-support to use for education. ICT-applications are widely used for standard applications (word processing, internet, e-mail, etc.) and for electronic learning environments (Blackboard). On the other hand, ICT is almost never used to further educational views or to develop strategic planning. Compared to other countries, the Netherlands does not take a vanguard role. Compared to the 60 largest economies in the world, the Netherlands scores 7.6 on a scale of 1-10. The Scandinavian countries, the USA and South East Asia perform considerably better.

It is the intention of Government to further stimulating the development of e-learning in Dutch HE by creating the proper conditions for the HE institutions. However, the responsibility for implementing e-learning remains the task of the HE-institutions themselves. A key role in this respect is played by SURF (and one of its important offshoots SURF-net), a networking institution created by the HE-institutions themselves and the Government. In 2005, SURF had an annual budget of about 33 million euros. SURF is responsible for the execution of the National Action Plan directed at developing e-learning further in HE-institutions¹. Besides the budget that SURF has at its disposal, it is estimated that all HE-institutions spend about 7 percent of their entire budget on ICT, namely 330 million euros annually.

The next step to be taken is to implement a more educational and strategic use of ICT at the institutional level, Government strongly favors the concept of *blended learning*. This is a combination of e-learning, internet usage and face-to-face learning. Accord-

1 The National Action Plan E-learning 2008 (NAP) has the following two objectives:
- improving access to higher education; and
- improving the performance of students as well as improving the quality of higher education.
For reaching these goals 2 x 4 million euros has been made available.

ing to Government, a far-reaching culture change will be necessary in the HE institutions, which in turn will lead to well-developed forms of online-education.

In order to give an impression of just how great this challenge will be, we will summarize briefly the results of evaluation research at the level of the HE institutions (universities and universities of professional education): the so-called ICT Education Monitor (Schooneboom et al. 2004).

In order to receive an impression of which role ICT currently plays in HE-institutions, we can display the results obtained concerning evaluation research in 2003. More recent results are not available at this time. Hence, the results, regrettably, will be somewhat outdated.

First of all, the ICT Education Monitor has confirmed that HE-institutions have a proper and good ICT-infrastructure. Many HE-institutions have drawn up an ICT-policy plan in the meantime and they have asserted how important ICT-skills are for students.

ICT is mainly used for information supply purposes, administrative functions and standard applications. It is used much less for substantive communication with students and for administering exams. Although there is an extensive collaboration between HE-institutions and related organization in the HE-domain, there is hardly any collaboration in the field of ICT with industry and organizations in the vicinity of the HE-institutions

The results also show that there is a discrepancy between the supply of ICT-infrastructure and the level of teacher satisfaction. Half of the teachers are dissatisfied with the technical support they receive for their courses, the lack of opportunities to log in at home and the help desk function. About two-thirds of all teachers are also dissatisfied with the didactical support related to ICT. Nevertheless, there is still a great potential among the teachers for using ICT-innovation more in education.

All in all, the ambitions seem to be much higher than what actually has been reached by implementing ICT and education in HE-institutions.

One of the first conclusions to be drawn is that during the past few decades the public education system in the Netherlands, with active support of the Government has, on the whole, invested much in ICT-infrastructure (hardware and software). Nowadays, computers are a common phenomenon at schools and universities and in addition, supportive organizations, such as SURF-net and Kennisnet, play an important stimulating role.

At the same time, up until today e-learning has only played a modest role in the renewal of learning processes. This definitely has proven to be most difficult. Nevertheless, there are differences in development. Primary schools and secondary schools appear to have made more practical progress when implementing new learning processes than the HE-system has.

Evaluation research shows that the ambitions and expectations of teachers and managers still are rather high as regard to the opportunities for using ICT in renewing learning processes. This is despite the fact that practical experience and progress have been difficult and to some extent also discouraging (Rubens, 2003). This also holds to a large extent for the Government. Although the ambitious policy goals, such as a prominent role of e-learning in new demand-oriented forms of innovative education fit in well with the requirements of the network society, have not yet been reached. The Government remains optimistic about the future significance of e-learning in the context of the knowledge society. In the next few years, it has vested its hope in *blended learning*, a practical combination of e-learning and classroom learning. The paradigm shift from education to learning, albeit still far from having been achieved, continues to beckon.

In summary, various curricular reforms in the Dutch system of HE have anticipated a possible future paradigm shift from education to learning. There have been and there still are programmes and experiments which involve dual learning, competence learning and digital learning. The most promising and successful in the short term has been dual learning in HE. But at the same time there, after the first successes and failures, there seems to be some reluctance to continue down this path. Perhaps the technologies of digital learning and e-learning will, in due time, give a new impetus to the transition from education to learning.

Conclusions Chapter 1

When evaluating Chapter 1, in which we focused on how the Dutch system of HE has anticipated and adapted to the European knowledge society, it can be stated that many initiatives have been taken in this context, but at the same time still much has yet to be realised. First of all, it has not completely been made clear what the role and function of the HE system in solving the innovation paradox in the Dutch economy should be. The Government has gambled and used a strategy which mobilizes all of the talent in Dutch society without, at the same time, striving to implement structural reform to the system of HE that are well-suited to a European knowledge economy (financing structure, incentive structure, binary system, knowledge transfer deficiencies, etc.). Nevertheless, there are still various reforms taking place that have contributed to solving the existing problems. This can be particularly observed in the content of the educational programmes, the links made between the HE system and industry and in the long run, the facilitated access for certain groups to participate in tertiary education and lifelong learning.

2 New social risks and the European social model

In this part of the report the findings the policy strategies and social risks will be summarized. Special attention will be devoted to the labour market risks of knowledge workers and the relationship between the demand side and those working in higher education institutes. This will then be set against a background in which the current discussion about European social models is taking place.

2.1 Which new social risks?

The first question to be dealt with is what are the new social risks in the emerging knowledge society for highly-qualified personnel? What role should higher education institutions play in order to protect these employees from these risks?

A meticulous and extensive literature search (De Boer & Van Mourik 2007) has provided us with the following preliminary list of perceived new social risks in relationship to the upcoming knowledge society:

- (a) Insufficient and unequal access to information and knowledge for certain social groups (Leijnse 2007).
- (b) Study performance of immigrants in secondary and higher education is lagging behind that of nationals (OECD 2007).
- (c) Weak national commitment to lifelong learning for all age categories. An accent has been placed on students below the age of 28 (OECD 2007).
- (d) An increasing gap or social divide between low-educated and highly-educated workers (De Gier 2007).
- (e) Critical labour market transitions during the life course (De Gier 2007b).

(a) Insufficient and unequal access to knowledge for certain social groups

Leijnse put forward the question that there is a strong and myopic identification with the need and availability of top talent in Dutch society. This one-sided identification with top talent puts some social groups at a disadvantage with respect to having access to knowledge. The main focus of universities and polytechnics is on young people who enter higher education after finishing secondary education. The disadvantaged groups are in particular, the elderly workers. They have hardly any opportunities for regaining access to the higher education system once they have reached a working life status. As a consequence, they will not be able to continue to

develop their talents and employability. Apart from that, knowledge is not freely available to everyone. As such it is not a free public good. For this reason, Leijnse pleads for an *open source approach* to knowledge in the knowledge society. Internet offers us an array of technical possibilities for organizing knowledge via open sources and which is freely accessible for every citizen (Leijnse, 2007-interview). Open access to knowledge and information will not be sufficient to help solve this problem. People of all ages should be able to work with knowledge in the information society. This implies that people need to be taught the proper skills necessary for working effectively with knowledge. If a society does not succeed in accomplishing this, a huge social gap will develop between knowledge workers who are able to work in a creative way with knowledge and information and workers who do not possess the proper skills.

(b) Study performance of immigrants in secondary and tertiary education is lagging behind

A recent extensive thematic review of Dutch tertiary education that was carried out by the OECD showed considerable deficiencies in the participation of ethnic minorities as compared to nationals (OECD 2007). Ethnic minorities, actually, do not only participate less in the tertiary educational system, but they also perform less (see also VandenBosch-VanNiekerk, 2007-interview). In particular, completion rates for non-western immigrants are lower than for other population groups. In addition, once ethnic minorities have taken part in tertiary education, they have a greater preference for polytechnics and much less of a preference for universities. This form of undesired segregation may be the result of selection processes that have already started in primary and secondary education². One might perhaps conclude that two different streams of pupils and students develop from primary schools to higher education, a *black* stream and a *white* stream (Vink 2007). The black stream consists of students with an ethnic minority background and develops along the line of lower and middle professional education to polytechnics. In contrast, the other (white) stream develops along the line of pre-scientific secondary education to universities.

In former times the Dutch educational system also contained second-chance opportunities for those who failed or underperformed during their initial education. These were largely abolished in the past. If these opportunities still had, existed they could have played an important role in overcoming the actual segregation tendencies (Rinnooy Kan 2007).

2 According to the interviewed employer union representative, it is not so much the structure of the educational system that causes segregation and inequalities, but the fact that children of immigrants are hindered by considerable language arrears. This could be solved by paying more attention to the prevention of social arrears, such as testing young children's linguistic abilities, youth care, etc. (Renieke 2007_interview).

As a consequence, this not only presents a clear and sustainable social risk for ethnic minorities, but it also implies a certain degree of human talents being wasted in the knowledge economy.

It must be stated, however, that during the course of time the participation of non-westerners has increased, both at polytechnics and universities. In 2004, 7,748 non-western immigrants attended a polytechnic, which equals 13.4% of all polytechnic entrants; and correspondingly 2,242 non-western immigrants attended university. This figure equals 8.2% of all university entrants in that year.

(c) Weak national commitment to lifelong learning for all ages

The same thematic OECD review pointed to yet another deficit in the system of tertiary education in the Netherlands (OECD 2007). This is the almost total absence of programs which are geared at lifelong learning. The tertiary system is focused on the age group from between 18-30 years old and practically does not serve any older age groups. There are a small number of exceptions with respect to some part-time initiatives and there is also a possibility to enroll in the Open University which is specialized in distance learning. Enrolment in higher education that goes beyond the age of 30 accounts for roughly half of the OECD average.

About 15 percent of the working population actually participates in activities that could be classified as lifelong learning activities. This percentage corresponds to the European average. At the same time, countries such as Sweden, Denmark, Finland and the UK perform considerably better in this area. An added problem in the Netherlands is that the majority of the courses offered has a functional and applied character and do not involve acquiring legally-recognized certificates or diplomas. Therefore, the significance of having completed these courses, in terms of investing in sustainable lifelong learning activities, is still rather unrecognized. The major reason for this is twofold. Firstly, a national future-oriented strategy with respect to lifelong learning is almost entirely absent, and secondly, companies as a rule do not stimulate their workforce to do training courses while working (Platzer 2007).

The need for both government and industry to play a more active role in this field is increasing because during the next decade a shortage of highly-educated workers has been predicted. In 2020, there will probably be a shortage of highly-educated people in the Dutch economy numbering approximately 200,000 (Renique, 2007-interview, Noorda-Levie, 2007-interview and Van den Bosch-Van Niekerk, 2007-interview). Apart from this fact, a more extensive range of lifelong learning activities will help contribute to more employment opportunities for the low educated, the immigrants and the elderly workers.

(d) Increasing gap or social division between lower educated and highly-educated workers

Labor market policy in the Netherlands is focused on activating the labor force as much as possible within the context of the Lisbon goals and the European Employment Strategy (EES). In 2010, 70 percent of the total labor force will actively have to carry out paid work. The accompanying strategy of transforming the more traditional redistributive *welfare state* into a so-called *activating participation society* was initiated at the start of the nineties, a time in which the unemployment and disability figures in the Netherlands were high. This strategy mainly consisted of a combination in which the entitlements to social security such as unemployment benefits, disability benefits was limited and the possibility to take early retirement for older workers was curtailed. Active labor market policies were no longer developed, such as the policy of introducing temporary subsidized work and financial incentives in the social security and tax system and reforming the administration of social security and the public employment services (De Gier, 2007a).

In principle, this change of strategy has generally been very successful up until today. The number of beneficiaries has decreased, not only with respect to unemployment and disability benefits, but also to some extent with respect to social assistance (for the long term unemployed). However, some problems which are difficult to solve still remain. Firstly, despite a decrease in the supply of low educated workers on the labor market with a stable or an ever increasing demand for low educated workers, the socio-economic position of the low educated workers has not improved over time, as one might have been expected. The risk of becoming unemployed is twice or even three times higher for the low educated than the risks for the highly educated workers. Secondly, a large group of active low educated workers in industry and services is becoming increasingly dissatisfied because of the rather constant pressure on their purchasing power due to increasing prices and rapidly rising, and sometimes excessive salaries paid to their bosses. At the moment, the activating participation society is perceived in terms of downward mobility instead of having better occupational foresight. In sum, the transformation of the welfare state into an activating participation society does not at present benefit the low educated employed and unemployed people. Their chances for experiencing upward mobility on the labor market are thwarted to a large extent. For the most part, the benefits can only be reaped by the highly educated workers (De Gier, 2007b).

(e) Critical labour market transitions during the life course

State policy which is geared towards achieving an activating participation society that fits well with a globalized knowledge-based society also implies making workers as such less vulnerable on increasingly flexible labour markets. Job security has to be exchanged for work security, creating a situation in which regular and successful job hopping becomes the standard instead of contracts for a life time. In fact, at the mo-

ment the existing institutional worker protection arrangements are quite limited or they have even been abolished in the fields of social security and dismissal protection with the intention of increasing labour mobility. In this context, all categories of workers will be particularly prone to social risks or critical incidents which could occur during transition periods on the labour market, such as from school to work, from fulltime to part-time work, from employment to unemployment, from caring to employment and from employment to retirement (De Gier, 2007b).

In conclusion, in this section we summed up some of the important social risks linked to the emerging knowledge society. Some risks are not completely new, but they have received a new appearance in the context of the knowledge economy. Not only are the traditionally vulnerable groups prone to these risks, but in principle, all of the categories of workers and particularly elderly workers are susceptible to these risks.

2.2 Lisbon and Dutch social and economic policy

The next question to be dealt with is: How can the core elements found in the Lisbon strategy be integrated into Dutch socioeconomic policy? What role do the Lisbon priorities play in policies and processes aimed at revising the Dutch social model in the context of a globalized knowledge based society?

Discourse of government and social partners

The question of how Dutch welfare state arrangements can be reformed according to the new realities of global competition has aroused a lot of debate in the Netherlands during the past decade. The debate found its way to a recent advice offered on the mid-term socioeconomic policy of the Social and Economic Council, the SER. The SER is the principal advisory board of Dutch government for socioeconomic policy. It is a central platform for consultations of government and social partners, with representatives from various ministries, employers' associations, trade unions and independent experts. The SER acts at the national level.

The SER-advisory report was published by the end of 2006. It is a basic policy document that set the agenda for mid-term social and economic policy for the period up until 2015. The advice has a central place in the actual discourse regarding the adaptation of innovation, labour market and training arrangements in view of the Lisbon objectives. It is an important document, because the recommendations are subscribed to by both employers and trade unions unanimously.

SER on mid-term socioeconomic policy

The SER pleads for an offensive socioeconomic policy strategy aims at ‘further developing the welfare state into an activating participation society where everybody participates according to his capabilities’. In the Council’s view, the maximum use and development of economic potential requires adapting socioeconomic institutions (in line with the Lisbon strategy), expanding the reactive capabilities of all economic actors and employing a strategic focus on economic activities with a greater knowledge intensity. What is needed are a more entrepreneurial culture, more space for economic actors at lower levels to develop their own potential and more investments in education and training at all levels. By rehauling the existing arrangements regarding work, income and training, people’s positions on the labour market can be reinforced. This can be achieved by raising and broadening their qualifications (SER, 2006).

The SER defines three basic priorities:

1. Strengthening the growth potential of the economy through increased productivity.
2. Developing the social model from a welfare state to an active participation society.
3. More decentralisation and differentiation in the system of labour relations.

We focus on the first and second priority, which are particularly relevant for this study.

Strengthening growth potential

Besides creating more stimuli for entrepreneurial behaviour, the first priority requires *a reinforcement of the innovative capacity of society*. Higher public investments in education, research and innovation are required in order to reach this goal. In this regard, the SER subscribes to the arguments and recommendations of the Innovation Platform (IP) as laid down in the *Knowledge Investment Agenda 2006-2016*. Not only should higher education be stimulated, according to this agenda but investments along the whole line of the educational infrastructure are needed in order to safeguard the connection of everyone with the rising knowledge society. Both highly-educated knowledge workers, as well as craftsmen and workers with medium and lower qualifications, form the pillars of a knowledge society, in the IP and the SER’s view.

The SER recommends that the following steps be taken in order to reinforce innovative capacity:

- higher public *investments at all levels* of initial education, starting with pre-school education;
- more public and private *investments in higher education*, coupled with an ambition for excellence, more collaboration between institutes and more influence should come from the demand side;
- more *focus and mass on key areas* where Dutch research is strong already, such as for example.: nanotechnology, biomedical technology, food research, clean energy and water management;
- reinforcement of the knowledge and innovation system by furthering policies aimed at '*knowledge circulation*'; more influence from the business community, more attention paid to the European dimension of the system;
- improvement of the instruments for '*knowledge adopters*', in particular the small and medium- sized companies; extension of financial facilities for innovation (subsidies, vouchers, contracts with professional colleges, polytechnics and universities);
- ease restrictions on the deployment of foreign '*knowledge workers*' on the Dutch labour market;
- continuation of the Innovation Platform as a *think-tank and consultancy agency* for the government, the social partners and the scientific community.

Furthermore, the SER recommends that '*social innovation*' at company level be stimulated, expressed in the formula: dynamic organisations, flexible work, and smart management. The maximum use of competences at firm level increases the chances of a successful adoption of knowledge and innovations in practice, and subsequently raises the effectiveness of investments made in the knowledge infrastructure.

Building an activating participation society

The second priority requires bringing about a *change in labour market policies and institutions*, according to the SER: 'Institutions in the field of labour market and social security should both stimulate economic dynamism as well as serve the needs for greater individual diversity in careers. The system of employment, training and income should give space to variations in life courses and transitions between work, care and education. Investment in human capital in the economic active period is a strong instrument to stimulate mobility on the labour market' (SER, 2007). This view is inspired by the model of a transitional labour market with the focus on active labour market policies and lifelong learning (De Gier, 2007a).

The SER has proposed that the current system of employment, work and training be modernized by using a two-pillar model:

- a. The pillar of participation, addressing *investments in human capital*. The SER recommends that a coherent set of measures in the field of education, training, and child care, participation in work, prevention, reintegration and tax policy be developed. The following recommendations have been made:
 - introduce an individual facility for training in the framework of lifelong learning; this should be an individual's right, and not bound to a particular company or economic sector;
 - increase participation at the bottom of the labour market by implementing specific tax measures;
 - develop a 'personal service market', at the bottom end of the labour market that could offer extra job opportunities to the less qualified workers who cannot keep up with qualification demands in knowledge intensive sectors;
 - improve the labour market position of vulnerable groups, by combating early school leavers, strengthening qualification levels, supplying more on-the-job training places.
 - increase the participation of older employees in the workplace by stimulating personnel policies in companies that do not discriminate in terms of age.
- b. The pillar of income protection, addressing *social security systems*. The SER has no concrete recommendations with regard to this pillar. Social security systems have considerably been reformed during the past few years, with the goal of making them more compliant with active labour market policies. The SER now advises that these reforms be optimally implemented in order to improve the organizational infrastructure of the new systems and to continue improving the execution of new rules.

In the SER's view, further decentralisation and differentiation of labour relations will be supportive of these measures. Nowadays labour relations are strongly regulated at the central level by means of collective labour agreements. If actors on lower levels - sectors, companies, workers - have more opportunities to create tailor-made arrangements within the framework of less detailed collective regulations, flexibility and mobility on the labour market will increase, which will contribute to the development of a transitional labour market.

In summary, when viewing the arguments, we can conclude that at the central policy level the problem of the 'innovation paradox' is being addressed as a key issue in the Dutch debate regarding the knowledge economy, and a number of problems can be observed as key social risks that are connected with the rise of a knowledge economy

in the Netherlands: a) insufficient and unequal access to knowledge for certain groups; b) a weak national commitment to lifelong learning; c) an increasing gap between low and highly-educated workers; and d) critical labour market transitions during the course of life. Building better relationships between knowledge producers and knowledge users, strengthening human (educational) capital at all levels of the economy and increasing labour market flexibility by reinforcing the employability of people during their lives, are key elements of the strategy proposed by the SER and others for tackling these risks. Policy actors appear to be aware of the problems. They try to formulate solutions, in line with the Lisbon strategy.

2.3 Role of life long learning

First of all, it should be stressed that in regard to the main problems due to social inequalities in the future, the debate in the Netherlands, with respect to the role of higher education in the knowledge society, will be dominated by the ‘innovation paradox’. This is also due to the fact that the Dutch innovation system performs well in regard to producing knowledge, but it lags behind when it comes to applying knowledge in products, processes, companies and other user contexts. Thus, the innovative capacity of the system is not being fully used. Many efforts are now being taken to find measures for tackling this problem and strengthening the relations between the production and application of knowledge.

On the other hand, social risks are being debated to a much lesser extent. As previously stated, observers perceive four major social risks connected with the rise of the GKS:

- a) insufficient and unequal access to knowledge for certain groups;
- b) weak national commitment to lifelong learning;
- c) an increasing gap between low and highly-educated workers;
- d) critical labour market transitions during the life course.

Here we will elaborate on one of the most important social risks in the context of the knowledge society, that of the lack of commitment to lifelong learning.

There still seems to be a broad consensus regarding the traditional task of the higher education system to prevent social inequality, although opposing voices can be heard which echo the doubt of whether it should continue to fulfil this purpose in the future. Equal opportunity for all remains the guiding principle. It is believed that access to higher education should be available to everyone, irrespective of their origin, class, income, social position, etc.

Within this context, institutes for higher education define stimulating lifelong learning opportunities and they see the employability of graduates and alumni as having high priority. We will now focus on the educational programmes developed by universities, colleges for higher professional education and other agencies in order to achieve these objectives. It is not our intention to give an exhaustive overview, but we would like, first and foremost, to highlight some of the policies and practices that might prove helpful in this respect.

Role of employers in further training

Several experts who were interviewed have emphasized the fact that graduation from higher education does not necessarily signify the end of the training trajectory of a student in higher education. In many cases, higher education simply provides the initial basis upon which further training can take place in the private domain, on the job, under the responsibility of private companies. Many companies have their own internal labour markets with well developed in-company training facilities to qualify talented employees for specific positions in the company. For instance, traineeships are very popular in large technical companies and public institutes. Such traineeships usually combine further theoretical courses with practical traineeship experience in various departments and positions within the company. Sometimes, international exchanges are included in the programmes. Usually, it takes several years to accomplish a traineeship. Traineeships are highly selective instruments. They presuppose an adequate general academic basis, upon which a reservoir of company-specific knowledge, experiences and attitudes can be built.

It is argued by some experts that in this regard, there is a difference between the high-tech segment of the large companies, which employ academic graduates, and the low-tech segment, with its many small and medium-sized companies, which primarily employ graduates from higher professional colleges. The former requires broadly educated graduates, who can be 'moulded' by specific further training within the companies themselves. The latter needs specifically qualified graduates, who can master in-company jobs and positions without much further training. Knowledge requirements in these companies are more specific. There are fewer internal training facilities available.

The policy of creating more opportunities for lifelong learning has been promoted by both social and economic policy actors in several recent papers which provided advice to the Government concerning the role of higher education in the rising knowledge society and how higher education can subsequently be reformed.

Policy proposals and measures

The Dutch Social and Economic Council - a national advisory board of the social partners - particularly stresses its importance for the labour market. Predicted shortages in the future on the labour market require that more effort be taken to increase the number of HE graduates and also that more efforts be made to stimulate the further education of the already active population. More facilities for lifelong learning are needed in order to upgrade the qualifications of employees, to keep the qualifications of (older) employees up to date and to retrain employees if changes in work and the economy make a shift necessary. Furthermore, lifelong learning should be stimulated because it is necessary in order to create better opportunities for 'second chance' trajectories at later ages and later stages in people's careers (SER, 2003).

The Innovation Platform (IP) – the national expert think tank on innovation - elaborated several concrete proposals for stimulating lifelong learning in the strategic Knowledge Investment Agenda 2006- 2016. Apart from further differentiation of education programmes, levels and financial contributions, the IP proposes among other things:

- a) accessibility of study grants up to the age of 30 years;
- b) legal recognition of procedures for the validation of previous, non-formal education;
- c) stimulation of dual learning in medium and higher professional education;
- d) an individual financial facility for employees to stimulate investment in further training;
- e) extra attention for groups lagging behind, such as migrants, low income groups and those above the age of 30.

Furthermore, the IP would welcome initiatives to improve transitions from medium level to higher professional education and to develop shortened HE programmes for a better response to the diverse needs of students and varying labour market demands (IP, 2006).

Several of these proposals were adopted by the government. They have found their way in new legislation and/or policy programs. The system of study grants is accessible now for people up to the age of 30. Programs for recognizing non-formal education are currently in place. Several institutes have introduced shortened HE programs or transition courses in order to facilitate the admission of students to regular HE programs. The proposals regarding financial facilities for employees are still being debated. However, despite these measures, all in all, lifelong learning has not received the highest priority in Dutch HE policy at the moment (see also: WP2 country report).

Recent initiative: second learning routes for adults

Recently, a new action plan was launched by the Council for Work and Income and the National Initiative Lifelong Learning - a network of agencies for distance learning, like the Open University, SURF-foundation, the Television Academy - to realize an 'open and flexible infrastructure for Life Long Learning' (RWI, 2008). The action plan is widely supported, e.g. by the social partners, the local communities, the public and the commercial educational sectorial organizations. Participants are among others: the VSNU (universities), the HBO-raad (professional colleges), the MBO-raad (secondary vocational education), the VO-raad (secondary general education) and the PAEPON (commercial training institutes).

The major objectives are to stimulate the creation of more demand-oriented 'second learning routes' and to stimulate actual participation of adults in these routes. As the plan states: *'In the longer run, the parties involved strive for a full, independent second learning route for adults, which provides them the opportunity to acquire professional qualifications by freely switching and linking informal, non-formal and formal learning in a way that fits best to their situation'*. To reach this objective, a further demand-driven development of the market for post-initial education is needed, with more tailor-made trajectories for medium and higher qualified employees and better opportunities for the recognition and validation of prior learning, e.g. learning outside the educational system.

The initiators have elaborated on a number of measures intended to stimulate such an open infrastructure for lifelong learning (RWI, 2008):

- on the demand-side (companies, employees, unemployed): development of adequate provisions for career guidance of employees and unemployed; development of adequate facilities for the training of employees, unemployed, special target groups;
- on the supply-side (education and training institutes): development of flexible qualifications and learning routes; development of collaboration with the demand side in open networks with innovative and flexible combinations of learning and work;
- mutual consultations between actors on the demand and on the supply side in regional and sectorial platforms; consultations should aim to better articulate the demand and to initiate new demand-driven lifelong learning trajectories;
- a national framework for the recognition and validation of prior learning and for vocational and professional qualifications, which supports the quality, transparency and compatibility of public and commercial education programs;
- financial arrangements supporting second learning routes for adults, such as those proposed by the SER and the IP.

The initiators propose that close connections be established with ongoing initiatives. In higher professional education a starting point can be seen in the network of professional HE colleges, recently established by the Open University. The colleges collaborate together in order to develop targeted HE programs for medium-qualified employees who have acquired several years of work experience, thus qualifying them further for a recognized HE bachelor or an associate degree. The programs use new didactical approaches, such as blended learning, work-based learning, learning communities, open educational sources, etc. Entrance levels are determined by the validation of prior learning.

In academic education a point of departure can be found in the recent agreements made between the universities regarding the further flexibility of learning programs, especially the Master programs. However, the universities will remain responsible for initial education in the first place. The Open University already offers academic (second) learning programs for adults. (RWI 2008).

In summary, the commitment to lifelong learning is still generally rather weak in the Netherlands, even on the part of the higher education system. Fortunately, important initiatives have been taken to improve this situation recently. Time will tell if these efforts will prove to be fruitful and more than only good intentions..

Conclusions Chapter 2

In Chapter 2 we paid attention to the social risks emerging in Dutch society in the context of the global and European knowledge economy. Although several social risks are at work, a strong and explicit commitment to preventing or solving these risks is greatly lacking. Most attention is being paid to solving the innovation paradox.

On the other hand, it should be stated that solving the innovation paradox will, at the same time, imply the solution or reduction of the social risks mentioned. Apart from that, the activating labour market strategy strongly propagated by the Social Economic Council can also be seen as a risk preventing strategy. It seems that in the years to come one of the greatest challenges for the Dutch Government, industry and institutions for higher education will be to develop and implement a concerted and coherent strategy with respect to lifelong learning. Such a strategy will not only be beneficial for older workers, but for other categories of workers as well.

3 The European dimension and global responsibility

This chapter focuses on the major results regarding the European dimension and internationalization at Dutch HE-institutes. The Bologna process provides us with a first point of reference. Furthermore, international student mobility, obstacles for international mobility and responses to internationalization at the institutional level will be discussed.

3.1 The relevance of the Bologna process

Adoption of Bologna elements

In the Netherlands, the main elements of the Bologna declaration were incorporated into the HE system at a rather early stage. Shortly after the declaration, the Law on Higher Education was adapted to introduce the Bachelor-Master structure (BaMa), the ECTS-based credit transfer system and the Diploma Supplement, which describes learning outcomes and qualifications in a common EU standardized format. These changes covered the HE system as a whole. Both universities and professional HE institutes could apply the new BaMa-structure, and many institutes actually did. Within a few years after the start in 2002-2003 more than 80% of all HE programmes were rearranged in the BaMa-structure, according to a progress report of the Ministry of Education in 2006. Bologna recommendations regarding quality management were all incorporated into the quality control procedures of the national accreditation body, NVAO.

However, early adoption does not mean that full transparency from an international perspective has been established. According to Bologna promoters, further improvements are needed with regard to issues such as: a) admission procedures for students from other EU countries; b) procedures for evaluating the qualifications of foreign students; c) recognition and validation of qualifications attained outside educational contexts, for instance, in practical traineeships; d) description of learning outcomes (in practice, HE institutes use various standards, instead of the common standards of the diploma supplement format); e) the way in which study credits are counted and related to students' work loads; f) the relationship between credits and competences, as defined in various parts of the study programmes; g) incomparability of titles of

scientific (WO) and professional education (HBO). These issues are still being debated.

In context of broader reforms

The Bologna based measures described above fit in well with the ongoing trends of deregulation, decentralisation and standardization in Dutch higher education. These trends are reflected in the new Law on Higher Education. With this legislative act the Government wants to increase the autonomy of the institutes, strengthen influences from the market and the demand side (students, stakeholders) on educational programs and introduce forms of governance, with new checks and balances within and around the institutes. The Government withdraws from the primary process of education – this fully becomes the domain of the institutes themselves - while maintaining its responsibility for quality, accessibility and efficiency of the system. The relevant elements found in the new law are listed below (Ministry of Education, 2006):

- Increased *autonomy* for HE institutes; the law becomes a kind of framework act, with a general obligation of good governance in regard to education, instead of detailed regulations regarding primary processes and supportive management.
- More *flexibility* for institutes with regard to the development of study programmes; the focus of accreditation will shift from the level of ‘programs’ to the broader level of ‘domains’, within which a greater variety of programmes is possible.
- More opportunities for students to develop *tailored educational trajectories*; it is still debated whether or not this should also be facilitated by using a financial system of ‘learning rights’ for students.
- More facilities for *lifelong learning*, especially by introducing better procedures for recognition and validation of non-formal learning.
- More opportunities for the *collaboration of institutes* in different HE segments, for instance between WO and HBO and between public and commercial HE institutes.
- Extension of scientific research opportunities in institutes for higher professional education, with a focus on *applied scientific research* as distinguished from the pure scientific research conducted at universities.
- More opportunities for *joint degrees*, among Dutch institutes but also with institutes in other EU-countries; the binary system will be continued, however.
- Better *connections with stakeholders* on the labour market and a better organization of consultation with the demand side (employers, professions, branches) as regards the topicality and quality of study programmes.
- Coupled with greater autonomy: a greater focus on *accountability* of the institutes and on the monitoring of quality, especially with output indicators.

It is expected that through broader domains, flexible programmes, a wider range of opportunities for students in the curriculum, more autonomy of institutes, opportuni-

ties for collaboration and a distanced system of governance, the student-centeredness of HE will be increased.

In order to prepare students for the new requirements of higher education, changes in preparatory secondary education have also been introduced during the past years. Four 'basic profiles' were introduced, each qualifying for a specific, but still broad, range of studies in HE. New subjects were introduced, that provide a better fit with HE programmes. Greater emphasis has been placed on skills such as being able to study independently, planning and study skills, communicative skills, ICT-skills and basic research skills, which are considered essential for a good preparation to higher education. Self-study, team learning, project groups, experiments, small-scale research, are used in order to teach these skills. Furthermore, the quality of information provided and student counseling has been improved, in cooperation between HE institutes and preparatory schools.

3.2 Critical perspectives

The changes, introduced by the new regulations on higher education and the ideals which spawned these changes, are not undisputed in the Netherlands. Much criticism can be heard from the academic community which says that the push towards a more demand-driven higher education will be at the cost of the classical values of academic freedom and professional autonomy. Critics warn of the negative consequences that stem from market thinking in higher education (compare Lorenz, 2006):

- commodification of educational products and programmes;
- standardization of the educational processes;
- taylorization and deskilling of the professionals;
- the rise of managerialism at the cost of professional autonomy;
- counterproductive bureaucratic effects of (quantitative) output control.

Camouflaged by 'buzz words' such as 'knowledge society', 'modularization', 'interdisciplinary', 'stakeholders', etc. universities and faculties are fragmented and have degraded into a kind of knowledge factories with students as 'consumers' and managers dominating 'production'. In this way, the shift from staff-centeredness to student-centeredness might be at the cost of quality, measured along traditional academic standards. Several critical observers plead for a restoration of small-scale educational practices, centred within and outside communities of leading academics in specific professional fields. Further internationalization, for example as it is promoted in the Bologna process, is not considered to be an generally positive development judging from this point of view.

3.3 The role of internationalization in forming the European HE Area

In the Dutch HE system, stimulation of European (worldwide) cooperation has been assigned to the Dutch organisation for international cooperation in higher education, the Nuffic, which promotes international students and staff mobility and plays an important role in the assessment of foreign qualifications. Nuffic has established foreign offices in several EU countries and further abroad to provide information and promote mobility. Nuffic participates in various networks, stimulating international cooperation between universities. In the Netherlands, it is the national agency for the execution of the Lifelong Learning programme.

Recently, Nuffic published data concerning the international mobility of students at universities and colleges for higher professional education. The data cover both mobility from the Netherlands to other (EU) countries, as well as mobility from other countries to the Netherlands (Nuffic 2007):

1. In 2006, a total number of 49,750 persons from other countries were studying in the Netherlands, which is approximately 9% of around 570,000 students in total; 6,750 of them participated in a mobility programme. This number has slightly increased compared to the year before.
2. Around 50% of these students come from other EU/EEA countries; by far the most students come from Germany (14,000), followed by Belgium (2,400), Spain (2,000) and France (1,650); in between, China occupies a second place as a supplier country. Approximately 11% comes from the new EU member states.
3. Of all students, 39% are enrolled in courses at a university, 61% has registered for a study at a college for higher professional education. Around 80% of the students are enrolled in the Bachelor's programme. The most popular discipline is economics, followed respectively by languages and cultural studies, social and behavioural sciences, technology and health care.
4. On the other hand, 18,250 Dutch students went abroad to study in another country, which is roughly 4% of all students; some 5,250 of them were involved in a mobility programme. Most students went to other EU countries, i.c. the United Kingdom (3,900), Belgium (3,250), Germany (2,250) and France (1,150). Furthermore, 1,500 students went to the USA.
5. Half of the students go abroad for a practical traineeship; approximately one quarter goes abroad to take theoretical courses. The most popular disciplines are respectively: agriculture, technology, economics, health care, and languages.

International mobility in higher education is further advanced than in secondary education. In secondary vocational education the percentage of pupils participating in international mobility programmes is still rather low at just 0.5 percent, although it is increasing gradually. In secondary general education, mobility is at an equally low level. This low level is not specific for the Netherlands; however, it is considered to be an EU wide phenomenon.

The data on mobility provide some concrete indicators of how Dutch HE institutes participate in the European higher education arena. Furthermore, Nuffic has noted that the number of English HE courses has gradually increased. In 2007-2008 approximately 1,300 courses were offered in the English language, which is an increase of 100 compared with the year before. This includes courses which cover the whole spectre of academic and higher professional education. Many qualify for a (complete) Bachelor or Master's degree. A broad supply of English courses is attractive for students from abroad. One of Nuffic's strategies is to promote these courses by having special support offices abroad, in the EU and in other continents. The offices provide information, help students to orient themselves and evaluate qualifications and certificates that can be obtained from studying Dutch programmes and show students how to access criteria (see: www.studyin.nl).

3.4 Obstacles for internationalization

Although internationalization is gradually increasing - measured at least by mobility rates and the bilingual supply of courses- experts are still observing several obstacles for students (Geven, 2008). These obstacles pertain to financing their stay and study periods abroad, the recognition and validation of credits and certificates, and the stay and work permits in other countries.

An important point that should be mentioned is the use of Dutch study grants for courses in other countries. Until recently, this was limited and only possible for a small number of students under strict conditions. Since 2007, however, the rules have been liberalised so that more students can take their study grant with them. This is now possible after a three-year period of studying in the Netherlands and under the condition that the study is continued at a foreign HE institute with formally recognised programmes, which are equivalent to the Dutch programmes in regard to level and content. These criteria are monitored by Nuffic. The Netherlands was one of the first Bologna countries to introduce this possibility, which certainly has helped to facilitate students' stays abroad.

Another important point has to do with the description and validation of qualifications. HE institutes are still in the process of implementing Bologna agreements regarding the 3-cycle system, the use of national and EU qualification frameworks, the description of learning outcomes in a standardized way and the provision of certificates that are transparent across the EU. Although the Netherlands is a forerunner at policy level in this regard, in practice HE institutes are not always inclined to apply the recommended frameworks and procedures. Discrepancies still need to be solved and critical voices opposing standardization can be heard, in particular from the academic field (see: WP4 country report NL). Lack of transparency might cause obstacles for students going abroad. Some experts recommend a better and faster implementation of Bologna agreements to overcome these obstacles. Some plead for greater participation of international students in decision making circles to accelerate the process (for example, Geven, in *Europa Expresse* 15, 2008). Policy experts usually stress the added value of greater transparency: helpful to validate foreign courses and certificates, helpful for students to show qualifications acquired abroad, helpful for employers at international labour markets, supportive in mobility and exchange programmes. At HE institutes, however, people often have doubts about the possibilities of describing and assessing programmes and qualifications in terms of (standardized) competences, learning outcomes and credits.

A third point that should be mentioned are the regulations regarding stay and work permits for students, that might cause obstacles if students participate in longer study programmes or if they are employed for a longer period in their practical traineeship as part of the programme. In the Netherlands regulations have been liberalised recently. Foreign students now have more possibilities to study for a longer period and to work and stay in the Netherlands if they can find a job after graduation. The policy of the Dutch government is to expand the number of opportunities for ‘knowledge migrants’ to anticipate the expected shortages for higher educated ‘knowledge workers’ on the Dutch labour market.

3.5 Responses to internationalization

From the interviews conducted for our study, it appears that internationalization is not among the top priorities in Dutch HE policy and HE institutes. When reviewing the responses given during the interviews concerning the rise of a (global) knowledge-based society, the various debates on how to stimulate the application of innovations, how to establish connections with stakeholders relevant and how to compromise the stakeholders’ interests with the traditional interest of academic science and education were all found to be much more predominant. Internationalization is, in this sense, often a derivative of participation in innovation processes. However, that does not

necessarily mean that HE institutes are not taking specific measures to further internationalization.

The question of how individual HE institutes internally respond to the trends of increasing internationalization, Europeanization and globalization was investigated in the dissertation written by Luijten-Lub in 2007. The study consisted of comparative case studies of 30 HE institutes in 7 Western European countries - among them the Netherlands - and involved both general universities as well as more specialised HE institutes, such as polytechnics and business schools. The in-depth analyses particularly focused on internal organisational responses with regard to objectives, rules, activities and decision-making procedures. Some major findings of the study are:

1. HE institutes respond rather differently, developing their own objectives and activities and they find their own ways to involve the participants in the internationalization process.
2. Special staff units that have been established to further internationalization serve as an important organisational device for coping with the many requirements of internationalization. These international offices are usually placed at a rather central level within the institutes, and are kept separate from professional academic staff.
3. Specialized HE institutes appear to respond in a more active way than regular universities. Five out of 10 instances in which the highest percentages of foreign students were found to be specialized institutes, with a limited range of disciplines. These institutes usually have a positive attitude towards the Bologna agreements.
4. Institutes with more economically-oriented goals appear to have higher percentages of foreign students and appear to respond with more comprehensive sets of activities, including student exchanges, staff exchanges, international programmes, joint degrees, language courses, and practical traineeships abroad.
5. External regulations particularly influence the goals and mission statements regarding internationalization of HE institutes. Supranational agreements, such as those made in Bologna, appear to have more influence than national regulations in this field.
6. Goals appear to have an influence on the 'technology' of the institutes' curricula. Technology is also influenced by the number of foreign students. There are some indications, however, that these influences are mediated by the role of academic disciplines, e.g. the values and perceptions of different professional actors within the institutes.

Interviews conducted for our own study reveal that there are different views in Dutch HE about the degree and way HE institutes should establish connections with actors in their environment, e.g. the demand side in the business community and the wider society. Differences run partly parallel to the distinction made between the academic research universities and the colleges for higher professional education. The latter often appear to be more inclined to establish connections with the demand side than the former, who tend to retire behind the walls of academia due to the pressure felt to secure scientific funding. Relationships that are maintained by professional colleges are often established with actors at both the local and regional level, while general research universities often operate more on a national and international scale. However, practices vary between and within disciplines.

Conclusions Chapter 3

In Chapter 3 we focussed on the international dimension and the contributions made by Dutch HE institutes to the development of a European and broader higher education area. Although the Netherlands was quick to adopt the Bologna elements in its legislation and the Bachelor-Master structure, BaMa has been widely implemented and, HE institutes appear to be persistent in regard to implementing the standardized qualification framework and credit systems. Discrepancies still should be solved in order to facilitate greater and improved international mobility of students and graduates. All in all, the international mobility of students has gradually increased in the Netherlands during the past few years, but observers are also pointing to the risk of stabilisation due to obstacles in the area of obtaining study grants, the validation and recognition of foreign qualifications, and permits to stay and work. Furthermore, when it comes to education, international activities do not receive top priority at the institutes. They are usually organized in separate international staff offices. Concrete initiatives are usually left to individual students and teachers.

4 Main conclusions and debate

In this concluding part of our syntheses we will draw several conclusions concerning the described ongoing transformation of the system of HE and its future in the Netherlands in the context of the knowledge economy and the Lisbon Strategy. We will do this by making remarks on three different levels: the level of HE-systems themselves (universities and polytechnics), the national level and the EU-level respectively. Our starting point is an expert's expectations regarding the contours of the European HE research landscape in 2020.

A few years ago the Dutch Centre for Higher Education Policy Studies CHEPS conducted an interesting study which included the opinions of experts regarding the contours of the European higher education and research landscape in 2020 (Enders et al., 2005). Some 164 experts in different EU regions and from different parties involved – such as policy makers, university managers, researchers - were asked in a Delphi policy survey about what would be desirable in their view and what would be the probable outcome in 2020 of basic trends in higher education and research. Enders has presented the following results:

1. Experts generally agree that by 2020 the Bachelor-Master structure will have been implemented and that degrees will have been made uniform across Europe. They predict that only a few multi-disciplinary clusters of excellence will remain which can compete on a global level. Besides, regional innovation clusters will have come into existence under the responsibility of regional authorities.
2. Experts agree that it is not likely that by 2020 universities will have generally lost their critical intellectual function and that the majority of basic research will take place outside HE institutes. They do not expect that the accreditation schemes and agencies will have been abolished either.
3. Experts generally expect that the Lisbon strategy probably will fail and that the USA and Asia will continue to be more competitive in research. In Europe, the quality of academic research will probably be highly skewed in 2020, with the Southern and Eastern EU countries lagging behind the North-Western countries. They find these outcomes to be undesirable..
4. Experts expect that it is not likely that by 2020 a large number of students (>25%) will enrol in a full study in another country or (>40%) will switch from university after their attaining their Bachelor's degree. In their view, it would be more desirable to have obtained higher figures.

5. Experts have different expectations regarding the labour market position of graduates in 2020. Experts from Southern countries perceive a serious risk that the supply of HE graduates will exceed the societal demand in 2020, resulting in unemployment and overschooling on a large scale. Experts from Western countries perceive these risks as being less probable in Europe as a whole, and far less probable in their own home country.

In a further step, the data were used as input to develop scenarios for possible future models of European higher education and research. Enders designed 3 scenarios for 2020, which, depending on their basic coordination mechanism, can be characterized as (a) a 'science'-based, (b) a 'network'-based- and (c) a 'market'-based scenario. We shortly summarize the key elements, here (Enders, 2005).

(a) Science-based scenario

In the science-based scenario, HE will still be a differentiated and centralized subsystem, with a strong public segment and autonomous large scale HE institutes. However, compared to the actual situation, it will have adapted in several ways to the requirements for creating a new knowledge society. Lifelong learning will have become the standard. Education will not only be career-related but it will also be provided as a kind of 'social service' to new groups. Much teaching will still take place face-to-face in classrooms, although ICT and forms of blended learning will also be widely used. Students can design their own modular programmes that have been adjusted to competences already acquired, something which will have been facilitated by an extended use of standardized qualification frameworks. Universities will have become large scale institutes, with a central management, strong relationships with external stakeholders, but at the same time there will be clear boundaries between internal management and external stakeholders. In research, there will be a clear division again between an academic segment, oriented at basic research and dominated by public interests, and a private segment, oriented to applied research and partly dominated by the interests of the private sector. Both basic and applied research will have been structured by new international divisions of labour. This model has generally a 'central' focus.

(b) Network-based scenario

In the network-based scenario, the boundaries between the HE subsystem and other subsystems of society will have become blurred. The idea of a single university will have diminished. The institutes have been differentiated into a diverse ensemble of networks that have become the main mode for coordinating activities within and around universities. Authority and responsibility have spread over the networks in a diffuse way. The networks usually consist of a mix of public, semi-public and private entities. Relationships with external actors are a basic requirement. A strong regional

embeddedness is characteristic for the mass of HE institutes that do not belong to the select group of internationally competitive universities. Studies will be designed in flexible ways, providing each student with the opportunity to construct his or her specific learning route throughout the (regional) networks. Blended learning with support of ICT will remain important, but experience-based learning in actual practice will also be highly valued. The distinction made between initial and continuous education will have become blurred by lifelong learning arrangements, the integration of practical contexts in the learning processes and a flexible, modular design of programmes. Research will still be financed using public funds, but private companies will contribute considerably to (regional) joint industry-university activities and public-private innovation networks. Across Europe, disparities will have come into existence, between the North and West with their universities being mainly focussed on top research and the South and East, where universities will focus primarily on teaching. All in all, the model however has a 'regional' focus.

(c) Market-based scenario

In the market-based scenario it is expected that Lisbon will have partly failed and that the 'quality of life' issues will have gained higher priority on the political agenda, besides innovation and the knowledge economy. The system of higher education will have lost its differentiated character and will now encompass all post-school education and training. It has become a very diverse field, primarily driven by markets. Higher education programmes will be offered more flexibly by a wider set of institutions to a broader range of learners. Institutes will remain autonomous. The number of private providers of education and research will have increased. Prices, for example, tuition fees will be set by the institutes themselves. Lifelong learning will have become common practice. Adult students will sometimes outnumber newcomers. The institutional differences between universities, polytechnics and colleges will have been abandoned. Most of the 'universities' will be closely embedded in regional and local relationships with stakeholders who co-determine study programmes and co-finance various research projects. Local universities will be largely dependent on market sources, and public funding will largely be awarded to a select group of top institutes. Many institutions are small and specialised. All in all, higher education will have less of a 'sector' and more of a 'loose collection of institutes each pretending to do something in the fields of teaching, learning, research and development'. There will be a large diversity within and across EU countries. Quality systems will only provide minimal standards. There will be multiple accreditation systems. Quality will have been primarily left to the market. The focus in this model will be on the 'local' level, on 'micro-climates' as Enders calls them.

There is some similarity which can be found amongst these three scenarios with the three possible future types of university distinguished by Duderstadt (Duderstadt

2007). Referring to important forces that will drive change in our world, such as an ageing population, increasing ethnic diversity, globalization and disruptive technologies (info-bio-nano) Duderstadt discerns three different types:

- The global university;
- A society of learning;
- The meta university.

A *global university* defines its purpose beyond regional or national priorities in order to address global needs such as health, environmental sustainability, and international development. Therefore, a global university is: “a university in the world and of the world”.

On the other hand, a *society of learning* anticipates the increasing limited shelf life of knowledge and the increasing life expectancies as well. These developments will require that the existing postsecondary education enterprise be considerably transformed, but entirely new paradigms for the conduct, organization, financing, leadership, and governance of higher education will also need to be designed.

Finally, the *meta university*, involves “an extension of the philosophy of open software development to open up opportunities for learning and scholarship to the world by putting previously restricted knowledge into the public domain and inviting others to join both in its use and development”. The meta university is based on open course ware and is no longer constrained by space, time, monopoly and archaic laws and it will be responsive to the needs of a global knowledge society.

It is conducive for us to link an expert’s expectations to the actual state of affairs. In this respect we can see that in the Netherlands many developments and transformations are occurring that anticipate the knowledge economy and the Lisbon goals. Some of these are successful. Others, such as the introduction of e-learning and blended learning, still seem to be premature and have not yet caught on. On the whole, a grand design or blueprint depicting the future system of HE seems to be missing in the Netherlands, except for the idea that the HE system, to a large extent, should be functional in order to utilize the innovative capacity and competitiveness of the Dutch economy. Therefore, reforms remain incremental. In the end, such, an incremental strategy could prove to be successful. For example, if we compare reforms in the Netherlands with reforms taking place in other EU countries and the US, the Netherlands scores fairly well. Aghion recently assessed the performance of HE systems in EU countries with respect to both education and research (Aghion et al., 2008; also Aghion, 2007). Together with the Scandinavian countries and the UK, the Netherlands belongs to the best performing countries in the EU. For example, the Netherlands has within the EU, jointly with Sweden and Switzerland, well-funded universities. Furthermore, the Netherlands, just as Belgium, Italy and Switzerland, has unrestricted access to the system of HE and maintains an average access fee for students. At the same time, the scale of Dutch universities is on an average scale

comparison in the EU and, in combination with generous funding (20,500 euros per student), this stimulates good educational performance.

Moreover, the research performance of Dutch universities, when seen in comparison, is quite good. After the UK, the Netherlands performs best in the Top 50 Shanghai-ranking of universities in the EU. This place remains so in the Top 200 and Top of the Shanghai-ranking.

Finally, Aghion also has looked at the governance of European universities and again the Netherlands has scored fairly well. Dutch universities do have a lot of autonomy with respect to hiring scientific staff and they have great budget autonomy as well. Therefore, the level of self-governance is relatively high and the influence of the state is, compared to the Mediterranean European countries in particular, relatively low. At the same time, the level of influence of external board members on universities' governance, deemed as a success-indicator according to Aghion, is large.

Thus, all in all, the Dutch HE-system does not appear to be performing poorly in the EU-context. However, if compared to the US, the Dutch-HE system does lag behind. This is unfortunate for the Netherlands and the EU because European growth has been disappointing for the past 30 years. It was persistently lower than in the US. Aghion contends that there is much evidence that this situation is closely linked to the state of innovation and higher education in Europe.

One of the problems is the still relatively low level of funding in the EU. According to Aghion, Europe suffers from a 'double deficit' in higher education and research in comparison with the US. As a percentage of GDP, the level of funding of European universities varies across countries, but on average it is insufficient for teaching as well as research. As a percentage of GDP, the US spends 3.3 percent, whereas the EU 25 spends only 1.3 percent on HE (NL: 1.6 percent).

Another weak point of the EU HE-system is the relatively low level of student mobility and faculty mobility. In this respect the Bologna process, designed to create a European Space of Higher Education (ESHE), results more in quality convergence of undergraduate education than in a substantial increase in mobility across countries.

As previously stated, despite the relatively successful performance of the Netherlands in the European context, the conviction still remains that the Dutch innovation capacity is increasingly lagging behind and that this is partly due to the Dutch or innovation paradox (that is: "an excellent record in knowledge *creation*, but a mediocre record in innovation activity, which is defined as the successful *development* and *application* of new knowledge in new product and/or processes": OECD 2005, p. 104)). In solving this paradox, the system of HE in the Netherlands has a crucial role to play. It was only quite recently that some very new ideas were proposed in this context by the Scientific Council of Government Policy (WRR, 2008). In particular, the idea of creating new virtual and also physical so-called third spaces between industry and academic research might help solve the innovation paradox, as well as the suggestion

to privatize the spin-off efforts of the HE-system. The most provocative proposal made in this document was the idea to develop the Netherlands as a *hub of buzz*, a country which would become the core-spot in Europe or the world for scientific, economic and artistic creativity.

WRR-perspective

The WRR takes a remarkable stand in its last document on innovation in the Netherlands. In fact, it says goodbye to the more linear so called '*old thinking*' about innovation, that is a focus on R&D and the accompanying need of increasing the level of R&D expenditure. Instead, the so-called '*new thinking*' on innovation has been put forward. 'New thinking' in contrast to 'old thinking' is much more focused on the innovation system itself. The system of innovation is seen then as a sort of *sequence* or, perhaps to put it even better, a *cycle* of invention, innovation and dissemination by means of open interaction and communication, in chains and cross-border-, cross-sectorial, and cross-technology networks. *Openness* (in terms of collaboration of different-minded people and contexts) is a key-term in the WRR-approach and this should be applied in the next four interrelated themes:

- Innovation as a system;
- Innovation as a cyclical process;
- Innovation as evolution;
- Investing public money in innovation.

Openness is an essential pre-condition for being able to create new ideas and further innovation. In principle, the WRR is pleading for a change in the institutional and organisational conditions for innovation at the intermediate and micro level. At these levels innovation capacity is perceived by the WRR as having better chances of success. It remains to be seen though, to what extent the parties involved in the innovation debate in the Netherlands will internalise the ideas of the WRR.

Several themes, findings and conclusions of the CHEPS-study also address the issue of social risks in a future knowledge-based society:

- Differentiation between a selective group of top universities and a vast number of regionally oriented mass-universities;
- Differentiation between a public and a private segment, the latter attracting better staff and students with higher salaries and better research facilities;
- Differentiation among the student population, between those who are able to pay the high tuition fees at the top universities and those who cannot afford these fees; unfortunately this tendency would reflect income inequalities;
- Risks of unemployment when, with the rising student numbers, the supply of graduates would exceed the demand; overschooling is another risk which has been signalled in this regard.

However, social risks are not addressed specifically and explicitly. They are considered more or less as derivatives of the differing evolutionary paths of the HE systems as portrayed in the three scenarios depicted.

In previous reports which were written for this project, four types of new social risks were identified that could be linked to the rise of a knowledge society:

- Insufficient and unequal access to knowledge for certain social groups;
- A broadening social gap between lower and higher educated workers;
- A weak national commitment to lifelong learning for all ages;
- Risks connected with critical labour market transitions during the life course.

In our interpretation of the above, we have found that the third and fourth type of risk appears to be mitigated in all of the three CHEPS-scenarios described above. Lifelong learning has become a widely accepted phenomenon and its principles are used as a standard frame of reference for the design and supply of educational programmes. Labour market conditions have become favourable for students. Graduates can easily find jobs. Unemployment has been considerably reduced. Transitions have become less crucial during the latter part of one's career.

However, we must add to this final point that the situation in the future is expected to have improved in the Northern and Western countries, more so than will be the case in the Eastern and Southern European countries. When observed from a trans-national point of view, the scenarios signal the probability of new inequalities brought forth by a further international division of labour in higher education and research. Roughly speaking, 'big science' concentrates in the North-West, whereas the Southern and Eastern countries are carrying out less research and are having to place a greater emphasis on teaching. This division might put graduates in the latter countries in a backward position. It would require that extra measures be taken in the areas of employability and mobility to compensate for these structural disadvantages. However, just as multinational corporations in the economy, the international division in science and education could cause national governments to be confronted with (regulative) problems that are difficult to solve.

It is questionable whether the scenarios provide adequate responses to the first and second type of social risks identified: unequal and insufficient access to knowledge of certain social groups and the increasing divide between higher and lower educated workers. On the one hand, a further differentiation in the HE systems, marked by the removal of the boundaries between HE systems and the society at large, and the arrangements made for lifelong learning, will provide new 'educational career' opportunities for groups thus far underrepresented and for lower educated people who have thus far not been able to exploit their talents optimally. But on the other hand, it is evident that built-in selective mechanisms will continue to augment the persistence of social inequalities, in particular between the elitists and the more mass-oriented segments of education and research.

In this regard, the network-based scenario appears to have provided the most egalitarian model. In the science-based model, institutional regulations might press for higher selectivity. At first glance, the market-based model appears to offer more opportunities and to become more egalitarian due to a further differentiation and increase of supply in various fields, at various levels, in various forms and by various actors. But selectivity is built-in by financial arrangements. These might lead to further inequalities, depending on the resources available to those who are fortunate and can grasp these opportunities.

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ISBN 978 90 5554 369 4
NUR 840, 740



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