

The Researchers Report 2012

Country Profile: Norway



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1. Key data

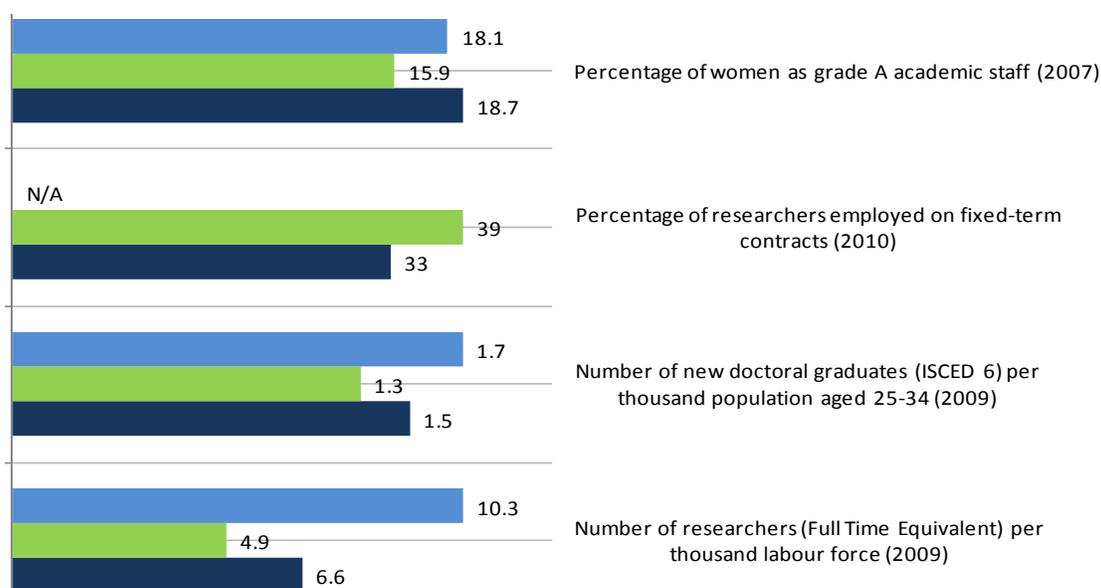
National R&D intensity target

“The most recent figures for Norway on R&D intensity are 1.80% of GDP for 2009 (0.85% public + 0.95% private), which represents a slight increase compared to the values of 2000, in particular visible for the period from 2007-2009. Comparing to other European countries, the most noticeable is Norway's business enterprise expenditure on R&D, which is below the EU average of 1.25% of GDP and far from the 2% level of the most R&D intensive countries in Europe. Norway is an outlier as concerns innovation with a low-tech but very knowledge-intensive industry based on raw material. The high profitability of companies in the petroleum sector means that the ratio of R&D investments as percentage of turnover is low, despite corporate spending on R&D to a competitive level. Over the period 2000-2009, Norway's gross domestic expenditure on R&D (GERD) had a real growth of 3.2%, which is above the 2.5% growth for the EU. Nevertheless, given the trend scenario presented below Norway would still be below the EU average in 2020, at an R&D intensity level slightly above 2%. Even if the associated countries to the European research cooperation do not form part of the Europe 2020 strategy of the European Union, certain countries do envisage fixing an objective for research investment and initiatives for fast growing innovative enterprises. This strategy could be justified if based on consultation with the stakeholders in the country.”¹

Key indicators measuring the country's research performance

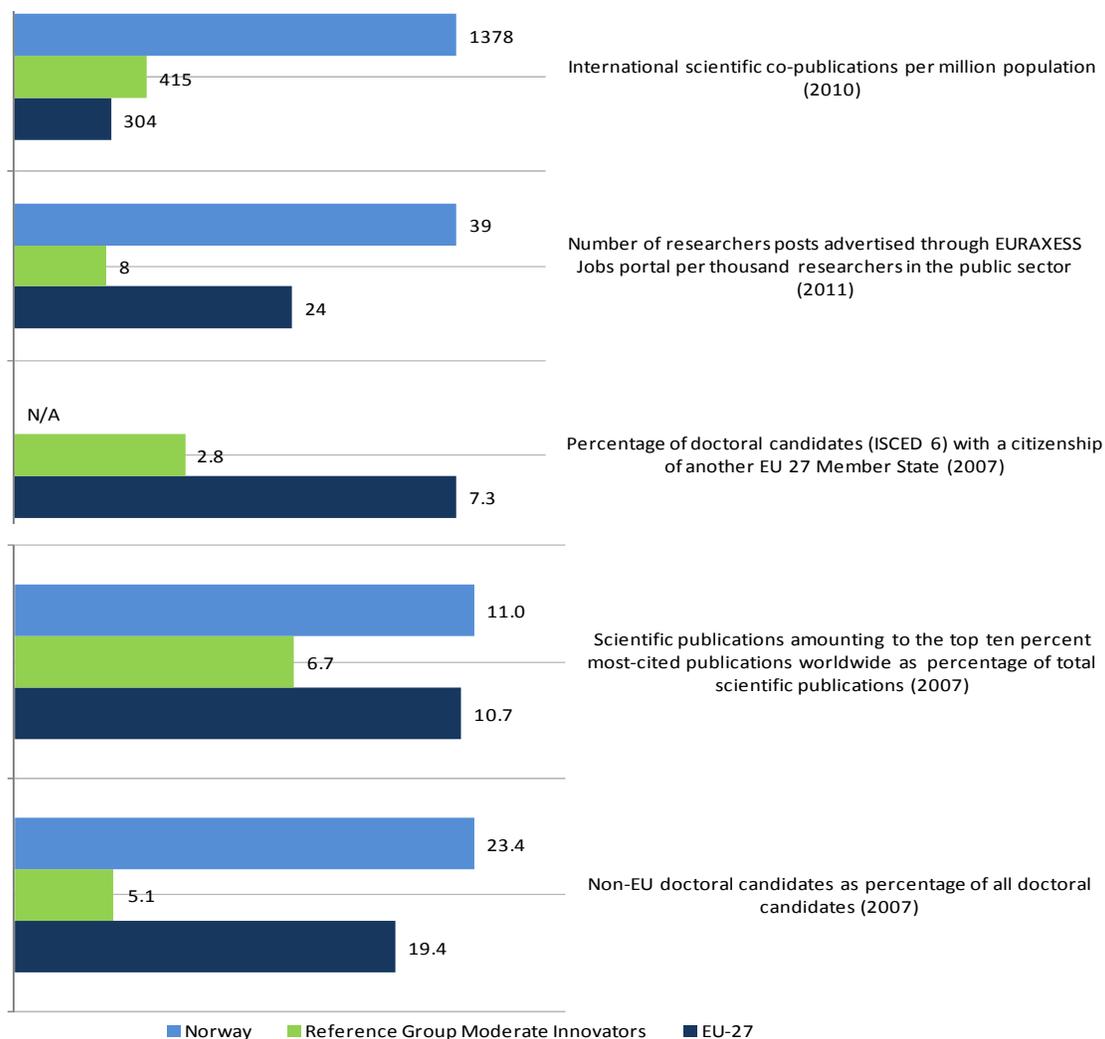
The figure below presents key indicators measuring Norway's research performance against a reference group and the EU-27 average².

Figure 1: Key indicators – Norway



¹ European Commission (2011), “Innovation Union Competitiveness Report 2011”.

² The values refer to 2011 or the latest year available.



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, Science Metrix/Scopus (Elsevier), Innovation Union Scoreboard 2010

Notes: Based on the average innovation performance, Norway belongs to the group of Moderate innovators showing a performance below that of the EU-27³.

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
Head Count per 1 000 active labour force (2008)	17.12	9.45
Head Count (2008)	44 145	-
FTE per 1 000 active labour force (2009)	10.31	6.63
Full time equivalent (FTE) (2009)	26 605	-

Source: Deloitte

Data: Eurostat

³ European Commission (2011), "Innovation Union Scoreboard 2010".

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
Norwegian (Shadow) Action Plan for Human Resources and Mobility (2009-2010)	The Action Plan was extracted from the White Paper <i>Climate for Research</i> (see below) and gives priority to action line 3 "Attractive employment and working conditions, including gender issues" and action line 4 "Enhancing the training and skills of European researchers, including inter-sectoral mobility". On the one hand, it focuses on the need for increasing the number of PhD positions, improving the quality of PhD training and increasing the share of candidates finishing their PhD. On the other, it points out the need to strengthen the leadership and research administration skills of researchers. A similar action plan addressing future objectives could be extracted from the forthcoming White paper.
White paper Climate for Research Report no. 30 (2008-2009)⁴	<p>The White Paper <i>Climate for Research</i> presents the future objectives of the Norwegian Government to increase the research budget, promoting a shift from research spending to research quality and results. The nine goals of the Paper (five strategic and four overarching goals) are:</p> <ul style="list-style-type: none"> – meeting global challenges, with a particular emphasis on the environment, climate change, oceans, food safety and energy research; – better health, levelling 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 areas of food, marine, maritime, tourism, energy, environment, biotechnology, ICT, and new materials/nanotechnology; – high quality research; – a well functioning research system; – increased internationalisation of research; – efficient use of research funding and results. <p>Finally, the Government is promoting the development of successful learning arenas for researchers, and is continuing its efforts to increase the number of PhDs, with a special emphasis on mathematics, science and technology, in addition to medicine.</p> <p>The Ministry of Education and Research is currently working on a new White Paper, which is due in spring 2013.</p>

Source: Deloitte

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2007, the percentage of women grade A academic staff was 18.1% in Norway compared with 15.9% among the Innovation Union reference group and an EU average of 18.7%⁵.

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

The national Committee for Gender Balance in Research (KIF Committee) deals with issues promoting 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 for leading researcher positions.

⁵ See Figure 1 "Key indicators – Norway".

Quotas to ensure a representative gender balance

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

Maternity leave

In Norway, almost all employees (those that have been working 6 of the last 10 months), including researchers, are paid during maternity leave. Researchers working in public institutions are paid by the institutions. If the contract ends during the maternity leave (i.e. the employee is on a temporary engagement/contract), the Norwegian Labor and Welfare Service (NAV) covers the remainder of the maternity leave. For researchers in private enterprises different regulations will apply, however they are under all circumstances entitled to funding from NAV.

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 sex is clearly under-represented in the category of post in the subject area in question, applications from members of that sex must be specifically invited. 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 sexes 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-wide online platforms (e.g. EURAXESS)	Yes	Institutions publish job vacancies on relevant Europe-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 may 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 2011, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 39 in Norway compared with 8 among the Innovation Union reference group and an EU average of 24⁶.

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 (Local 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.

The Research Council of Norway has launched several initiatives to attract people to become researchers, including Researchers' Night events, Nysgjerrigper Science Knowledge Project for children, *Proscientia* project (promoting interest in research and science among young people aged 12-21 years old) and an Annual Science Week.

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 KappAbel 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 prioritized 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 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 (total) (2009)	1.7	1.5

⁶ See Figure 1 "Key indicators – Norway".

Indicator	Norway	EU average
Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)	1.6	1.4
Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)	1.9	1.6

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

A scheme of national network research schools was established in 2008 to facilitate learning and networking among PhD students from different institutions. Funding for such national research schools⁷ is provided by the Research Council on the basis of competition among applicants.

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. The White Paper *Climate for Research* (2009) called for recognition of the need for lifelong learning, including flexible pathways through the education and training system, and flexible provisions (in time, space and mode).

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 the rights as such. The remaining (5-7%) receiving grants have a student status with regards to 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 YFF-Young Excellent Researchers award aims to fund young outstanding researchers. Applicants need to prove scientific quality, leadership skills, professional (and international) experience. This can be up to NOK 2.5 million (some EUR 350 000) per year for up to four years. Funding can be used for the applicant's salary, travel, PhD and postdoc positions, running costs and equipment.

Finally, the Nordic Centres of Excellence fund researchers' projects for 5+5 years.

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.

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'.

The RCN has signed and is also implementing the 'Charter & Code' principles in documents, calls and contracts, which may influence funding decisions. The RCN has established a national HR Strategy 'mirror' group with representatives from the leading universities at pro-rector/research director and personnel administration levels for exchange of experience/best practice, and input to and discussion of issues in the EU HR Strategy Group.

Two universities and the RCN have received the HR Excellence in Research logo.

Autonomy of institutions

As a general rule, academic staff pursues both research and teaching tasks. However, it is up to the HEIs to decide the amount spent on both research and teaching for each employee individually.

As far as the differentiation of researchers' salaries is concerned, salaries are regulated by the collective agreements.

Career development

In Norway, a formal tenure track is not possible. On the contrary, introducing systematic, individual career development strategies, both for permanent and temporary staff, is increasingly promoted at institutional level.

Shift from core to project-based funding

The shift from core to project-based (short-term) research funding has – until now – had little impact on researchers' working conditions for those employed as permanent staff, although it might be noted that in

many disciplines, particularly those based on scientific equipment and laboratory work, additional external funding is important for research .

An increase in the ratio of externally funded projects has however led to the increase in the number of researchers appointed temporarily. To some degree this results in higher competition for further employment, hence increasing the level of insecurity for this category of researchers.

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

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.
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.
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.

Source: Deloitte

8. Mobility and international attractiveness

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

In 2007, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 23.4% in Norway compared with 5.1% among the Innovation Union reference group and an EU average of 19.4%⁸.

The Norwegian educational system attracts research students from all over the world (33% of candidates awarded PhD degrees in 2011 held foreign citizenships). 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 (CEER) 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.

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 researchers' positions are open for foreign applicants.

Outbound mobility

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

Employees at universities are entitled to sabbatical leave during which they are encouraged to carry out their research at foreign institutions. However, outgoing mobility is still low. Numbers are not available.

Promotion of 'dual careers'

Free schools and full kindergarten coverage in Norway facilitates 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 EU countries.

The RCN's contract partner is always a Norwegian research institution. This implies that the institution must agree to the researcher/grant 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 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.

Measures encouraging inter-sectoral mobility

In Norway, professors and associate professors have the opportunity to hold 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 may also take up part time positions in the Higher

⁸ See Figure 1 "Key indicators – Norway".

Education Sector. This arrangement facilitates cooperation between the higher education sector and industry. See also chapter 7 “Collaboration between academia and industry”.