



Researchers' Report 2014

Country Profile: Norway



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1. Key data

National R&D intensity target

“Norway's R&D intensity of 1.70% in 2011¹ is below the EU average. This is due to the particular nature of Norway's economy which is characterised by traditional industrial activities related to the extraction and processing of natural resources. In recent years, Norwegian policy makers have increasingly recognised that the low level of industrial R&D should be seen against the backdrop of the country's industrial structure. Although Norway's R&D intensity has fluctuated over the last decade, the average annual growth rate of its R&D intensity is close to that of the EU as a whole. If Norway's R&D intensity continues to grow at the same average annual growth rate, the R&D intensity value attained by Norway in 2020 will still be below the EU value and, in fact will be lower than 2%.

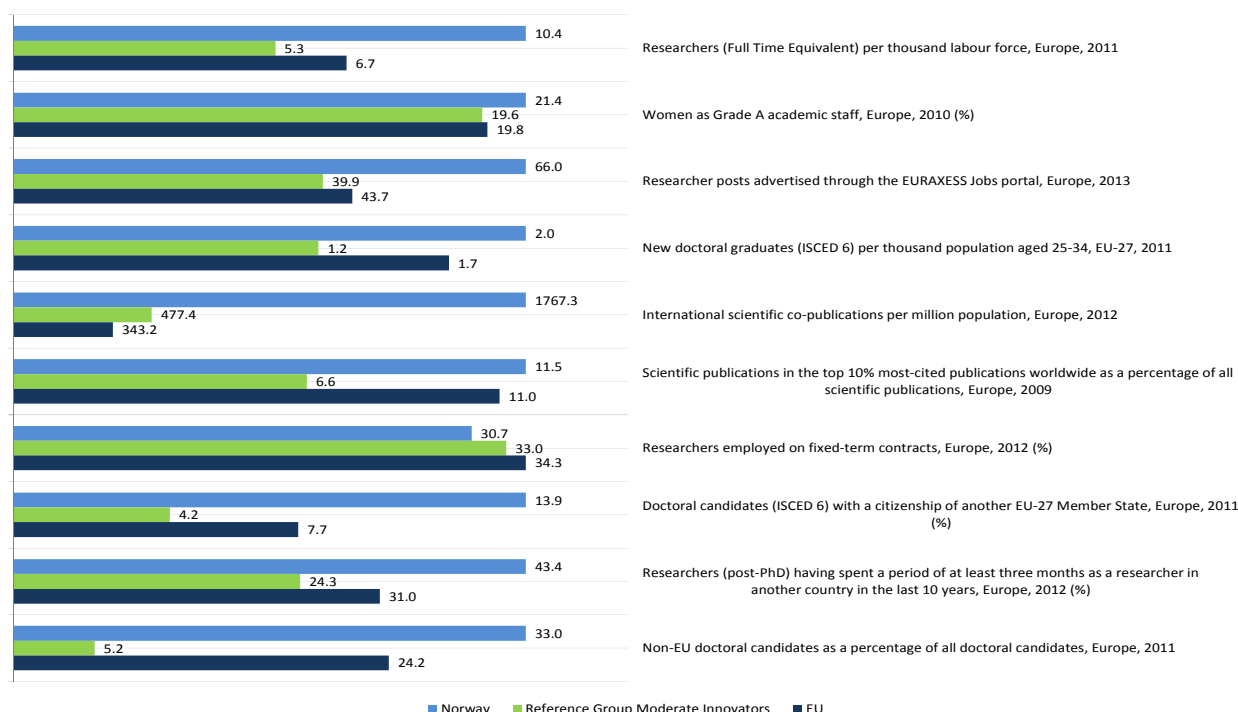
Over the last decade, total expenditure on R&D (GERD) in Norway has increased in real terms at an average annual growth rate of 2.1% while the corresponding growth rate for business expenditure on R&D (BERD) was 0.4%. The business enterprise sector accounts for 51% of Norwegian R&D and a large share of it is performed by SMEs. Norway's business R&D intensity of 0.86% in 2011 is much lower than the EU value of 1.26% and is far below the level of the other Nordic countries all of which have values higher than 2%. It is important to mention that the value excludes indirect support for R&D such as R&D tax credits, which is the largest R&D support scheme for business in Norway.

The EU Framework Programmes are the most important international research programmes in which Norway participates. Norwegian researchers have participated in EU FPs since 1987. In FP7, Norway's participant success rate was 24.64% while the average EU success rate was 22%. The successful participants received a total EC financial contribution of EUR 563 million.”²

Key indicators measuring the country's research performance

The figure below presents key indicators measuring Norway's performance on aspects of an open labour market for researchers against a reference group and the EU average³.

Figure 1: Key indicators – Norway



Source: Deloitte

¹ In 2012, R&D expenditure was 1.66% (Eurostat, 2014).

² European Commission (2013), “Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level 2013”

³ The values refer to 2013 or the latest year available

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2014, MORE2. Notes: Based on the average innovation performance, Norway belongs to the group of “Moderate innovators” showing a performance below that of the EU average⁴.

Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

Table 1: Human resources – Stock of researchers

Indicator	Norway	EU Average/Total
Head Count per 1 000 active labour force (2011)	17.38	10.55
Head Count (2011)	45 578	2 545 346
FTE per 1 000 active labour force (2011)	10.38	6.75
Full time equivalent (FTE) (2011)	27 228	1 628 127

Source: Deloitte

Data: Eurostat

2. National strategies

The Government of Norway has put in place a range of measures aimed at training enough researchers to meet its R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Norway’s R&D targets, to promote attractive working conditions, and to address gender and dual career issues.

Table 2: National strategies

Measure	Description
R&D Technology Strategies (2011-ongoing)	Biotechnology, nanotechnology and ICT have been prioritised fields since the 2005 White Paper <i>Commitment to Research</i> , and the plan to develop national strategies was announced in the 2009 White Paper <i>Climate for Research</i>). An R&D strategy for biotechnology was presented in 2011, for nanotechnology in 2012 and for ICT in 2013. In addition, a strategy for marine bio-prospecting was presented in 2009 and a strategy for environmental technology in 2011.
White Paper: Long-term perspectives – knowledge provides opportunity Report no. 18 (2012-2013)	The White Paper on research “<i>Long-term perspectives – knowledge provides opportunities</i>” (Report No. 18 (2012-2013), was presented in March 2013 and discussed and approved by Parliament in June 2013. This paper addresses the challenges of the knowledge triangle: research, teaching and innovation. The Government continues to pursue the objectives from the previous White Paper, Report No. 30 (2008–2009) to the Storting, “<i>Climate for Research</i>”. The Norwegian Government has high aspirations for research and higher education. In the view of the Government, Norwegian research is of high quality and the Norwegian research system functions well. However, there is still potential to: – further enhance the quality of research and establish more world-class research and educational environments; – lay a better foundation to encourage innovative thinking and renewal within the research system and in the development of the private and public sectors; – increase internationalisation in parts of the research system and ensure more effective coordination in the use of national and international policy and funding instruments; – promote greater cooperation in the development and application of knowledge. The long-term objective set out in the previous White Paper <i>Climate for Research</i> to achieve an overall investment in research constituting three per cent of GDP remains unchanged. Further, it is the Government’s objective that public allocations to research should equal roughly one per cent of GDP, i.e. approximately one-third of the target for the total amount of investment in research and development. The Government will: – Continue increasing allocations to research in the coming years given that educational quality plays an important role in the ability of society to adapt and innovate. The need for high-quality higher education, together with the need for good and relevant skills, will therefore be more clearly integrated into the Government’s research policy in the

⁴ European Commission (2014), “Innovation Union Scoreboard 2014”

Measure	Description
	years to come; – Develop a long-term national plan for research and higher education, which will set out political priorities for research and higher education in a 10-year perspective. The priorities will serve as a guidepost for investments in buildings, research infrastructure, fellowships and expanded student enrolment capacity. – Establish a system for analysing future competency needs to match society's needs with the offering of educational institutions. – Seek to expand the framework for mobility of research and development personnel among institutions, sectors and countries in order to promote knowledge development and knowledge sharing. The Government also emphasises the importance of universities and university colleges adopting binding and transparent personnel strategies to make education and research institutions attractive workplaces. Research policy still has nine goals (five strategic and four overarching): – Meeting global challenges, with a particular emphasis on the environment, climate change, oceans, food safety and energy research; – Better health, leveling social differences in health and developing high-quality health services; – Addressing social challenges and providing research-based practice in the relevant professions; – Knowledge-based industry in all regions; – Industry-oriented research within the food, marine, maritime, tourism, energy, environment, biotechnology, ICT, and new materials/nanotechnology areas; – High-quality research; – A well-functioning research system; – Increased internationalisation of research; and – Efficient use of research funding and results.

Source: Deloitte

In 2012 the Research Council allocated NOK 6.5 billion, of which NOK 2 083 million went to the university and university college sector, NOK 2 799 million to the independent research institute sector, NOK 999 million to trade and industry, and NOK 128 million to the regional health authorities and hospital trusts. A total of 5 156 projects are currently underway, and funding was granted for 1522.3 person-years in doctoral fellowships and 925.4 person-years in post-doctoral fellowships. In the context of Research Council projects, there have been several thousand scientific articles published overall in peer-reviewed scientific journals, reports, presentations and books. New companies have been established, new patents conferred, and new methods and models produced. The Research Council is financing approx. 25 % of all PhD-students and approx. 50% of all post-doctoral fellowships in Norway. The remainder is financed directly by the HES through their annual budgets from the ministries⁵.

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2010, the percentage of women grade A academic staff was 21.4% in Norway compared with 19.6% among the Innovation Union reference group and the EU average of 19.8%⁶.

In Norway, all HEIs are obliged to have gender equality action plans. There is an annual prize for the institution with the best performance in gender equality.

The Norwegian Government strengthened its focus on gender equality by launching a temporary incentive scheme in 2010 to encourage the institutions to appoint women to permanent academic positions (professors and associate professors) in mathematics, natural science and technology. A total of NOK 10 million (some EUR 1.4 million) a year will be allocated for this purpose until 2014, and up to NOK 300 000 (some EUR 41 000) is awarded to institutions per woman employed in such a position. This rewards the environment; it is not a subsidy towards the woman's salary. A current analysis of the measure's impact will form the basis for deciding whether to prolong the measure or not.

⁵ Source: http://www.forskningsradet.no/en/Annual_reports/1138785841818. The numbers are updated late 2013.

⁶ See Figure 1 "Key indicators – Norway"

In addition, the Research Council has established a new initiative called Gender Balance in Senior Positions and Research Management (BALANSE), which will be developed into a funding scheme. In 2013 the total budget was NOK 15 million (some EUR 2.0 million) and four projects received support. The scheme aims to increase the share of women in senior and leading positions in research.

The Research Council is implementing the 'Charter & Code' principles in documents, calls and contracts, with an emphasis on the recruitment of women to leading positions in projects funded by the Council. This may influence funding decisions.

The National Committee for Gender Balance in Research (KIF Committee) deals with issues relating to promotion of women's position in research, including recruitment of women to research and top academic posts at higher education institutions. Similarly, governmental research institutions and the Research Council of Norway (RCN) aim to include more women in leading researcher positions. During 2014 the committee will be expanded and its work directed more widely towards diversity in pursuit of excellence in research.

Measures to ensure a representative gender balance

Gender equality is implemented through legislation, including >40% representation of each gender on boards and committees, including in the research profession. Participation of both men and women in peer review groups judging applications for positions is guaranteed.

Parental leave

In Norway, almost all employees (those that have been working six of the last 10 months), including researchers, are paid during parental leave. A key qualifying condition is to have been working for six of the previous 10 months.

Researchers working in public institutions are paid by the institutions. If the contract ends during the parental leave (i.e. the employee is on a temporary engagement/contract), the Norwegian Labor and Welfare Service (NAV) covers the remainder of the parental leave. For researchers in private enterprises, different regulations apply. However, they are entitled to funding from NAV in all circumstances.

Employees can receive 100% of their salary as parental benefits for a period of 49 weeks or 80% of their salary/parental benefits for a period of 59 weeks. The mother is entitled to a minimum of 10 weeks and the father of 10 weeks. The remaining weeks can be divided between the couple at their discretion.

4. Open, transparent and merit-based recruitment

Recruitment system

Appointment to academic positions is regulated by the Act relating to universities and university colleges (2005). Positions are advertised publicly by the appointing body. If one gender is clearly under-represented in the category of post in the subject area in question, the advertisement must specifically invite applications from members of that gender. Appointments to academic posts are made by the board – on the basis of recommendations by a subordinate body or an appointments committee. Recommendation is made on the basis of peer review. The appointing body may decide in addition that there is a need for an interview, a trial lecture or other tests. Both genders must be represented in the peer review group. When the appointment is made, importance must be attached to gender equality considerations.

Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

Table 3: Open recruitment in higher education and public research institutions

Do institutions in the country currently have policies to ...?	Yes/No	Description
– publish job vacancies on relevant national online platforms	Yes	Institutions plan automatically to transfer research position advertisements from national websites to EURAXESS Jobs.
– publish job vacancies on relevant Europe-	Yes	Institutions publish job vacancies on relevant Europe-

Do institutions in the country currently have policies to ...?	Yes/No	Description
wide online platforms (e.g. EURAXESS)		wide online platforms (e.g. EURAXESS).
– publish job vacancies in English	Yes	Leading universities and frontline research groups publish job vacancies in English.
– systematically establish selection panels	Yes	Procedures for the establishment of selection panels within higher education institutions are set out in the Act on Universities and University Colleges.
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Yes	Institutions have policies to establish clear rules for the composition of selection panels.
– publish the composition of a selection panel (obliging the recruiting institution)	Yes	Institutions publish the composition of selection panels upon request.
– publish the selection criteria together with job advert	Yes	Institutions publish the selection criteria together with job advert.
– regulate a minimum time period between vacancy publication and the deadline for applying	Yes	Institutions regulate a minimum time period between vacancy publication and the deadline for applying.
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent	Yes	Institutions have policies to place the burden of proof on the employer to prove that the recruitment procedure was open and transparent.
– offer applicants the right to receive adequate feedback	Yes	Institutions offer applicants the right to receive adequate feedback.
– offer applicants the right to appeal	No	Institutions do not have policies to offer applicants the right to appeal.

Source: Deloitte

EURAXESS Services Network

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 2.7 in Norway compared with 39.9 among the Innovation Union reference group and an EU average of 43.7⁷.

Since 2006, the Ministry of Education and Research has asked institutions to publish relevant positions on the EURAXESS Jobs portal and in English. The national EURAXESS portal (www.euraxess.no) links to relevant institutions and useful information on the research profession. For their part, institutions (EURAXESS Contact Points) provide national and local information and hands-on assistance to researchers. Leading universities also publish on international websites (e.g. Nature Jobs) in their frontline fields.

5. Education and training

Measures to attract and train people to become researchers

The Norwegian educational system does not include ‘elite’ primary/secondary schools. However, many secondary schools have established agreements with nearby universities and university colleges enabling gifted pupils in natural sciences to substitute classes at tertiary level for classes at secondary level.

In Norway, Science Centres are popular scientific recreation and learning centres of technology, natural sciences and mathematics for children and adults. The Science Centres do not focus on disseminating the results of research, but on sharing with the public the sheer excitement of scientific work and experiments. Norwegian HEIs organise annual student recruitment weeks.

A regulation under the Act relating to Universities and University Colleges (2005) requires all Norwegian masters’ programmes to include a thesis (or other independent work in disciplines where that is relevant) evaluated by external examiners. In the National Qualifications Framework for higher education (2009), the learning outcome descriptors at the bachelor’s, master’s and PhD levels are designed so as to assure training for research as part of the qualification.

⁷ See Figure 1 “Key indicators – Norway”

The Research Council of Norway (RCN) has launched several initiatives to attract people to become researchers, including Researchers' Night events, the *Nysgjerrigper* Science Knowledge Project for children, the *Proscientia* project (promoting interest in research and science among young people aged 12-21 years old) and an Annual Science Week, where the purpose is to fuel the public's curiosity, interest and understanding of research activities and results, and to promote recruitment of young people to an academic career.

The RCN also engages in collaborative initiatives with other stakeholders, such as the Norwegian Contest for Young Scientists, a writing competition on freedom of expression, maths and science Olympiads, the KappAabel competition (Nordic competition in mathematics for school classes) and the FIRST LEGO League.

In addition, an important measure for increasing the number of students taking science in general is that applicants for higher education who have 'in-depth' science courses at the upper secondary level (in Mathematics, Chemistry, Physics, Biology and Information Technology) obtain more competitive points than applicants with other subject combinations. To strengthen recruitment to research within science, technology, engineering and mathematics (STEM subjects), these subjects are prioritised when allocating new PhD positions from the ministry to the HEIs.

Women represent about half the population taking doctoral degrees, but they are still under-represented and under-engaged in research in STEM subjects. In order to attract more female students to technological studies, all female applicants to engineering studies (with the exception of chemistry, where there is no shortage of female students) are awarded two additional competitive points compared to male applicants.

Doctoral graduates by gender

The table below shows the number of doctoral graduates in Norway by gender as a ratio of the total population.

Table 4: Doctoral graduates by gender

Indicator	Norway	EU Average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (2011)	2.0	1.7
Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2011)	1.9	1.6
Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2011)	2.2	1.8

Source: Deloitte

Data: Eurostat

Funding of doctoral candidates

The table below presents the two different funding paths accessible to Norwegian doctoral candidates.

Table 5: Funding opportunities for doctoral candidates

Funding scheme	Description
Stipends/grants	Approximately 5-7% of doctoral candidates in Norway receive grants. These are mainly non-EU citizens who receive development grants. Some Norwegians graduating in another country receive a stipend/loan from the State Educational Loan Fund (Lånekassen). (The others are on ordinary employment contracts, see below.)
Employment contracts	The most common form of funding for PhD candidates is through employment in an ordinary fixed-term position. Some take their PhD while working in a research institute, hospital or university college in a permanent position. Ordinary employment contracts apply to approximately 93-95% of doctoral candidates in Norway.

Source: Deloitte

Measures to increase the quality of doctoral training

To start a PhD education, candidates have to be accepted to a PhD programme in a PhD-awarding institution. The programme includes:

- Completing an independent piece of research in active collaboration with the academic supervisor(s) and other researchers;
- An approved set of training courses;
- Participation in active research communities, both national and international;
- Research dissemination that is closely linked to the thesis in progress.

Guidelines for PhD education are developed by the Norwegian Association of Higher Education Institutions (UHR). In addition to the programmes, the students may apply to participate in a doctoral school. Such schools are thematic, often across disciplines.

Of the 1331 person-years in doctoral fellowships financed by NRC in 2013, 80 % were financed by the following programmes or activities:

- SFF/SFI/FME⁸: NOK 292 million (some EUR 35 million);
- Large-scale Programme Initiative: NOK 196 million (some EUR 23 million);
- Policy-oriented programmes: NOK 150 million (some EUR 18 million);
- The FRIPRO funding scheme for independent projects: NOK 173 million (some EUR 21 million);
- The Programme for User-driven Research-based Innovation (BIA): NOK 121 million (some EUR 14 million).

A scheme for a national network of research schools, financed by the Ministry of Education and Research and run by the Research Council, was established in 2008. The scheme provides funding to 15 national researcher schools across the country based on national networks of cooperating institutions. The researcher schools are part of the effort to create a better framework for researcher training. They were established to help promote recruitment, to enable more doctoral candidates to complete their degrees, to reduce time to degree completion, and to enhance the internationalisation of researcher training in Norway. The Ministry allocates NOK 40 million annually (some EUR 5 million) to the scheme.

In addition, Norwegian PhD education was evaluated in 2012. The aim of the evaluation was to provide a description of the status of PhD education in Norway, and assess the education system for quality, efficiency and relevance. The evaluation was also intended to provide the government and higher education institutions with information on how to improve PhD education. Based on the data collected, experience from other countries and input from international experts on PhD education, the overall assessment was that Norway has a high-quality PhD education system. Compared to the situation in many other countries in the current economic climate, it is well funded and well organised, and offers very good working and learning conditions for PhD candidates, as well as good career prospects for PhD graduates.

It did, however, identify challenges and emerging issues that need to be addressed, for instance:

- Completion rate and time-to-degree are not satisfactory in several fields of science and fall short of government targets;
- The relatively high age of PhD graduates;
- Having enough high-quality graduate courses remains a challenge within many institutions, and supervision needs to be improved;
- The need for higher education institutions to strengthen their focus on the increasingly diverse career trajectories of their PhD holders.

Under Norway's Industrial Ph.D. scheme, companies may apply for partial funding for a three-year period for an employee seeking to pursue an ordinary doctoral degree (see chapter 7 "Collaboration between academia and industry"). A new scheme for a public sector PhD is being set up. This scheme will be largely modelled on the Industrial PhD Scheme and is expected to start up in 2014

Skills agenda for researchers

Leading universities and research institutions offer various training programmes in doctoral schools to improve researchers' employment skills and competencies. The type of training involves methods, statistics, ethics, intellectual property rights awareness as well as management.

Life-long learning is provided to researchers to favour their professional and academic development, including at the highest academic levels. There is a need for training at all career levels, to facilitate flexible pathways through the education and training system, and mobility between institutions and sectors.

⁸ Centres of Excellence (SFF), Centres for Research-based Innovation (SFI), Centres for Environment-friendly Energy Research (FME).

6. Working conditions

Measures to improve researchers' funding opportunities

The majority of PhD candidates are employees (93-95%, see chapter 5 "Education and training"), and enjoy rights as such. The remaining (5-7%) receiving grants have a student status for social and health benefits. There is no tuition fee for PhD candidates.

The Research Council provides support to encourage increased Norwegian participation in European research cooperation. Project establishment support (PES) may be used to prepare grant applications or project proposals for European R&D programmes that are open to Norwegian participation.

The Research Council funds exceptional researchers and research centres under their leadership through the Centres of Excellence (SFF) scheme. In 2014, around NOK 300 million (some EUR 38 million) will be spent on top-up financing of 21 Centres which are affiliated with Norway's top universities and premier public research institutes (see chapter 7 "Collaboration between academia and industry").

NOK 153 million (some EUR 18 million) were spent in 2013 on 11 Centres for Environmental-friendly Energy Research (FME). This scheme seeks to develop expertise and promote innovation through focus on long-term research in selected areas of environment-friendly energy (see chapter 7 "Collaboration between academia and industry").

Norway also contributes to several Nordic excellence initiatives, including the Nordic Centres of Excellence (NCoE) instrument. NCoE is a network centre of excellent Nordic groups of scientists from three or more Nordic countries collaborating within a defined field of research. Other initiatives are the Top-level Research Initiative (TRI), The Nordic eScience Globalisation Initiative (NeGI), the Nordic eInfrastructure collaboration and The Education for Tomorrow initiative. The Norwegian contribution to these initiatives was about NOK 18.5 million in 2013 (some EUR 2.5 million.)

Remuneration

Researchers are considered employees and the level of their salaries – following negotiation case by case – is set on the basis of collective agreements with trade unions.

Researchers working in institutions without a collective agreement negotiate their own salaries with their employer. The Norwegian government does not interfere in free collective bargaining.

For further information, see the country profile on remuneration of researchers from the MORE2 study on the EURAXESS website.⁹

Researchers' Statute

The Norwegian government does not provide a researcher's 'statute'. Legislation gives researchers employee status and they enjoy the same rights as employees, including social security, pension rights, maternity and paternity leave, full kindergarten coverage etc. Social security and pension rights are regulated by law. Salaries and career prospects as well as additional social security rights are set out in collective agreements.

PhD candidates receiving funding from developmental funds have student status, but still have social security rights.

Freedom of research and participation in decision-making within HEIs is set out in national law and collective agreements.

'European Charter for Researchers' & the 'Code of Conduct for the Recruitment of Researchers'

The Norwegian Association of Higher Education Institutions (UHR), all universities, several university colleges and a few independent research institutes have signed and are implementing the 'Charter & Code'.

⁹ <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

The Research Council has included a reference to the Charter and Code in its information to applicants under "General requirements for applications" and it has been agreed to include a statement in calls for applications that "Projects headed by women are given priority in cases where professional quality and relevance are rated equal."

A national gap analysis was carried out for the independent research institute sector in 2013 by their umbrella organisation the Norwegian Independent Research Institute Association, and launched at a national seminar in September 2013. The analysis looked into whether national legislation and common practice in the institute sector comply with the Charter and Code principles and concluded that they to a large extent do so. A few principles are however mainly aimed at the university sector and thus are not so relevant for institutes, as they are dependent on the market and contracts. The analysis will typically be used as a reference document for institutional gap analyses (Step 1 in the HRS4R).

Five universities, one University College and the RCN have been awarded the right to use the HR Excellence in Research logo.

Autonomy of institutions

Norwegian higher education institutions have a large degree of autonomy. The institutions themselves decide whether to appoint or elect leaders at all levels. These positions are fixed term (4+4 years). The institutions may decide on their academic structure. External members are appointed by the Ministry. The institutions may create legal entities.

The institutions receive a large basic grant from the Ministry, which is allocated as a lump sum. In addition, a substantial amount of the funding is allocated through competition mechanisms such as the Research Council of Norway and the EU. Some of the institutions own their own buildings. State universities and university colleges may not claim fees from students for ordinary courses leading to a degree or for professional training courses. The Ministry may in special cases, on application, approve exceptions to this rule.

The institutions also have the capacity to decide on recruitment and promotion within the law and regulations set by the government. They may to a large extent define salaries within the public pay structure. In general, student numbers are decided by the institutions, but the criteria for the selection of students are common for all institutions. Particular requirements for the selection can be negotiated with the Ministry. The institutions also decide on the establishment of educational programmes, conditional on recognition by the national quality assurance agency NOKUT. Finally, the course language is decided by institutions. However, they are required to develop Norwegian as a language of research within all fields of science. Assessment of education programmes is carried out by NOKUT.

Career development

Introducing systematic, individual career development strategies, both for permanent and temporary staff, is increasingly promoted at institutional level. In the 2013 White Paper, the Government proposed a trial scheme for tenure-track positions with a quota of up to 300 positions to strengthen the recruitment of talented researchers in mathematics and natural sciences, technology, medicine and dentistry. In April 2014 the Ministry of Education and Research sent a proposal to the Parliament for a legal framework in order to make it possible to establish tenure-track positions. Moreover, the proposal includes the possibility of tenure-track positions in all subjects.

In the White Paper the Government announced a concerted effort to reduce the proportion of employees on temporary contracts, in part by demanding that institutions with a high proportion of employees on temporary contracts draw up action plans.

Social security benefits (sickness, unemployment, and old-age)

In Norway, researchers are on employment contracts (except the 5-7% PhD candidates on development grants) and receive full social security coverage. The State Education Loan Fund provides sickness benefits for the 5-7% of PhD candidates receiving development grants. Research Council funding for short-term mobility (1-12 months) for doctoral candidates/post-docs/others does not carry sickness benefits. However, in both cases, health insurance is normally provided for through the Norwegian Labour and Welfare Service (NAV).

All employees in Norway, including researchers, enjoy the same right to unemployment benefit. The size of the benefit depends on their previous income level.

Researchers, like all employees in Norway, are entitled to old-age benefits.

7. Collaboration between academia and industry

In Norway, professors and associate professors have the opportunity of holding a part-time (20%) position (Professor II/Associate professor II) in one institution in addition to their full-time permanent position in another institution. Qualified personnel from other sectors and countries and between institutions across disciplines and countries may also take up part-time positions in the Higher Education Sector. This arrangement facilitates stronger cooperation between the higher education sector and industry.

The following table summarises key programmes designed by the RCN to boost collaboration between academia and industry, and to foster doctoral training in cooperation with industry.

Table 6: Collaboration between academia and industry

Measure	Description
Centres for Research-based Innovation (SFI) scheme (ongoing)	The Centres for Research-based Innovation (SFI) scheme is a national scheme under the auspices of the Research Council of Norway. The SFI scheme seeks to promote innovation by providing funding for long-term research conducted in close cooperation between R&D-performing companies and prominent research groups. The scheme is designed to enhance technology transfer, internationalisation and researcher training.
Centres for Environment-friendly Energy Research (FME) (ongoing)	The scheme of the Centres for Environment-friendly Energy Research (FME) of the Research Council of Norway funds 11 centres in renewable energy, energy efficiency, social sciences and CO ₂ -management. The research activity is carried out in close cooperation between prominent research communities and users.
FORNY programme (ongoing)	The FORNY programme provides funding for the development of business ideas based on R&D results from universities and university colleges. The aim is to start new companies or develop new technology that can be used by existing industry. The FORNY programme promotes commercialisation of ideas based on R&D results from universities and university colleges. The FORNY programme awards funding at an early stage in the commercialisation process, long before seed funds or venture capital companies would take the chance of investing money. The FORNY programme facilitates the commercialisation of ideas generated by researchers at publicly funded institutions across Norway through a nationwide network of players. The FORNY programme is administered jointly by the Research Council and Innovation Norway.
Industrial PhD scheme (ongoing)	The Industrial PhD scheme managed by the RCN provides support to companies operating in Norway hiring an employee seeking to pursue an ordinary doctoral degree at a degree-conferring university or university college. The funding period is three years. Small and medium-sized companies may also apply for an operating grant to cover up to 50 % of the additional costs related to costly laboratory testing connected with the research fellow's doctoral work. Companies may also seek funding for overseas research grants at the applicable rates. The fellowship is at 50% of the established current rates for doctoral research fellowships. A company may receive funding for a doctoral research fellowship for a three-year period. The doctoral candidate must be employed by the company and the doctoral research project must be of clear relevance to the company's activities.
Large scale programme Initiative (ongoing)	At present the Research Council administers seven programmes under the Large-scale Programme initiative. These programmes have been developed in a dialogue between the research establishment, industry and the public administration, and extend across various sectors and value chains. They incorporate a wide variety of actors, providing them with a strategic and dynamic arena for communication and cooperation.
Norwegian Centres of Expertise (ongoing)	The Norwegian Centres of Expertise Programme (NCE) was established in 2006 to enhance sustainable innovation and internationalisation processes in the most dynamic and growth-oriented Norwegian clusters. The programme supports long-term development processes in the clusters based on collaboration between industry, R&D and the public sector. Twelve clusters have so far been selected and given NCE status. The NCE Programme is jointly owned and implemented by the three main Norwegian innovation agencies: Innovation Norway (which has the primary responsibility), the Research Council of Norway and SIVA, a Norwegian state-owned company that supports cooperation between Norwegian and foreign businesses.
Programme for	The VRI-programme, which is administered by the Research Council of Norway (RCN), is a

Measure	Description
Regional R&D and Innovation (VRI) (2007-2017)	funding initiative for regional R&D and innovation to strengthen innovative capacity and promote new forms of cooperation within Norwegian regions. It especially targets environment, tourism, the maritime sector, and the marine sector. One of its objectives is closer co-operation with industry. The VRI programme includes (i) mobility initiatives enabling students, researchers and representatives of trade and industry to cross institutional boundaries and gain experience of and participate in new environments; (ii) competence brokering, in which a qualified consultant (broker) helps companies to find suitable research expertise; (iii) promotion of employee involvement in innovation efforts, with action-oriented researchers assisting in the process; (iv) regional foresight, a tailored, participant-based process to promote understanding of future challenges, a process which can be used to generate support for a regional agenda for R&D and innovation; (v) a regional dialogue conference, a meeting place for regional players to learn about each other's expertise and roles and develop a common understanding of what they can do together; (vi) pre-project funding designed to encourage companies to increase their R&D investment. The first part of the programme was evaluated in 2012. The evaluation confirmed the relevance of the programme, although it pointed to the potential for more impact at corporate level.
SkatteFUNN (ongoing)	The SkatteFUNN tax deduction scheme for companies is flexible and easy-to-use for costs related to research and development. All companies subject to taxation in Norway are eligible to apply for a deduction, regardless of the industrial sector, size or geographic location. Companies may receive a 20% tax deduction for documented expenses incurred under the SkatteFUNN scheme. The size of the tax deduction is calculated and limited by the Norwegian Tax Administration in accordance with Section 16-40 of the Norwegian Taxation Act and relevant secondary legislation. The deduction is awarded for a period of up to three years, with the possibility of a one-year extension.
User-driven Research based Innovation (BIA) (ongoing)	The level of national investments in R&D is lower than desired, and it is vital that Norwegian trade and industry is encouraged to increase its investments in research. Moreover, the ability to exploit the economic potential of R&D investments still needs to be enhanced significantly. BIA managed by The Research Council of Norway funds industry-oriented research and has no thematic restrictions. This broad-based programme supports high-quality R&D projects with good business and socio-economic potential.
21-strategies and forums (ongoing)	Several processes for developing sectoral research and innovation strategies referred to as the "21-strategies" and "21-forums" have been initiated since 2001. The strategies are formulated by committees appointed by government ministries and representatives of business, research institutions and public administrations. These also serve as advisory bodies and stakeholder forums. They develop strategies for R&D and innovation, and strategic collaboration, and have established advisory councils in relation to the oil industry, energy, climate and environmental research, the maritime industry, marine industries (aquaculture, fisheries, marine biotechnology), construction, health and forestry.

Source: Deloitte

8. Mobility and international attractiveness

In 2011, the percentage of doctoral candidates (ISCED 6) with citizenship of another EU-27 Member State was 13.9% in Norway compared with 4.2% among the Innovation Union reference group and an EU average of 7.7%¹⁰. In the same year, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 33.0% in Norway compared with 5.2% among the Innovation Union reference group and an EU average of 24.2%¹¹.

Measures aimed at attracting and retaining 'leading' national, EU and third country researchers

The Norwegian educational system attracts research students from all over the world (35% of candidates awarded PhD degrees in 2012 were citizens of another country). The major reasons are: a good funding system for PhD candidates, an advanced research infrastructure, national Centres of Excellence (SFF), Centres of Research-based Innovation (SFI), Nordic Centres of Excellence (NCoE), thematic research networks (FME) as well as the existing industry-academia collaboration schemes.

The main obstacles to inward mobility are the lengthy and rigid processing paperwork for visas, work permits, pension schemes, and dual career and family reunion issues.

¹⁰ See Figure 1 "Key indicators – Norway"

¹¹ Ibid

Inward mobility (funding)

There is an individual scholarship programme of 3-12 months for young researchers. There is also a visiting researcher's grant for attracting senior researchers. There is no specific grant for re-integration. All Norwegian researcher positions are open to foreign applicants.

Outbound mobility

Funding for outbound mobility is embedded in most of the Research Council's financial instruments, including research programmes, strategic programmes, individual programmes and dedicated mobility programmes. All funding to cover direct costs is doubled if the mobile researcher is accompanied by his/her immediate family.

Employees at universities may apply for sabbatical leave during which they are encouraged to carry out their research at foreign institutions. However, outbound mobility is still low.

Promotion of 'dual careers'

Free schools and full kindergarten coverage in Norway facilitate researchers' dual careers. Leading universities are starting to try to assist in dual career issues by engaging private expat/inpat services.

Projects funded by the RCN and PhD/post-docs stays abroad are automatically accompanied by grants to cover family expenses.

Portability of national grants

Norway has signed up to the EUROHORCs 'Money Follows Researchers' scheme which allows for the portability of national grants to other EEA countries.

The RCN's contract partner is always a Norwegian research institution. This implies that the institution must agree to the researcher taking his/her grant with him/her if moving elsewhere.

Access to cross-border grants

The RCN's contract partner is always a Norwegian research institution, but the institution is free to advertise positions internationally, hire foreigners and even to decide to fund him/her abroad if considered beneficial.

Since 2009, all RCN funding schemes have been open to Nordic institutions carrying out research funded by the Nordic Council of Ministers, or Nordic research institutions that receive public funding from at least three Nordic countries, including Norway.