



OECD Reviews of Tertiary Education

NORWAY

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<p><i>This report is based on a study visit to Norway in March 2005, and on background documents prepared to support the visit. As a result, the report reflects the situation up to that point.</i></p>
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1. Introduction

This Country Note on Norway forms part of the OECD Thematic Review of Tertiary Education. This is a collaborative project to assist the design and implementation of tertiary education policies which contribute to the realisation of social and economic objectives of countries. The tertiary education systems of many OECD countries have experienced rapid growth over the last decade, and are experiencing new pressures as the result of a globalising economy and labour market. In this context, the OECD Education Committee agreed, in late 2003, to carry out a major thematic review of tertiary education.

The principal objective of the review is to assist countries to understand how the organisation, management and delivery of tertiary education can help them to achieve their economic and social objectives. The focus of the review is upon tertiary education policies and systems, rather than upon the detailed management and operation of institutions, although clearly the effectiveness of the latter is influenced by the former. The project's purposes, methodology and guidelines are detailed on the OECD web site.¹ The purposes of the review are:

- To synthesise research-based evidence on the impact of tertiary education policies and disseminate this knowledge among participating countries;
- To identify innovative and successful policy initiatives and practices;
- To facilitate exchanges of lessons and experiences among countries; and
- To identify policy options.

All countries taking part in the review prepare a detailed national background report that is written using a common framework developed by the OECD secretariat, working together with member countries. At the time of writing, 22 countries had agreed to participate in the review. About half

¹ Reports and updates are available from www.oecd.org/edu/tertiary/review

of these, including Norway, have asked for a review of their tertiary education policies by a team of external examiners. This team visits the country for one and a half to two weeks, talking to institutions, key stakeholders, policy makers and national experts. A report, referred to as a country note, is then prepared. This has two aims: to describe the country's national system of tertiary education for the benefit of outsiders; and to make suggestions that the country can use to help the development of its national system and policies.

At the conclusion of the review a comparative report will be written that summarises the lessons learned from the review. It will draw upon national background reports, country notes, expert papers commissioned for the review, and a range of detailed statistical and research material.

Each country taking part in the review is asked to appoint a steering committee of key stakeholders to guide the writing of its background report and to assist in developing the programme for the national visit (if one of these has been requested). Meetings of national co-ordinators for the countries taking part in the review, and of other experts and international organisations, take place at regular intervals during the review. The review is expected to conclude late in 2007.

A draft of Norway's background report was made available in January 2005.² It was prepared by NIFU STEP, a Norwegian research organisation with special expertise in the field of tertiary education, under the guidance of a national steering committee chaired by the Norwegian Ministry of Education and Research.³ A team of six examiners subsequently visited Norway in the period 7-16 March 2005, and this Country Note is based upon materials provided at that period. The team visited a wide range of institutions both in Oslo, the capital, and in several regional areas. It held discussions with the Norwegian Minister for Education and Research, with senior policy makers in a number of Ministries, and with key stakeholders and researchers.⁴ Particular thanks are owed to Gro-Beate Vige of the Ministry of Education and Research, the national co-ordinator for Norway's participation in the thematic review, and to Jan Levy, Director General within the Ministry who chaired meetings of the steering committee.

² A final version of the background report has since been made available, and can be found on the website of the thematic review: www.oecd.org/edu/tertiary/review

³ Annex 2 lists the authors of the background report and the members of the national steering committee.

⁴ The members of the review team can be found in Annex 1. The detailed programme for the visit is in Annex 3.

2. General Background

2.1 The Norwegian Economy and Labour Market

With a GDP per capita of USD 38 700 (in 2004, at Purchasing Power Parity) Norway is one of the wealthier countries in the OECD. This owes much to revenues from its oil industry, but also much to sound economic management of its oil wealth. Its population (4.6 million) is quite small, and is spread over a relatively large geographical area. As a result, the population density (14 people per square kilometre compared to 125 in Denmark, which has roughly the same population) is quite low. Norway's wealth potentially gives it opportunities, in designing and managing its tertiary education system, that are not available to other countries. On the other hand, when combined with the strong national emphasis upon regional issues and regional development that is associated with low population density, a high GDP per capita can lead to the temptation of avoiding some policy choices that other countries might see more starkly. The high direct and indirect costs of Norway's regionalisation policies within the wider economy have been commented on elsewhere by the OECD.⁵ During the ten years to 2004 GDP per capita grew at an average rate of 2.9%, slightly above the OECD average of 2.6%. However more recently economic growth has slipped somewhat behind the OECD average. This, together with the possibility of a future decline in oil revenues, is one of the factors that have helped to increase interest in research, science and technology as future drivers of growth in Norway.

Norway is fortunate in combining a wealthy economy with low unemployment. In 2004 the unemployment rate was 4.5%, well below the OECD average of 6.8%, and lower than all of the other Nordic countries except Iceland. In addition to unemployment being a relatively unlikely event for most Norwegian labour force members, when it does occur it is a far briefer experience than in most other OECD countries. In 2004 unemployment that lasted 12 months or more represented only 9% of all

⁵ See OECD (2004a), p. 99.

unemployment in Norway, well below the OECD average of 32%, and the lowest of all the Nordic members of the OECD. Reflecting the buoyant nature of the Norwegian labour market, employment rates for graduates are high when compared to other OECD countries. At 76%, the female labour force participation rate is one of the highest in the OECD, and participation rates of older workers are also well above the OECD average.

Although some three quarters of all employment is located in the service sector, somewhat above the OECD average, self employment is, at 7% of all employment, only half of the OECD average, and well below the levels found in Denmark and Iceland. This underlies the interest that successive Norwegian governments have shown in supporting educational programmes that promote entrepreneurship. Government services such as health and education are significant employers in Norway, particularly of graduates. However outside of government, the Norwegian labour market has relatively few large employers. This pattern of enterprise structure (an important role for government employment combined with small average enterprise size in the private sector) shapes both the nature of the labour market for graduates in Norway and the ways in which much research and development takes place and is funded.

Compared to many other OECD countries, Norway's population is highly educated, and has been for many years.⁶ In 2003, 95% of the Norwegian population aged 25-34 had completed at least upper secondary education, and 40% had completed tertiary education. These figures compare to OECD averages of 75% and 29% respectively. The proportion of this age group with tertiary qualifications is among the highest in the OECD, exceeded only by Canada and Japan, in each case with slightly over 50%, and by Korea with 47%. Among those aged 45-54, 85% had completed at least upper secondary education, and 28% had a tertiary qualification, compared to 62% and 22% for the OECD as a whole. Data from the International Adult Literacy Survey shows that Norway's tertiary graduates have high skill levels. The survey showed that there were fewer Norwegian tertiary graduates aged 25-34 in the lowest two skill levels on the document literacy scale than in any of the 21 participating countries, and the

⁶ It should be noted that in September 2006 Statistics Norway issued educational completion statistics based upon new, and tighter, definitions of educational completion. These showed completion rates that are significantly lower than those that had previously been published. However data based upon the new definitions had, at the time that this Country Note was completed, not yet flowed through into international educational statistics. The revised Statistics Norway data can be found at www.ssb.no/english/subjects/04/01/utniv_en/

number of graduates of the same age in the top two skill levels was exceeded only by the Czech Republic and Sweden.

As in other Nordic countries, a significant feature of the Norwegian labour market is a relatively high degree of wage compression, with wages not being significantly differentiated across different levels of educational qualifications. Graduates from tertiary-type 5A programmes earn only 35% more than do those who at most have an upper secondary qualification, one of the lower such differences in the OECD. Between 1997 and 2002 the relative earnings of Norwegian tertiary graduates declined marginally, although the general trend in other countries was for the relative earnings of graduates to rise over the same period. Whilst it is commonly argued that this wage compression reduces the incentive to invest in education,⁷ education levels in Norway in fact are high, and, as we shall see below, the Norwegian tertiary education system is quite a large one. However the reality of wage compression across different levels of educational qualifications is a factor that influences the ways in which student participation in tertiary education is funded. With reduced financial incentives to take part in tertiary education coming from the national wages system, there is a fear that participation might not be sufficient to meet Norway's requirements for highly educated workers. Hence incentives in the form of free or low-cost tuition and generous student loans and grants are seen to be more important in Norway than in countries where wage compression by level of education is less.

High levels of education help to explain some distinctive features of the ways that policy is made in Norway, with wide consultation and participation in decision making by all key stakeholders being expected and accepted parts of the public policy process. The Civic Education Study shows Norwegian students to have above average scores in democratic knowledge and values.⁸ A strong concern for consultation and participation is complemented by a strong concern for equity as an abiding value within Norwegian society.

⁷ See for example OECD (2004a), p. 114.

⁸ See the International Association for the Evaluation of Educational Achievement www.iea.nl/

2.2 The Norwegian Tertiary Education System⁹

When measured by the proportion of the population that is participating, Norway's tertiary education system is a relatively large one.¹⁰ The two largest parts of the system are 25 university colleges¹¹ that account for 47% of all students, and six universities,¹² in which around a third of all students are found. In addition there are 21 private colleges receiving state funding (plus a small number that do not) that account for 15% of all students, and six small specialised university-level institutions offering courses in fields such as architecture that account for an additional 4%. The remaining handful of students is located in specialised academies and colleges for

⁹ International statistical conventions define tertiary education in terms of programme levels: those programmes at ISCED levels 5B, 5A and 6 are treated as tertiary education, and programmes below ISCED level 5B are not. In some countries the term higher education is used more commonly than tertiary education, at times to refer to all programmes at levels 5B, 5A and 6, at times to refer only to those programmes at levels 5A and 6. An additional complication is presented by the practice, in some countries, of defining higher education or tertiary education in terms of the institution, rather than the programme. For example it is common to use higher education to refer to programmes offered by universities, and tertiary education to refer to programmes offered by institutions that extend beyond universities. The OECD thematic review follows standard international statistical conventions in using tertiary education to refer to all programmes at ISCED levels 5B, 5A and 6, regardless of the institutions in which they are offered. In Norway higher education and tertiary education are often used interchangeably, but at times tertiary education is used to encompass programmes at ISCED level 4 (post-secondary non-tertiary) that are not included within the definition used by the thematic review. This country note adopts the OECD convention on terminology.

¹⁰ In 2002 5.8% of the population aged 15 and over were enrolled in a tertiary programme. This compared to an average across 26 OECD countries of 4.9%. The Norwegian tertiary participation rate is lower than Finland's (6.8%) and similar to Sweden's (5.7%), although higher than Denmark's (4.6%).

¹¹ The university colleges were formed in the early 1990s from mergers of a larger number of smaller institutions. Initially referred to as state colleges, their title was changed to university colleges by an Act of the *Storting* (Norwegian Parliament) following lobbying and pressure from staff. The change of title does not seem to have been associated with any significant change of mission or educational profile.

¹² One of these being a previous university college and another a previous specialised university-level institution whose upgraded status was approved only in 2005.

fields of study such as the arts and the police. Most of the private institutions are small and specialised, offering courses in fields such as theology, nursing and teaching. The exception is the Norwegian School of Management with about 20 000 students. To enhance distance learning, the Norway Opening Universities was created in 2004, as a merger of two previously existing organisations (the Norwegian Agency for Flexible Learning in Higher Education – SOFF – and the Norwegian University Network for Lifelong Learning – *Norgesuniversitetet*).

In the past, Norway's tertiary education system had a complicated degree structure. Now, as a result of changes introduced through the Bologna Process the structure of degrees has been considerably streamlined and simplified. This has included shorter prescribed study periods for many students.

During the last decade, growth within the system has been concentrated in the university colleges. Compared to the universities these focus largely upon courses with a strong professional orientation such as education, engineering, nursing and the like. Unlike the universities, the university colleges generally do not offer courses in fields such as medicine or law. In general the university colleges do not have a research focus, and receive little in the way of competitively awarded research grants. However staff have a tradition of seeing time for research as part of their working conditions, and there is an expectation that their teaching should be "research-based". Some colleges offer masters degrees and a few even doctoral degrees. We discuss the involvement of colleges in research in more detail later.

Norway's system of tertiary education is a well integrated one, compared to other countries, with the development of an integrated system having been a policy goal over an extended period, regardless of the political complexion of the government of the day. There are few barriers to the recognition of credits and study programmes between institutions, and students seem to be able to transfer between institutions, both of the same type and of different types, with little difficulty. This attractive feature of the system does, however, confront policy makers with problems. Young people show a clear preference for studying in Oslo and other major cities, and frequently seek to transfer between institutions part way through their programme of study. This can create difficulties for smaller regional institutions in filling the available places, and it poses challenges for attempts to build stronger regional institutions as part of national regional development policies.

In addition to the institutions described above that offer tertiary education, a new Act in 2003 established a vocational college sector, still

quite small, that offers shorter (six month to two year) courses of vocational training at ISCED level 4. The Act represents an organisational reform rather than a reform of content, aiming at creating a common framework for formal acknowledgement and quality control of a wide range of courses. Some of the institutions encompassed by the Act have been operating for many years. These institutions and their courses were not included within the scope of this review of Norway's tertiary education system, but, in the overall future development of the options open to Norwegians after the end of upper secondary education, they have increasingly been taken into account by government policy.

Through the Ministry of Education and Research, the government proposes to the *Storting* (national assembly) budgets that determine the annual funding level for each institution, and in turn these funding levels play a significant role in determining the institutions' admissions levels. The Ministry sets admission levels for only a small number of programmes, mainly in the paramedical professions and the two small national institutes of the arts. The Ministry conducts annual consultative meetings with each institution, and these meetings play an important role in the co-ordination and governance of tertiary education. Around half of all upper secondary students enrol in the general education programmes that provide the most common admission route to tertiary education, but demand has also been stimulated by reforms in the latter part of the 1990s intended to increase adult participation in formal education (the Competence Reform), and by the opening up of new routes to tertiary study from upper secondary vocational programmes as a result of reforms carried out in the mid 1990s.¹³ During the early 1990s Norway's tertiary education system expanded relatively rapidly as a result of rising demand from young people in the face of a difficult labour market situation.

Other government agencies that play key roles in Norway's tertiary education system are: the Research Council of Norway (RCN), which allocates research funds both to tertiary education institutions and to research institutes; The Norwegian Agency for Quality Assurance in Education (NOKUT) which is responsible for auditing institutions' quality

¹³

However the exact impact of these reforms upon flows between upper secondary vocational programmes and tertiary education was hard to estimate on the basis of the evidence available at the time of the review team's visit to Norway. Information provided after the visit shows that around 14% of new students in 2004 had a background from vocational studies. Many of these were adults entering tertiary education under special provisions for those aged 23 and over, and so the impact of the pathway reforms upon young people's opportunities to enter tertiary education would seem to need further clarification.

assurance systems, for discipline and programme evaluations and for institutional accreditation; and the Norwegian Centre for International Co-operation in Higher Education, which promotes international co-operation in education and research and co-ordinates efforts to internationalise higher education in Norway. Other key actors in the system are the Norwegian Council for Higher Education, which represents the rectors of the universities and university colleges in discussions with the government, a comparable Network for Private Higher Education Institutions, and organisations that represent students and staff.

Given the Norwegian consensus- and dialogue-based approach to policy development, all of these key actors are regularly involved in discussions on future directions for the tertiary education system. Another strong Norwegian tradition in public policy development is the use of independent Royal Commissions, appointed by the government to investigate key policy issues, and reporting to the government on options for addressing them. In 1997 the OECD conducted a review of tertiary education in Norway, as part of a thematic review of the initial years of tertiary education.¹⁴ The examiners' country note pointed to what it believed to be some problems in the quality of teaching and learning: delays in graduation; student drop-outs;¹⁵ the need for a stronger emphasis upon quality teaching and upon student outcomes; and the need for a better follow-up of students.

Partly in response to these issues, the Norwegian government established a Royal Commission in April 1998 (the Mjøs Commission) to make recommendations for improvement. It submitted its final report (referred to in Norway as a green paper) in 2000, following a long period of public consultation and debate. A subsequent government white paper that responded to the Mjøs Commission report was submitted in March 2001. Together with the need to adjust the Norwegian higher education system to conform to the requirements of the Bologna Process, the Commission's report and the following white paper have resulted in a large scale process known as the Quality Reform.¹⁶ The Quality Reform has been a gradual process, involving further reviews and white papers on specific issues,

¹⁴ OECD (1998a). A copy of the country note for Norway from the earlier thematic review can be found on the web site for the present thematic review: www.oecd.org/edu/tertiary/review

¹⁵ However despite the reforms outlined in this paper, good data on quality indicators such as these remains surprisingly hard to find.

¹⁶ The two are linked, in so far as the Bologna Process requires countries to put quality assurance systems in place. However its principal feature is the harmonisation of study programmes and qualifications.

changes to student incentives and income support arrangements, changes to funding arrangements, changes to the ways that courses of study are organised (a new modular structure; tighter sequencing, combination and progression rules), the passing of a new law on higher education in the spring of 2005, and the establishment of a new agency for quality assurance. The Quality Reform provided one of the principal contexts for the review team's visit to Norway.

The 11-member boards of Norway's tertiary institutions contain representatives of teaching and non teaching staff, students, and four external members appointed by the Ministry. Traditionally the board has been chaired by the institution's rector. Changes to the nature of institutional governance have also been part of the Quality Reform. Traditionally the management of tertiary institutions in Norway has been divided between a rector elected for a four-year term who is responsible for academic matters, and a general director, appointed by the board of the institution who heads the administration. The new law on higher education passed by the parliament in spring 2005 contained provisions allowing for a choice between the traditional model and a model in which the board is chaired by an external member, with the rector appointed by the board and responsible for both academic and administrative matters. Greater institutional autonomy in financial matters has been encouraged in recent years (for example by allowing institutions to retain financial surpluses), as have moves towards a more managerialist, as opposed to collegiate, approach to internal management structures.

Norway's tertiary education system has a number of features that make it distinctive, when compared to the tertiary education systems of other countries. One is that, as in other Nordic countries, students are somewhat older both when they commence and when they graduate than in many other countries. This occurs for three reasons. The first is that it is very common for Norwegian young people to take a period off from study after they finish their upper secondary education: to travel; to work; to do community service; and, although less commonly now, for males to do military service. One result of this is that only 4% of Norwegian undergraduates are under the age of 20, a fifth of the OECD average. The second reason, which has been of great concern to policy makers and which is one of the factors that has stimulated recent reforms, is that they take a long time to complete their first degree. Post graduate studies in Norway are also long and drawn out. One indicator of this is that close to a half of all post graduate students (those in tertiary-type 6 programmes) are aged 35 and over. The third reason is that, in large part because of the impact of reforms introduced during the mid to late 1990s to stimulate adult participation in education, many students are adults: the proportion aged 35 and over is around 20%, one of

the highest in the OECD and twice the OECD average. The student body is also more highly feminised than in most OECD countries, with 60% being female.¹⁷

Course structures and patterns of enrolments are also distinctive. There are, for example, relatively few enrolments in shorter, vocationally oriented tertiary courses – those classified as tertiary-type 5B in the ISCED system: only about 7% of all enrolments are at this level, compared to an OECD average of more than two and a half times this. Nearly all enrolments are in longer, tertiary-type 5A programmes that can potentially lead to post graduate programmes and research degrees. Patterns of enrolment by field of study are also distinctive. Education and health and welfare together account for close to half of all graduates, the second highest proportion in the OECD. However the proportion of graduates in a number of other fields is very low: the social sciences, business and law; engineering, manufacturing and construction; life sciences; physical sciences; and mathematics and statistics. The latter in particular are a particular concern for those policy makers who believe that Norway’s economic future needs to be secured by stronger performance in science- and technology-based research and development.

It is also quite common for Norwegian students to study abroad. This is encouraged and funded by the Norwegian government, both to develop young people’s language skills and to encourage the development of an international perspective. In 2003 around 7% of all Norwegian tertiary students were studying abroad, twice the level in Denmark, Finland and Sweden and nearly double the rate for the OECD as a whole. On the other hand relatively few foreign students are studying in Norway: they represented only 5% of total enrolments in 2003.

One very distinctive feature of tertiary education in Norway is its heavy reliance upon public funding, and the fact that traditionally tuition is free.¹⁸ In 2002 public funds accounted for 96% of all expenditure on tertiary

¹⁷ However at graduate level the proportion of female students drops to around 40%.

¹⁸ This was enshrined in legislation for the first time in the new law on higher education that was passed by the *Storting* in early 2005. The principle of free tuition at times is expressed by students as free tertiary education. However this ignores the fact that students make a significant contribution to the total cost of their education through the loans that they take out to cover living costs. The “free tuition” principle is also violated in other ways. Under some circumstances loans are also available to cover tuition costs: for example to cover private institution’s tuition costs. And degree programmes that are delivered in distance mode, and that can be identical to programmes delivered in face-to-face mode, can attract tuition fees.

education, one of the highest proportions in the OECD, alongside Denmark, Finland and Sweden. While the trend in many other OECD countries has been for the share of tertiary funding represented by public sources to fall in recent years, in Norway the trend has been the reverse, with a slight growth from the 94% share that was observed in 1995. This helps to account for the fact that public expenditure on tertiary education in Norway is one of the highest in the OECD, representing 2.1% of GDP in 2002 compared to the OECD average of 1.3%. Another factor that helps to explain why Norway spends so much on tertiary education, compared to other countries, is its generous system of student grants and loans, which is discussed in more detail in Section 4.3 below. Student loans and grants account for a third of all expenditure on tertiary education in Norway, double the proportion observed across OECD countries as a whole. High expenditure, compared to other countries, also owes something to the relatively low student-teacher ratio in Norwegian tertiary education (11.9 compared to an OECD average of 14.9), and to the fact that expenditure per student on educational institutions is some 29% higher than the OECD average (USD 13 739 in 2002 compared to an OECD average of USD 10 655). Between 1995 and 2002 expenditure per student rose by 10%,¹⁹ a somewhat lower rate of expenditure growth than the 39% average increase that was observed in the group of 23 OECD countries for which a comparable indicator is available.

Norway spends less, as a percentage of GDP, upon research and development (R&D) than the OECD average (1.75% in 2003 compared to an OECD average of 2.24%), although expenditure has been rising (up from 1.65% in 1991). This has been a focus of government policy efforts recently, and there are important issues under consideration about the role of tertiary education system in the overall national research effort. Norway's R&D efforts show some distinctive national patterns, in part because of the pattern of enterprise structure outlined above. A smaller proportion of Norway's R&D effort takes place in the private sector than in many other OECD countries, and more (28% compared to an OECD average of 19%) in tertiary education.²⁰ There is, in addition, a large number of research institutes that are largely government funded, that support particular industry sectors and that sit outside of the tertiary education system. These account for around 23% of total national R&D expenditure, whereas across the OECD as a whole such institutions account for only around 11% of all research expenditure.

¹⁹ In constant prices.

²⁰ And industry's contribution to the tertiary education sector's R&D effort is also somewhat lower than the OECD average. 5% of the total tertiary education research expenditure comes from industry, compared to 5.6% across the OECD as a whole.

3. Norway's Policies for Tertiary Education

3.1 Strategy

There is no doubt that tertiary education in Norway has many strengths. There is a strong commitment to access and to meeting social demand. There is a strong commitment also to regional needs. There is an emphasis on quality. Both institutions and students are provided with a level of public funds which is well above average in global terms. There is nevertheless regard for efficiency through differentiation in both teaching and research. There is effective consultation over reforms.

Substantial reforms are taking place in tertiary education in other countries mainly aimed at encouraging institutions to be more responsive to the needs of society and the economy – reflecting competition in the global economy. This has involved a reappraisal of the purposes of tertiary education and the setting by governments of new strategies for the future. It has also involved more autonomy for institutions but with clearer accountability for the institutions to society. There have been measures as well to diversify sources of funding, including private funds. As examples, Denmark, Sweden, and the Netherlands have all developed or are developing strategies along these lines. As we were told, Norway has been somewhat more conservative in its own reforms, although the intention in legislation from 1995 to 2005 is clearly to move in the same direction.

The background report provided for the examiners set out the government's specific objectives for tertiary education as defined in the 2001 white paper on tertiary education. These are to:

- Contribute to using the capacities and abilities of the population in such a way that consideration is taken both of the interests of the individuals and of the country's need for a highly educated work force;
- Improve the quality of tertiary teaching and learning and research;

- Ensure that applicants to tertiary education institutions are given equal treatment (in terms of access to education);
- Promote conditions at universities and colleges that are favourable to the development and transmission of new knowledge;
- Use the resources of the sector more effectively;
- Reduce the time actually spent by students before graduation, so that the actual length of study periods corresponds more closely to the formal requirements; and
- Encourage increased international co-operation in tertiary education and research.

The 1995 Act, substantially amended in 2002, states the importance of tertiary education institutions' contribution to the economy and to the development of society in general. It specifies, amongst other purposes, the role of tertiary education in disseminating knowledge. But we did not receive a published strategy for tertiary education within which the aims and objectives above could be carried forward (although we were able indirectly to discern a strategy from points made to us in discussion and from measures in the Act).

The purpose of classical universities was to engage in teaching and research primarily to expand knowledge for its own sake. Nowadays most tertiary institutions recognise that they also have a responsibility to promote the transfer of new knowledge, both through research and through consultancies and community service. Furthermore, tertiary institutions prepare young people both for employment (offering them work experience, career guidance and the generic skills needed for employment, as well as the educational qualifications and specific occupational skills with which they emerge), and for the wider intellectual, cultural and social contribution which they may make to society. A future policy to emphasise expansion of enrolments in the vocational colleges, rather than provision within universities and university colleges, could be seen as reflecting an assessment of employment needs. We believe that there would be merit in reviewing and clarifying both the purposes of tertiary education and the government's overall strategy towards tertiary education to promote those purposes. A future white paper might be an appropriate way to do this. We hope that the views that are expressed in the rest of this report will assist in developing such a white paper.

3.2 Institutional Structure and Links

The Norwegian university sector has been highly selective in its programme offerings, providing mainly a similar range of subjects including law, medicine, the natural sciences and engineering, and arts and the humanities for about one third of all tertiary education students. This selectivity enables the government, among other things, to concentrate funds for research. While we endorse the general structure, we believe that the universities would benefit from less uniformity, even greater autonomy, and more competition. This is being achieved to some extent by the approval of new universities such as Stavanger and the University of Life sciences, which we support.

The university colleges were formed in 1994 through mergers of 98 existing colleges offering mainly teacher training, nurse training, and general engineering to bachelor's degree level. Despite the mergers, our perception from visits to three university colleges is that some colleges have little coherence in academic terms and continue to operate on several sites as separate entities. Some students that we spoke to welcomed this separation because it assisted continuation of their studies near to their homes. No doubt local pressures have led to the retention of sites. We do not however believe that this will lead to strong academic institutions providing high quality education for their students. In our view, there is a need to review the role and location of university colleges, particularly having regard to related subjects offered in universities. Such a review would need to take account of the important regional dimension in Norway albeit recognising that there are 19 regions (the counties) in Norway. This review would consider specifically whether there would be advantage in allowing (and promoting) some further new universities to develop from university colleges in line with the government's policy.

Diseconomies of scale that we observed in some of the university colleges are also apparent in some of the specialised university institutions. Their small size means that they need to recruit and retain staff to teach specialised subjects which would, in a larger multi-faculty university, be provided by staff from other faculties.

A problem with any system of tertiary education containing two distinctive types of institutions is that the rules governing the establishment of the two groups of institutions inevitably lead to a loss of flexibility for individual institutions. We have suggested some closer links between the university college and university sectors. We believe that the role of individual institutions should be determined with flexibility in individual cases. New universities, in particular, should be encouraged to develop a

wider range of academic programmes (including for example, all levels of teacher education, or both design and architecture) at a range of levels.

We visited two private tertiary education institutions. The larger business school in Oslo flourishes because it maintains close connections with business and commerce and can attract students despite its fees. The small missionary school in Stavanger (School of Mission and Theology) is not flourishing financially although we were impressed by the enthusiasm of the staff and students. In our view the parity of private and public institutions under the 2005 Act ought to lead to more equitable funding for some of the smaller private institutions. We welcome the new provision that private institutions may not return a profit or issue dividends.

The focus of the background report and of our visit programme was on the universities and university colleges. We did not visit any vocational colleges. We were told by the Ministry that the vocational colleges were at the time of the visit a priority area for the expansion of tertiary education. We believe that there would be merit in linking or combining some vocational colleges with university colleges – so as to promote co-operation between vocational subjects and business studies or engineering and to facilitate the movement of students in either direction.

There are a number of steps that the Norwegian government might take to strengthen the structure of tertiary institutions and links between them. For example one aim for the future could be to encourage less uniformity among institutions and even greater autonomy for the universities. New universities, in particular, should be encouraged to develop academic programmes at a range of levels. The approval of new universities based on existing institutions offers scope to assist in achieving this. There is also merit in reviewing the role and location of university colleges, both having regard to related subjects offered in universities – education and engineering are examples – and taking into account the regional dimension. Links or mergers with vocational colleges could also be explored in such a process. The strategic review that is suggested above would, of course, need to take account of the outcome of such reviews of the structure of institutions and of links between them.

3.3 Governance of the System and of Institutions

We favour both more autonomy for tertiary education institutions, and clearer arrangements for their management. In our view, both of these serve to promote initiative and enterprise. While more autonomy has also been favoured by the government, the impression from our visits is that this is more apparent than real. For example, two universities told us that they were

awaiting the Ministry's view as to which of them should start a new academic programme. Although this was in principle a matter for the universities, the *de facto* cap on student numbers meant that universities could not settle this themselves unless they reduced other programmes. It is also the case that increased autonomy has been resisted by academic staff.

So long as most funds for tertiary education originate almost exclusively from one Ministry, or other public agencies, real institutional autonomy will remain qualified. Hence, if increased autonomy is to be a genuine objective of government policies, it is in the interest of both institutions and of the Ministry to promote every possibility for the institutions to acquire alternative sources of funding beyond the national government.

There is a further barrier to autonomy. Unless institutions are able to demonstrate that they are accountable to society, then those who represent society will object to more autonomy. One way of demonstrating accountability is for institutions to publish, in an agreed format, a series of performance measures, including measures of the quality of teaching and of research and of the employment of graduates. We say more about this in our section on evaluation below. In addition, it is helpful for boards to be chaired by an external member and to include other external representatives. These external representatives would normally offer advice and support for the institution. They are, however, available to call the institution's executive officers to account. If the rector was appointed by the board this would be a further way to signal an institution's accountability to society. This is one of the options for governance available to universities under the 2005 Act. We believe that it should be welcomed by the executives of institutions as a necessary step towards further autonomy. We believe that the government should be ready in due course with proposals to offer further autonomy to those institutions, which in the first instance are likely to be universities, taking up this model of governance.

Ultimately, tertiary institutions will always be constrained by being treated as part of the public sector. The public ownership of buildings and sites does not always promote the best use of capital invested. Japan has recently incorporated its national universities. Other countries, including Germany and Korea, have been considering the creation of universities as legal entities in their own right. We believe that this should be a goal for Norway, although we recognise that strong resistance from within the sector itself has frustrated government attempts to move more strongly in this direction.

We have already indicated our view about governance arrangements. Unusually, we heard from academic staff in two universities that they saw a need for more effective management and leadership. This was partly in

connection with allocating time for teaching and for research. We do not believe that the present divided responsibility for academic matters and for administration is conducive to good management and accountability. In our view, there should be a single chief executive, the rector, within each institution, who is ultimately responsible for all matters within the institution. We think that such a change should occur in association with the introduction of an institutional leadership programme, drawing on the best international practice.

The objective of Norway's universities becoming self-managing legal entities in their own right, with a single chief executive, the rector, responsible for all matters within the university, could be attained in steps. For example we believe that the government should be ready, in due course, to offer further autonomy to those universities deciding to appoint an external representative as the chair of their board. However while we believe that the suggestions that we are making on institutional governance should be pursued initially for the universities and specialised university institutions, revised arrangements for institutional governance should also be considered for the university colleges. International experience – for example in Australia and the United States, shows that autonomy and self-governance for non-university institutions, allied with management structures that allow for clear lines of responsibility, can be an effective mechanism to promote closer ties to industry and to the community, and an enterprising, outward looking approach to education.

4. Funding Tertiary Education

4.1 Free Tuition

Norway's heavy reliance upon the public purse to fund its tertiary education system has clearly resulted in benefits. The most obvious of these is that its tertiary education participation rates are amongst the highest in the OECD, and there appear to be few financial constraints to participation. On the other hand, and perhaps as an unintended consequence, these high levels of financial aid for students (including free tuition) have not encouraged early completion of initial degrees or doctorates. And, as we have pointed out in Section 2.2, the principle of free tuition is not an absolute one, and contains exceptions.

The Norwegian government has taken steps to improve efficiency and value for money in tertiary education through incentives for both students and institutions to reduce non-completion rates and the total length of study time.²¹ Our impression is that further gains of this kind are possible. The Quality Reform programme should ensure that quality is, at least, maintained. Nevertheless, pressures on public spending are likely to continue²² and there are also questions of equity about funding tertiary education. There is a private return for tertiary education students as well as a benefit for society. We were told consistently that the flat wage structure in Norway limits the private return. Tertiary education has benefited just

²¹ In addition to the incentives for students that operate through the system of loans and grants to meet living costs, institutions now receive part of their funds on the basis of student progression. However this has been controversial, as increased funds that result from efficiencies have been seen to be cancelled out by reductions in the basic grant component of overall funding. In addition there is concern that basing part of total funding upon student progress could encourage grade inflation. At the time of the review team's visit this issue was under review through research and evaluation commissioned by the government.

²² Particularly given that the present level of revenues from the oil industry might not be guaranteed in the future.

under one third of the population. In other countries it is commonly being asked whether it is equitable for two thirds of the population to pay taxes to support private benefits that largely flow to the other third. The answer depends on the relative rates of return to society and the individual and the relative costs of tertiary education to society and the individual. We note also that early childhood education is not free in Norway, and that the OECD has argued elsewhere that there is a stronger case, on the grounds of equity, for high public subsidies at this level of education than at the level of tertiary education (OECD, 2005). There is virtue, then, in these issues receiving more rigorous analysis than appears to have been the case in the past in Norway, taking into account not only the relative distribution of public and private benefits and Norway's wage structure, but also the social composition of the student body, student costs in the form of foregone earnings and living costs, and the extent to which the taxation system is regressive or progressive.

While recent legislation in Norway has legally enshrined the concept of free tuition, we were not offered an analysis of the kind that we have suggested should be conducted. Subject to that analysis, there might be other benefits of tuition fees that could be considered. First, these could provide more flexibility for institutions to raise extra income, for example, to develop innovative new programmes of study to respond to the needs of the economy and to improve quality. Second, money flowing with the student could be a way to increase the accountability and responsiveness of institutions to the needs of students. The development of a new national strategy for tertiary education that we suggested above, would, of course, also need to take account of funding issues of the sort that we have outlined.

4.2 Allocation of Public Funds to Institutions

We were informed that allocations by the Ministry to universities and university colleges take account of student numbers and the need for institutions, particularly the universities, to invest in infrastructure for research. The main funds for specific research are allocated by the Research Council of Norway on a competitive basis, although most research funds as such come from block grants from the Ministry.

We understand that the allocation from the Ministry is generally provided as a block grant which institutions may decide how to spend. We applaud this. However, none of the institutions which we visited was able to give us a clear account of the *basis* for their allocation (even though a detailed booklet setting out *changes* in the budget are provided to institutions each year). We believe that the allocation is determined largely

on a historical basis, with incremental adjustments to allow for student numbers completing courses and any increase in provision for research.

On this basis, there must be a question about whether the allocations are equitable. Moreover, a more transparent formula for allocations could provide an incentive to institutions to become more efficient. As an example, funds could be allocated according to the number of students completing their programme of study each year together with a sum for research based on the quality of research undertaken and the transfer of knowledge. If this yielded a substantially different level of funds from an allocation based on historic levels, there would need to be a period for adjustment. Many of these problems can be addressed by the use of a systematic approach to the evaluation of costs (and, ideally, of cost-effectiveness). Specifically, the ingredients approach (Levin, 1983) offers a well-tested method that has the potential to substantially improve policy makers' understanding of the real resource demands of different types of programmes.

There is a strong case for the Ministry reviewing its allocation arrangements, in consultation with the institutions, and developing a more transparent formula, based among other factors, on real costs and on measures of output. (We understand that this is in line with a proposal in the April 2005 white paper on research).

4.3 Student Finance

A brief overview of the system

In Norway, student aid consists of a mix of grants and loans to cover for costs of living as tuition fees are not charged in public institutions. Grants and loans are not means-tested to parental income, but are means-tested to student's or spouse's income, and are subject to a ceiling. Loans are interest-free during the study period and all students are entitled to financial aid for a maximum of eight years. Initially the basic amount is given as a loan but, upon completion of studies, part of it is converted into a grant (to a maximum of 40%, so that students who take up less loans than the maximum will have a higher share of support in grants) -- the actual proportion depends on students' success in completing their studies. Students living with their parents are not entitled to grants but may receive loans. Grants may be reduced if the student perceives other income or social benefits. In addition, loans are repaid over 20 years on a flat rate basis. Concessions on repayment can be granted on the basis of low income or other social difficulties, but repayments are not otherwise contingent upon individuals' earnings. Most students in private institutions have to pay

tuition fees (although not in religious, paramedical and teacher training programmes that are fully subsidised by the state) support for which is available in the form of additional loans. Other benefits are provided such as grants for students with children, travel support, or medical assistance.

Strengths and challenges: Analysis of the current system

The student finance system in Norway is highly commendable in a number of aspects. First, students are considered as independent individuals who are not expected to rely on parents' financial support. As a result, for financial aid purposes, students are considered equal in their ability to pay. Parents' financial circumstances are irrelevant.

Second, Norway is among the most generous countries in student financial aid provision. In 2002, the latter accounted for about 33% of total public expenditure on tertiary education (12% in grants and 21% in loans), one of the highest percentage shares in the OECD (see Annex 4). The scale of public subsidies provided to students in Norway is also high among those countries where tuition fees are not charged. The basic amount provided, a mix of grants and loans, is by many considered large enough to cover living costs, mostly resolving problems such as student poverty, excessive hours spent on part-time work, or disproportionate reliance on family support. On average, in the 2002-03 academic year, students were entitled to a total basic monthly amount of NOK 8 000 (about EUR 1 000), intended to cover living costs for ten months. During the review visit, many students expressed the view that this amount was not sufficient to cover realistic costs of living, in particular in areas such as Oslo. A good proportion of them revealed that they had a part-time job and/or relied on some parental support. Nonetheless it can be said that to a great extent the system greatly facilitates access by removing liquidity constraints faced by students. Another positive feature is that it is universal, as all students are entitled to financial support. Also, and quite appropriately, there is a ceiling on the amount available for borrowing every year and a limit on the number of years a student is entitled to financial aid.

Third, another positive feature is that the proportion of financial support the student receives as a grant is incentive-based. The share in grants (to a maximum of 40%) depends on the student's progression and is awarded once the studies are completed. The aim is to improve students' effectiveness by reducing the time for completion of studies and drop-out rates, areas in which Norwegian students did not fare well before the implementation of the Quality Reform.

Fourth, students who attend private institutions benefit, under the same conditions, from the same basic financial support to cover costs of living.

They also have access to extra loans to help them cover their tuition fees. This clearly facilitates students' freedom of choice and enables the development of institutions with distinct approaches and purposes. Also, students wishing to pursue studies in a foreign country are entitled to the standard financial aid package and benefit from special funds to help pay for their tuition fees. This helpfully promotes the international mobility of Norwegian students with the current student financing system.

There are however some challenges that the present arrangements present:

- First, is it fair for high earners after graduation to repay loans at the same rate as low earners?
- Second, those who are averse to debts may be discouraged from joining a tertiary programme. This will concern, in particular, poorer families who do not have a tradition of going to university or college.
- Third, there is the risk and uncertainty faced by individuals in a loan-based system. All borrowers face two types of risk: failing to graduate; or not securing a satisfactory job after graduation. In either case, they would still face loan repayments.
- Fourth, student financial aid was not, at the time of the visit, tied to a consumer price index to ensure that students' purchasing power does not erode. Some students expressed concern to the review team that the latter has been the case in recent years. In addition, student financial aid does not account for the considerable differences in the cost of living across regions and cities.
- Fifth, there is a risk that the financial penalties for non-completion might encourage institutions to pass students too readily through the different stages of their programme. This emphasises the importance of effective quality controls.

We believe that the first four challenges could be met, at least in part, by introducing an income contingent basis for repaying loans. While this would require a link with the tax system for delivery, experience elsewhere suggests that this would also reduce repayment default rates. Linking the level of repayment with graduate salary level provides a helpful indication that the loan offers the means of achieving good salaries. This and low repayments for lower earners may serve to limit any adverse impact of loans on access. Increasing the level of repayments for high earners should not create hardship and would bring forward the payment of loans. The extra cash available might be used to provide for the indexing of loans. It would

be for consideration whether there should be a minimum earnings level for repayments.²³

In summary, we believe that the present student financial aid programme should be reviewed in order to meeting these challenges, and in particular with the goal of introducing loan repayments on an income contingent basis.

4.4 Human Resource Management

One strength of the tertiary education system in Norway is that institutions have autonomy over many aspects of managing their staff. Within limits, they can set individual salaries²⁴ and can determine the proportion of time spent by individual staff on teaching and research. They can design their own quality assurance systems and set performance indicators which could bear on the assessment of individual staff.

We formed the impression during our visits that the main weakness lies in the unwillingness of managers to make the best use of the discretion available to them. At two universities, academic staff indicated to us that they would like to see more positive leadership and management. Management by consensus is not effective without leadership to demonstrate the advantage of change. With ageing teaching staff, lack of staff mobility, and weak mechanisms for dealing with under-performance, effectiveness is bound to be at risk. Furthermore, the emphasis in universities (as in universities around the globe) to publish research in refereed journals without incentives to engage with the workplace and community outside the institution inevitably leaves them looking inwards. The traditional arrangements for governance of institutions exacerbate this problem.

We believe that universities and colleges need to exercise more leadership and management at senior levels if institutions are to respond satisfactorily to the emerging needs of society and the economy. A preferred option is for institutions collectively to set up arrangements for improving the leadership and management skills of all senior staff and that the issues outlined above are explored further with staff in individual institutions. However if institutions do not rise to this challenge, then we think that there

²³ A helpful discussion of income contingent ways of financing tertiary education can be found in Gallagher, M. (2003).

²⁴ For state institutions staff salaries are set partly through national negotiations between the government and the national trade unions, and partly through negotiations at the institutional level.

would be a good case for the Ministry to provide stronger incentives, encouragement and support. We also favour changes to staff incentive systems within all institutions – both universities and university colleges – to include performance in community service and consultancies alongside performance in teaching and research.

5. Regional Policy Considerations

In line with Norway’s strong emphasis on its regional policies, some key goals of tertiary education policy have been to:

- Use tertiary education to help preserve the geographical distribution pattern of the population;
- Increase tertiary participation rate in the non-urban (especially Northern) regions of Norway; and
- Reduce the “brain drain” towards the Oslo, Akershus and Trondheim regions.

This has been reinforced through an emphasis on the need for tertiary education to meet the training and research needs of regional economic development. However too often, it appeared to the review team, the major criteria used to assess the regional impact of tertiary institutions were inputs (funds flowing to regions, student numbers and the like), and that direct impacts in terms of economic or social development, the level of consultancies provided to local firms and the like received minimal attention.

The concentration of growth within the university colleges has, when combined with their accessibility, led to an impressive growth in overall tertiary education participation. As a result, participation rates in urban and rural regions are broadly similar – although completion rates are reported to be significantly lower for students in rural areas²⁵. During the visits to non-urban university colleges, we were told consistently by staff and students that they preferred the more easily accessible regional institutions to other

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Part of the explanation for this, and for the reportedly higher completion rates in major metropolitan areas, could be the tendency for students to transfer from smaller regional institutions to larger metropolitan ones part way through their courses of study. Part of the explanation could also lie in the tendency for smaller regional institutions to select students whose grades in upper secondary school are lower. More effective student tracking and cohort analyses would help to provide data that could resolve the issue.

places of study. For some fields of employment such as teaching and nursing, this serves to safeguard the supply of labour in rural areas and prevent the alienation from rural life, which can be a side-effect of studying in large cities.

As already mentioned, the colleges were formed from mergers of smaller colleges in the early 1990s. However even if the sector as a whole is somewhat less widely dispersed geographically than it was in the mid 1990s, some of the merged colleges have remained a loose confederation of isolated campuses some distance apart - with a central administration. The small size of many such units is not conducive to high quality in teaching, or to effective resource utilisation. There is a risk of parochialism amongst students. In one college that we visited, programmes of study were duplicated at different campuses of the college. When institutions do not reach a certain critical mass of staff and students, they lack the opportunity for diversification and specialisation. This may mean that they then become unable to provide a stimulating learning environment for students, or to engage in project work, consultancy or other activities that can contribute to regional development. They cannot then project themselves (or be seen) as potent partners for regional economic development. Hence while local pressures may support the retention of multi-campus colleges, this is not likely to be in the interest of wider regional policies.

The review team was presented with a wide range of initiatives linking local or regional firms with entrepreneurial academic staff. However these were limited to the involvement of a small proportion of staff. Apart from teaching and nursing students, we were not made aware of any systematic arrangements for work experience for students linked with their studies, beyond the occasional offer of summer jobs. We consider that more formal partnerships should be established between tertiary education institutions and regional firms on matters such as internships and mentoring. We believe also that the inclusion of work placements in course programmes and curricula should become more prevalent in all tertiary education institutions.

The Norwegian background report refers to a growing popularity of studies which combine different modes of delivery: for example ICT-based distance study elements with face-to-face on-site seminars. It is expected that Norway Opening Universities will be a key player in stimulating and coordinating such flexible ways of studying, which seem particularly suited to the lifelong learning and in-service needs of the widely dispersed population of regional Norway. We were told several times about unmet demand for such forms of learning, which some regional providers currently meet by buying suitable courses from Denmark.

In line with the government's aspirations for regional development, the March 2005 white paper on research refers to an intention of strengthened funding of regional research institutes and of the research activities of the university colleges. But it also strongly emphasises that 'increased resources will be divided between institutions through competition-based schemes that take academic results and quality into account'. However we think that, unless the colleges can develop into coherent academic organisations with evident research strengths (as we saw at Stavanger), it is inevitable that the policy of concentrating research in the interest of effectiveness of output will concentrate resources in the universities and applied research institutes. It will be important, in this eventuality, that the transfer of the knowledge resulting from research takes place across the regions so that they can then share in the wealth created as a result of excellence in concentrated research.

The profile of some university colleges has greatly benefited from their success in becoming unique national centres in specialised fields of research and teaching. In the light of our analysis above, we believe that the majority of university colleges will need to concentrate on applied research, and projects and consultancy with local firms rather than engage in fundamental research. The research basis for teaching will need to be reviewed to enable staff to keep abreast of latest developments in their fields of interest. We return to this in our later section on research-based teaching. Cross regional variations in research intensity, with most of the R&D spending of the past twenty years taking place in Oslo and Trondheim, are likely to continue.

In the 1990s, government policies, using the concept of "Network Norway", adopted a strategic decision to disseminate several academic specialisations, or nodes, to a number of (regional) institutions. However the background report mentions that due to "institutional difficulties" and "political disagreements within institutions" an evaluation conducted in 1999 found "that the impact...was not as expected" and that there was "a lack of results".

The future development of a stronger relationship between regional policy and tertiary education policy will require the development of university colleges into more coherent academic institutions. This is especially true for those colleges operating on a number of sites. We believe that regional development will also require the stronger incorporation of work experience into all programmes in regional institutions, in order to assist graduate employment in the regions and to extend links with employers. In line with the recommendations of the OECD review of lifelong learning in Norway²⁶ we believe that the government should make

²⁶ See OECD (2002a), p. 215.

explicit how regional needs can be safeguarded alongside a more market-driven approach to tertiary education. This should include a statement on the development of new technologies for lifelong learning. We also believe that any future goals for regional development should recognise the reality that competition for and the concentration of research funds limits the scope for expanding fundamental research in the regions.

6. Equity Considerations

6.1 Strengths and Challenges: Analysis of the Current System

Strengths

The view that all individuals should be treated alike and be given the same opportunities is well ingrained in Norwegian society. A reflection of this is the fact that Norway is among the OECD countries which exhibit the lowest salary differentials in relation to the worker's level of education (see Annex 4). Traditionally, tertiary policy stresses universal arrangements and student aid does not build on need-based or targeted approaches. It draws on low entry barriers, low participation costs and a good regional distribution of tertiary education institutions. The overall levels of provision of tertiary education are among the highest within the OECD area. This has resulted in the high levels of participation in tertiary education, and the high rates of achievement of tertiary qualifications, that were outlined in Section 2.

As noted above in the discussion of student financing, the generous universal scheme of grants and loans greatly facilitates access by removing the liquidity constraints faced by students. Given that the basic amount is large enough to cover living costs it considerably reduces the influence of parents' financial circumstances on individuals' tertiary participation and therefore improves equity of access.

Norway has also been very successful in improving the geographical accessibility to tertiary education. The expansion of tertiary education in Norway in 1960s and 1970s has led to the establishment of tertiary education institutions in all counties. As a result, participation rates of students living in rural areas (22% in 2002, an improvement relative to the 10% of 1992) caught up with those of students living in urban areas (24% in 2002 and 20% in 1992). Hence, geographical inequities in access to tertiary education seem to have been greatly reduced.

As access to tertiary education is largely determined by outcomes in preceding levels of education, it is important to indicate that a major strength in the Norwegian system is the impressive rates of completion of

upper secondary education: currently 95% of 25-34 year-olds have completed upper secondary education, the second highest rate in the OECD and exceeded only by Korea. In addition, and unlike many other OECD countries, the upper secondary vocational track offers students feasible pathways into tertiary education. This can occur in two ways: either by the young person completing an upper secondary vocational programme and then doing a supplementary one-year course of general education; or by transfer from a vocational programme to a general education track part way through upper secondary schooling.²⁷ Data on the extent to which such routes result in transfers between upper secondary vocational tracks and tertiary education proved surprisingly difficult to obtain during the review team's visit. However the University of Oslo, Norway's most competitive, indicated that in the 2004-05 academic year, 15% of all new students had come through one or other of these routes. Furthermore, the proportion of applicants from these routes was only slightly less than the proportion admitted. We found this an impressive indicator of the likely impact upon social mobility of the upper secondary pathways reforms that took place in the mid 1990s.

Another positive feature is the opportunity offered to adults to undertake tertiary studies. The Competence Reform of the late 1990s permits the admission to tertiary education to individuals aged 25 and above on the basis of a person's formal, non-formal and informal training. In addition, the system of vocational rehabilitation grants the right to paid education (including tertiary education) for a maximum of 3 years for individuals aged 26 and over who seek to re-enter the labour market.²⁸

Equity policies in Norway have traditionally emphasised equity of access. However, as a result of the Quality Reform, an increasing focus on equity of outcomes has emerged. More emphasis is being placed on student progression throughout their tertiary studies with special support and follow-up measures to assist those students which reveal more difficulties.

²⁷ Details of Reform 94 that resulted in these new pathways being opened up may be found in OECD (1998b).

²⁸ Note, however, that data provided by the University of Oslo for the 2004-05 academic year suggests that these alternative methods by which adults can qualify for tertiary study are far less successful in attracting applicants to competitive programmes. Only three per cent of applicants and a similar proportion of admissions came from these routes.

Challenges

Despite these strengths, a number of concerns about the equitable provision of tertiary education remain. Principally, there is evidence that access to and completion of tertiary education differs along at least three dimensions: (i) the educational background of parents; (ii) immigrant status; and (iii) gender.

Participation and completion rates differ considerably according to the educational background of parents. In 2002, the rate of participation in tertiary education of individuals (19 to 28 year-olds) with at least one parent who had attained tertiary education was 40%, a rate considerably above that of individuals with no parent having attained more than compulsory schooling (8%). No reduction in such disparity had been achieved in the preceding decade as the respective figures in 1992 were 36% and 6%. A similar reality was reflected in the completion rate for 30-34 year-olds: in 2002, it was 66% for individuals with at least one parent who had completed tertiary education against 13% for individuals with no parent having attained more than compulsory schooling (in 1992, the corresponding figures were 55% and 10%).

A similar picture emerges for the immigrant population. While the participation rate for individuals without an immigrant background was 25% in 2002, the rate for first generation immigrants without Norwegian background was 11%. However, remarkably, the participation rate for persons born in Norway with two foreign-born parents attained 23% for the same year. The completion rates for 30-34 year-olds provided similar indications: it reached 36% for individuals without an immigrant background against 20% for first generation immigrants and a notable 39% for persons born in Norway with two foreign-born parents.

Gender disparities have become more pronounced over the period 1992-2002. While in 1992 the participation rate for males was only 2% less than that for females (16% against 18%), in 2002 that difference had reached seven percentage points (20% against 27%). A similar trend was evident in completion rates. While in 1992 the gender gap in completion rates for 30-34 year-olds was only three percentage points (22% for males against 25% for females), the gap in 2002 had reached nine percentage points (30% against 39%). In 2003 females accounted for 60% of total tertiary enrolments. This figure, however, hides an under representation of females among post-bachelor's students, where they made up only 40% of total enrolments.

The review team also formed the impression that the Competence Reform was at an incipient stage of implementation and few potential users were accessing tertiary education through it. This impression is confirmed

for the more competitive universities by data from the University of Oslo referred to above. However it should be noted, as pointed out in Section 2.2, some 20% of all tertiary students are aged 35 and over, one of the highest levels in the OECD. This would seem to suggest that adults tend to be confined to those courses and institutions that are the least competitive to enter. As described earlier, the student financing system (including the issue of free tuition) also raises important equity concerns. An aspect which deserves particular examination is whether linking the share of grants in the financial aid package to progression is inequitable for weakly prepared students such as immigrants with weak language skills.

6.2 Priorities for Future Policy Development

To a great extent the response to reduce inequities in access to and completion of tertiary education lies at two levels: schooling policies and incentives to tertiary education institutions to widen participation and provide extra support for students from disadvantaged backgrounds.

Students whose parents have lower levels of education more often underestimate the net benefits of tertiary education. To offset this information gap, career guidance and counselling services in Norwegian schools should strengthen their role in making poorly informed school children aware of the benefits of tertiary education and in raising their attendance aspirations.²⁹ Norway has already in place active policies in this respect such as a well-established network of career guidance services and a means-tested financial aid scheme to encourage students to complete upper secondary education. It is suggested that career guidance place more emphasis on the transition from upper secondary to tertiary education for students from disadvantaged backgrounds. This is also likely to benefit children with an immigrant background and male students. In addition, an expansion of tracks from vocational upper secondary education to tertiary education is also likely to enlarge the participation rates of the currently underrepresented groups, namely male students. It is the view of the review team that the male under representation at tertiary level has not received enough attention so far and needs to become a stronger policy issue.

On the other hand, tertiary education institutions also need to be provided with incentives to widen participation by less represented groups and assist those groups with extra support. A possibility worth considering is

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The need for improved career guidance in Norwegian schools, and in particular a clearer separation between personal counselling on the one hand and educational and vocational guidance on the other has been urged by the OECD review of career guidance policies. See OECD (2002b).

the creation of a special financial incentive for institutions to attract less represented groups. This could be achieved, for instance, by assigning a greater weight in the student-credits component of the funding formula to particular groups of students such as immigrants. This would possibly lead to particular initiatives by institutions not only to widen access but also to support students from disadvantaged backgrounds in their study progression. A particularly good initiative in this respect is the project launched at the Oslo University College to better integrate and support linguistic minority students. This project is resourced with three permanent posts funded by the Ministry. The approach is not limited to the provision of extra support for minority students to meet their specific learning needs, including extra language instruction. On the principle that the increasing student multicultural diversity must be accompanied by a change in the culture of tertiary education institutions, the overall strategy also includes adapting the learning environment to account for the diversity, for instance by adjusting the curriculum and the tuition for the entire student population. Initiatives include the development of multicultural competencies among the entire academic staff, seminars and courses on multicultural pedagogy and the training of tutors with multicultural knowledge and communication skills.

The Competence Reform deserves a broader dissemination strategy so that not only potential users are informed of the opportunities it provides but also institutions realise they can widen their societal role with the new audiences they can reach. Suggestions to respond to the equity issues raised by the financing of the system were proposed earlier.

7. Monitoring the System and Institutions

The review team was presented with details of a range of approaches to quality assurance and quality improvement, much of it under the banner of the Quality Reform and much of it still work-in-progress.

At the national level the Norwegian Agency for Quality Assurance in Education (NOKUT), audits the effectiveness of institution's quality assurance systems and procedures for teaching and learning. One of the outcomes of the Quality Reform is that now all institutions are required to have quality assurance systems, and if they do not, lose the right to have new study programmes accredited. NOKUT also carries out sectoral reviews to provide data for the calibration and benchmarking of the performance of individual institutions. One such review for nursing has just been completed and another is planned for teacher education. In broad terms responsibility for monitoring the quality of research rests with the Research Council of Norway. It allocates funds on a competitive basis. In addition, it designates Centres of Excellence which gives other institutions a benchmark for comparing their own achievements.

At the institutional level the approach to quality assurance is similar to measures in use in most OECD countries.³⁰ These include student assessments of courses; annual departmental or faculty self-evaluations of academic performance and administrative efficiency; periodic external reviews of academic units; and set procedures for considering the introduction of new academic programmes.

NOKUT's approach to meeting its present quality assurance objectives is commendable in its openness. We think that the publication of evaluation reports and the institutional responses to them is beneficial to system improvement and to wider national discourse. We endorse, however, the view that is expressed in the background report that "at present there is a lack of reliable data that addresses issues concerning the learning outcome of students in Norwegian tertiary education" (p.94). Furthermore we were not offered any evaluation of the overall performance of tertiary education

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For a review of these measures see Kis (2005).

institutions covering also their contribution to society and the economy. In addition to NOKUT's sector reviews, we think that their audit of procedures should be extended to cover the impact of the procedures in a selected academic area – to test their effectiveness by examining the quality of outputs. As indicated in our earlier section on policies for tertiary education, we also believe that institutions should be required to publish (and not simply report to the Ministry) a range of performance indicators on a common basis. These indicators might include:

- Completion rates for undergraduate degrees and doctorates, and the average time for completion (making allowance, if possible, for the numbers who transfer to other institutions part way through their studies);
- The proportion of students undertaking work experience as an integral part of their academic programme;
- Employment rates for those graduating over the last two-to-five years;
- Levels of competitively-awarded research income from the Research Council of Norway;
- Levels of income from research contracts from other sources, including the private sector;
- Levels of income from other contracts and consultancies distinguishing, between income from the private sector and public sectors; and
- Measures of the regional impact of institutions: for example the number of consultancies undertaken for regional public and private enterprises.

We stress that this list is illustrative. To be of value, the indicators need to be kept as simple as possible. Complex indicators are much more difficult for those outside tertiary education to interpret. They would of course need to be drawn up in consultation with institutions. Who would undertake this? As in other countries, our impression is that research into tertiary education is of variable quality and that co-ordination could be improved. There might be value in selecting an organisation to undertake this task, to consider further the development of evaluation of both teaching and research, and to lead in co-ordinating tertiary education research more generally.

There are a number of steps which we believe would improve the monitoring of the system and of institutions. One would be for NOKUT to extend its audit reviews from the testing of the effectiveness of an

institution's quality control procedures to more widely examining the quality of output in selected academic areas. Another would be the introduction of a requirement for institutions to publish annually a range of selected performance indicators in an agreed format – in order to assist the evaluation of the full range of their objectives. We suggest that a national organisation be nominated to develop the list of these performance indicators, to consider further the evaluation of both teaching and research, and to co-ordinate research into tertiary education more generally.

8. Teaching and Learning

8.1 The Bologna Process

We begin this Section with an overview of the steps that Norway has taken to implement the Bologna Process. The Norwegian government is committed to the implementation of the Bologna Process, having published in October 2004, in the preparation for the Bergen Ministerial Conference, a fact sheet in which the reforms introduced are related to the action lines and objectives of the process (Ministry of Education and Research, 2004). These action lines, as identified by the Bologna Follow-up Group, are:

1. Adoption of a system of easily readable and comparable degrees;
2. Adoption of a system essentially based on two main cycles;
3. Establishment of a system of credits;
4. Promotion of mobility;
5. Promotion of European co-operation in quality assurance;
6. Promotion of the European dimension in tertiary education;
7. Lifelong learning;
8. Higher education institutions and students;
9. Promoting attractiveness of the European Higher Education Area;
10. Doctoral studies and the synergy between the European Higher Education Area and the European Research Area; and
11. The social dimension (as an overarching or transversal action line).

The Quality Reform, effective from the academic year 2003-04, covers the objectives of action lines 1 to 3. It introduced the bachelor, master and

PhD degree structure, the ECTS credit system³¹ and grading system, as well as the Diploma Supplement,³² which will be delivered to all graduates from 2005 onwards. A national qualifications framework is being developed. The value of the newly created bachelor's degree for the labour market is, however, frequently questioned and unclear. In our view, the problem arises because employers are likely to prefer more mature master's graduates if such graduates are readily available. We think that an increase in the balance between bachelor's graduates and master's graduates should be considered as part of the strategic review that we suggest in Section 3.1.

The Norwegian policy of portability of grants and loans is a contribution to action line 4. As already mentioned, the Norwegian government also finances the fees paid by the students studying abroad, therefore contributing to mobility. The impact may, however, be limited in practice, because the level of funding of the loans and grants for the students has not been updated according to inflation.

We have already referred to NOKUT, which was established in January 2003 as an independent body. It replaced the former Network Norway Council, with responsibilities and functions that are in agreement with the Berlin Communiqué³³ and, therefore, action line 5. The institutions are also required to establish internal quality assurance systems. These systems are limited in scope, focusing on internal indicators, such as student progression. We have suggested the need to go beyond this and to also ensure the publication of indicators of social and economic outcomes from and relevance of the programmes.

A new Act was in preparation at the time of our visit that includes provisions for joint degrees, therefore contributing to the development of action line 6.

The Competence Reform, initiated in 1999, includes the assessment of non formal learning as a basis for access to tertiary education and the

³¹ The European Credit Transfer and Accumulation System is based on the student workload required to achieve the objectives of a programme, objectives preferably specified in terms of the learning outcomes and competences to be acquired.

³² The Diploma Supplement is a document attached to a higher education diploma providing a standardised description of the nature, level, context, content and status of the studies that were successfully completed by the graduate. The Diploma Supplement is intended to provide transparency and to facilitate academic and professional recognition of tertiary qualifications.

³³ Realising the European Higher Education Area, Communiqué of the Conference of Ministers responsible for Higher Education, Berlin, September 2003.

possibility of shortening the duration of studies. This is the object of action line 7. However the shortening of studies through accreditation of prior learning is not widely applied. The causes for the difficulties in applying the reform require attention, and corrective action is necessary.

Action line 8 aims at the involvement of tertiary education institutions and students in the development of the European Higher Education Area. Our visit convinced us that awareness of the Bologna Process is not widespread, either among students or teaching staff. The links between this process and the Quality Reform are not clear to many members of the academic community. However, the level of awareness varies considerably from one institution to another.

With some exceptions, the Bologna Process is mostly perceived as involving the government and the law, rather than the individual institutions in a direct way. There is a clear need for steps to raise awareness of the Bologna Process and to promote a more pro-active role of the institutions and of the academic community, including students, in building the European Higher Education Area. These steps should involve staff, students and the external members of governing boards.

In the context of action line 9, the Norwegian tertiary education institutions already offer some programmes designed for foreign students and taught in English. There is a growing involvement in the co-operation with foreign institutions.

The links between doctoral studies and research, the object of action line 10, are established in national regulations, as the institutions have specific research responsibilities in the fields of the PhD.s they award.

The social dimension, as an overarching action line, comprising equal opportunities (*e.g.* minorities, gender, etc), living conditions of students and the public responsibility for tertiary education, is well represented in the Norwegian system. The support for students is generous, as compared with other countries. Minorities are the object of specific provisions and are present in the institutional discourse. However, care needs to be taken to ensure that the measures taken within the Quality Reform, to reduce the duration of studies and to improve quality do not have a negative impact on the access to tertiary education of older students.

8.2 The Quality Reform and Quality Processes

The Quality Reform aims to respond both to the need for an improvement in the quality of tertiary education and research, and to the Bologna Process. The Reform involves changes in governance, funding,

quality assurance, degree structures, student follow-up, student support and internationalisation.

In analysing the impact of the Quality Reform, two facts must be taken into account. First, at the time of the review team's visit, many of its more important elements had been implemented for less than two years. Secondly, it requires a significant change in the culture of the institutions, especially in the university college sector. In our visits, two points were emphasised to justify the Quality Reform: first the excessive age of the graduates; and secondly the need to ensure relevant learning outcomes of the programmes offered. The previous programmes were often described as too theoretical, and lacking relevance to employment. The new programmes were said to require greater work by the student.

Learning outcomes

The Reform has resulted in a positive move towards more relevant outcomes and an amount of work by the students that is in line with the standard set by the ECTS system of 1500 to 1800 hours of work per year for full time students. The changes have also affected the relationship between the teaching staff and the students, with greater interaction and closer individual follow-up of the students. This has induced an increase in the number of hours that staff dedicate to teaching and to student follow-up. The result appears to have been a greater coherence of the programmes, more relevant learning outcomes and greater attention to individual student learning needs, having an overall positive effect on learning outcomes.

However given some concern about the new bachelor's programmes and their relevance to employment, we believe that the learning outcomes that programmes are intended to achieve, including preparation for employment, should be widely disseminated both to students and staff within institutions and to potential employers.

Teaching staff work loads

It has been a strong tradition in Norwegian tertiary education that teaching should be research-based. We point out below that this needs clarification. Nevertheless, the increase in the teaching work load that has resulted from the Quality Reform has put pressure on the time that staff are able to spend on research. We believe that this needs to be examined, by reference to their new tasks and allowing for the clarification of research-based teaching; and that, if necessary, action should be taken to remedy any overload.

Student work loads

Students have been given financial incentives to reduce programme completion times: if they lag behind pre-defined programme objectives, the level of loans converted into grants is reduced. This offers a clear incentive to complete the programmes in the allocated time. The objective is to reduce the period taken to achieve a degree, although there is not yet clear evidence that this is being achieved.

Norwegian students often do not begin their studies until a somewhat later age than students in other countries. In addition, many of them enter as adults who have spent periods in the labour force. This implies that a number of students enter tertiary education already have professional, social and family responsibilities. If these students have to work, alongside their studies, they will not be able to complete their studies in the allocated time. They will be penalised by a smaller proportion of their loans being converted into grants. As a result, we believe that special measures need to be considered, such as part-time study contracts for older students, to avoid older students being handicapped by lower grants.

Quality assurance

The recent creation of NOKUT has already had an impact on the way that quality issues are perceived by the institutions. There is a growing culture of quality that is clearly on the agenda of the institutions, with a focus on student performance during their programmes. The creation by institutions of their internal quality assurance systems by January 2004 has already had a positive effect on the development of this institutional quality culture.

Focusing on completion of their programmes limits the scope of the quality assurance system. As we said at the beginning of our report, the purposes of tertiary education need to include preparation for employment, active citizenship and personal development. Quality is currently identified as fitness for purpose. This implies that quality assurance requires that indicators of the integration of graduates in the labour market and their contribution to the economy and to society must be taken into account. Some of the skills needed for employment (for example, oral and written communication and working in a team) will in many cases be covered naturally within academic programmes. Others, such as career self management skills, may need to be delivered by central units within an institution such as the careers service.

There seems to be a significant lack of relevant national and institutional data to assess the performance of the tertiary education system as a whole,

as well as of individual institutions. This deficiency will need to be addressed. NOKUT has the responsibility of accrediting and recognising institutions, programmes and the quality assurance systems of the institutions. The existence of accredited quality assurance systems at institutional level, based on clear definition of criteria and indicators to be used, associated with regular reporting of the results as we have proposed, should allow over time for a reduced burden of external programme evaluation.

The stated aim of the national quality assurance system is also the accreditation of institutions. This includes those applying for a change of status as well as approval for individual study programmes in those institutions which do not have a statutory right to establish new programmes. To fulfil the objective of improving quality, a clear definition of the consequences of quality evaluation is required. If a given institution or programme has been deemed not to satisfy the required standards and, therefore, is not accredited, the follow-up measures should be clarified.

In order to strengthen Norway's system of quality assurance in tertiary education, we are strongly of the view that the present approach must be broadened to encompass an evaluation of the quality of student outcomes. In particular, this broader approach needs to encompass outcomes related to preparation for employment, but should also include those outcomes related to active citizenship and personal development. One way in which this might be done is through the development of a national assessment of graduate skills. It will also be important, as Norway's quality assurance system develops and matures, for the consequences of negative evaluations or a refusal of accreditation be clarified.

Provision for adults

There is a strong tradition of adult learning in Norway, Norwegian adults are significantly more interested in taking part in learning than are adults in many other European countries,³⁴ and a network of tertiary education institutions covers most of the territory. In addition structures (the Norwegian Opening Universities) exist to encourage open and distance learning for those adults prevented by geography or personal circumstances from taking part in face-to-face classes. These are favourable conditions for effective lifelong learning.

³⁴

A recent survey on lifelong learning showed that, after adults in Iceland, Denmark and Sweden, Norwegian adults were the least likely of the 17 countries included in the survey to indicate that they had not taken part in education and training in the last twelve months and were not interested in doing so. See CEDEFOP (2003).

The Quality Reform introduced measures to promote the timely completion of studies. We have described how this has made it more difficult for student-workers to participate in tertiary education. The success of the Competence Reform is being questioned, as the accreditation of prior learning to shorten their studies is not, for whatever reason, widely applied.

As it is not possible for all programmes to be offered at all tertiary education campuses, open and distance education is an alternative that may benefit from the existence of a dense network of institutions. Even if a programme is not offered on a given campus, the institution can, nevertheless, be used as a contact and support point.

The regular programmes of tertiary education institutions do not charge tuition fees. However if a programme is offered as distance learning, tuition fees may be charged. It seems inconsistent that degree programmes (with the same content as other degree programmes) delivered in an open and distance mode to give an opportunity to those who are not able to attend classes, have tuition fees. This is a negative incentive to adult learning, especially those that live in remote areas where the programmes are not being offered.

Therefore we believe that the impact of tuition fees in degree programmes offered in an open and distance learning mode needs to be evaluated and that, if necessary, this policy should be reviewed alongside the detailed analysis of the rationale for present fees policies for tertiary education that we suggest in Section 4.

Internationalisation

There is a clear policy to internationalise Norwegian tertiary education: for example through financial incentives for institutions to receive foreign students. In addition to traditional Nordic co-operation, this policy aims at increasing co-operation links with other countries in the European Higher Education Area and in other regions of the world.

The Norwegian Centre for International Co-operation in Higher Education (SIU) was set up in January 2004, based on the Centre for International University Co-operation, with the objective of providing information and advice, managing international programmes and profiling Norway as a country open to the world.

The aims of this internationalisation policy have been taken up by the institutions. There are visible efforts at institutional level directed to increase student mobility, both outgoing and incoming, to recruit foreign nationals as teaching staff or members of the boards and to establish international partnerships. However, the policy impetus for internationalisation requires a continuing effort to produce more significant results.

Network management

Norway has a highly regionalised tertiary education system, inherited from the previous network of regional colleges. This is a positive factor for social cohesion, in terms of the possibility to offer access to tertiary education to larger numbers. But it also has its drawbacks. One of these is that many institutions or campuses are small and do not have the capacity to develop a critical mass: for example in terms of the number of staff members associated with a given field of knowledge. Such a critical mass is indispensable for a significant research capacity to be able to develop, and is important for the quality of teaching.

There is also a network of vocational colleges, funded by the regions (unlike the tertiary education system, which is funded by the national government). As already mentioned in the Section 3, we believe that there should be closer links, or networks, through association or merger, between the vocational colleges and the university college sector. This would both promote synergies and increase the size of the smaller units. This is consistent with our view, expressed earlier, that institutions, including new universities, should aim to broaden the level and content of their programmes. We also believe that it would be useful to encourage the creation of active teaching and research subject or discipline networks, associating the teaching staff of the small regional units with larger units with an established capacity for research and teaching. This is an additional step that could be taken in order to reduce the relative isolation of those working in the smaller units.

We see no reason why integrated institutions should not receive funds both from the regions and the national government. Given the small size of many of the campuses, we believe also that there would be benefit in establishing subject networks at national level, both for research and teaching. This would enable staff of the small units to be less isolated by participating in joint projects and exchanges.

Research-based teaching

The background report notes that “the principle of research-based teaching in all tertiary education” was introduced in the 1990s and that “academic autonomy is restricted by requirements that teaching should be based on research activities and that links between research and teaching should be strong”. The need to engage in research-based teaching was raised with us by staff in all types of institutions. The usual interpretation was that all academic staff should engage in leading edge research.

The ideal vision for research-based teaching can be traced back to the noble Humboldtian vision of the *Einheit von Forschung und Lehre*, or the unity of research and teaching. Academic work takes place in laboratories or other forms of scholarly interaction. Teachers and students co-operate so closely that teaching and research are blended together.

This vision may apply in some, if not most, graduate studies today. But is it so relevant at bachelor's degree level? In any case, many academic staff today are research-active in specialised areas which may have only limited relevance to their teaching obligations. Others, and particularly those in university colleges, will only have limited opportunities for research despite the notional allocation of 25% of their time (as compared with 50% for university staff) for this purpose. Consultancy and project work with outside companies may be just as important for teaching vocational and professional subjects. Staff not directly engaged in research relevant to their teaching may of course keep up to date with state-of-the-art research literature.

Many staff we met in university colleges, in particular, were concerned that they were not fulfilling their responsibility for research-based teaching, despite a notional allocation of 25% of their time to research. We believe therefore that the interpretation of research-based teaching needs to be clarified. In our view, this does not mean that all staff engaged in teaching need to be engaged themselves in relevant research. But all staff should be aware of current research developments relevant to what they are teaching, and we strongly believe that their working conditions should ensure that they should have sufficient time to keep up to date with the current research literature.

We believe, then, that, taking into account the different contexts, missions and working conditions of the different Norwegian tertiary education institutions, the meaning of the term “research-based teaching” needs to be clarified.

9. Research, Innovation and Knowledge Transfer

9.1 Background

As indicated in Section 2.2, the distribution of research expenditure between universities, the private sector and research institutes is strongly influenced by Norway's pattern of enterprise structure and size. Fundamental research is primarily undertaken in the universities. The research institutes engage mainly in applied research for particular industries or public sector bodies. The university colleges which we visited were not heavily engaged in research although there was some project research undertaken in co-operation with local or regional businesses. The Research Council of Norway funds research in a variety of settings, and also plays an important role in developing national policies and strategies on research and development.

University research is funded mainly from public funds – some as part of the block grants received from the Ministry and some on a competitive basis from the Research Council of Norway (RCN). We support this dual approach and the concentration of resources to enable significant research groups to be established. We noted however the very large number of research institutes receiving public funds from a range of Ministries. Unlike the position in some other countries, these Institutes are not linked or associated with universities, even though they may occupy adjacent or nearby sites. Although informally there can be fruitful co-operation between the two, we do not believe that this dispersion of public funds is likely to achieve the best value for money. We think that there would be merit in associating some institutes (with their own Directors) with individual universities. This would serve to promote wider co-operation and interchange with university academic staff - for the benefit of both university and institute.³⁵

³⁵ There are some clear parallels between our views on the need for improved research networks between universities and research institutes and improved networks between the university colleges and the vocational colleges.

9.2 Strategic Planning for the Contribution of Tertiary Education to Research and Innovation

Vision

At the time of the review team's visit, the Norwegian government's vision was for Norway to become a leading research nation, which occupies a high ranking position internationally in terms of new technology, skills and knowledge, and a white paper setting out this vision was released by the government very shortly after the conclusion of the team's visit. In it, the competitiveness of industry is seen to depend on the ability of the various enterprises to put to use and develop new knowledge, and new technological and organisational solutions (Ministry of Education and Research, 2005).

The white paper indicated that government aimed to increase total investment in research from 1.7% of GDP in 2002 (of which public expenditure represented 0.8%, and private expenditure 0.9%) to 3% of GDP by 2010 (of which public expenditure would represent 1% of GDP and private expenditure 2%). Hence public funding for research was projected to grow by 0.2% of GDP, whilst private investment was projected to grow by 1.1% of GDP. This suggests that the impact on public funding of the increase in public funds together with other policies, particularly those to stimulate private sector investment in research and development, will need to be substantial if the overall target is to be achieved.

Strategy

The main strategy to achieve this vision is the promotion of stronger links between research, tertiary education and industry. These links can then trigger private spending on research and boost innovation and competitiveness.

For this to succeed, high quality in research in the universities is essential. This will continue to be promoted through competition for funds and concentration of research effort, as well as upon internationalisation in research. Priority thematic areas for excellence in research are: natural sciences and mathematics with applications in energy and the environment, oceans, food and health, and technologies such as ICT, new materials, nanotechnology and biotechnology. Research in other areas will be also be funded to the extent it meets high international standards. This approach to research combines the promotion of selected areas together with general incentives for high quality research. We judge from our visits that this approach has been well received by the stakeholders and acted upon with enthusiasm. For it to succeed there will be a need for strengthened leadership and professional management at institutional level, as we have

already identified. There will also be a need for regular review of those areas that are national research priorities.

9.3 Monitoring and Evaluation

A strategy based on research, transfer and commercialisation of knowledge needs careful monitoring. Some priority areas may yield disappointing results while some which are not included in the priority list may become more promising. The new policy initiatives put in place need to be monitored. Is the choice of priority areas still valid? How should research at universities, university colleges and research institutes develop in the new competitive environment? What happens to innovations, commercialisation, the availability of entrepreneurs and business start-ups? Are the new incentive mechanisms effective? What happens to students and graduates in the labour market?

The change in culture implied by the need for closer links between tertiary education, research and trade and industry takes time to achieve. We think that new data bases adapted to the new needs should be developed and used in a systematic way. The main purpose would be to provide the government with data for evaluating decision making. However, the tertiary education institutions also need such data which could also be used for information to students and graduates.

This points to the need for both short-term and long-term monitoring. From our visits and meetings, it would seem that evaluations are commissioned mainly by the government and the Research Council of Norway. The Research Council of Norway is a key organisation in implementing the strategy in all its aspects from fundamental research to innovation. We doubt whether it is right that the responsibility for evaluation should rest with the organisation which is implementing the strategy. Moreover, and as already indicated, monitoring and evaluating the strategy requires the development of a statistical system and suitable databases. It might be preferable to locate these auxiliary tasks outside the Council.

9.4 The Supply of Graduates from Scientific and Technological Disciplines

Background

Higher education contributes to economic development through the skills and knowledge of its graduates. Norway has a high output of graduates, which has increased substantially over the past decade. Despite

this rapid growth in the supply of graduates, and despite a pattern of distribution of graduates by field of study that shows relatively low output in scientific and technological disciplines, we found few indications of an oversupply of graduates on the labour market - either in general or in considering different fields of study. Nor is it evident that at the moment there is an undersupply of graduates in particular disciplines.³⁶

In the background report, we were provided with data on unemployment six months after graduation over the period 1991 – 2003. In most years the rate of unemployment is highest for law and humanities graduates, some years for science and technology graduates, and one year for social science graduates.

The number of researchers per total employment is quite high in Norway: in 2001 there were 8.5 researchers per thousand total employment, a rise from 6.6 in 1991, and the fourth highest of the 11 countries for which data was available. In 1999, Norway ranked fifth out of the 23 countries for which this data was available (OECD, 2003).

We were presented with some indications of a need for more engineers. But this was not a recurrent theme during the visit. According to the background report, signs of concern for science and technology are rather to be seen in the spending by tertiary education on R&D. This shows that the share of natural science has declined from 26% in 1995 to 21% in 2001 and total R&D man-years in mathematics and science by 14% during the same period.

We did not investigate the development of science and technology teaching in secondary education. The background report refers to the “recruitment challenge” and the strategic plan launched in 2002 to raise the status and level of activity in the natural sciences throughout the whole education system. The plan includes more PhD fellowships within natural sciences and technology, recruitment of women to science and technology, a strengthening of teacher training and national centres intended to stimulate interest in science and technology.

³⁶

A recent OECD review of highly skilled workers in Norway similarly does not conclude that the country has significant shortages of highly skilled scientific and technological labour. However it does point to the need to address labour market rigidities in order to ensure that shortages and labour market mismatches do not emerge in the future. See OECD (2004b).

Policies

Policies to strengthen research effort in mathematics, science and technology are aiming at increasing interest in these fields and improving recruitment. Long term measures include co-operation with educational programmes for journalists to increase interest among students in research in the natural sciences and technology, and results-based reward components for dissemination of knowledge for universities and university colleges.

Measures that have been taken to increase secondary school students' interest in science and technology and their motivation to study them include: increased credits for students who take science subjects in secondary education; and incentives associated with teacher training courses and courses for teachers in mathematics, science and technology.

These initiatives have been complemented by measures to improve the career possibilities of researchers, including increased numbers of PhD fellowship positions at universities, the creation of more post-doctoral positions, and proposals, yet to be implemented, to create new teaching and research posts of four to six years duration, during which the holder will be assessed for a fixed position as a professor.

The effects of these measures as well as the development on the labour market, especially the market for researchers, need to be kept carefully under review. We do not believe that there are immediate problems for the science and technology sector. Problems in the longer term depend on whether the labour market and the educational system are flexible enough to respond to increases in spending on R&D in science and technology.

An important factor to consider is also whether general interest in science and technology needs to be boosted or whether it is enough to motivate for research those most competent to undertake such studies. We were informed that most arts and humanities graduates were employed in the public sector. There might be advantage in employing more science and technology graduates (perhaps at bachelor's degree level) so as to offer with their other colleagues in the public sector a wider understanding of what is likely to be required by society in the years ahead.

This is a difficult area for governments because it involves changing behaviour in the population. We recognise that doing nothing is not sustainable. Nevertheless, we believe that the effects of existing measures need to be evaluated before further measures are put in place. We also believe that more research needs to be undertaken, having regard to international experience, into what type of measures is needed and likely to be effective. The education of the public as to the benefits of science and technology may have a part to play.

9.5 The Transfer of Knowledge

Background: The supply of knowledge

We saw examples of universities and university colleges linking up with the world of work through their Technology Transfer Offices (TTOs), incubators, science parks, companies and selling various types of services including courses. The conditions for developing such activities have recently improved. The “professor’s privilege” has been removed and tertiary institutions granted title to intellectual property rights and resulting patents. In 2001, Norway only ranked 18 among 30 countries for share in OECD total “triadic” patent families.

Universities and university colleges are allowed to run companies and retain any earnings. SINTEF, however, showed a deficit in 2004.

Despite the changes which have been made to encourage universities, in particular, to engage in the transfer of knowledge, we do not believe that these activities have been sufficiently recognised by universities as part of their core activities. We found that there was some confusion amongst staff concerning the new outreach activities. Their existence depended on individual initiatives rather than a university-wide strategy.

When discussing the allocation of academic staff time, education and research were generally given priority over outreach activities related to contacts with working life, practice and innovation. Rewards were based on the same approach. Norwegian academic staff are able to spend up to 20% of their working time undertaking consultancies and other external employment, provided that they obtain the agreement of their employing university or university college. However in discussions with staff, this possibility was rarely referred to, and we gained the impression that it was rarely taken advantage of. (The exception to this was the Norwegian School of Management where there was a tradition that employees work one day a week for outside employers).

Students and teachers sometimes practice at or work for private firms as part of their studies or employment contracts. Some firms generously and voluntarily offered relevant summer jobs and internships. Sometimes contacts with firms for training and summer jobs are arranged by the subject associations or by individuals. We have already recommended that tertiary education institutions should incorporate work experience in their academic programmes. Part-time students were generally not seen as a resource, a contact with the world of work.

Policies on organising the supply of knowledge

The 2005 white paper on research gave a clear commitment to the continued promotion and stimulation of outreach activities by the tertiary education sector. Supporting that aim are measures to promote excellence in research - through more Centres of Excellence, the competitive allocation of resources for research, and a common incentive funding model for universities and university colleges. This model will include three result-based components: education, research and dissemination of knowledge.

We believe that a number of aspects remain to be clarified even after the new initiatives. Are the measures put in place sufficient to promote distinct profiles for the outreach activities for the old universities, the new universities, the colleges and the research institutes? Will the academic institutions continue to drift in the direction of promoting academic excellence in the form of publication in international refereed journals (with or without contacts with trade and industry)?

University colleges are described as good at applied research and at collaboration with small and medium sized firms on the basis of their business-oriented college programmes. This implies more practical co-operation with private companies. The white paper nevertheless mentions their “applied research profile” and their “research programmes” that are to be strengthened.

The white paper outlines two types of research institutes – those acting as a bridge between research and private business and those creating a link regionally between university colleges and small and medium sized business. (A third group of research institutes largely meets the needs of government administration.)

The government should clarify its intentions in relation to the research profile of universities, university colleges and research institutes. We believe that the emphasis on high quality research should be reserved for universities but on the clear understanding that they engage more in outreach activities. To support that approach, we have already suggested that selected research institutes should be associated with individual universities. We believe also that university colleges should concentrate on practical projects and consultancy for their outreach work with industry.

Policies on contact points for innovation and entrepreneurial activities

The government has indicated that it wants to promote the development of trade and industry based increasingly on new knowledge. This is to be

supported by a good infrastructure of universities, colleges and research institutes. But if this is to be successful, these institutions also have to reach out. Arenas have to be created where researchers and business can meet.

The 2005 research white paper includes the following further measures:

- Centres for research-driven innovation to be set up by universities in co-operation with industry;
- Regional innovation centres.;
- Industrial scientists working towards doctorates; and
- Scholarships to researchers to commercialise innovations and to set up businesses.
- Reinforced continuation of an existing programme (FORNY) for commercialisation of projects by employees at tertiary institutions.

The effects of these initiatives remain to be seen. If the role in research of different tertiary education institutions varies, then the content of the contacts between tertiary education institutes and business need to differ. In all cases, the need is to create a dynamic environment for exchange of ideas and for business creation.

Norwegian universities and university colleges need to improve the ways in which they reach out and create arenas for interchange between their staff and industry. The content and format of the interchange may vary from one institution to another – universities and some research institutes having interchange based on high quality research (incubators and science parks) and university colleges and other research institutes having interchange based on practical co-operation (companies selling management, ICT and research services). It is important that this approach is driven from the top – in the case of universities and university colleges, from strategies set by their respective boards.

9.6 The Demand for Knowledge

Background

The supply of knowledge and the arrangements for meeting with business sketched out above need to be matched by a demand from trade and industry for knowledge and collaboration. The percentage of tertiary education expenditure on R&D financed by industry gives one indication of business interest in co-operation. In 2003 this was 5% in Norway, which was somewhat lower than the OECD average of 5.6%.

A number of programmes were already in place at the time of our visit to increase entrepreneurial activities and the demand for research from industry. These included:

- The MOBI-programme with main objectives to encourage training, innovation and value adding in companies with little experience of R&D;
- The SkatteFUNN scheme which gives Norwegian small and medium sized enterprises tax relief for investments in research and more so if the research is done in co-operation with approved R&D institutions;
- The four regional commercialisation funds; and
- The four seed capital funds to invest in innovation projects financed at a 50/50 basis between public and private actors.

Policies to influence the demand for knowledge

In the 2005 white paper on research the government committed itself to continue the policies outlined above. In addition, it describes new incentives:

- Incentives for private funding of public research through a 25% top up to private donations of more than NOK 5 000 000 to universities, the Norwegian Academy of Science and Letters, and RCN;
- Increased grants for industrial research and development contracts; and
- A strengthening of the research-based development of the public sector including public development contracts.

It is important that research-based policies to create a demand for knowledge (as a basis for economic growth) operate alongside the innovation and entrepreneurial policies developed in the wake of the Innovation Strategy launched in 2004 (Ministry of Trade and Industry, 2004).³⁷

The measures to create a demand for knowledge from trade and industry are ambitious. Consequently, the government will need to closely monitor the effects to see if they are effective and sufficient. Special attention should

³⁷ See also Ministry of Trade and Industry, Ministry of Education and Research, Ministry of Local and Regional Government (2003).

be given to the links between research policies and policies aimed at creating innovation and entrepreneurial activities – in order to achieve the overarching goal of a research- based competitive trade and industry.

9.7 Regional Research Policies

We visited a number of universities and university colleges the in the regions. The awareness shown of the potential to build economic development on research and the transfer of knowledge varied. Some were actively interested in realising this potential: others were more hesitant. Examples were given of money for research and development being channelled via counties, municipalities and hospitals to universities and university colleges.

There are two perspectives to the contribution of universities and university colleges to regional development – firstly, access to tertiary education for people living in the region and secondly the effects of tertiary education on economic growth in the region. The success of the first was clear enough. However we were not able to obtain significant evidence about the success of the second perspective. As we have already indicated, an outcomes-focused approach to regional policies was rarely evident in our discussions either with government officials or with the regional institutions that we visited.

The 2005 white paper on research indicates that:

- Priorities will be made in the light of the need for increased research in and for regions with growth potential and few research activities;
- Collaboration between enterprises and research institutions will be strengthened through a scheme involving regional innovation centres; and
- Funding of regional institutes and the research activities of the university colleges will be strengthened and will be formulated in a way that promotes co-operation and regional development.

It is not clear how these policy declarations are to be interpreted or implemented. We believe that it will be important to have open communications between different policy levels. Central policy makers need to clarify their intentions. Regional representatives need to offer views about their successful implementation. Preferably such communications should be based on research evidence as to the possible and potential relations between research and regional development. What are the needs for education, training, applied research, development of business from new research findings in each particular region?

We suggest, then, that the government initiate a dialogue with the regions on the needs for research-based development, and on the options for different kinds of relations between tertiary education institutes and individual regions.

10. Future Policy Directions and Conclusion

10.1 Key Policy Directions for the Future

The review team has been impressed by the many strengths of Norway's tertiary education system. These strengths include: the high levels of participation and attainment that have been realised over a long period; the emphasis upon wide and equitable access as a function of age, social background, region, and upper secondary pathways; and the steps that have been taken in recent years through the Quality Reform to improve the quality and efficiency of the system. The key challenge that we see for the future is to improve the system's responsiveness to the needs of society and the economy. Improving the management and leadership of institutions, including through increasing their legal autonomy and making their management structures clearer, will be central to this. So will an increase in institutional differentiation and a reduction in institutional uniformity and the introduction of encouragement and incentives for staff to be more outward looking. There is also a need, in the interests of both improving the efficiency of the system and increasing its responsiveness to students and society, to improve the performance indicators and outcome measures by which it can be judged. We also advocate a more transparent basis for the allocation of public funds to institutions. Most of these directions for the future are consistent with existing government thinking.

There is a long, and strong, tradition in Norway of free tuition in tertiary education. We have not advocated change to this. However we do argue that there are anomalies within this policy, and that the distribution of costs and benefits has been too often assumed, and needs to be the subject of more rigorous public analysis and more vigorous public debate. We have been very impressed by Norway's system for supporting students in their studies through loans and grants. We suggest that the system might be further improved through the introduction of an income-contingent system for the repayment of loans. The emphasis upon equity in the system is commendable. However we were concerned by evidence of a growing gender gap in access and completion, and by the problems of recent

migrants in gaining full benefits from tertiary study. We encourage steps to be taken to improve career guidance, and suggest the consideration of financial incentives for institutions to increase the participation of under-represented groups.

Whilst the steps taken to date in the Quality Reform have been impressive, we believe that much more needs to be done to improve the quality of outcome indicators. We also suggest a wider use of discipline and subject reviews across several institutions to complement existing quality assurance mechanisms that tend to focus upon whole-of-institution reviews. An additional step that seems important is a clarification of what “research based teaching” should mean in practice. This seems particularly important in those university colleges that have a minimal involvement in research and that receive few competitive research grants.

The regional role of tertiary education has received a strong emphasis in Norway. However we believe that there is a need to review the role and location of regional university colleges to achieve greater coherence and a better use of resources. There is also a need to introduce a much stronger results- and output-focused approach in assessing the regional impact of institutions’ teaching and research.

We have been impressed by the introduction of a more competitive basis for the allocation of Norway’s tertiary research funds, and by the emphasis upon the commercialisation of knowledge that has accompanied this. These directions are to be encouraged. We believe that the impact of tertiary research might be improved through a review of the Research Council of Norway’s role in at the onetime awarding research grants and evaluating the outcomes of research. The encouragement of stronger partnerships between universities and research institutes, and the introduction of stronger incentives for staff to engage in outreach work with industry, would be steps in the same direction.

10.2 Conclusion

Tertiary education in Norway has undoubted strengths. However our main conclusion is clear enough: there is much more to do in universities and university colleges if Norwegian tertiary education is to retain its position of strength in the years ahead and to contribute what is needed to economic development.

We think that the differences between types of institutions within the tertiary sector, differences that are clearly reflected in the desire of some colleges to be reclassified as universities, should be operated more flexibly. We support the development of some new universities based on existing

institutions and believe that they should offer a wider range of academic programmes.

This is not a criticism of the steps taken by the Norwegian government to improve the effectiveness of teaching and research. The Quality Reform and developments in research are examples of essential first steps. We have offered recommendations as to how these initiatives might be developed further. Rather our conclusion is a recognition of the impact of increasing global competition and the greater need for universities and university colleges to deliver graduates who can thrive in the new competitive era. High quality teaching and research in tertiary education will be even more important. Leadership and management in tertiary education will need to be enhanced.

It is generally recognised that tertiary education has a role in the development, mainly through its graduates, of a civilised community in the nation as a whole. We believe that this has played a part in the present standing of Norway in the world. We were able to observe that students and student organisations in Norway contribute much to the welfare of students. The greater maturity of Norwegian students as compared with many others serves to enhance this contribution, as does their ongoing engagement debates on the future of the system, their periods of study abroad, and their volunteering at home and overseas.

With the prospect of immense changes in the economic environment in particular, it is critically important that tertiary education gives higher priority to the contribution it makes to the economy. That depends on initiative and enterprise within universities and a willingness to co-operate with business. We think there is more to be achieved here.

It is crucial that institutions are given the freedom to thrive. Despite measures to give institutions more autonomy, our clear impression is that the government is still seen as a regulator of what institutions can do. We recognise, of course, that the government has to exercise control of public spending and that because of the cost of supporting individual students, there has to be some control of student numbers, whether through direct or indirect mechanisms. We firmly believe that universities would benefit substantially from having access to more private funds to supplement what is made available by the government.

We believe also that the need for accountability should be delegated more to the institutions in line with our views on governance. This requires a greater external presence with an external chair of university and college boards. That external presence then also provides a clear signal of an institution's willingness to co-operate with the outside world.

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Annex 3: Programme of the Review Visit

Monday 7 March - Meetings at Ministry of Education and Research

- 09.00 – 09.15 Welcome by ministry officials
- 09.15 – 10.30 Meeting with senior officials for tertiary education
- 10.30 – 11.30 Meeting with NOKUT
- 11.30 – 13.00 Lunch meeting with NIFU STEP (report writers)
- 13.00 – 14.00 Meeting with Norwegian Council for Higher Education
- 14.00 – 15.00 Meeting with the Research Council of Norway
- 15.00 – 16.00 Ministry of Local Government and Regional Development

Tuesday 8 March - Stord

- 09.00 – 17.00 Stord-Haugesund University College meetings with various stakeholders

Wednesday 9 March - Stavanger

- 09.00 – 13.30 University of Stavanger
- 14.00 – 17.00 School of Mission and Theology (Misjonshøgskolen)

Thursday 10 March - Trondheim

- 08.30 – 13.30 Norwegian University of Science and Technology HE researchers
- 14.00 – 17.00 Sør-Trøndelag University College

Friday 11 March - Levanger

- 11.00 – 16.30 Nord-Trøndelag University College
Local authorities and stakeholders

Monday 14 March

- 09.00 – 12.00 University of Oslo
13.00 – 15.00 Oslo National Academy of the Arts
15.00 – 17.00 Oslo School of Architecture and Design

Tuesday 15 March

- 08.30 – 10.30 Norwegian School of Management BI
11.00 – 11.45 Confederation of Norwegian Business and Industry (NHO)
11.45 – 12.30 Lunch with student organisations (NSU, StL)
12.30 – 13.15 Ministry of Modernisation
13.15 – 14.00 Ministry of Labour and Social Affairs
14.00 – 15.00 Meeting with Minister of Education and Research, Ms. Kristin Clemet
15.00 – 16.00 Ministry of Trade and Industry
16.00 – 17.00 Network for private tertiary education

Wednesday 16 March

- 09.00 – 11.00 Oslo University College
11.00 – 12.15 Norwegian Association of Research Workers
13.00 – 14.30 Debriefing meeting with reference group

Annex 4: Comparative Indicators on Tertiary Education

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
OUTCOMES				
% of the population aged 25-64 with tertiary qualifications (2003)				
Tertiary-type B – Total	2	8	22/24	25
Males	3	7	21/24	43
Females	2	8	23/25	25
Tertiary-type A– Total	28	15	2/30	187
Males	25	16	4/30	156
Females	31	15	1/30	207
Advanced research programmes – Total	1	1	11/12	100
Males	1	1	10/15	100
Females	n	1	--	--
% of the population aged 25-34 with tertiary qualifications (2003)				
Tertiary-type B	2	9	23/25	22
Tertiary-type A and advanced research programmes	37	20	1/30	185
% of the population aged 55-64 with tertiary qualifications (2003)				
Tertiary-type B	2	5	21/25	40
Tertiary-type A and advanced research programmes	20	12	3/30	167
% of the population aged 25-64 with tertiary qualifications – time trends				
1991	25	18	5/21	139
2003	31	24	8/30	129
% of the population aged 25-34 with tertiary qualifications – time trends				
1991	27	20	4/21	135
2003	40	29	6/30	138
Average years in formal education (2003)³	13.8	12.0	2/30	115
Survival rates in tertiary education (2003)				
Number of graduates divided by the number of new entrants in the typical year of entrance				
Tertiary-type A education	--	70	--	--
Tertiary-type B education	--	73	--	--
Advanced research programmes	--	58	--	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Average duration of tertiary studies (in years)⁴				
All tertiary education	--	4.21	--	--
Tertiary-type B education	--	2.18	--	--
Tertiary-type A and advanced research programmes	--	4.72	--	--
Tertiary graduates by field of study⁵ (2003)				
Tertiary-type A				
Education	19.3	--	4/27	--
Humanities and arts	7.7	--	22/27	--
Social sciences, business and law	21.2	--	27/27	--
Science	8.9	--	16/27	--
Engineering, manufacturing and construction	8.7	--	20/27	--
Agriculture	0.9	--	23/27	--
Health and welfare	27.5	--	2/27	--
Services	2.9	--	12/27	--
Not known or unspecified	2.9	--	5/13	--
All fields	100.0	--	--	--
Tertiary-type B				
Education	n	--	--	--
Humanities and arts	5.8	--	15/25	--
Social sciences, business and law	69.4	--	1/24	--
Science	11.2	--	9/23	--
Engineering, manufacturing and construction	3.1	--	22/23	--
Agriculture	n	--	--	--
Health and welfare	4.8	--	20/22	--
Services	5.8	--	20/23	--
Not known or unspecified	n	--	--	--
All fields	100.0	--	--	--
Advanced research programmes				
Education	1.4	--	17/23	--
Humanities and arts	12.0	--	13/27	--
Social sciences, business and law	15.0	--	17/26	--
Science	24.8	--	13/27	--
Engineering, manufacturing and construction	17.8	--	8/26	--
Agriculture	9.0	--	6/26	--
Health and welfare	20.0	--	8/27	--
Services	n	--	--	--
Not known or unspecified	n	--	--	--
All fields	100.0	--	--	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Tertiary graduates by field of study⁵ per 10 000 population (2003)				
Tertiary-type A				
Education	11.42	--	5/27	--
Humanities and arts	4.55	--	18/27	--
Social sciences, business and law	12.50	--	22/27	--
Science	5.22	--	9/27	--
Engineering, manufacturing and construction	5.13	--	17/27	--
Agriculture	0.53	--	22/27	--
Health and welfare	16.25	--	2/27	--
Services	1.68	--	11/27	--
Not known or unspecified	1.73	--	4/13	--
All fields	59.01	--	14/27	--
Tertiary-type B				
Education	n	--	--	--
Humanities and arts	0.32	--	19/25	--
Social sciences, business and law	3.89	--	13/24	--
Science	0.63	--	15/23	--
Engineering, manufacturing and construction	0.17	--	22/23	--
Agriculture	n	--	--	--
Health and welfare	0.27	--	18/22	--
Services	0.33	--	19/23	--
Not known or unspecified	n	--	--	--
All fields	5.60	--	18/26	--
Advanced research programmes				
Education	0.02	--	17/23	--
Humanities and arts	0.19	--	16/27	--
Social sciences, business and law	0.24	--	16/26	--
Science	0.39	--	16/27	--
Engineering, manufacturing and construction	0.28	--	11/26	--
Agriculture	0.14	--	5/26	--
Health and welfare	0.31	--	11/27	--
Services	n	--	--	--
Not known or unspecified	n	--	--	--
All fields	1.57	--	15/27	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Employment rates and educational attainment⁶ (2003)				
Number of 25 to 64-year-olds in employment as a percentage of the population aged 25 to 64				
Lower secondary education				
Males	73	73	18/30	100
Females	57	49	7/30	116
Upper secondary education (ISCED 3A)				
Males	82	82	16/29	100
Females	77	65	5/29	118
Post-secondary non-tertiary education				
Males	86	84	9/18	102
Females	84	72	2/18	117
Tertiary education, type B				
Males	91	88	6/26	103
Females	88	77	2/26	114
Tertiary education, type A and advanced research programmes				
Males	91	89	6/30	102
Females	86	79	4/30	109
Employment rates and educational attainment¹ (2003)				
Number of 30 to 34-year-olds in employment as a percentage of the population aged 30 to 34				
Lower secondary education				
Males	80	76	10/26	105
Females	54	48	7/26	113
Upper secondary education (ISCED 3A)				
Males	82	84	21/26	98
Females	72	58	3/26	124
Post-secondary non-tertiary education				
Males	84	85	16/26	99
Females	72	60	4/26	120
Tertiary education, type B				
Males	84	87	19/26	97
Females	74	63	4/26	117
Tertiary education, type A and advanced research programmes				
Males	90	88	8/26	102
Females	82	67	1/26	122

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Unemployment rate and educational attainment⁷ (2003) - Number of 25 to 64 year-olds who are unemployed as a % of the population aged 25 to 64				
Lower secondary education				
Males	c	9.8	--	--
Females	c	11.0	--	--
Upper secondary education (ISCED 3A)				
Males	c	7.1	--	--
Females	c	10.6	--	--
Post-secondary non-tertiary education				
Males	c	5.9	--	--
Females	c	6.9	--	--
Tertiary education, type B				
Males	c	3.9	--	--
Females	c	4.4	--	--
Tertiary education, type A and advanced research programmes				
Males	2.6	3.6	22/27	72
Females	2.3	4.1	22/27	56
Earnings of tertiary graduates aged 25-64 relative to upper secondary graduates aged 25-64 (2002) (upper secondary = 100)				
Tertiary-type B	155	--	2/18	--
Tertiary-type A	135	--	18/19	--
Earnings of tertiary graduates aged 30-44 relative to upper secondary graduates aged 30-44 (2002) (upper secondary = 100)				
Tertiary-type B	152	--	2/18	--
Tertiary-type A	135	--	17/19	--
Trends in relative earnings of tertiary graduates aged 25-64 (upper secondary and post-secondary non-tertiary education = 100)				
1997	138	--	13/18	--
2002	135	--	11/14	--
PATTERNS OF PARTICIPATION				
Participation rates of all persons aged 15 and over by programme (2003)				
Per cent of all persons aged 15 and over in tertiary type-5A programmes	5.52	--	4/26	--
Per cent of all persons aged 15 and over in tertiary type-5B programmes	0.20	--	17/26	--
Per cent of all persons aged 15 and over in tertiary type-6 programmes	0.11	--	15/23	--
Per cent of all persons aged 15 and over in all tertiary programmes	5.83	--	8/26	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Index of change in total tertiary enrolment (2003)				
(1995 = 100)				
Total				
Attributable to change in population ⁸	92	96	15/19	96
Attributable to change in enrolment rates ⁹	126	143	19/16	88
Enrolment rates (2003)				
Full-time and part-time students in public and private institutions, by age				
Students aged 15-19 as a percentage of the population aged 15-19	85.3	79.1	8/28	108
Students aged 20-29 as a percentage of the population aged 20-29	28.6	23.6	9/28	121
Students aged 30-39 as a percentage of the population aged 30-39	7.0	5.4	8/28	130
Students aged 40 and over as a percentage of the population aged 40 and over	1.8	1.6	8/25	113
Age distribution of enrolments (2003)				
Persons aged 35 and over as a per cent of all enrolments in tertiary type-5A programmes	22.4	--	2/24	--
Persons aged 35 and over as a per cent of all enrolments in tertiary type-5B programmes	17.4	--	9/21	--
Persons aged 35 and over as a per cent of all enrolments in tertiary type-6 programmes	42.8	--	4/22	--
Persons aged 35 and over as a per cent of all enrolments in total tertiary programmes	22.6	--	4/24	--
Persons aged less than 25 as a per cent of all enrolments in tertiary type-5A programmes	44.1	--	24/26	--
Persons aged less than 25 as a per cent of all enrolments in tertiary type-5B programmes	52.0	--	16/26	--
Persons aged less than 25 as a per cent of all enrolments in tertiary type-6 programmes	0.6	--	21/21	--
Persons aged less than 25 as a per cent of all enrolments in total tertiary programmes	43.5	--	24/27	--
Persons aged less than 20 as a per cent of all enrolments in tertiary type-5A programmes	3.6	--	22/27	--
Persons aged less than 20 as a per cent of all enrolments in tertiary type-5B programmes	2.9	--	24/27	--
Persons aged less than 20 as a per cent of all enrolments in tertiary type-6 programmes	n	--	--	--
Persons aged less than 20 as a per cent of all enrolments in total tertiary programmes	3.5	--	24/27	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Gender distribution of enrolments (2003)				
Females as a per cent of enrolments in tertiary type-5A programmes	60.4	--	3/29	--
Females as a per cent of enrolments in tertiary type-5B programmes	51.2	--	18/29	--
Females as a per cent of enrolments in tertiary type-6 programmes	41.9	--	20/28	--
Females as a per cent of total tertiary enrolments	59.7	--	2/29	--
Net entry rates into tertiary education¹⁰ (2003)				
Tertiary-type B				
Total	1	16	20/23	6
Males	1	14	20/22	7
Females	1	17	19/23	6
Tertiary-type A				
Total	68	53	7/26	128
Males	56	47	7/25	119
Females	82	57	4/25	144
Distribution of students in tertiary education by type of institution¹¹ (2003)				
Tertiary-type B education, public	78.3	67.5	13/27	116
Tertiary-type B education, government-dependent private	21.7	19.5	11/19	111
Tertiary-type B education, independent private	--	13.1	--	--
Tertiary-type A and advanced research programmes, public	85.0	77.6	20/27	110
Tertiary-type A and advanced research programmes, government-dependent private	15.0	11.5	4/13	130
Tertiary-type A and advanced research programmes, independent private	--	10.9	--	--
Distribution of students in tertiary education by mode of study (2003)				
Tertiary-type B education				
Full-time	87.0	78.3	16/29	111
Part-time	13.0	22.5	14/18	58
Tertiary-type A and advanced research programmes				
Full-time	67.3	83.4	22/29	81
Part-time	32.7	16.6	8/18	197
Age distribution of net entrants into tertiary education, tertiary-type A (2003)				
Age at 20th percentile (20% of new entrants are below this age)	19.1	19.2	13/23	99
Age at 50th percentile (50% of new entrants are below this age)	20.9	20.8	11/23	100
Age at 80th percentile (80% of new entrants are below this age)	--	24.9	--	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Foreign students as a percentage of all students (2003) (foreign and domestic students) ^{12, ii}	5.2	6.4	12/27	81
Index of change in foreign students as a percentage of all students (2003) (foreign and domestic students) (1998 = 100)	165	--	7/22	--
National students enrolled abroad in other reporting countries relative to total tertiary enrolment¹³ (2003)	7.1	4.0	6/29	178
Expected changes of the 20-29 age group by 2012 relative to 2002 (2002 = 100) ¹⁴	103	96	11/30	107
Upper secondary attainment rates (2003) % of persons aged 25-34 with at least upper secondary education	95	75	2/30	127
Expected years of tertiary education under current conditions (2003) Full-time and part-time ¹⁵	3.5	2.8	7/28	125
Admission to tertiary education¹⁶ Source: Eurydice (2005) Limitation of the number of places available in most branches of public and grant-aided private tertiary education (2002/03) Limitation at national level with direct control of selection	√	1/35	--	--
Selection by institutions (In accordance with their capacity or national criteria)		23/35	--	--
Free access to most branches		11/35	--	--
EXPENDITURE				
Annual expenditure on tertiary education institutions per student, public and private institutions (2002) In equivalent US dollars converted using PPPs, based on full-time equivalents				
All tertiary education (including R&D activities)	13739	10655	5/26	129
Tertiary-type B education (including R&D activities)	--	--	--	--
Tertiary-type A and advanced research programmes (including R&D activities)	--	--	--	--
All tertiary education excluding R&D activities	--	7299	--	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Annual expenditure on tertiary education institutions per student relative to GDP per capita, public and private institutions (2002)				
Based on full-time equivalents				
All tertiary education (including R&D activities)	37	43	18/26	86
Tertiary-type B education (including R&D activities)	--	29	--	--
Tertiary-type A and advanced research programmes (including R&D activities)	--	42	--	--
All tertiary education excluding R&D activities	--	34	--	--
Cumulative expenditure on educational institutions per student over the average duration of tertiary studies¹⁷ (2002)				
In equivalent US dollars converted using PPPs				
All tertiary education	--	45812	--	--
Tertiary-type B education	--	--	--	--
Tertiary-type A and advanced research programmes	--	--	--	--
Change in tertiary education expenditure per student relative to different factors				
Index of change between 1995 and 2002 (1995 = 100, 2002 constant prices)				
Change in expenditure	110	--	22/24	--
Change in the number of students	104	--	21/25	--
Change in expenditure per student	105	--	13/23	--
Change in tertiary education expenditure per student				
In equivalent US dollars converted using PPPs (2001 constant prices and 2001 constant PPPs)				
1995	14087	--	3/22	--
2001 ⁱⁱⁱ	13189	--	5/26	--
Expenditure on tertiary education institutions as a percentage of GDP, from public and private sources				
All tertiary education, 2002	1.5	1.4	9/28	107
Tertiary-type B education, 2002	--	0.1	--	--
Tertiary-type A education, 2002	--	1.1	--	--
All tertiary education, 1995	1.7	--	5/25	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Relative proportions of public and private expenditure on educational institutions, for tertiary education				
Distribution of public and private sources of funds for educational institutions after transfers from public sources				
Public sources, 2002	96.3	78.1	3/27	123
Private sources, household expenditure, 2002	3.7	18.5	22/24	20
Private sources, expenditure of other private entities, 2002	--	7.6	--	--
Private sources, all private sources, 2002	3.7	21.9	25/27	17
Private sources, private, of which subsidised, 2002	a	1.3	--	--
Public sources, 1995	93.7	--	6/19	--
Private sources, household expenditure, 1995	--	--	--	--
Private sources, expenditure of other private entities, 1995	--	--	--	--
Private sources, all private sources, 1995	6.3	--	14/19	--
Private sources, private, of which subsidised, 1995	n	--	--	--
Distribution of total public expenditure on tertiary education (2002)				
Public expenditure on tertiary education transferred to educational institutions and public transfers to the private sector, as a percentage of total public expenditure on tertiary education				
Direct public expenditure on public institutions	62.6	71.1	23/25	88
Direct public expenditure on private institutions	4.5	11.5	12/20	39
Indirect public transfers and payments to the private sector	32.9	17.4	3/27	189
Expenditure on tertiary education institutions as a proportion of total expenditure on all educational institutions (2002)				
Public and private institutions	--	24	--	--
Total public expenditure on tertiary education (2002)				
Direct public expenditure on tertiary institutions plus public subsidies to households (which include subsidies for living costs, and other private entities)				
As a percentage of total public expenditure ¹⁸	4.4	3.0	4/26	147
As a percentage of GDP	2.1	1.3	3/28	162
Subsidies for financial aid to students as a percentage of total public expenditure on tertiary education (2002)				
Scholarships / other grants to households	11.6	9.2	12/26	126
Student loans	21.2	7.6	3/15	279
Scholarships / other grants to households attributable for educational institutions	a	1.1	--	--

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Annual expenditure per student on instruction, ancillary services and R&D (2002)				
Expenditure on tertiary education institutions in US dollars converted using PPPs from public and private sources, by type of service				
Educational core services	--	7173	--	--
Ancillary services (transport, meals, housing provided by institutions)	--	342	--	--
Research and development	--	2795	--	--
Expenditure on tertiary education institutions by resource category (2002)				
Distribution of total and current expenditure on tertiary education institutions from public and private sources				
Percentage of total expenditure				
Current	90.2	88.4	12/26	102
Capital	9.8	11.6	15/26	84
Percentage of current expenditure				
Compensation of teachers	--	42.3	--	--
Compensation of other staff	--	22.2	--	--
Compensation of all staff	62.7	66.1	16/27	95
Other current	37.3	33.9	12/27	110
Registration and tuition fees (2002/03)¹⁹				
Source: Eurydice (2005)				
Registration and tuition fees and other payments made by students of full-time undergraduate courses, public sector				
Neither fees nor compulsory contributions		9/35	--	--
Solely contributions to student organisations	√	3/35	--	--
Registration and/or tuition fees (and possible contributions to student organisations)		23/35	--	--
LITERACY LEVELS				
IALS achievement levels of graduates aged 25-34				
Source: OECD (2000)				
Graduates aged 25-34 at IALS levels 1 and 2 as a per cent of total graduates aged 25-34	3	19	21/21	16
Graduates aged 25-34 at IALS levels 4 and 5 as a per cent of total graduates aged 25-34	61	40	3/21	151

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
PATTERNS of PROVISION				
Ratio of students to teaching staff in tertiary education^{20, iv} (2003)				
Based on full-time equivalents, Public and private institutions.				
Type B	--	14.4	--	--
Type A and advanced research programmes	--	15.7	--	--
Tertiary education all	11.9	14.9	17/23	80
EXPECTATIONS OF 15-YEAR-OLD STUDENTS				
Students' expected educational levels (2003)				
Source: PISA 2003 (OECD, 2004)				
Per cent of 15-year-old students who expect to complete secondary education, general programmes (ISCED 3A)	45.7	48.9	14/28	93
Per cent of 15-year-old students who expect to complete secondary education, vocational programmes (ISCED 3B or C)	47.1	29.9	6/26	158
Per cent of 15-year-old students who expect to complete post-secondary non-tertiary education (ISCED 4)	11.5	16.4	13/21	70
Per cent of 15-year-old students who expect to complete tertiary-type B education (ISCED 5B)	32.9	20.5	3/26	160
Per cent of 15-year-old students who expect to complete tertiary-type A education or an advanced research qualification (ISCED 5A or 6)	25.4	44.0	26/29	58
RESEARCH AND DEVELOPMENT				
Gross domestic expenditure on Research and Development (R&D) as a percentage of GDP				
Source: OECD (2005)				
2003	1.75	2.24	13/19	78
1991	1.64	2.21	13/26	74
Higher education²¹ expenditure on R&D as a percentage of GDP				
Source: OECD (2005)				
2003	0.48	0.42	6/19	114
1991	0.44	0.36	6/23	122

	Norway	OECD mean	Norway's rank ¹	% of OECD mean ²
Percentage of gross domestic expenditure on R&D by sector of performance (2003)				
Source: OECD (2005)				
higher education	27.5	18.7	5/18	147
(higher education in 1991)	26.7	16.3	9/23	164
business enterprise	57.5	67.3	11/18	85
government	15.1	10.9	9/18	139
private non-profit sector	--	3.1	--	--
Percentage of higher education expenditure on R&D financed by industry Source: OECD (2005)				
2003	5.0	5.6	10/15	89
1991	4.7	5.5	14/22	85
Total researchers per thousand total employment				
Source: OECD (2005)				
2003	9.1	--	3/11	--
1991	6.6	5.7	3/19	116
Researchers as a percentage of national total (full time equivalent) (2003) Source: OECD (2005)				
higher education	29.8	--	7/11	125
(higher education in 1991)	30.9	23.8	17/20	--
business enterprise	54.7	--	6/11	--
government	15.5	--	6/11	--
Share in OECD total "triadic" patent families²² (%)				
Source: OECD (2005)				
2001	0.23	--	18/30	--
1991	0.25	--	17/30	--
Foreign PhD students as a per cent of total PhD enrolments (2003)				
	17.6	--	5/17	--

Notes for the Tables

Sources:

All data are from Education at a Glance, OECD Indicators 2004 and 2005, unless indicated otherwise in the table.

Other sources:

Eurydice (2005), Key data on education in Europe 2005, Eurydice, Brussels.

OECD (2000), Literacy in the Information Age, Final Report of the International Adult Literacy Survey, OECD, Statistics Canada.

OECD (2004), Learning for Tomorrow's World, First Results from PISA 2003, OECD, Paris.

OECD (2005), Main Science and Technology Indicators, volume 2005/2, OECD, Paris.

Missing data:

a: Data not applicable because the category does not apply.

c: There are too few estimates to provide reliable estimates.

n: Magnitude is either negligible or zero.

General notes:

1. "Norway's rank" indicates the position of Norway when countries are ranked in descending order from the highest to lowest value on the indicator concerned. For example, on the first indicator "% of the population aged 25-64 with tertiary qualifications, Tertiary-type B - Total", the rank "x/x" indicates that Norway recorded the xxst highest value of the xx OECD countries that reported relevant data. The symbol "=" means that at least one other country has the same rank.
2. "% of OECD mean" indicates Norway's value as a per cent of the OECD value. For example, on the first indicator "% of the population aged 25-64 with tertiary qualifications, Tertiary-type B - Total", the percentage "xx" indicates that Norway's value is equivalent to xx% of the OECD mean.
3. The calculation of the average years in formal education is based upon the weighted theoretical duration of schooling to achieve a given level of education, according to the current duration of educational programmes as reported in the UOE data collection.
4. Two alternative methods were employed to calculate the average duration of tertiary studies: the approximation formula and the chain method. For both methods, it should be noted that the result does not give the average duration needed for a student to graduate since all students participating in tertiary education are taken into account, including drop-outs. Hence, the figure can be interpreted as the average length of time for which students stay in tertiary education until they either graduate or drop out.
5. These indicators show the ratio of graduates as a proportion to all fields of studies. The fields of education used follow the revised ISCED classification by field of education.
6. The employed are defined as those who during the survey reference week: *i*) work for pay (employees) or profit (self-employed and unpaid family workers) for at least one hour, or *ii*) have a job but are temporarily not at work (through injury, illness, holiday, strike or lockout, educational or training leave, maternity or parental leave, etc.) and have a formal attachment to their job.
7. The unemployed are defined as individuals who are without work, actively seeking employment and currently available to start work.

8. The impact of demographic change on total enrolment is calculated by applying the enrolment rates measured in 1995 to the population data for 2003: population change was taken into account while enrolment rates by single year of age were kept constant at the 1995 level.
9. The impact of changing enrolment rates is calculated by applying the enrolment rates measured in 2003 to the population data for 1995: the enrolment rates by single year of age for 2003 are multiplied by the population by single year of age for 1995 to obtain the total number of students that could be expected if the population had been constant since 1995.
10. The net entry rates represent the proportion of persons of a synthetic age cohort who enter a certain level of tertiary education at one point during their lives.
11. Educational institutions are classified as either public or private according to whether a public agency or a private entity has the ultimate power to make decisions concerning the institution's affairs. An institution is classified as private if it is controlled and managed by a non-governmental organisation (e.g., a Church, a Trade Union or a business enterprise), or if its Governing Board consists mostly of members not selected by a public agency. The terms "government-dependent" and "independent" refer only to the degree of a private institution's dependence on funding from government sources. A government-dependent private institution is one that receives more than 50 per cent of its core funding from government agencies. An independent private institution is one that receives less than 50 per cent of its core funding from government agencies.
12. Students are classified as foreign students if they are not citizens of the country for which the data are collected. Countries unable to provide data or estimates for non-nationals on the basis of their passports were requested to substitute data according to a related alternative criterion, e.g., the country of residence, the non-national mother tongue or non-national parentage.
13. The number of students studying abroad is obtained from the report of the countries of destination. Students studying in countries which did not report to the OECD are not included in this indicator.
14. This indicator covers residents in the country, regardless of citizenship and of educational or labour market status.
15. School expectancy (in years) under current conditions excludes all education for children younger than five years. It includes adult persons of all ages who are enrolled in formal education. School expectancy is calculated by adding the net enrolment rates for each single year of age.
16. In this indicator, the column "OECD mean" indicates the number of Eurydice member countries/areas, in which limitation on admission to tertiary education is adopted, out of 35 countries/areas whose data is available. For example, in the column "Limitation at national level with direct control of selection", 1/35 indicates that limitation at national level with direct control of selection is adopted in 1 country.
17. The estimates of cumulative expenditure on education over the average duration of tertiary studies were obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies.
18. Total public expenditure on all services, excluding education, includes expenditure on debt servicing (e.g. interest payments) that are not included in public expenditure on education.
19. "Registration fees" refers to payments related to registration itself or the certified assessment of each student. By "tuition fees" is meant contributions to the cost of education supported by individual tertiary education institutions. These fees also include any certification fees. Payments for entrance examinations are excluded. In this indicator, the column "OECD mean" indicates the number of Eurydice member countries/areas, in which registration and tuition fees are adopted, out of 35 countries/areas whose data is available. For example, in the column "Membership fees to student organisations", 5/35 indicates that membership fees are adopted in 5 countries/areas.
20. "Teaching staff" refers to professional personnel directly involved in teaching students.

21. “Higher Education” includes all universities, colleges of technology and other institutions of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education institutions. For detail, see OECD (2002), Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development.
22. “Triadic patent” means patents filed all together to the European Patent Office (EPO), the US Patent and Trademark Office (USPTO) and the Japanese Patent Office (JPO). This indicator shows each country’s share in total triadic patents filed by OECD countries. Reference year is when the priority patent is filed. Data is estimated by the OECD Secretariat and provisional. Because a few countries share large proportion of triadic patents, other countries have small share.

Country specific notes:

- i. Because sample size is small in this age-range, these figures should be interpreted as showing broad indications only.
- ii. Foreign students are defined by citizenship hence include children of permanent residents in the country. The number of tertiary students who came to Norway for the purpose of study is overestimated.
- iii. The decline in expenditure per student between 1995 and 2001 is due to a substantial change in the GDP deflator caused primarily by an increase in oil prices.
- iv. Public institutions only.

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OECD Reviews of Tertiary Education

NORWAY

In many OECD countries, tertiary education systems have experienced rapid growth over the last decade. With tertiary education increasingly seen as a fundamental pillar for economic growth, these systems must now address the pressures of a globalising economy and labour market. Within governance frameworks that encourage institutions, individually and collectively, to fulfil multiple missions, tertiary education systems must aim for the broad objectives of growth, full employment and social cohesion.

In this context, the OECD launched a major review of tertiary education with the participation of 24 nations. The principal objective of the review is to assist countries in understanding how the organisation, management and delivery of tertiary education can help them achieve their economic and social goals. Norway is one of 14 countries which opted to host a Country Review, in which a team of external reviewers carried out an in-depth analysis of tertiary education policies. This report includes:

- an overview of Norway's tertiary education system;
- an account of trends and developments in tertiary education in Norway;
- an analysis of the strengths and challenges in tertiary education in Norway; and
- recommendations for future policy development.

This Review of Tertiary Education in Norway forms part of the *OECD Thematic Review of Tertiary Education*, a project conducted between 2004 and 2008 (www.oecd.org/edu/tertiary/review).