

# The Researchers Report 2012

## Country Profile: France



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# 1. Key data

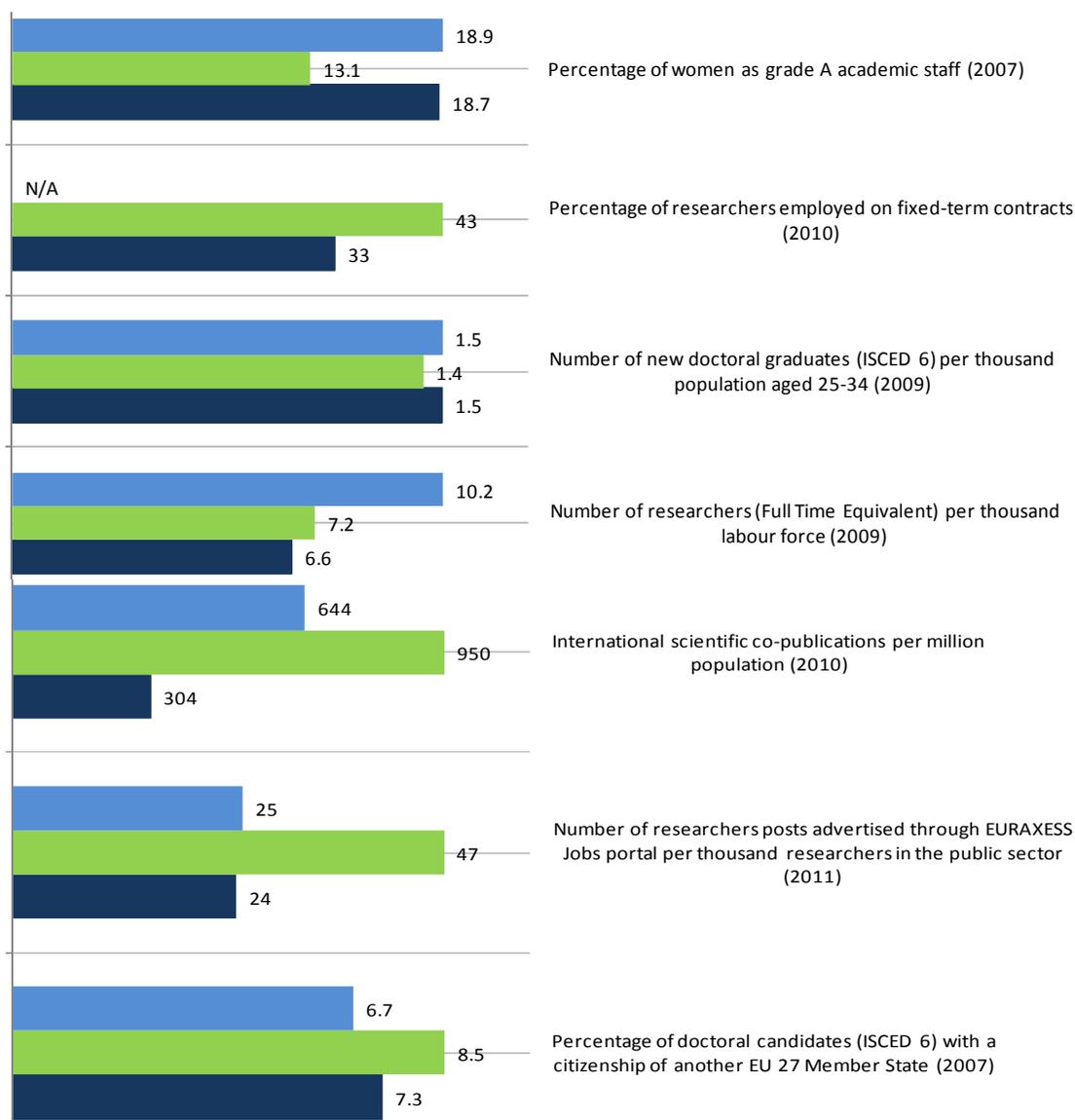
## National R&D intensity target

“In the last decade, R&D intensity in France remained in the range of 2.07-2.21% of GDP, about 16% above the EU-27 average. If France’s and the EU-27’s current trends continue, France’s R&D intensity will hardly be above EU-27 average in 2020. In order to maintain and increase its economic competitiveness and secure high-quality jobs, France will have to increase its investments in research and innovation. French authorities have recognised this and have set an ambitious, albeit realistic national R&D target for 2020: R&D intensity in France should account for 3% of the national GDP in 2020.”<sup>1</sup>

## Key indicators measuring the country’s research performance

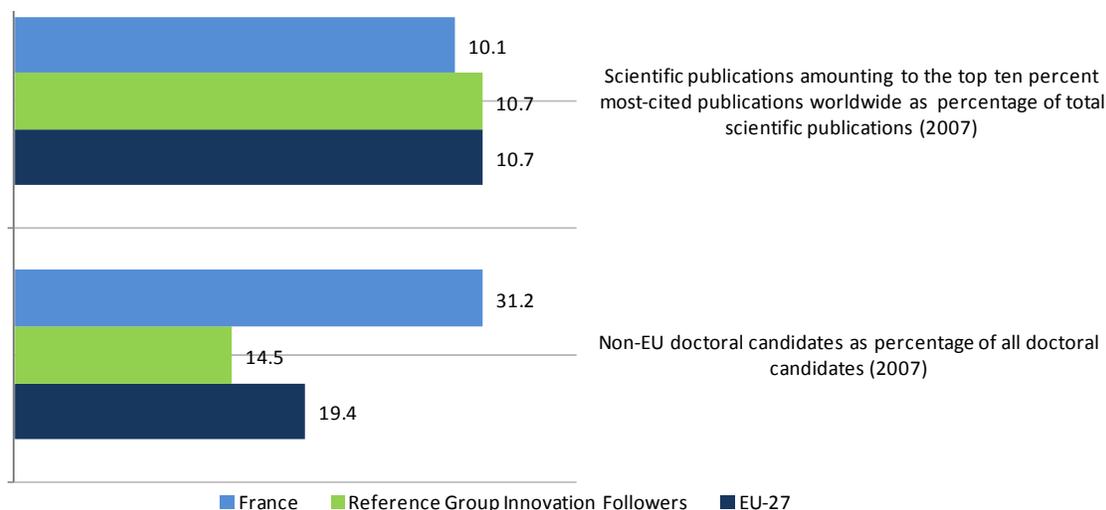
The figure below presents key indicators measuring France’s research performance against a reference group and the EU-27 average<sup>2</sup>.

Figure 1: Key indicators – France



<sup>1</sup> European Commission (2011), “Innovation Union Competitiveness Report 2011”.

<sup>2</sup> 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 their average innovation performance across 24 indicators, Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, Netherlands, Slovenia and the UK show a performance close to that of the EU-27. These countries are the Innovation followers.<sup>3</sup>

## 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	France	EU Average
Head Count per 1 000 active labour force (2008)	10.29	9.45
Head Count (2008)	289 478	-
FTE per 1 000 active labour force (2009)	10.19	6.63
Full time equivalent (FTE) (2009)	289 478	-

Source: Deloitte

Data: Eurostat

## 2. National strategies

The French government 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 France’s R&D targets, to promote attractive working conditions, and to address gender and dual career aspects.

Table 2: National strategies

Measure	Description
<b>Investments for the Future Programme (<i>Investissements d’avenir – Initiatives d’excellence</i>) (ongoing)</b>	<p>The Investments for the Future Programme is closely related to the National Research and Innovation Strategy and puts particular emphasis on the links between science and society. The two main target groups are:</p> <ul style="list-style-type: none"> <li>– universities, in order to bring together internationally distinguished academics;</li> <li>– SMEs in order to encourage their development.</li> </ul> <p>The programme contributes to a new approach to the way French research and innovation system is organised by financing the most competitive research infrastructures, labs and organisations, and thus promoting attractive employment conditions in public research institutions. The programme covers sustainable development, science and technology for information and communication, health, nuclear and renewable energy, biotech, green technologies and nanotechnology.</p>
<b>National Strategy for Research and Innovation (SNRI) (2009)</b>	The National Strategy for Research and Innovation provides the overall context for improving the national R&D&I system over a five-year period and thus increasing the

<sup>3</sup> European Commission (2011), “Innovation Union Scoreboard 2010”.

Measure	Description
<b>(Stratégie Nationale de Recherche et Innovation)</b>	attractiveness of scientific careers. By introducing several measures to improve human resources' management in the public research sector, the strategy seeks to strengthen the link between education and research as well as between education and the labour market.
<b>Report on academic excellence and the lessons of international experience, prepared by the Aghion Mission for Minister Pécresse (26 January 2010) (L'excellence universitaire : leçons des expériences internationales, 26 janvier 2010)</b>	<p>This report presented international benchmarks to identify the labour market success factors that lead a university to become excellent. The fundamental success factor it identified is the necessity of funding for the autonomy of universities and HEIs. Three more factors increase the level of an HEI's connection with the job market:</p> <ol style="list-style-type: none"> <li>1. The diversity and flexibility of the higher education career path;</li> <li>2. Information (evaluation and monitoring);</li> <li>3. Progressive specialisation.</li> </ol> <p>The report made three recommendations on how France can improve its current situation:</p> <ol style="list-style-type: none"> <li>1. Increase the amount of money available for higher education (to reach 2% of GDP) and use the 'Investments for the Future' Programme for innovative educational projects;</li> <li>2. Guarantee more balanced governance of universities by setting up boards of trustees open to individuals from outside academia;</li> <li>3. Promote the development of university colleges to be responsible for all first cycle courses.</li> </ol>
<b>The Young Researchers Plan (2009; ongoing)</b>	<p>The Young Researchers Plan, in line with the Career Plan, focuses on four areas:</p> <ol style="list-style-type: none"> <li>1. Improving the professional status of young researchers (by signing a doctoral contract);</li> <li>2. Strengthening the role of doctoral schools for the implementation of an open, transparent and merit-based recruitment;</li> <li>3. Improving professional training and integration with private sector initiatives, such as <i>Conventions Industrielles de Formation par la Recherche - CIFRE</i> [industrial research training partnerships], <i>Crédit d'impôt recherche - CIR</i> [research tax credit], support for innovative SMEs via OSEO<sup>4</sup>);</li> <li>4. Strengthening the partnership between universities and the private sector through tax exemptions of up to 60%<sup>5</sup> for businesses financing doctoral training (doctoral sponsorship).</li> </ol>
<b>University Freedoms and Responsibilities Act (2007)</b>	The University Freedoms and Responsibilities Act provides that by January 1, 2013 all universities will have budgetary autonomy and will be responsible for their own human resources management. Universities will be able to develop projects, make strategic choices, recruit staff, and thus be more attractive internationally. Finally, the Act reaffirmed the universities' mission to support their current students and graduates in entering the job market.

Source: Deloitte

### 3. Women in the research profession

#### Measures supporting women researchers in top-level positions

In 2007, 18.9% of grade A academic staff in France were women, compared with 13.1% among the Innovation Union reference group and an EU average of 18.7%.<sup>6</sup>

Gender equality promotion in the research profession is being tackled in various ways and at various levels as illustrated in the table below.

Table 3: Measures to promote gender equality

Measure	Description
<b>Structures for equality policies</b>	
<b>Conférence Permanente des Chargé-e-s de Mission Egalité et Diversité de l'Enseignement Supérieur (CPRD) (since 2011)</b>	Following the recommendations from the Rectors' Conference on gender equality, the University of Strasbourg was at the origin of the creation of a permanent conference of equality and diversity officers in higher education and research. 37 universities have joined this network so far whose primary goal is the exchange of best practices, notably for human resource management.

<sup>4</sup> OSEO: *Financement de l'innovation et de la croissance des petites et moyennes entreprises (PME)* (Financing entity for SME's.)

<sup>5</sup> Tax cut equal to 60% of the amount of the funding

<sup>6</sup> See Figure 1 "Key indicators – France".

Measure	Description
<b>Mission parité et lutte contre les discriminations (since 2001)</b>	The Ministry for Higher Education and Research in 2001 created an Office dedicated to equality in science and technology. Today, the Office is responsible for setting up strategies for Equal Opportunities and the Fight against Discrimination within the Ministry. Thanks to one of its working groups ("Europe" Group), it also allows the sharing of best practices from Member states and associated countries among universities and research institutions.
<b>Mission pour la place des femmes au CNRS (since 2001)</b>	The National Centre for Scientific Research ( <i>Centre National de la Recherche Scientifique - CNRS</i> ) is the largest French research centre. It established an Office focusing on the place of women in science in 2001. CNRS was the first public research institution in France to set up an operational structure to foster gender equality within the organisation and promote full participation of women in scientific research. The "Mission" reports directly to the President of CNRS. CNRS organizes in 2012 a series of awareness and capacity-building workshops on gender equality with one-day training schemes, including presentations on the status of women at CNRS, indirect discrimination in research careers, gender stereotypes, etc. The target public for these are Human Resource and Communication Officers as well as research institutes' administrative directors, regional delegates and central department managers.
<b>Pôle Egalité Hommes Femmes, Université Paris Diderot (2010)</b>	The Paris Diderot University ( <i>Université Paris Diderot, Paris 7</i> ) in 2010 created an Equality Centre to promote and favour gender equality. The Centre carries out surveys, organises trainings and awareness-raising actions (informing students and academics) but it also applies the Charter for Equality between Men and Women thus devising policies and actions promoting women in its institution.
<b>National Reports</b>	
<b>Femmes dans les organismes de recherche (2007)</b>	All three of these reports dealt with the subject of women in science. Published by the Ministry for Higher Education and Research, the reports provided a statistical view and comparative analysis of women in R&D at national level, emphasising the need to increase the number of women researchers in France and in particular in the private research sector.
<b>Femmes dans les organismes de recherche (2005)</b>	
<b>Livre blanc 2004 – Les femmes dans la recherche privée en France (2004)</b>	
<b>La parité dans les métiers du CNRS - Bilan social (annually)</b>	The CNRS each year publishes an inventory of the situation in relation to equality between men and women in R&D. The report deals with gender equality in recruitment, training, promotion, qualification, classification, working conditions and salary, as well as the representation of women on boards. The report allows CNRS to provide explanations for inequalities (demographic, historical, sociological factors, etc.) as well as to spot the factors creating these inequalities (procedures, evaluation criteria, regulatory and common practice, etc.).
<b>Statistiques sexuées et temporelles du personnel titulaire de l'Université Paris Diderot (2000-2009) (2011)</b>	The Paris Diderot University published in 2011 a report on gendered statistics in permanent positions over the period 2000-09. The report enables comparison of career progress between men and women by identifying and explaining the reasons for these inequalities.
<b>Specific measures by organisation</b>	
<b>Agreement on Professional Equality between Men and Women (Accords sur l'Egalité Professionnelle entre les Hommes et les Femmes à l'IFREMER) (2008 and 2011)</b>	IFREMER ( <i>Institut français de recherche pour l'exploitation de la mer</i> ) [marine research institute] in 2008 signed an 'Agreement on Professional Equality between Men and Women' to promote attractive employment conditions. That first agreement ran until 2011 and has been renewed until 2014. Its goals are to: <ul style="list-style-type: none"> <li>– ensure gender balance in recruitment, promotion, and other committees;</li> <li>– encourage trade unions to achieve gender balance;</li> <li>– ensure that no gender factor will be taken into account in career development;</li> <li>– establish a monitoring committee to oversee implementation of the agreement.</li> </ul>
<b>Centre National de la Recherche Scientifique - CNRS</b>	The CNRS is a major partner in the INTEGER (Institutional Transformation for Effecting Gender Equality in Research) project. This began in March 2011 and will last until February 2015. It is funded through the European Commission's Science in Society FP7 Programme (call FP7-SCIENCE-IN-SOCIETY-2010). The objectives of INTEGER are to: <ul style="list-style-type: none"> <li>– create sustainable structural change to improve the career paths of women researchers in STEM through the implementation of gender action plans;</li> <li>– use and assess a variety of tools and techniques to support an effective and comprehensive organisational gender management strategy and share experience, tools and learning, through guidelines, case studies, role models, publications, public speeches and other means of dissemination.</li> </ul> <p>The 5-year action plan covers four key themes:</p>

Measure	Description
	<ol style="list-style-type: none"> <li>1. empowerment of decision makers;</li> <li>2. organisational structures;</li> <li>3. career progression, development and support;</li> <li>4. work-life balance.</li> </ol>
<b>Good practice examples</b>	
<b>Diderot University's 'Gender Action Plan' (2011)</b>	<p>The Paris Diderot University's Gender Action Plan:</p> <ul style="list-style-type: none"> <li>– encourages all committees, working groups, and councils to reach the European target for representation of women of 40%;</li> <li>– set up a 'watch unit' on issues related to violence (physical or verbal abuse, sexual harassment, discrimination);</li> <li>– requires that all documents be written in gender-neutral language;</li> <li>– mainstreams gender issues and actions.</li> </ul>
<b>Network of universities' staff (ongoing)</b>	<p>The Paris Diderot University [again requires some positioning] promotes a network of university staff to encourage and help all university personnel, men and women, academics or administrative staff, to draft applications for promotion, carry out research, apply for fellowships, grants and bonuses. Its goal is to prevent self-censorship among university personnel.</p>
<b>Paris Diderot University</b>	<p>The Paris Diderot University encourages personnel rotation in administrative tasks that tend to be carried out by women. The maximum recommended period in these functions is five years. The University is about to modify its statute so that elected posts are gender-balanced and gender balance is secured.</p>

Source: Deloitte

As France's research landscape is rather diversified<sup>7</sup>, strategies can either be coordinated nationally or devised internally within each research institution.

**Table 4: Measures to promote networking activities among research institutions in France on gender equality**

Measure	Description
<b>Networking</b>	
<b>Agreements on Professional Equality between Men and Women (<i>Accords sur l'Égalité Professionnelle entre les Hommes et les Femmes à l'IFREMER</i>) (2008, 2011)</b>	<p>The three-year agreements signed between the IFREMER and the labour unions recognise the importance of professional equality, in particular in terms of access to employment, professional training and career development (mobility, promotion, salary) as well as work-life balance. IFREMER has agreed that the percentage of women promoted every year should at least be equivalent to the percentage they represent in their category. Recruitment salaries are based on qualifications (diplomas) and experience. These guarantee identical pay between men and women. IFREMER has also established specific measures so that when working in the field (at sea and on ships), women can lead missions as easily as men. IFREMER integrates work-life balance in its agreements with labour unions, thus ensuring fair career development, through various initiatives, such as:</p> <ul style="list-style-type: none"> <li>– flexible working hours;</li> <li>– video conferences or conference calls in preference to travel;</li> <li>– meetings between 9:00 am and 5:00 pm, and not on Wednesdays (when children do not go to school in France) or school holidays;</li> <li>– part-time work (equal salary, equal promotions and bonuses, equal level of responsibility).</li> </ul>
<b>Dual Career Network (ongoing)</b>	<p>The French universities of Strasbourg and Haute-Alsace are part of the 'Dual Career Network' with the universities of Freiburg (Germany) and Basel (Switzerland), and the Karlsruher Institut für Technologie (Germany). The network welcomes couples, helps them search for jobs in nearby universities or within the same geographical area, and assists them with accommodation and childcare. 'Dual Career Couples' are those in which each spouse has a university degree or equivalent. The network meets twice a year and works on the recruitment procedures of each country, possible salaries and potential positions, putting in contact candidates and university departments or laboratories.</p>
<b>Internal communication schemes (ongoing)</b>	<p>IFREMER uses its internal communication schemes to target women and inform them about the possibilities offered to them to pursue higher level positions.</p>

Source: Deloitte

<sup>7</sup> The scientific landscape in France is composed of Public Scientific and Technological Institutions (EPST), and Public Administrative Institutions and Universities, but also industrial and commercial institutions governed by private law but carrying out public service missions. IFREMER is one of those. The CNRS on the other hand is an EPST.

## Quotas to ensure a representative gender balance

As far as Boards in universities and research institutions are concerned, the French government has adopted in 2011 a text ensuring that electoral rolls are composed with the objective of having a gender-balanced representation.

## Maternity leave

French law guarantees maternity leave and applies to research institutions. Women are normally paid by their employers during this leave and their contract can be extended. If the project ends during the maternity leave, it is in general extended, as is the funding.

The replacement of women on leave depends on each institution. In IFREMER, for example, the replacement in the team of the person on maternity leave is systematic and women on maternity leave have the same career development as those working (general bonuses, etc.) As part of its gender equality agreement, IFREMER implements specific salary measures to combat inequalities between women and men caused by interruptions to employment (maternity or adoption leaves, or part-time work).

## 4. Open, transparent and merit-based recruitment

### Recruitment system

All public job vacancies at universities for researchers with a teaching position (*enseignants-chercheurs*) are posted on the national 'GALAXIE' platform. GALAXIE publishes job vacancies in French with, optionally, a short description of the job profile in two lines in English. Since March 2010, all GALAXIE job vacancies are also posted on the EURAXESS jobs portal (about 4 000 research jobs are published daily).

All universities and public research organisations have their own websites and job portals. Some public research organisations also post their job vacancies on EURAXESS jobs (e.g. Institut National de la Recherche Agronomique - INRA), often in French and English (e.g. INRA, CNRS, Commissariat à l'Énergie Atomique - CEA).

ABG Intelli'agence is an association (funded by the Ministry for Higher Education and Research) dedicated to young researchers and providing a platform where recruiters post job vacancies in both French and English. 'ABG Intelli'agence' published well over 3 000 job offers, almost 2 000 PhD posts and about 2225 CVs in 2010 (2010 annual report)

Researchers working at public research institutions (research fellows and research directors) are civil servants (*fonctionnaires de l'État*). In order to be employed, they need to sit a recruitment competition based on qualifications and work experience (decree 83-1260 of December 30, 1983).

Researchers with a teaching position (*enseignants-chercheurs*), both lecturers and university professors (*maîtres de conférences* and *professeurs des universités*), are also civil servants and contribute to the fulfillment of the public service missions of higher education. They are employed via open competitions within the academic institution (decree 84-431 of June 6, 1984).

### Open recruitment in institutions

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

Table 5: 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 have a statutory requirement to post all university public job vacancies for researchers with a teaching position (i.e. professors and lecturers) on the 'GALAXIE' national platform.
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	Yes	Since March 2010, institutions have been publishing all 'GALAXIE' job vacancies on the EURAXESS jobs portal. Some public research organisations also post their job vacancies on EURAXESS jobs (e.g. INRA).
– publish job vacancies in English	Yes	– 'GALAXIE' publishes job vacancies in French with,

Do institutions in the country currently have policies to ...?	Yes/No	Description
		optionally, a two-line job profile in English; – ‘ABG Intelli’agence’ publishes job vacancies in both French and English; – Public research organisations publish their job vacancies in French and English (e.g. INRA, CNRS, CEA).
– systematically establish selection panels	Yes	Institutions establish selection panels for statutory and long term job offers. For fixed term contracts, the deputy director and the project officer have the right to recruit without a prior selection panel.
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Yes	The Scientific and Technological Public Institutions (i.e. public research organisations) are obliged to safeguard gender balance in the selection panels and to have one external expert, or to justify non-compliance in an official explanation sent to the management committee. Depending on the topic, panels are open to foreign experts.
– publish the composition of a selection panel (obliging the recruiting institution)	Yes	Institutions publish the composition of the selection panels.
– publish the selection criteria together with the job advert	No	Institutions do not publish selection criteria together with the 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 place the burden of proof to prove that the recruitment procedure was open and transparent.
– offer applicants the right to receive adequate feedback	No	Institutions do not offer applicants the right to receive adequate feedback.
– offer applicants the right to appeal	Yes	Applicants may appeal against the decision of the institution to reject their candidature.

Source: Deloitte

### EURAXESS Services Network

In 2011, the number of researcher posts per thousand researchers in the public sector advertised through EURAXESS Jobs was 25 in France, 47 for the innovation reference group and 24 for the EU as a whole<sup>8</sup>. General and specific information is available on the EURAXESS France portal. Specific information is also available through the Ministry of Immigration portal. This provides information on the scientific card for non EU residents. The CLEISS (*centre des liaisons européennes et internationales de sécurité sociale*) portal also provides information on social security rights.

## 5. Education and training

### Measures to attract and train people to become researchers

The table below summarises key measures to attract and train people to become researchers.

Table 6: Human Resources - Key programmes and initiatives

Measure	Description
<i>Multi-level</i>	
<b>Public Research Organisations (ongoing)</b>	Most public research organisations implement policy measures to attract young people to research and help teachers to involve young people in research. Likewise the CCSTI public research organisations attract youngsters by means of events, visits to scientific sites, lectures in schools, workshops, conferences, competitions, symposiums in partnerships with several research organisations, etc. These actions are presented and led by scientists who have been trained for that purpose.

Source: Deloitte

<sup>8</sup> See Figure 1 “Key indicators – France”.

The Investments for the Future programme offers many opportunities for PhD students in laboratories of excellence or via excellence initiatives in all scientific disciplines, including STEM subjects.

The French government has so far only used awareness and communication tools to increase the number of women students taking science to an advanced level.

**Table 7: Women students taking science to an advanced level**

Measure	Description
<b>Exhibitions on women (annually)</b>	One of the activities of the CNRS is to organise exhibitions and the annual 'Young female mathematician workshop' in association with 'Women and Mathematics'. Based on a scientific agenda, the workshop provides mentoring and awareness-raising activities on gender-related issues. There are also round tables on career and gender equality as well as presentations by sociologists. The goal of such workshops is to create networks, fight self-censorship and detect potential obstacles in career development. Young male researchers are also welcome to participate.
<b>Irene Joliot-Curie Prize (annually)</b>	The Ministry and the EADS Foundation organise the 'Irene Joliot-Curie' Prize every year. For the 10 <sup>th</sup> edition in 2011, the Prize was co-organised with the Academies of Science and Technologies. The Prize is meant both to propose role models for young researchers and offer highly scientific female profiles to the male-dominated scientific community. Three prizes are generally awarded: <ol style="list-style-type: none"> <li>for young researchers;</li> <li>for the woman scientist of the year;</li> <li>for woman scientist in private research.</li> </ol>
<b>National Initiatives (ongoing)</b>	National initiatives have been under way for 10 years on the issue of young female students' career choice. They primarily focus on high school students. The Ministry for Higher Education and Research supports numerous associations in their action at local level as well as a website to encourage girls to choose science ( <a href="http://www.elles-en-sciences.net/">http://www.elles-en-sciences.net/</a> ). The Ministry is also setting up an action inspired by the German 'Girls' Day' that would institutionalise one day in the year during which girls would go and discover high technology and scientific jobs in research institutions and universities.

Source: Deloitte

### Doctoral graduates by gender

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

**Table 8: Doctoral graduates by gender**

Indicator	France	EU average
<b>New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2009)</b>	1.5	1.5
<b>Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)</b>	1.3	1.4
<b>Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)</b>	1.7	1.6

Source: Deloitte

Data: Eurostat

### Funding of doctoral candidates

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

**Table 9: Funding opportunities for doctoral candidates**

Funding scheme	Description
<b>Employment contract</b>	<p><b>Doctoral contract</b> - The implementation of the new doctoral contract (2009) has significantly improved the working conditions of young researchers as well as the national R&amp;D targets. It mainly aims to:</p> <ul style="list-style-type: none"> <li>establish a single contractual framework, providing more protection and applicable to all public employers;</li> <li>integrate for each doctoral student in a single contract all activities directly related to the preparation of his/her PhD, but also relevant activities, such as training;</li> <li>establish a single remuneration platform;</li> <li>ensure full social security coverage.</li> </ul> <p>This is a three-year term work contract for doctoral students in universities and public research institutions. It may be extended for a year for professional or personal reasons, such as maternity leave or sick leave. The doctoral contract guarantees all the statutory social aspects of a 'traditional' employment contract. In September 2010, 5 320 students registered</p>

Funding scheme	Description
	<p>for their first year of PhD studies signed a doctoral contract.</p> <p>The activities assigned to the doctoral student may relate exclusively to research or include other tasks as well: teaching, scientific and technical information, promotion of research, consultancy assignments or expertise to companies or public authorities.</p> <p>Funding primarily comes from public sources (Ministry for Higher Education and Research, research organisations, regional allocations) or through an industrial research training partnership (<i>Convention Industrielle de Formation par la Recherche</i> - CIFRE). The CIFRE is a partnership between French industry or other employment sectors, a research laboratory and a doctoral candidate. During a three-year contract with the company or other private employer, the doctoral trainee benefits from a high level of scientific supervision that will help in writing and defending a PhD dissertation while contributing to research activities. The system is managed by the ANRT (<i>Association Nationale de la Recherche Technique</i>). The State supports the CIFRE financially.</p> <p>Over the period 2009-10, 1 200 CIFRE agreements were signed each year. Over the period 2011-12, the goal is to reach 1 300 agreements annually.</p> <p><b>The <i>Crédit d'impôt recherche</i> (CIR)</b></p> <p>The CIR tax credit contributes to national R&amp;D efforts by creating tax benefits for companies recruiting young PhD holders.</p>

Source: Deloitte

### Measures to increase the quality of doctoral training

The table below summarises the main measures introduced by France in support of doctoral training.

Table 10: Measures to increase the quality of doctoral training

Measure	Description
<b>Doctoral Schools (ongoing)</b>	As of September 2010, 285 doctoral schools ( <i>Ecoles Doctorales</i> ) with 70 000 doctoral students were accredited by the Ministry of Higher Education and Research. The doctoral schools are established under an agreement between the State and universities ( <i>contrats d'établissements</i> ). The doctoral schools provide training and development for participants. They offer future PhD holders high-level scientific supervision as well as preparation to enter the labour market.
<b>Doctoral training in cooperation with industry and other relevant employment sectors (ongoing)</b>	<p>The Research Program Law (2006) on doctoral training includes several actions designed to bring together doctoral training and socio-economic sectors. The reform of doctoral training takes two major trends in cooperation with industry and other employment sectors into account:</p> <ul style="list-style-type: none"> <li>– preparing young researchers to enter the labour market;</li> <li>– linking doctoral training and R&amp;D better with socio-economic sectors.</li> </ul> <p>Of the total of 285 doctoral schools accredited by the Ministry of Higher Education and Research, 131 host doctoral students engaged in original PhD research projects which will enable them to pursue a scientific career in the private sector. These 131 doctoral schools enrol about 33 000 doctoral students. They hear the defence of some 7 500 dissertations each year.</p>
<b>International cooperation (ongoing)</b>	<p>French higher education institutions which wish to develop mutual trust with their partners take part in international cooperation projects such as jointly supervised international doctoral training (<i>co-tutelle internationale de thèse</i>). For example, in September 2010, thirteen institutes and universities launched the 'International Relativistic Astrophysics Doctorate Program' project (IRAP). This programme, the only project in fundamental physics and astrophysics in Europe, which was selected under the Erasmus Mundus Doctorate scheme, leads to a doctoral degree common to all thirteen institutions<sup>9</sup>.</p> <p>International partnerships can also be structured in European or international colleges:</p> <ul style="list-style-type: none"> <li>– At the University of Strasbourg, the European Doctoral College gives thirty doctoral students the opportunity to prepare a jointly supervised doctoral research project involving the University of Strasbourg and a university or research organisation in a country chosen by the doctoral candidate;</li> <li>– The PRES 'Université européenne de Bretagne', which has an international doctoral college whose mission is to share and coordinate international doctoral training, has signed several</li> </ul>

<sup>9</sup> Université de Savoie, Université de Nice Sophia Antipolis, Observatoire de la Côte d'Azur, Shanghai Astronomical Observatory (China), Free University of Berlin and AEI Postdam (Germany), Tartu Observatory (Estonia), Stockholm University (Sweden), University of Ferrara, University of Rome La Sapienza, International Centre for Relativistic Astrophysics Network (Italy); Brazilian Centre for Physics Research (Brazil), Indian Centre for Space Physics (India).

Measure	Description
	agreements with higher education institutions in Brazil. The jointly supervised doctoral research projects deal with cell and molecular genetics, marine environmental science and cross-language research on memory, identity and territory.
<b>PRES Joint entities (ongoing)</b>	The Research Programming Law (2006) allows French higher education and research institutions to establish joint entities designed to give more visibility to French research, especially in terms of international ranking. These joint entities are called 'PRES' and they are set up as 'public institutions for scientific cooperation' ( <i>établissements publics de coopération scientifique</i> ) to ensure coordination between doctoral schools. PRES may decide to deal with the coordination of doctoral training (the choice of the Doctoral College 'Lille Nord de France', for example). Other PRES choose to further define the funding policy of doctoral training by doctoral schools and they harmonise the candidature rules from the recruitment process up to the defence of the PhD (e.g. the PRES "Sorbonne Paris Cité" has chosen this procedure).

Source: Deloitte

### Skills agenda for researchers

In 2006, France passed a Program Law for Research<sup>10</sup> to ensure that researchers are equipped with the necessary skills to contribute fully to a knowledge-based economy and society throughout their career, ensure better links between academia and industry during their training and promoting industry financing PhDs and involvement in curriculum development.

## 6. Working conditions

### Measures to improve researchers' funding opportunities

The table below summarises specific action taken by the French government to promote the attractiveness of French research.

Table 11: Measures to improve funding opportunities for researchers

Measure	Description
<b>Investments for the Future</b>	See chapter 2 "National strategies".
<b>Opération campus (ongoing)</b>	Opération campus is a national programme to promote attractive working conditions for researchers. This plan is dedicated to the renovation of university buildings by investing heavily in universities real estate in order to increase the quality of the environment and working conditions of sites like Aix-Marseilles, Bordeaux, the <i>Condorcet</i> Campus for humanities, Grenoble, Lyons, Montpellier, Paris, Strasbourg, Toulouse, etc. The Plan aims to render universities more attractive to mobile incoming researchers (Total budget: EUR 5 billion.)
<b>Joint Chairs (<i>Chaires mixtes</i>) (ongoing)</b>	This measure allows a university and a research organisation jointly to recruit a lecturer whose profile covers an agreed scientific topic. The lecturer is placed in the research organisation and exempted from two-thirds of the normal teaching activity. Researchers with a teaching position receive a scientific excellence bonus of between EUR 6 000 and EUR 15 000 per year, and an enhanced scientific environment by the allocation of funds of between EUR 10 000 and EUR 20 000, depending on the project.
<b>University Institute of France (IUF) (ongoing)</b>	The University Institute of France was established to support the development of high-level research in universities. The objective is to improve the conditions for research for researchers with a teaching position in their university, without abandoning their mission of educating/giving lecturers. The existence of two classes of members – 'Juniors' (under the age of 40 when they are appointed) and 'Seniors' reflects the desire to support both emerging and pre-existing excellence. In 2011, 335 of the 637 members of the IUF were 'Juniors'.
<b>Programmes funded by the National Agency for Research (ANR)</b>	
<b>Chairs of Excellence Programme (ongoing)</b>	The Chairs of Excellence Programme offers the best scientists from abroad financial support to complete their research projects quickly. Part of the endowment can be put toward the cost of researchers establishing themselves and living in France. The projects funded are likely to benefit from complementary resources provided by research organisations and/or regional authorities. The measure was re-designed in 2008 with a view to increasing its impact. Three types of Chairs are now available: <ul style="list-style-type: none"> <li>– 'Senior' Chairs of short duration (18 to 24 months);</li> </ul>

<sup>10</sup> (Loi n° 2006-450 du 18 avril 2006 de programme pour la recherche) followed by the implementing decree of 7 August 2006 on doctoral training (Arrêté du 7 Août 2006 relatif à la formation doctorale).

Measure	Description
	<ul style="list-style-type: none"> <li>– ‘Junior’ long-term chairs (36 to 48 months);</li> <li>– ‘Senior’ long-term Chairs (36 to 48 months).</li> </ul> <p>During 2009-10, 30 projects were funded with EUR 14.8 million. In June 2011, 13 projects were selected.</p>
<b>Post-Doctoral Return Programme (ongoing)</b>	The Post-doctoral Return Programme targets young French researchers, but also young foreign researchers who defended their thesis in France, to return to France. The programme is managed through calls for proposals open to all research domains. The successful tenderers receive the appropriate means to pursue their research project in France for up to three years. During the period 2009-10, 48 research projects were funded with EUR 20.2 million. In 2011, 26 new projects were funded.

Source: Deloitte

The setting up of the ANR in 2005 introduced project-based (short-term) research funding. This gave young researchers the opportunity to submit proposals in their own name rather than through a research organisation, thus leading to higher levels of responsibility for individual researchers in submission and management of a project.

### Remuneration

The ‘Career Plan’ increases the opportunities for career progress and facilitates the transfer from one grade to another. As an example, in 2011, 979 candidates were promoted to the rank of professor first class (*professeur de 1ère classe*) compared to 919 in 2010. Similarly, in 2011, 634 university professors were promoted to the exceptional class (*classe exceptionnelle*), significantly more than the 455 and 557 in 2009 and 2010.

The early career remuneration of lecturers has increased since September 2009 by 12%-25% depending on the duration of their activities prior to recruitment, doctoral training, public and private assignments, etc. Bonus policies such as the PES (*prime d’excellence scientifique*) and PRP (*prime pour responsabilité pédagogique*) also improve remuneration. Two decrees of 2009 fix the PES and the rate of bonuses<sup>11</sup>.

The 2009 reform of the University Institute of France has also contributed to increasing researchers’ remuneration levels: winners of the IUF receive scientific credits to finance their research project. These credits are allocated via their Research Laboratory. Since 2009, each winner receives a yearly credit of EUR 20 000 (before 2009, the yearly amount was EUR 15 000). Moreover the winners of IUF credits automatically receive the PES bonus.

Finally, the ‘Investments for the Future’ programme is increasing researchers’ remuneration levels through attractive contracts (long term contracts and high salaries) for high level researchers (national or international).

### Researchers’ Statute

Researchers with a teaching position – professors and lecturers (*maîtres de conférence et professeurs des Universités*: which are known as *enseignants-chercheurs*) in public institutions are governed by the general statute of civil servants and decree 84-431 (of June 6, 1984) and decree 83-1260 (of December 30, 1983) respectively.

On the other hand, each public research organisation is governed by its own specific rules defining researchers’ salaries, career prospects, employment contracts, social security coverage, freedom of research as well as participation in decision-making processes.

### ‘European Charter for Researchers’ & the ‘Code of Conduct for the Recruitment of Researchers’

Since 2008, 26 public research institutions have committed to implement the principles of the ‘Charter & Code’. The ‘Charter & Code’ principles have been promoted since then through the EURAXESS France network, the Marie-Curie actions – and more specifically the COFUND, which is supported by the Ministry for Higher Education and Research and implemented by public institutions.

<sup>11</sup> Décret n° 2009-851 du 8 juillet 2009 relatif à la prime d’excellence scientifique and Arrêté du 30 novembre 2009 fixant les taux de la prime d’excellence scientifique). The PRP is fixed by two decrees (Décret 99-855 du 29 septembre 1999 et arrêté du 4 octobre 1999).

The implementation of the Human Resources Strategy for Researchers (HRS4R) is being promoted by means of information through a dedicated HR network, the 'GTN RH' network.

### **Autonomy of institutions**

In France, research institutions and universities are autonomous in defining their recruitment strategy (recruitment of researchers for permanent positions or recruitment of the staff for permanent or temporary positions). The University Freedoms and Responsibilities Act (2007) allows universities to provide bonuses and other financial incentives to researchers and researchers with a teaching position. The initiatives under the Investments for the Future Programme provide more flexibility in researcher recruitment (especially because part of the recruitment will be carried out through private foundations) and more attractive salaries and benefits.

### **Career development**

The Career Plan (2008) is one of the strategies implemented by the Ministry for Higher Education and Research aimed to improve researchers' career opportunities. It focuses on:

- Attracting the best young people to teach/carry out research at universities;
- Enhancement of professional commitment and excellence;
- Mobility programmes and adequacy of university management.

Researchers with a teaching position – professors and lecturers (maîtres de conference et professeurs des Universités : which are known as *enseignants-chercheurs*) benefited from the Career Plan in an amount of EUR 252 million over the period 2009-11, including:

- better remuneration (a salary of between EUR 2 347 and EUR 2 861 gross per month);
- an evaluation of all educational activities, including practical work;
- more or fewer hours of instruction depending on each year's priorities;
- increased opportunities for career progression and facilitation of the transfer from one grade to another;
- bonuses for scientific excellence (prime d'excellence scientifique – PES)

### **Shift from core to project-based funding**

Project-based research funding develops independence and responsibility in project management, set-up of the project and its integration in the laboratory; hence the project holder demonstrates that the project is an integral part of laboratory activities.

According to the ANR (National Agency for research) 2010 annual report<sup>12</sup>, project-based funding is suitable both for cognitive research to targeted research, whether conducted in the public sphere or in public-private partnerships. The ANR acts as an accelerator and amplifier of research topics that emerge within different scientific communities, be they universities, research organizations, alliances ( groups of research organization) or, in some cases, firms and clusters. It offers French research teams a strong programming that meets current priorities while leaving 50% of its budget to non-thematic programs, thus offering greater freedom to innovative projects, particularly at the frontiers of knowledge.

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

All researchers with employment contracts have the right to receive full social security coverage (including sickness, unemployment and pension benefits). All ANR (National Research Agency) fellows are recruited under doctoral contracts. Both doctoral and post-doctoral candidates working under doctoral contracts enjoy sickness and unemployment rights.

## **7. Collaboration between academia and industry**

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

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<sup>12</sup> Available at: [http://www.agence-nationale-recherche.fr/fileadmin/user\\_upload/documents/2011/ANR-Rapport-annuel-2010.pdf](http://www.agence-nationale-recherche.fr/fileadmin/user_upload/documents/2011/ANR-Rapport-annuel-2010.pdf)

Table 12: Collaboration between academia and industry

Measure	Description
<b>Carnot Institutes Network (2006)</b>	The creation of the Carnot Institutes aims to improve inter-sectoral knowledge circulation through partnership research, building on the model of the German Fraunhofer institutes. The institutes will receive a new EUR 500 million endowment under the Investments for the Future programme.
<b>CIR (Crédit d'Impôt Recherche)<sup>13</sup> (ongoing)</b>	The CIR ( <i>Crédit d'Impôt Recherche</i> ) is a research tax credit which aims to encourage private sector companies to carry out more R&D. To be eligible, companies must hire young PhD holders to carry out research. This tax credit is available for the first 24 months of the employment contract, providing it is the researcher's first long-term contract.
<b>Technological research institutes (<i>instituts de recherche technologique</i>) (ongoing)</b>	Technological research institutes bring together public and private laboratories dedicated to a specific area of technology, in which France aims to become a world leader. They help adapt higher education to business needs, thus encouraging the major French and foreign large companies to invest and create research jobs in France. The projects are co-financed by up to 50%. The total budget is EUR 2 billion for the period 2010-2020.

Source: Deloitte

## 8. Mobility and international attractiveness

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

In 2007, 6.7% of doctoral candidates (ISCED 6) were citizens of another EU-27 Member State, compared to 8.5% among the innovation reference group and an EU average of 7.3%<sup>14</sup>. In the same year, 31.2% of doctoral candidates came from outside the EU, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 31.2% compared to 14.5% in the innovation union reference group and an EU average of 19.4%<sup>15</sup>.

In the framework of the Investments for the Future programme, better salaries are being used to make it more attractive for researchers to come and remain in France and run projects. The Programme provides for open recruitment of international candidates, flexibility in the recruitment procedure and medium-to-long term contracts. Furthermore, favourable tax provisions motivate French companies to recruit high-level foreign researchers and thus to attract them to France.

Recruitment through competition to obtain the status of researcher in France could be seen as an obstacle for both incoming and outgoing researchers. However, a permanent research position remains very attractive and public institutions (universities and EPST) may recruit researchers on permanent contract.

Salary is the main obstacle to inward mobility. However, one of the initiatives of the Investments for the Future programme is to enable the payment of complementary salary for 'senior' researchers and thus, increase the attractiveness of and their interest in coming to France. For foreign scientists from developing countries, the cost of travelling to France and the cost of living in France are also an obstacle.

Table 13: Measures to improve inward mobility

Measure	Description
<b>Policies to encourage return of expatriate researchers</b>	
<b>Chairs of Excellence Programme</b>	The Chairs of Excellence Programme offers the best scientists from abroad financial support to complete their research projects quickly. For detailed information, see chapter 6 "Working conditions".
<b>Post-Doctoral Return Programme (2009)</b>	The Post-doctoral Return Programme targets young French researchers, but also young foreign researchers who defended their thesis in France, to return to France. For detailed information, see chapter 6 "Working conditions".
<b>Hosting foreign researchers</b>	
The proportion of young foreign researchers recruited by Public Scientific and Technological Institutions is approximately 1/5 and by universities 1/6. Eight percent of assistant professors are recruited from a country of the European Union and 8% from the rest of the world. In 2010, 2 300 residence permits were issued to scientific researchers from outside the	

<sup>13</sup> Available at: <http://www.industrie.gouv.fr/enjeux/innovation/credit-impot-recherche.php>

<sup>14</sup> See Figure 1 "Key indicators – France".

<sup>15</sup> Ibid.

Measure	Description
	European Economic Area (which is comparable to 2009). More than 90 different nationalities were represented, but six countries accounted for more than half the permits issued: China (14%), India (9%), Algeria (9%), Brazil (8%), the United States (7%) and Japan (6%).
	Since the University Freedoms and Responsibilities Act (2007), universities have had the tools to conduct their own recruitment policy, and be more attractive nationally and internationally. In addition to these tools, the procedure for applying for a Scientific Visa was simplified by the entry into force of Act 2011-672 (of 16 June 2011) on immigration, integration and citizenship.
	France has 20 EURAXESS Services Centres to provide foreign researchers with the information they need on everyday life, children's education, accommodation, cultural integration and French language courses.

Source: Deloitte

### Outbound mobility

Mobility to a foreign institution is an essential asset for a young researcher wanting subsequently to obtain a position as a lecturer in the university or as a researcher in an EPST. Young French researchers are encouraged to apply for mobility programmes, short and long, depending on their post-doc discipline.

According to a survey conducted in 2011 and covering life sciences, information technology and communication and physics, only 25% of the 12 900 doctoral graduates in 2010 continued with postdoctoral studies. Just over half (51%) went outside France for this – 21% to another EU country and 30% elsewhere.

### Promotion of 'dual careers'<sup>16</sup>

See chapter 3 "Women in the research profession" for information on 'dual careers'.

### Portability of national grants

ANR fellowships are not portable. The agency may not pay researchers to carry out research in other EU countries. Researchers living in another EU country may answer an ANR call for proposal, but must lead the project in France.

The CNRS and ISERM (French National Institute of Health and Medical Research), as part of a strategy to increase the mobility of researchers within the European Research Area, have joined the EUROHORC Money Follows Researcher (MFR) scheme, allowing researchers moving to other scheme countries to take the rest of their current grant with them.

### Access to cross-border grants

ANR fellowships are open to non-residents, as are those of all French research organisations.

### Measures encouraging inter-sectoral mobility

The 1999 law on innovation and research established three provisions which allow research civil servants (*agent du service public de la recherche*) to work with private companies. They may participate in the start-up of a company intended to develop research activities they are dealing with as part of their civil service job. They may also participate in long-term scientific consultancy affairs (*concours scientifique*), hold up to 20% of the company's share capital and be a member of the board or supervisory board promoting dissemination of public research results.

Moreover, researchers (*chercheurs*) and researchers with a teaching position (*enseignants-chercheurs*) have the right to take part-time jobs with a private company which is carrying out tasks for a university or EPST. Similarly, an academic researcher may be made available full or part-time (*mis à disposition à temps incomplet ou complet*) to a company or private organisation, French or foreign, on specific remuneration terms. The transfer of a civil service researcher to the private research sector is allowed for five years renewable. Researchers and researchers with a teaching position receive one-year additional seniority (*bonification d'ancienneté*) if they follow a mobility programme for at least two years.

<sup>16</sup> Researchers face a 'two-body problem' when moving. The challenge is to find positions for both members of a couple.

Finally, the young innovative companies (*jeune entreprise innovante - JEI*) and young university enterprises (*la jeune entreprise universitaire - JEU*) schemes further strengthen cross-sector mobility. A JEI carrying out R&D enjoys tax and payroll reductions for highly skilled employees such as engineers and researchers. Similarly, JEU status encourages entrepreneurship by students and those involved in research in higher education institutions because it carries significant exemptions from social security payments and tax deductions.