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**REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN
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EUROPEAN RESEARCH AREA PROGRESS REPORT 2013

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EFFECTIVENESS

The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product was 0.78 % in 2011, increasing constantly from 2006. The 2020 target is very ambitious: 3.76% of GDP. The share of GBAORD allocated as project based was 29,51 in 2009.

In Austria the main funds are distributed at federal level and regional strategies and regional funding agencies complement research, technological development and innovation (RTDI) policies and activities on national and EU levels. Formal coordination between the federal and regional level is done under on the RTDI platform Austria (“Plattform FTI-Österreich”) in the form of a semi-annual conference. The main funders in the public R&D domains are: Ministry of Economy, Family and Youth (BMWFJ), Ministry of Transport, Innovation and Technology (BMVIT) and the Ministry of Science and Research (BMWF), while the main funding agencies are the Austrian Science Fund (FWF), the Austrian Research Promotion Agency (FFG) and the Austria Business Service (AWS). While FWF mainly covers basic research and funds academia, the FFG is responsible for cooperative R&D funding and provides funds dedicated mainly to applied research and thematic oriented R&D programmes. The FFG partners with regions to allow complementing their funding via Structural Funds. AWS allocates funds mainly to innovation measures.

The Austrian Research, Technological Development and Innovation Strategy “Becoming an Innovation Leader: Realising Potentials, Increasing Dynamics, Creating the Future” was published in March 2011. It introduces a coordinated vision and strategy across all ministries in charge of RTDI and identifies new challenges. Also in 2011 a Task Force of senior officials was put in place to coordinate activities from the strategic perspective and monitor the implementation of this strategy. Nine inter-ministerial working groups were established, among those one on European dimension of research agendas, one on research infrastructure and one on knowledge transfer. This strategy builds on the exchanges of ideas among the most relevant stakeholders and an analysis of the innovation system as a whole: The Austrian ”Research Dialogue” (2008), the “System Evaluation” of the R&D support and funding system (2009), and the Strategic Recommendations of the Austrian Research and Technological Development Council (“Rat für Forschung und Technologieentwicklung”) (2010). In addition, the Austrian Council for RTD as an independent scientific and technological advisory body has the main task to monitor progress of the strategy’s implementation and reports to the Parliament (National Council) on an annual basis.

In 2009 there was a revision of the Austrian Universities Act (revision of/amendment to the original 2002 law, Bundesgesetz BGBl. I Nr. 81/2009). The University Structural Funds Ordinance in force since January 2013 provides for an indicator- and project-base allocation of research funds in the period 2013-2015 and states efficiency criteria. The Austrian Higher Education Plan launched in December 2011 aims at ensuring the highest possible quality in research. The performance agreements concluded with the universities for the 2013–2015 period include capacity-oriented funding as well as explicit statements on cooperation in

research, internationalisation and mobility, HR strategies and large-scale infrastructure planning (NRP 2013).

Public funds in Austria are more often distributed via institutional than project-based modes, roughly accounting for 2/3 and 1/3, respectively, of total funding. National public funding for the higher education sector is mostly institutional and is based on performance agreements at university level and less so for public research institutes. A revision of the universities financing legislation in 2013 further strengthened the trend towards institutional funding by allocating additional money to it for 2013-2015. Institutional funds are a combination of three categories: funds for teaching, for research and for infrastructure. The part allocated for research is based on number of students, a competitively oriented research indicator and a strategic budget depending on the societal objectives of the universities. Full implementation of the institutional funding model is foreseen for the performance contract period 2019-2021, for period 2016-2018 up to 60% of university funding will be based upon this model. Higher Education institutions (HEI) have to undergo external quality assurance every seven years. In March 2012, under the "Quality Assurance Framework Law" the Agency for Quality Assurance and Accreditation Austria was established. This agency is responsible for external quality assurance for all types of universities. Later in 2012, the Platform Research & Technology Policy Evaluation (FTEVAL) published its new standards for evaluations in the field of research, technology and innovation, with impact on future institutional assessments and general evaluation practice in Austria in medium- and long-term.

The FWF's total grant portfolio has been €195.2m for each 2011 and 2012. In 2013 it will refinance and stabilise the budget with own financial savings. More than 60% of competitive funds research public funds are performed by Austrian businesses. In 2011 major steps were taken to simplify the implementation of programme management by Austrian public funding administrations (Ministries, agencies etc.): calls for proposals were integrated into annual schedules; common guidelines for similar type of projects have been issued and agreement has been reached to treat similar projects the same way (by BMVIT, BMWFJ and FFG).

The majority of public funds aiming at scientific excellence and basic research and lately also knowledge transfer are based on international peer-review and internationally recognised standards for peer-review.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Austria in total participation is 2.52% so far, and Austria has received 2.62 % of total EC contributions. FP funding represents 105 Euros per head of population.

Joint research agendas are envisaged by Austria's participation in a large number of ERA-nets, INCO-nets, European Science Foundation programmes, JTI's (including funding of ARTEMIS and ENIAC), five Article 185 initiatives while leading one of them, and seven Joint Programming Initiatives while also leading the JPI Urban Europe. It is also interested in

improving the general standards for cross-border research coordination. Within the NRP 2013 there is commitment to consistently increase participation in the JPIs.

As far as the mutual recognition of evaluations are concerned, within the D-A-CH agreement between Germany, Austria and Switzerland, the German Research Foundation (DFG), the Austrian Science Fund (FWF) and the Swiss National Science Foundation (SNSF) have agreed to follow a lead agency principle for research projects with participants of at least two of the three countries. Negotiations are on-going to include similar funding agencies from other Member States from the Netherlands or the UK.

Cross-border inter-operability of national programmes is promoted by intergovernmental bilateral S&T agreements with China, FYR of Macedonia, India, Korea (mainly in the EU project KORANET), Croatia and Ukraine. Programmes serve to fund bilateral collaborations in cases where the two national subprojects are so closely connected that they may only be performed in conjunction with one another. New or reinforced bilateral cooperation was established in 2012 with, among other: Slovenia, Slovakia, France, China, Saudi Arabia, Albania, Singapore, Montenegro and Indonesia. This not only includes bilateral agreements at federal government level, but also cooperation at university or public research organisations levels. Additionally, a multilateral (and “macro-regional”) strategic communique was signed in 2012 by eleven countries in the Danube region, addressing potential R&D synergies for Horizon 2020 and Structural Funds.

Austria participates in international large-scale research programmes and infrastructures, ten of which are ESFRI initiatives, such as the European Laboratory for Particle Physics of the European Organisation for Nuclear Research (CERN), European Synchrotron Radiation Facility (ESRF), International Centre for Mechanical Sciences, Energy and Environment, Fluid Mechanics (CISM), Institut Laue-Langevin (ILL), Synchrotron Light Laboratory (ELETTRA), without hosting any such infrastructure.

One important policy priority outlined in the national RTDI strategy is the improvement of national research infrastructures as well as Austria’s integration and commitments to international infrastructures (e.g. ESFRI). Thus this is the focus of one of the inter-ministerial working groups of the Task Force established for its implementation. A strategy on Austria’s involvement in pan-European interest infrastructures and a national roadmap for the building of new infrastructures are currently being developed after a public consultation. The Austrian Council for RTD has published specific recommendations regarding the further improvement of national infrastructures, among other measures, the establishment of a national infrastructure contact point and a national repository for Austria Ris. A national repository of RI was established and measures were taken to allow its continuous improvement.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 8.5 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 2.3. The

shares of non-national doctoral candidates were 18.2% from another EU-27 Member State and 8.8% from non-EU countries.

Open, transparent and merit-based recruitment is facilitated by the Austrian Universities Act which requires public research institutions to advertise for research positions internationally, including through EURAXESS, not giving prescriptive implementation rules. However, transparent procedures and advertisement standards have been put in place to assure a fair and international recruitment. In 2012, 55% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The faster recognition ("Nostrifizierung") of foreign diploma or training qualifications has been implemented. The equivalence of foreign academic degrees with national ones is done on case-by-case basis. German is the teaching language for all courses and Master programmes. The amendment of the law on occupation of foreigners in 2011, the introduction of the "Rot-Weiß-Rot"(RWR) visa card and work permit for the general labour force and the implementation of the provision of the Scientific Visa Directive 2005/71/EC and recommendations 2005/762/EC and 2005/761/EC for the research domain, allow foreign researchers at all levels to pursue a career in Austria.

At the federal level, a variety of grants and scholarships supports incoming as well as outgoing PhD students as well as post-doc researchers. Although these measures are implemented by different organisations, information is accessible through a single web-based platform: <http://www.grants.at>. Programmes exist to attract expatriates and foreign researchers to pursue research in Austria.

In general, Austrian researchers are allowed to move their grant to another ERA country and this is decided mostly on case-by-case basis. Research fellowships and programmes administered by the Austrian Academy of Sciences (ÖAW) may be used either domestically or abroad, i.e. APART, DOC and DOC-ffORTE Programmes and the D-A-CH agreement (with the "money follows researcher" principle) and EUROHORCS allows also for grant portability.

Austria participates in the EURAXESS initiative with a national portal. More than 250 Austrian research institutions have registered by the end of 2011 (Deloitte 2012, Austria country report), and the Austrian Bridgehead Organisation, all EURAXESS Services Centres and 14 out of 32 Austrian Local Contact Points have signed the Declaration of Commitment by mid-2010.

Principles of innovative doctoral training are followed by several programmes. The FWF structural doctoral programmes are well established and allow for international mobility. A new, small-scale grant scheme for excellent post-docs ("sub auspiciis Praesidentis") and the Marietta Blau grant have been introduced to generate internationally competitive PhD grants.

The principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers have been integrated in the performance agreements with HEIs

for 2010-2012 and 2013-2015. 31 Austrian research institutions have already signed and adopted the Charter & Code, including universities, public research organisations as well as funding agencies. Five Austrian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which four have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

More detailed information can be found in the country profile for Austria in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Tackling discrimination is high on the government agenda. In the course of the new reform of budget laws, gender budgeting and gender equality were laid down in the Federal Constitutional Act (BV-G) and Federal Budget Act (BHG). The latter provides for a balanced representation in academic leadership positions and boards. On the basis of these laws a gender equality objective was developed by all ministries.

Several acts are in place to ensure gender equality: the Charter on the Compatibility of Family and Career, the National Action Plan (NAP) for Gender Equality in the Labour Market, the Care Allowance Reform Act 2012 and the Care Allowance Act. Laws require equal treatment for women and several provisions are included to ensure that: maternity leave is not a discriminating factor; pregnancy automatically freezes temporary contracts; women have the right to return to an equal position to the one held before their maternity leave; women are entitled to have a part-time position when they end their maternity leave. The NRP 2013 lists further measures to reduce the income gap between women and men and improve the work-life-balance.

Since 2009 objectives to attain gender balance in leadership positions and decision-making bodies in public research organisations and higher education institutions were gradually put in place by the University Act. These are: 1) introduction of quota in university committees and boards of up to 40% or according to overall distribution in academic staff, 2) implementation of gender monitoring with respect to recruitment as well as in governance entities, and 3) targeted recruitment.

Since 2002 several support schemes have been put in place to support recruitment, retention and career progression of female researchers and to strengthen the gender dimension in research programmes: under the umbrella of the inter-ministerial action programme "Women in Research and Technology", fForte: the Excellentia Programme launched in 2005 to support women full professors; the fForte Coaching Programme supports women in writing successful grant proposals; the 'Laura Bassi Centres of Excellence' encourage women to apply for top positions; the FEMtech programme seeks to increase female participation in industry innovation and applied sciences at PROs. The FWF structural doctoral programmes support women at the start of their careers and to apply for full professors. All FWF programmes provide for a quota of 30% women scientists/scholars and this target has been achieved and

FWF and ÖAW fellowship programmes allow for interruptions and extensions in case of maternity leave.

The Working Group on Gender and Diversity Management & Diversity within the BMWF aims to implement diversity measures as cultural and institutional change initiatives and will grant a diversity award that honours research organisations that already implemented diversity measures.

The 2009 amendment of the Universities Act stipulates a women quota in university committees of 40%. Gender specific measures are included in the performance agreements with universities (for example the 40% mandatory representation of women). Austrian Universities provide statements and figures on gender (and budget) and how do they progress on gender equality. BMWF evaluates progress on an annual basis using performance indicators, including gender indicators.

KNOWLEDGE CIRCULATION

Austria supports open access in the frame of the performance agreements with universities. Activities concerning open access policies are up to individual RPOs and research funding institutions. FWF has a mandatory policy on open access, including to data where legally possible with green and gold open access as equivalent options. In January 2010 Universities Austria (the Austrian Rector's Conference) published its recommendations for the enhancement of Open Access Policies in Austria and in 2012 stakeholders have organised themselves into the "Open Access Network Austria" to coordinate open access activities and make nation-wide recommendations in the field. Additionally, since 2007 research and funding institutions from Austria, Switzerland and Germany co-operate in a joint project/online platform to improve information, knowledge and discuss on open access.

Research funders and public research organisations are obliged by law to play a full role in supporting national innovation and competitiveness by fostering knowledge transfer. Knowledge transfer remains high on the political agenda, with the establishment in 2011 of an inter-ministerial working group "knowledge transfer and start-ups" and introduction of improved tax measures in 2012. In the on-going performance agreements assurances were given that reliable and sustainable intellectual property and utilisation strategies would be developed that enable partners from the economy to formulate long-term research targets.

In addition, specific programmes for transferring knowledge, creation and support of spin-offs, support for IPRs at level of universities and research organisations, and specific placement schemes for young researchers in industry exist.

There are specific programmes for transferring knowledge, creation and support of spin-offs, support for IPRs at level of universities and research organisations, and specific placement schemes for young researchers in industry. The General Programme of the FFG has remained Austria's most important source of public funding for R&D carried out by industry in terms of funding budget, efforts to promote R&D in all economic sectors and industries, areas of technology, and sizes of companies. Some examples of FFG programmes fostering academia-

industry cooperation are COMET, COIN, BRIDGE, AplusB or uni:invent and most recently the Laura Bassi Centres of Expertise and the thematic programme “Leuchttürme eMobilität” (Lighthouses of E-mobility). The Christian Doppler Research Association provides also for academia-business cooperation within its programmes. All measures are considered effective as they have led to a high level of transfer activities and Austria ranks 3rd among OECD countries in this respect. In 2010, a national contact point (NCP) has been designated at the BMWF. The NCP's tasks include the coordination of measures regarding knowledge transfer between public research organisations and the private sector, including tackling trans-national issues, in liaison with similar contact points in other Member States.

With regard to access and usage of e-infrastructures and digital research services, most Austrian academic institutions (more than 80%) are part of Austrian Academic Computer Network (ACOnet -“Österreichisches akademisches Computernetz”) which is the National Research and Education Network (NREN) run by the Universitaet Wien. ACOnet offers its members high-performance access and support services via the GÉANT pan-European data network to international academic networks and is in the process of accessing eduGAIN.

EFFECTIVENESS

Research and innovation policy in Belgium is designed and implemented in a multi-level governance framework involving the Federal Government and autonomous regional/community governments.

The Federal Government has competence for the federal scientific institutes, intellectual property (IP) law, standardisation, fundamental metrology, nuclear research, corporate taxation, employment legislation and social security. The communities are competent for matters related to individuals including scientific research and (higher) education, and the Community Scientific Institutes. The regions are competent for territorial matters such as energy, environment, and economic support, thus including innovation, applied and industrial research, science parks, and technology transfer: the three Belgian regions (Brussels-Capital, Flanders and Wallonia) design policies that suit the specific needs of their business sectors for innovation and that are tailored to optimise the potential of their higher education research capacities. The Belgian German community does not have a research policy.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.65% in 2011. Total GBAORD per capita rose until 2010, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Belgium was of 1.21% in 2011.

The Federal Science Policy Office (BELSPO) coordinates federal science policy as well as specific aspects of international co-operation on behalf of the Belgian authorities. Another actor is the Federal Public Services (FPS) Economy, SME's, Self-employed and Energy which deals with intellectual property, standardisation, fundamental metrology, nuclear research and research regarding the continental shelf.

As regards the policy priorities, in Wallonia and the Wallonia-Brussels Federation, the Research Strategy 2011-2015 gives follow-up to their willingness for closer cooperation between the different policy levels (cfr. Marshall Plan2.Green). This document sets out eight strategic objectives (including reiterating the 3% objective), identifies five priority thematic areas and includes a detailed plan of action for meeting the objectives. Competitive funding is implemented through calls for proposals connected to the Research strategy priorities (i.e. GREENTIC, Competitiveness Poles, RELIABLE programme, etc). The Wallonia Marshall Plan2.Green allocates funds to competitiveness clusters with support to public-private partnerships and projects related to the Research Strategy priorities (ICT, sustainable development, ageing and health).

Additional competitive funds are available from the Strategic Fundamental Research fund, hosting the virtual research institutes for life sciences and sustainable development.

In Flanders, the regional R&D strategy is based on the plan Flanders in Action (FiA), which aims at making Flanders one of the top five EU regions by 2020. The amended Flemish

Parliament Act on Innovation from 2012 sets out the legal basis for subsidies for special research funds, and legal anchoring of young researchers support programme.

On a federal level, the Belgian Research Action through interdisciplinary Networks (BRAIN_be) 2012 – 2017, sets out the recurrent framework programme for research. Project funding is based on scientific excellence and European and international anchorage.

Overall across all the Belgian public authorities funding R&D, more than 50% of the GBAORD is allocated through calls for proposals.

As regards the distribution of institutional funding, in Wallonia - Brussels Federation, allocation is made on the basis of the number of students and full-time equivalent researchers and not performance based. Nonetheless some additional public funding tools for the HEIs, such as the ARC (Actions de recherche concertées) and the FSR (Fonds spéciaux de la recherche) are based on competitive peer reviewing procedures and take the excellence of the research production into account.

In the Flemish Community, direct funding for universities is distributed based on an allocation key, which is partially based on scientific output indicators. The Special Research Fund (BOF) is solely meant for fundamental research in universities in the shape of either projects or mandates and does not have any thematic focuses.

In terms of monitoring and quality control of research performance, in Flanders, a Dutch-Flemish accreditation body carries out systematic review, still primarily focused on education. The Flemish Expertise Centre for R&D Monitoring (ECOOM) monitors the scientific progress of the Flemish region / Community as a whole. Within the Wallonia-Brussels Federation, the independent public sector agency for the evaluation of the quality in the HEI (AEQES) is the responsible unit in charge of the policies and guidelines concerning the external evaluation of programmes. In a position paper adopted in June 2012 the Steering Committee of the AEQES asked for further improving the QA system of the Wallonia-Brussels Federation, and to extend it to doctoral training.

The allocation of research funds applies the peer review principles. BELSPO and the Research Foundation – Flanders (FWO) calls on international experts for the evaluation of all applications, both fellowships and projects. Specific regulations on External Peer Review are in place to make sure that there is no conflict of interest between the applicant and the referee. The National Scientific Research Fund (F.R.S-FNRS), an essential actor in Federation Wallonie-Bruxelles, supports bottom-up research activities on the sole criteria of scientific excellence.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Belgium in total participation is 4.3 % so far, and Belgium has received 4.2 % of total EC contributions. FP funding represents 120 Euros per head of population. The country also participates in 8 Joint Programming, is observer in 2 and also participates in 4

Article 185 initiatives. The Belgian governments are committed to support participation of R&D performers in international networks, namely JPIs, ERA-NETs and EUROSTAR initiatives. The share of public funding which is transnationally coordinated is in Belgium the highest among the MS for which the information is available.

Transnational cooperation is also supported by structural or ad-hoc policy initiatives with (priority) partners, funding of cooperation exchange projects, public support to access of STI actors in international initiatives or programmes, lead agency initiatives etc. Thanks to the strong involvement of Belgian researchers in many international collaboration networks, the international scientific co-publications per million population of Belgium is more than double the EU average and the Science-Metrix "Collaboration Index" of Belgium (which is based on the number of co-publications while taking into account the size of national scientific output) is 1.33.

As regards mutual recognition of evaluations, in Flanders, the FWO has concluded Lead Agency agreements with Luxembourg and Slovenia. In the past, a Lead Agency pilot project with the Netherlands was concluded successfully and at the moment Austria is prospected as a new partner.

In view of financial commitment for the construction and operation of ESFRI, the ministers in charge of research are debating a national approach regarding the participation in the ESFRI roadmap with a clear division of responsibilities and guiding rules. The current priorities are based on the 2011 Inter-ministerial Conference for Scientific Policy which has encouraged participation in 31 international research infrastructures. It has also decided Belgium's fast-track accession to PRACE, SHARE-ERIC, ESS-ERIC, LIFEWATCH-ERIC and ICOS-ERIC in 2012. The Belgium federal project MYRRHA is in its preparation phase with 60% paid by the Federal Government. The creation of an international consortium is actively pursued and the ERIC legal status will be used as reference framework.

At regional level, there are specific measures that finance research infrastructure investments (such as, for instance, the Hercules Foundation and the FWO's Big Science programme in Flanders and the Athena Budgets managed jointly by Wallonia and Wallonia-Brussels Federation since 2011).

According to the European portal on Research Infrastructures (RI), the Belgian RI provides essential resources, at a high cost. They are open to external researchers and have a clear European dimension and added value. Improved coordination at national level could lead to more critical mass at this level. Bundling of initiatives for example in computing could lead to a stronger Belgian position, thus leading to win-win situations for all regions involved.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 7.8 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.5. The shares of non-national doctoral candidates were 13.6% from another EU-27 Member State and 8.8% from non-EU countries.

In Belgium, the implementation of human resources strategies falls within the jurisdiction of the Communities (Flemish community and FWB). At federal level, the State provides the legal framework for ensuring access to labour market, equal opportunities and gender equality.

Recruitment policies belong to the academic community but the Federal state encourages institutions to recruit as openly as possible.

The level of salaries of academic staff in research organisations are established by law for the federal scientific institutes (FOD Justice 2008), for the F.R.S-FNRS and for the Flemish research institutions. The F.R.S-FNRS reformed its recruitment system in 2012 to provide better transparency and accommodate the principle of open recruitment. The Wallonia-Brussels Partnership for Researchers promotes open and merit-based recruitments and research careers. In 2012, 65% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Information on job opportunities, social security and pension contributions, accommodation and administrative assistance is available at EURAXESS portals. The Flemish Community does not have a regional-wide job portal. It uses the EURAXESS Jobs portal to advertise researchers' positions. The Walloon Government aims to publish all publicly-funded research jobs online on the EURAXESS portal and at www.doctorat.be.

Both inward and outward mobility is supported in the three Belgium regions through various schemes. Several measures exist to attract Belgian researchers who settled abroad such as return mandates from the federal level, scientific impulse mandates - ULYSSE from the French Community (F.R.S-FNRS) and the FWO's Odysseus and Pegasus programmes of the Flemish Community as well as measures in the Brussels-Capital region ('Brains Back to Brussels', 'Research in Brussels').

The Flemish Community allows the portability of grants for short to medium-long stays in other countries during the mandate. The grants cannot be completely transferred abroad.. For the FWB, national grants or fellowships are open to non-residents. They only have either to live in Belgium or promote collaboration between Belgium and their home country.

With regards to training and business academia link, in Flanders, doctoral training has risen on the agenda in the past couple of years. This training is moreover no longer solely focused on academic skills. Flemish Minister of Innovation Ms. Ingrid Lieten, has attributed a financial incentive to the Flemish universities to assist young researchers with career management. This incentive has recently been upgraded and comes in the form of structural funding from now on. The principles for innovative doctoral training are explicitly mentioned in the legislation. Under the Plan Creative Wallonia, a focus is put on the implementation of multidisciplinary research initiatives and creative and innovative training. The Brussels Capital DOCTRIS programme specifically funds PhD projects carried out in collaboration with a private company. In Flanders the Baekeland mandates support inter-sectoral mobility

by offering support to projects at the interface of companies and knowledge institutes. The “innovation mandates” provide support to postdoctoral researchers who wish to transfer, exploit and utilise their research findings, either through a collaboration with an existing company, or a new spin-off company to be established.

Belgium has recognised the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers as a good basis for improving researchers’ career prospects, 13 Belgian organisations are actively engaged in the Commission’s Human Resources Strategy for Researchers of which 9 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

GENDER

General provisions are provided by the Labour law and the Government Agreement of 1 December 2011 which require the extension of anonymous curriculum vitae for applications in the public sector (first round). A specific law is expected to be established concerning equal pay.

In addition to social security provisions (including maternity leave provisions), the Walloon Government ensures that all researchers enjoy the same rights to grant extension and alternative incomes during maternity leave. The provisions are applicable to researchers with fixed-term contracts as well as grant beneficiaries.

The F.R.S.-FNRS allows for an extension of a mandate or a grant when a fixed-term mandate or a grant is suspended due to maternity, paternal or adoption leave, for a period equal to that of the suspension. A replacement income is then provided by the health care mutual (as is also the case for open-ended mandates) and a complement is provided by the F.R.S.-FNRS to compensate for the loss of income.

The Wallonia-Brussels Partnership for researchers promotes gender equality and provides for the insertion of a “genre” approach in scientific careers and the perpetuation of 10 researchers in the FRS-FNRS. The Wallonia-Brussels Federation has established a ‘Women and Science’ standing working group aimed at enforcing equality between men and women to implement the Partnership on gender equality as well as the Walloon Government’s Roadmap on equal opportunities.

To ensure that gender policy at universities is developed bottom-up, the Flemish Interuniversity Council (Vlaamse Interuniversitaire Raad/VLIR) set up the Gender at Universities high- level action group. The group aims to improve the gender balance among professors, researchers and students by a gender action plan at the level of the universities. By early 2014, this action plan will be translated in an interuniversity charter on gender equality.

Also, the regulation for support to the universities in the framework of the BOF (Special Research Fund) has been modified whereby universities must become more gender-friendly. The new legislation (valid from 1 January 2013) pays attention to the gender balance in the universities since performance based indicators include number of female researchers at

postdoctoral and permanent level. It also stipulates that administrative boards, research councils and selection juries must be gender balanced and it gives priority to the underrepresented sex in a recruitment procedure with equal candidates. Also In relation to gender balanced participation, in Flanders FWO ensures that in its scientific evaluation panels no more than two thirds of the experts are of same gender.

KNOWLEDGE CIRCULATION

The implementation of Open Access (OA) is well under way in Belgium. In October 2012, the three responsible ministers (federal government, Flemish and French Community) signed the “Brussels Declaration on Open Access” which promotes OA as the default infrastructure for the dissemination of Belgian scientific research results.

All universities of the Wallonia-Brussels Federation as well as the F.R.S.-FNRS have adopted an Open Access Scheme. OA Green Repositories are generally used in the evaluation process of the researchers and follow the “Liège Model” (Immediate Deposit / Optional Access). In Flanders, the University of Ghent adopted an Open Access scheme and represents the Belgian partner in the DRIVER projects.

In view of fastening knowledge circulation and open innovation, the ‘Innovation Centres Flanders’ concept note sets the Innovation policy context in Flanders by connecting it to the key economic and social challenges. A call for social innovation has been launched and a new innovation platform, “Sociale Innovatiefabriek” is being supported. Since 2012 a new structure has been adopted to integrate the Flanders Excellence centres into six thematic innovation hubs to allow raising sufficient levels of funding from industry by way of innovation platforms.

Belgium is member of EDUgain through Belnet Federation. Belnet is the Belgian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

In terms of valorisation of research results in industry, the Walloon government supports the reinforcement of the university-industry interfaces with specialised personnel in charge of fostering those. Since 2012, Flanders has setup the SOFI fund to support spin-off companies setup from research from the 4 Flemish strategic research centres. Funding has increased in 2013 to support spin-off companies setup from research conducted at universities and university colleges of the Flemish Community. The Flemish government has also traditions supporting the IOF (Industrial Research fund) and the Interfacediensten (Technology transfer offices) to manage and facilitate technology transfer. Finally, the Brussels-Capital Region also supports launch of spin-offs (Spin-Off in Brussels programme) and the interface technology transfer offices of three universities as well as the Indutec interface gathering the four university colleges of the region.

EFFECTIVENESS

The Bulgarian Government has adopted a series of measures aimed at modernising the national R&D structures. The Bulgarian National Reform Programme (NRP) 2013 identifies the need to improve the efficiency of public spending for R&D by leveraging funds to attract more private capital as key for achieving its national target of 1.5% of GDP in 2020.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.25% in 2011. Total GBAORD per capita rose until 2009, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Bulgaria was of 0.7% in 2011.

The National Strategy for Scientific Research to 2020, as of 2011, is the key policy document, which sets five priority areas for the development of research in Bulgaria. Public competitive R&D project grants, support for R&D infrastructures, structural reform of public research institute sector are becoming important characteristic of the national policy. However, some necessary strategic documents and measures are still under preparation such as the Innovation Law.

The research governance of the country is formed by public research organisations, along with the higher education institutions which perform research activities, business and NGO sector. The core portion of Bulgarian scientists is employed in public R&D organisations and higher education establishments, while the percentage of scientists in business organisations is 14% of the total. The Bulgarian Academy of Sciences (BAS) is the largest national scientific research centre with the largest Ph.D. school in the country.

The main actors and institutions for allocating competitive funds for research and innovation are the Ministry for Education, Youth and Science (MEYS) which defines and implements national research policy and the Ministry of Economy, Energy and Tourism (MEET), responsible for the national innovation policy.

The main competitive national public R&D funding instruments are the National Innovation Fund (NIF) and the National Science Fund (NSF). However, NIF has not distributed any funds since 2008 and a positive feature is the opening in 2012 of a new call for R&D projects with a total budget of BGN 5 million (€2.55 million). The inflow of EU Cohesion and Structural Funds in 2010 and 2011 has increased the share of competitive public funding for R&D considerably. The latest development in the R&I policy in Bulgaria is connected with Government decision of 9th of January 2013 for a separate operational programme (OP) during the next programming period, 2014-2020, called "Science and Education for Smart Growth 2014-2020". Smart National and/or Regional specialisation strategy has not been introduced in the country yet but it is expected to be presented by the team of the World Bank in fall 2013.

Funding instruments should respect peer review principles, however the submission of proposals only in Bulgarian, in some cases, may in fact hamper the foreign review if needed.

One international evaluation and consultation of research organisation has been undertaken so far by the Bulgarian Academy of Sciences (BAS), performed jointly by the European Science Foundation and ALLEA. The evaluation had significant impact on the reform, taking place in the BAS during the period 2010-2012 in the direction of programme oriented organisation of research activities.

Institutional funding is distributed per capita students and practically, there is no institutional assessment of the RPOs in Bulgaria. A new ranking system for Universities was introduced in 2011 to provide the Government with a tool for performance-based allocation of funding, however the Commission Staff Working Document on the 2013 NRP indicates that this tool is not sufficiently used so far.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme (FP). The share of participation of Bulgaria in total participation is 0.56 % so far, and Bulgaria has received 0.25 % of total EC contributions. The country participates in two Article 185 initiative(s) and leads 1 of them. Bulgaria participates also in the ESF, COST and ERA NET initiatives. Still, according to ERAWATCH report Bulgaria needs to set more precise guidelines to elaborate and implement effectively support measures in order to define and implement common research agenda on grand challenges. The existing set of priorities of the research agenda are not yet sufficiently connected to meeting grand challenges. In terms of Framework Programme, the funding represents 10 Euros per head of population in Bulgaria.

The country has undertaken some measures to remove legal and other barriers to Europe-wide competition. Non-nationals are eligible to participate in the Bulgarian competitions for research grants.

The National Roadmap for Research Infrastructure, adopted in 2010, has allowed Bulgaria to be included in several European research infrastructure projects. There are no specific commitments for the construction and operation of ESFRI, global, national and regional Ris of pan-European interest

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 3.2 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.5. The shares of non-national doctoral candidates were 3.3% from another EU-27 Member State and 4.1% from non-EU countries.

As regards research career and recruitment; the Law on the Development of Academic Staff grants universities autonomy in defining policies for their staff. There are no common promotion procedures for researchers that could ensure career stability. Salaries at public research institutions are fixed or depend on the academic title and the provided budget subsidy. The situation is similar in the universities, although with the new rating system they can slightly increase their public funding through academic and research achievements. In

2012, 46% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Job vacancies are published on university websites (however mostly in Bulgarian), as well as on the EURAXESS jobs portal. In addition, job vacancies are published on other platforms (e.g. the labour agency). It is not a statutory requirement, however, to advertise job vacancies on the EURAXESS jobs portal.

As a general rule, national grants and fellowships are not open to non-residents.

The Operational programme “Human resource development”(OP HRD) supports the setting up and running of structured innovative doctoral training programmes applying the Principles for Innovative Doctoral Training. In addition to (new) policies aimed at improving the research profession in Bulgaria, bilateral programmes such as the “Sciex” Programme with Switzerland, are considered not only as measures for importing researchers’ funding opportunities, but also as instruments for increasing the quality of doctoral training in Bulgaria.

In 2007, the Bulgarian Rectors’ Conference, as a collective body of the largest national university network, has signed the European Charter for Researchers and Code of Conduct for the recruitment of researchers. One researcher organisation has received the "HR Excellence in Research" logo for its progress in implementing the Charter & Code.

GENDER

In Bulgaria, researchers are not recognised as a specific workforce and hence do not enjoy a special status. There is no specific legislation on gender introducing mandatory quotas. However the transposition of the European directive on gender equality (Council Directive 2000/78/EC of 27 November 2000) provides for equal treatment of women and men in research. The Labour Code grants women researchers the right to interrupt and extend their contract during maternity leave. However, other contracts (stipends, fellowships, or equivalent) do not guarantee the right to maternity leave. The right depends on the contractual conditions and on the researcher’s level of income in the previous 18 months.

KNOWLEDGE CIRCULATION

The Bulgarian government supports the principles of access to and dissemination of scientific information, however no national policy on scientific information has been adopted.

Harmonised access and usage policies for research and education-related public e-infrastructures and for associated digital research services are developed through participation in the Open access infrastructure for research in Europe (OPEN AIRE). The initiative includes setting up of data repository of Open Access to research outputs, journal articles, conference papers and datasets of various kinds; setting up links of the national repositories to European repositories.

BREN is the Bulgarian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

Some policy initiatives such as internal BAS regulations, setting joint innovation centre, university technology transfers etc. are in place to increase knowledge transfer activities and to facilitate a structural change towards more advanced and knowledge-intensive research sectors. This is also at the heart of the draft national Innovation Strategy. As an important step in that direction is the establishment of the first science and technology park in Sofia, co-financed by the ERDF for around EUR 50 million, which should grow into a core R&I hub for the whole country and attract leading local and international scientists. The 2013 Country Specific Recommendation stressed the need to “pursue the reform of higher education, in particular (...) through strengthening cooperation between education, research and business” and “improve the access to finance for SMEs and start-ups”.

EFFECTIVENESS

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) in 2011 amounts to 0.75% of which almost half comes from public sector.

The research system is mainly governed by the Ministry of Science, Education and Sports (MSES) which has overall responsibility for the science and education system in Croatia and the Ministry of Economy and Ministry of Entrepreneurship and Crafts which are responsible for innovation. The increased role of the Ministry of Regional Development and European Funds is expected upon the availability of the Structural Funds, in particular the ERDF, following Croatian accession to EU on 1 July 2013.

Policy formulation and implementation include the National Council for Science (NCS) and the National Council for Higher Education (NCHE) which are the highest advisory bodies in their respective fields.

The main funding bodies, in addition to the MSES, are the Croatian Science Foundation (CSF), fostering science excellence, the Business Innovation Agency of Croatia (BICRO), supporting various innovation policy programmes like RAZUM, TECHRO, IRCRO, PoC, etc., the Unity through Knowledge Fund (UKF), supporting cooperation between local researchers and Croatian researchers living abroad and the Science and Innovation Investment Fund (SIIF), fostering technology transfer and commercialisation of universities' research results.

The efforts to strengthen competitive funding and improving the ratio between institutional and project funding has gained increasing importance. IN 2012, institutional funding was the most important source of funding for research organisations (33% of MSES budget) and research grants represent 9 percent of MSES budget. The importance of competitive – based research funding has increased lately. The amended Law on Science and Higher Education (to be adopted in 2013) provides legal basis for reforming the national R&D system, including, among others, a new model of intuitional funding through “programme contracts” between the Ministry of Science, Education and Sports (MSES) and Research Performing organisations (RPOs). The allocation of the competition based research project grants will be transferred to the Croatian Science Foundation (CSF) which will establish new scheme of competitive projects and programs based on the model of EU collaborative research.

In the area of institutional assessment, the Agency for Science and Higher Education (ASHE), member of the ENQA – European Association for Quality Assurance in Higher Education and EQAR – European Quality Assurance Register) is carrying out the evaluation procedures (initial accreditation, re-accreditation and thematic evaluations).

The international peer review processes for allocating research grants have gained increasing importance with the establishment of independent research funding agencies in Croatia. The two principle funding agencies for scientific research –CSF and UKF have developed their own processes and guidelines for assessing quality of research proposals that include an

international peer-review process. The MSES is also using external expertise for the evaluation of research projects proposal.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the EU Framework Programmes (FP). In the Seventh EU Research Framework Programme (FP7) Croatia has more than 300 participations mobilising almost 60 million Euros of EC contribution. Croatia is cooperating internationally through bilateral, multilateral and transnational projects and research programmes. It participates in the transnational research programmes like EUREKA and COST that includes coordination of research priorities, plans and goals, but does not include cross-border flow of funds. Croatia also participates in five ERA-NET initiatives. Croatia is also actively participating in the design of a Regional Strategy aiming at strengthening R&I cooperation at regional level with its Balkan neighbours.

Croatia is a member of ESFRI and participates in four related projects: CLARIN, DARIAH, ESS and SERSCIDA. A Committee for Scientific Infrastructure has been set-up to prepare the national roadmap on research infrastructures and to provide a strategic approach and policy objectives in accessing intergovernmental European infrastructures. Access to the national research infrastructure within the scientific institutions is organized by the Agency for Mobility and European Programmes.

Croatia is a member of the European Molecular Biology Organization (EMBO), the Conference and European Centre for Medium-Range Weather Forecasts as well as engaged in the program of the European Organisation for Nuclear Research. Croatia participates also in a number of intergovernmental organisations such as CERN, EMBL (European Molecular Biology Laboratory and EUMSTAT (EU meteorological satellites)

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 3.6 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.4. The shares of non-national doctoral candidates were 2.2 % from another EU-27 Member State and 2.2% from non-EU countries.

Recently, Croatia has adopted two policy measures for (1) removing the obstacles to inward and outward mobility of researchers and (2) increasing the international and inter-sectorial mobility. Removing the legal and other barriers to the application of open, transparent and merit based recruitment of researchers is directly addressed within the Action Plan for Mobility of Researchers 2011-2012, which does not require anymore a Croatian citizenship for entry into the Registry of Researchers. Procedures on recruitment must be made public, preferably on the respective organisations' websites, in both the Croatian and English languages. In 2012, 43 % of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The transparency of employment of foreign researchers has been improved through advertising job positions at the EURAXESS portal of the European Commission

In Croatia, publicly funded grants or fellowships are not portable to other EU countries. However, the majority of programmes of the Croatian Science Foundation are open to researchers from all around the world and no nationality restrictions are included.

The “Higher education reform” renewed the doctoral studies in Croatia within the implementation of the Bologna process, especially in the period 2004-2008. However, no specific mentions of structured innovative doctoral training are found.

By March 2013, 37 research and higher education institutions have signed the Declaration of Commitment to the Principles of the Researchers Charter and the Code. 18 Croatian organisations are actively engaged in the Commission’s Human Resources Strategy for Researchers of which 13 institutions were granted with the European Commission logo for the "HR Excellence in Research".

GENDER

Croatia has made a considerable progress in the area of setting a policy framework for women’s rights and gender equality, enshrined in both legal and strategic policy documents such as the National Policy for Gender Equality 2011-2015. Croatia is one of the few EU countries which have a special Gender Equality Ombudswoman. Croatia has also set an Office for Gender Equality as the main institutional mechanism for gender equality.

The main reference document is the Action plan Science and Society from adopted in December 2012 by the Ministry of Science, Education and Sports. It proposes the equalization of gender ratio of researchers in the system, especially in management structures (minimum 1/3 of women in national councils, regional councils, main committees, scientific and political bodies, etc.)and stresses the need for gender equality awareness increase.

Non-Governmental Organisations (NGOs) play a significant role in promoting and implementing gender equality policy and the advancement of current position of women in Croatia.

KNOWLEDGE CIRCULATION

The Croatian Government encourages open accessibility to the results of publicly funded research. A Croatian stakeholder declaration of Open Access was initiated in October 2012 and has been signed by more than 500 researchers.

The Ministry of Science, Education and Sports supported the Croatian scientific portal, which provides open access to all scientific information resulting from public funding research, as follows: the Croatian scientific bibliography - CROSBIB, the Croatian scientific journals portal – HAMSTER and the Who's who in Croatian science.

The Croatian Information and Documentation Society (HID) plays an important role in raising awareness on Open Access (OA), encouraging individuals and institutions to sign

BOAI and Berlin Declaration and to accept technical standards for achieving OA. The open access is enabled by the University Computing Centre (SRCE) which provides communication and information infrastructure (e-infrastructure).

According to the Directory of Open Access Repositories – OpenDOAR, 6 data repositories exist in Croatia.

As regards knowledge transfer between public and private sectors, it is at the heart of the Croatian Innovation policy. Croatia's system of programmes and institutions for knowledge transfer is featured by many technology transfer centres (in the university cities of Zagreb, Split, Rijeka, Osijek and Dubrovnik), out of which three technology transfer offices (TTO) (University of Split, University of Zagreb and University of Rijeka which has grown into the Science and Technology Park (STeP) of the University of Rijeka).

The National Strategy for the Croatian innovation development 2013-2020, carried out by the OECD, provides a list of five strategic pillars for the future development of the innovation system, focusing, among others on increasing knowledge flows and interactions between industry and academia and securing a strong science and technology base and strengthen the capacities of research institutions for technology transfer. To date there is no clear legal or regulatory framework covering the field of IPRs and technology commercialization in universities but efforts are on-going to create a national policy for IPR creation and management at research institutions.

The pillar institution of the innovation system is the Agency for Business Innovation (formerly called BRICO) which manages several programmes to support innovation in firms and new firm creations (such as RAZUM providing loans for research and development; IRCO programme, a collaborative programme targeting SMEs that are linking up with research institutes and POC, a programme supporting Proof of Concept).

Croatia participates in the MERIL project (Mapping of the European Research Infrastructure Landscape) which provides through the MERIL portal an inventory of the most excellent research infrastructures (Ris) in Europe. The five infrastructures from Croatia are included: Cloud Infrastructure Services (IaaS): Virtual Computing Lab/ Virtual Private Servers, Croatian National Grid Infrastructure, Data Infrastructure Services, and Institute of Oceanography and Fisheries.

At the national level, Croatia has founded in 1971 the University Computing Centre (SRCE) which is one of the key subjects in planning, designing and maintenance of the e-infrastructures in Croatia. Today SRCE actively participates in the EU projects: GÉANT3 - Multi-gigabit Pan-European Research and Education Network and EGI-InSPIRE - European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe. Besides, the SRCE experts participate in the work of international institutions and bodies, such as: TERENA, DANTE, ECAM, GeGC, and many others. Croatia is member of EDUgain through AAI@EDUHR. CARNet is the Croatian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

The Croatian government established in 1995 the Croatian Academic and Research Network (CARNet), a network of Croatian academic, scientific and research community, as well as of institutions of elementary and high school educational system. It provides more than 60 different services to academic community such as e-library, electronic identity, e-mail, e-learning, etc.

EFFECTIVENESS

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.45% in 2011. Total GBAORD per capita rose until 2009, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Cyprus was of 0.97% in 2011.

The national research system in Cyprus is young and evolving. At the operational level the Planning Bureau is an independent government agency engaged in the formulation of strategy, the identification of objectives and the introduction of policy measures aiming at the promotion of research activities in Cyprus. At the implementation level, research and innovation activities are integrated under the Research Promotion Foundation (RPF), which is an autonomous agency under the supervision of the Planning Bureau.

RTDI is among the key priorities of the National Strategic Development Plan (NSDP) 2007-2013, the main strategy document reflecting guidelines for R&D and innovation policy in the country and forming a basis for the preparation of the programming documents.

Competitive research funding is distributed mainly through the multi-annual and multi-thematic National Framework Programme for Research and Technological Development (DESMI), designed and managed by the Research Promotion Foundation (RPF). Additional

competitive funding for innovation, entrepreneurship and investments is distributed by the Ministry of Commerce, Industry and Tourism. These two programmes introduced the competition for both individual and collaborative projects, against the backdrop of historical institutional block funding. However, due to financial constraints and government changes, competitive funding has diminished rather than increased since 2011.

Institutional evaluations are foreseen but not systematically pursued and are not linked to the distribution of block funding. Block funding follows historic and size criteria and is not associated to performance indicators. Public HEIs, which benefit from block-funding, have introduced internal research support mechanisms: faculty members apply for a (small) research budget and selection is based on a review process by an internal HEI Committee.

While there is not an explicit, mandatory legal provision for peer review, funds allocated under DESMI programme apply the principles for international peer review, using Greek reviewers.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme (FP). The share of participation of Cyprus in total participation is 0.34 % so far, and Cyprus has received 0.19 % of total EC contributions. The country also participates in four Joint Programming initiatives and in two Article 185 initiatives. FP funding represents 88 Euros per head of population

The size of the research system in Cyprus and its peripheral geographical location may be barriers to transnational cooperation. There are no joint research agendas addressing Grand Challenges, except in the context of ERAnets, JTI and Territorial Development Programmes of the Structural Funds. Participation of Cyprus is marked under the MED ERA-NET programme for cooperation in the Mediterranean network and JPI in cooperation with other participating countries in the areas of Agriculture, Food Security and Climate Change, Urban Europe, Water Challenges and Cultural Heritage. Funds will also be earmarked to Joint European Programmes (EUROSTARS, Ambient Assistant Living)..

RPF participates in the European Energy Research Alliance (EERA), where 13 Joint programmes have been announced in the fields of Photovoltaic, Wind Energy, Smart Grids, Geothermal, Carbon Capture and Storage, Materials for Nuclear, Bioenergy, Concentrated Solar Power, Ocean Energy, Smart Cities, Advanced Materials and Processes for Energy Applications, Energy Storage, and Fuel Cells and Hydrogen.

Currently, RPF started devising a national ESFRI roadmap and define explicit policy on participation in ESFRI.

Research Infrastructures projects under ESFRI of interest for Cyprus are DARECLIMED, LinkSCEEM 1st and 2nd phase and STACHEM. Cyprus also participates in the European portal of Research infrastructure services with the following three research infrastructures: CyGrid in the area of Grid computing facilities, Nanomanufacture in the area of micro and

nanotechnology facilities and Agricultural Research Institute in the area of environmental management.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 2.2 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.2. The shares of non-national doctoral candidates were 7.8% from another EU-27 Member State and 1.6% from non-EU countries.

The labour market is open due to a long term tradition of cooperation with the UK and Greece, established since the time the country did not have its own HEIs. Cyprus was among the first member states to adopt portability of grants policies.

Researchers in Cyprus are civil servants, where by definition recruitment is open, however their career progression is highly inflexible. Academic promotion is regulated and higher education laws specify the composition of promotion committees. In 2012, 54% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Information on entry conditions, transfer of social security, pension contributions, accommodation and administrative assistance is available through the Cypriot EURAXESS National Portal (www.euraxess.org.cy).

Cyprus participates since 2000 in the Programme for the Support of Young Researchers, which promotes also participation in private sector research projects. There is no explicit policy regarding the Principles for Innovative Doctoral Training at the national level or at the institutional level, although some interest is expressed individually.

Out of the 13 Universities in Cyprus which have expressed interest to the European HR Strategy for Researchers, five Cypriot organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which two have been awarded with the HR Excellence in Research logo (University of Cyprus and Cyprus Institute of Neurology and Genetics).

GENDER

Gender issues in Cyprus are currently subject to a specific evaluation contracted by the Planning Bureau concerning all ERDF funding in view of formulating clear gender policy.

RPF will participate at the first Gender ERA-NET programme as of 2013.

KNOWLEDGE CIRCULATION

In 2013 the Planning Bureau and the RPF, considered as primary organisations carrying responsibility for Open Access, have appointed official open access contact points at national level. Three open access repositories exist in Cyprus, all in Universities (Cyprus University of Technology, Open University of Cyprus, Cyprus University) out of which two provide

access to digital collections and one repository (Cyprus University of Technology) provides access to research data.

CYNET is the Cypriot National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

According to the NRP 2013 there is an on-going process on the development and operation of Enterprise liaison offices at the Universities in Cyprus. Similarly, the development of the Business Support Centre is expected to provide intermediary services for the transfer of knowledge and technology.

Finally in 2012, the Ministry of Commerce, Industry and Tourism launched a technology platform “Manufuture-CY”, an initiative for future industrial technologies which activities include information exchange, thematic training workshops, production of position papers and other contributions of industrial policy, as well as new initiatives for the enhancement of cooperation between its members. Except for industries, members of the platform may also be companies which influence and are influenced by the industry, associations of companies, IT companies and research centres with direct interest, as well as other Public Organisations, academic institutions and financial companies, cooperatives, and consumers associations which have an indirect industrial interest.

EFFECTIVENESS

The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product (GDP) was 0.67 % in 2011. The share of GBAORD allocated as project-based funding was 46,13 % in 2008.

In 2008 a comprehensive reform of the research and innovation system was launched (Act No. 211/2009 Coll, amending Act No.130/2002 Coll.), the characteristics of which are described in the National Research, Development and Innovation Policy of the Czech Republic 2009-2015. The reform defined long-term national priorities for R&D&I (up to 2030); established a single advisory body for innovation policy (in a boarder sense) and for the coordination of public support to RDI; increased the share of public funding allocated on a competitive basis; reorganised R&D funding bodies by creating the Technology Agency of the Czech Republic (TACR) in charge, together with the already existing Grant Agency of the Czech Republic (GACR), to administer competitive funding instead of the ministries; introduced a new national methodology for research evaluation based on quantitative indicators to allocate institutional funding on the basis of performance; promoted better research links between academia and industry; and ensured open access to the Research and Development Information System of the Czech Republic.

As a result of the reform the Council for Research, Development and Innovation (CRDI) has been set in place as an advisory body of the government, thereby improving the governance of the system. CRDI defines research priorities (through different committees), proposes the research budget and is ultimately responsible for the annual evaluation of research institutions. It also targets funding towards potentially strong and globally competitive research fields and fields with strong potential for applications. While CRDI has become the main governing body of the system, the Ministry of Education, Youth and Sports of the Czech Republic (MEYS) and the Ministry of Industry and Trade of the Czech Republic (MIT) continue to set priorities in the context of the National Innovation Strategy and to administer the Structural Funds through their respective Operational Programmes dealing with R&D and innovation.

The bulk of competitive project-based funding is administered by GACR - which allocates grants for basic research based on international peer review - and by TACR – which allocates grants for applied research and development. GACR also awards postdoc grants with limited funding on open, merit, competitive basis. GACR has a budget of CZK 3.3b (€132m) in 2013. On the side of applied research, there is currently a transition period where TACR is taking over the administration of competitive funding from MEYS and MIT. The budget of TACR has grown significantly in recent years from CZK 0.9b (€34m) in 2011, to CZK 2.8b (€113m) in 2013. In addition, five other ministries administer their own (small) competitive research funds in their respective domains (Agriculture, Health, Defence, Interior, and Culture) with a focus on short-term policy needs.

Since the 2008 reform there has been a constant increase of project-based funding and a decrease in institutional funding from 56% in 2009 to 51% in 2012. In its outlook for 2014,

the CRDI envisages a further decrease to 47% in 2014 and 2015. The largest recipients of institutional funding are on the one hand the academy of Science of the Czech Republic (ASCR) and on the other, public research centres and higher education institutions (via the MEYS which distributes the funds). ASCR uses its own internal evaluation methodology for internally redistributing the funds received. Over the period 2010-2013 the performance of research institutions was systematically evaluated on an annual basis using the current methodology ('methodika') and used by the CRDI as a starting base for the allocation of funding. However, 'methodika' has been criticised by some stakeholders and by the independent international audit of the Czech research system (Arnold, E. 2011) due to the fact that it is based strictly on quantitative indicators which do not sufficiently reflect the quality of the S&T outputs nor the specificities of different scientific fields. A revised methodology for the period 2013-2015 has been prepared based upon a combination of new evaluation criteria and international peer review to better take into account the quality and relevance of the research performed. It is a first step in response to the Council Recommendation No 6 'Increase the share of performance-based funding of research institutions.' (from the specific Council Recommendation for the Czech Republic dated 10 July 2012) asking for an effective system for evaluation and funding of R&D projects.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Czech Republic in total participation is 1.04% so far, and Czech Republic has received 0.61 % of total EC contributions. FP funding represents 20 Euros per head of population. The country also participates in Joint Programming. Czech Republic participates as a member in 4 initiatives and coordinates The Demographic change (More Years, Better Life). The country also participates in 2 Article 185 initiative(s). There are programmes at national level which support research on topics relevant to the Strategic Research Agendas (SRAs). Funding of common actions and alignment of national programmes to the SRAs are under development. The Czech Republic also participates in in EUREKA and COST. The NRP 2013 states that the Czech Republic is interested in participating in the Cross-Thematic Contractual Public Private Partnerships and/or Joint Technology Initiatives (JTI), with research infrastructures, energy security and space research as well as the private sectors' needs stated among the priorities.

As part of the revision in 2012 of the National R&D&I policy 2009-2015, the set of national priorities for R&D&I was revised in view of better targeting the six major grand challenges identified (competitive knowledge economy, sustainable energy and material resources, environment for quality life, social and cultural challenges, healthy people and secure societies). Those priorities are largely in line with the grand challenges of the H2020 proposal.

The Czech Republic has bilateral agreements, either at inter-governmental or inter-institutional level, with India, Israel, South Korea, Russia, Argentina, China, and the United States. In the frame of these agreements, GACR and TACR (for the future DELTA programme with non-EU countries) recognise evaluations made by partner agencies as basis

for national funding. Regular funding is attributed through the GACR bilateral grants and comprises about 2% of GACR budget (based on agreements with the Deutsche Forschungsgemeinschaft, National Science Foundation of Korea and National Science Council of Taiwan). Cross-border interoperability is implemented by the MEYS KONTAKT scheme for non-EU intergovernmental agreements and GESHER/MOST with Israel. The Visegrad fund (between the Czech Republic, Hungary, the Republic of Poland, and the Slovak Republic) provides also research grants from a common pot contribution of all countries involved.

The Czech Republic is a member of most intergovernmental organisations in ERA as well as of projects of large European infrastructures (ESFRI). The Czech Republic participates in the European Space Agency, European Southern Observatory, European Molecular Biology Conference, the European Laboratory for Particle Physics of the European Organisation for Nuclear Research (CERN), European Fusion Development Agreement (EFDA) and others.

Following the national strategy for research infrastructures, the Roadmap for Large Research, Development and Innovation Infrastructures in the Czech Republic has been approved and it has been updated in 2011. A draft amendment (March 2013) of the principal law governing research and development (Act No.130/2002 Coll.) is proposed which should allow to provide institutional funding for support of international cooperation in research on the basis of international evaluation (in order to conform to the Council Regulation 2009/723/EC from 25th June 2009 on ERIC). All the six large RI projects financed so far for a total amount of €835m (85% funded by the ERDF) had to have a partnership with ESFRI. Among those there are several e-infrastructures: Czech Education and Scientific NETwork (CESNET); IT4Innovations - building a national Centre of Excellence in the field of information technologies; CERIT Scientific Cloud. Their future financing was secured by launching the National program sustainability I and II financed from Structural Funds via MEYS, allowing also funding from private sources to contribute to their operation.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 5.6 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.3. The shares of non-national doctoral candidates were 8.4% from another EU-27 Member State and 4.0% from non-EU countries.

General procedures regarding recruitment and employment conditions are given at the national level by the Labour Code (Act no. 262/2006 Coll.) and the Act on Employment (Act. No. 435/2004 Coll.).

Higher education establishments and public research institutes are allowed to pursue fairly autonomous approach to recruitment of academic staff, which are decentralised even to faculty and department level. In 2012, 52% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012). Most public research institutions conduct their

activities in accordance with the Act on Public Research Institutions (Act no. 341/2005 Coll.). For higher education institutions the main human resources issues are defined by the Higher (Tertiary) Education Act (Act No. 111/1998 Coll.) with consecutive amendments. A draft amendment of the Higher Education Act was recently sent to universities, in line with the White Paper on Tertiary Education adopted by the Government in 2009. The draft amendment is not expected to alter the current system of recruitment but to simplify the recognition of university diplomas acquired abroad.

The adopted Scientific Visa Package simplifies recruitment of researchers from the non-EU countries. According to the Czech Republic's legislation rules, foreign researchers, especially EU citizens, can be employed in academic positions.

Under the MEYS and ASCR there are programmes (for ex. NÁVRAT) funding reintegration of top-researchers (Czech who live abroad and foreign) as well as foreign doctoral students (Fellowship J. E. Purkyně). The MOBILITY programme supports short-term outward internships and bilateral agreements allow for exchange of university teachers and students (financed from Structural Funds).

Legislation allows foreign researchers to participate in research and development calls. Funding is reserved for residents except for special programmes based on international agreements. All research projects funded by national research programmes must be performed in the Czech Republic. In general applications have to be made in Czech. The main exception represent the grant programmes of GACR that require applications exclusively in English, with background documentation (i.e. Programme Operators' Manual, etc.) being in Czech.

Project „EURAXESS Czech Republic 2012 - 2015“ finances the EURAXESS Centre and website. While the Czech EURAXESS supports foreign researchers by the usual means, it is not formally required to advertise new positions nationally and internationally via the media, on EURAXESS or other international portals.

Currently the standardisation of PhD programmes has started.

Two institutions, namely the ASCR and Central European Institute of Technology (CEITEC), have endorsed the Charter & Code and one Czech organisation is actively engaged in the Commission's Human Resources Strategy for Researchers.

GENDER

General legislation on non-discrimination and equal opportunities applies also to the research field and to the recruitment, retention and career progression of female researchers (the Act No. 262/2006, Coll. on labour code, the Act No. 435/2004 Coll. on employment and the Act No. 198/2009, Coll. on antidiscrimination). Labour law guarantees a maternity leave of six months with return to the same position (not for fixed contracts) and parental leave up to three years. The government proceedings (or law), the so-called "Jednací řád vlády", require that gender impact is assessed for every government resolution. Recently the government has set a national target for increasing the employment rate for women to 65% and decided to increase

the availability and affordability of quality pre-school facilities for children after six months of age, in line with the Council Recommendation No 4 'Increase significantly the availability of inclusive childcare facilities with a focus on children up to three years old, and the participation of Roma children, notably by adopting and implementing the law on provision of childcare services and strengthening the capacities of both public and private childcare services.' (from the specific Council Recommendation for the Czech Republic dated 19 June 2013). The Governmental Resolution No. 1033 of 2001 establishes measures on equal opportunities and (among others) the Council for Equal Opportunities for Women and Men as an advisory body of the government. In May 2010, the Council of the Government for Equal Opportunities for Women and Men drafted a recommendation to the government concerning the need to address the issue of gender equality in the field of research, development and innovation in the Czech Republic at the level of expert and advisory bodies of the government. This recommendation was elaborated by its Working Committee for the Institutional Mechanism in cooperation with the National Contact Centre for Women and Science and concerns the CRDI. The recommendation was acknowledged by the government and was not acted upon.

Ministerial gender focal points and working groups are established as well.

GACR grants restrictively allow female researchers to interrupt or postpone research due to maternity.

The main agent promoting cultural change in women in science is the National Contact Centre for Women and Science (en.zenyaveda.cz), which carries out analysis and raises awareness about gender issues. The award Milada Paulová is organised jointly by MEYS and National Contact Centre for Women and Science for lifelong achievement of female researchers in Czech science and the L'ORÉAL Scholarship Czech Republic for Women in Science is also in place.

KNOWLEDGE CIRCULATION

CRDI administers the Research and Development and Innovation Information System of the Czech Republic which provides open access to information about publicly funded research activities, projects and their outputs. It allows the collection, processing, publication and utilisation of data. The Czech Statistical Offices (CZSO) – pursuant to the Section 17 “Provision of confidential statistical data” of the Act No. 89/1995, on the State Statistical Service - provides confidential statistical data for scientific research purposes. Several open access repositories including for data are run by different stakeholders.

Improving the links between industry and academia and fostering knowledge transfer are main points within the National Reform Programme 2013 and at the top priorities of the on-going reform of the research, development and innovation system. Several measures contribute to knowledge transfer. The National Innovation Strategy of the Czech Republic (NIS) published in October 2011 (coproduced by MIT and MEYS) lists “Cooperation and knowledge transfer between academia and industry” as one of the four priority areas.

Additionally, beginning with 2012 the set-up of Technology Transfer Offices (TTOs) at universities or intermediary organisations is supported via the Structural Funds. Newly implemented R&D programmes, mostly funded by TACR but also by MEYS and MIT, support public-private R&D co-operation (ALFA, Centres of competence, DELTA, respectively EF-TRANS and TIP). Also, state-of-the-art IPR legislation is in place. In December 2012 the government approved an action plan to promote growth, entrepreneurship and employment, of which one of the proposed measures is to extend the existing R&D tax credits to purchase of external R&D services from research organisations.

As far as policies for e-infrastructure and services access are concerned, CESNET (see point 2) has been established in 1996 initially as a joint venture of universities and the ASCR and has been approved by the government in 2010. CESNET acts as the National Research and Education Network (NREN), it is the coordinator of the National Grid Infrastructure (NGI) and national partner of GÉANT and EGI.eu. CESNET also provides via different projects means for inter-organisational identity management and interconnectivity of networks. Among those projects, the EDUROAM infrastructure and eduroam.cz project support and spread IP mobility and roaming in order to enable users of interconnected networks easy and transparent usage of any network connected to the roaming space; The Czech Academic Identity Federation eduID.cz project provides means for inter-organisational identity management and access control to network services through the eduGAIN initiative, while respecting the privacy of the users.

EFFECTIVENESS

Science, technology and Innovation in Denmark are supported by a strong culture for innovation that reflects the country's open and dynamic society. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 1.02% in 2011. Total GBAORD per capita steadily rose until 2012. The national public effort on Research and Development, measured as the share of total GBAORD in national expenditures in Denmark was 1.77% in 2011. R&D funding is provided by the Danish National Research Foundation, the Council for Independent Research, the Council for Strategic Research, the Council for Technology and Innovation, the Danish Advanced Technology Foundation, and several sectorial R&D programmes. Another key funding source is the University Basic Research Funding, i.e. the earmarked basic university grants provided to the universities from the annual national budget.

Policy and actions have taken place, aiming to increase the efficiency of public support to R&D. The Finance Act Agreement from 2013 strengthens funding from basic research and introduces three years budget security. The reform of the university system in Denmark has led to a high level of autonomy regarding management of research budgets and hiring of research personnel. Institutional funding is distributed on the basis of development contracts with the Ministry for Science, Innovation and Higher Education, lasting for 3 years, based on performance indicators.

The share of competitive funding has been over several years at a level of 40% of the total public research funding. Following a political agreement in June 2009, a new distribution model for core funding applies including bibliometric indicators. The distribution for 2012 was: 45% based on education appropriations, 20% based on external funding of R&D activities, 25% based on bibliometric indicators and 10% based on PhD graduates.

Research funds are allocated based on the principles of international peer review. The Council for Strategic Research, for example, has established a peer review panel that is intended to strengthen the quality of the project reviews. Assessments made by the peer review panel are complemented with assessments provided by other, internationally recognized academics.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the EU Framework Programme (FP). The share of participation of Denmark in total participation is 2.01% so far, and Denmark has received 2.35% of total EC contributions. FP funding equals to EUR 144 per capita. Denmark is active in a number of ERA related cooperative initiatives, such as European Technology Platforms (ETP), ERA-NETs, and ERA-NET Plus, where it participates as a member in 9 Joint programming initiatives and is an observer in one. The country also takes part in the five Article 185 initiatives.

The Ministry of Science, Innovation and Higher Education initiated several cooperation agreements and different policy measures to ensure an improved exchange between knowledge communities in Denmark and outside Europe.

Denmark has developed specific strategies for the BRIC-countries to improve trade and investment, in fields such as climate and energy, welfare, architecture, research, education and food. According to its 2013 National Reform Programme, Denmark has established innovation centres in hotspots around the world and as part of its national Innovation Strategy, Denmark should open three new innovation centres in Bangalore, Seoul and Sao Paulo this year.

Denmark is actively cooperating with other Nordic countries in joint programmes and institutions within the Nordic Council of Ministers. Nordic cooperation involves Denmark, Finland, Iceland, Norway and Sweden as well as the three autonomous areas, the Faroe Islands, Greenland and the Åland Islands. The organisation of the Nordic collaboration in research and innovation rests on two main pillars: NordForsk (research) and Nordic Innovation (formerly The Nordic Innovation Centre, NICE). In 2008 the Nordic Prime Ministers initiated the Top-level Research Initiative (TRI), which is until now the largest joint Nordic research and innovation initiative that has a research focus within climate, environment and energy.

As regards cross border access to funding, Danish schemes are open to researchers based abroad, regardless of their nationality, provided that their research is judged to be of benefit to Danish research. The Research Council law allows the national research councils to allocate up to 20% of their funds to international initiatives. These initiatives are allowed to administer the funds on behalf of the Danish research councils on a real common pot model as long as it benefits Danish research and fulfills the other general principles. Furthermore, the council funds are generally available to international researchers.

The Danish Councils for Independent Research participate in the EUROHORCS initiative and in Science Europe. Taking into account that the Council for Strategic Research has not signed the letter of intent ‘Money follows researchers’, it allows researchers to move to other countries and take the remainder of any awarded grant with them.

Denmark is actively involved in ESFRI research infrastructures projects. In terms of financial commitment to research infrastructures, the Globalisation Fund includes funds allocated to a comprehensive modernisation of research infrastructure, including a green stimulus package and other measures. The national roadmap for Research Infrastructure 2011 presents a complete and prioritised catalogue of the national needs for research infrastructures in the short term and charts a strategic direction for national initiatives in the field.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010, the number of researchers (FTE) in relation to the labour force was 12.9 per 1,000, and the number of new doctoral graduates per thousand population aged 25-34 was 2.1. The shares of non-national doctoral candidates were 12.4% from other EU-27 Member State and 15.4% from non-EU countries.

Providing attractive employment and working conditions have been priority areas in Denmark, since the employment system for public researchers generally displays a high level

of flexibility. The national Innovation Strategy provides for a better framework for the development of a culture of talent. In 2012, 65% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

All Danish universities have joined the ‘Charter for Researchers’ and the ‘Code of Conduct for the Recruitment of Researchers’. Three Danish organisations are actively engaged in the Commission’s Human Resources Strategy for Researchers of which one, Copenhagen Business School (CBS), has been added to the list of “HRS4R Acknowledged Institutions” (in 2012).

Research job vacancies are published on the EURES Portal, the EURAXESS portal or at the job portals of the different organisations. The Ministerial order on the Appointment of Academic Staff at universities stipulates that positions at professor and associate professor levels have to be posted internationally, while this is not mandatory for assistant professor, post-doc or PhD levels positions.

Doctoral training in Denmark features both the “traditional” model of PhD education oriented towards internationally competitive education standards and a path referred to as the Industrial PhD Programme. Since 2002, the latter has been part of the Danish Council for Technology and Innovation’s umbrella of innovation promotion initiatives, and has been run by the Danish Agency for Science, Technology and Innovation. The programme has been evaluated several times and in 2011 the impact assessment considered the programme contributing to an increased absorptive capacity in the private sector that can be expected to facilitate knowledge and technology transfer from academia to industry and hence to foster innovation in firms.

Most publicly funded innovation grants or fellowships are portable to other EU countries as long as this is also to the benefit of the Danish enterprises. Grants from the Danish Council for Independent Research (DFR) and the Danish Council for Strategic Research (DCSR) are open to Danish, EU and third-country candidates, provided they fulfil the application criteria. One of the application criteria is the actual and potential significance of the research subject for the growth, development and welfare of Denmark in the short and long term.

GENDER

Gender equality is regulated exclusively at the level of general labour market.

The Danish Gender Equality Act (GEA), as revised in 2013, stipulates that boards, assemblies of representatives or similar collective management bodies within the public administration should have an equal gender balance. In order to achieve such gender balance the collective management body in question is obliged to formulate gender equality targets. The legislative goal is to achieve a gender composition of 60/40 of the underrepresented gender in such collective management bodies.

In addition to gender equality targets, institutions and companies in the public administration are obliged to formulate gender equality policies concerning the underrepresented gender on a managerial level. This is only a requirement for institutions and companies with 50 employees or more.

The revised GEA is a direct result of the 2008 “Charter for More Women in public and Private sector Management”. The new provisions apply to all Danish universities.

In March 2013, the Council of Independent Research held a conference on the role of gender in research and excellence. The objective of the conference was to stimulate the debate about the role of gender and how to achieve equality between the genders in all research contexts. In this context, the Minister of science, innovation and higher education and the Minister of gender equality discussed the introduction of special initiatives to enhance the chances of female researchers to access leading positions in research institutions.

Moreover, in 2013, the Council of Independent Research commissioned a study on the role of gender in research and excellence (Det Frie Forskningsråd, 2013), mapping gender aspects and differences in the Danish R&I system.

KNOWLEDGE CIRCULATION

The implementation of Open Access is well under way among Danish universities, public research councils and foundations. In June 2012, public research councils and foundations implemented a joint Open Access-policy and five of the eight universities in Denmark have introduced Open Access policies.

Regulatory policies exist to support knowledge transfer between public research institutions and industry, the establishment of research-based enterprises and cooperation between public research institutions, associations and foundations. Most of the universities also have their own technology transfer office (TTO), but the number of staff varies from more than ten full-time employees, to less than one full-time post. The creation of academic spin-off companies is assessed as being a good mechanism for circulating new, educated R&D personnel from the universities into industry. The statistics reveal a modest increase in this type of activities since 2004. The National Network for Technology Transfer organises the TTOs from the universities, research institutes, hospitals and regional TTOs and it supports the sharing of competences, knowledge and methods involved in technology transfer.

There are several funding instruments targeted at increasing R&D co-operation between the business sector and public research organisations. Inter-sectoral mobility of researchers is high in Denmark in comparison to other EU-27 countries. Approximately 80% of the industrial PhD programme contributes to improved mobility between universities and companies while only around 20% of traditional PhDs gets positions in the private sector. Moreover, public-private knowledge transfer is ensured by the involvement of representatives from the private sector in the governance of higher education institutions. At several universities the majority of board members are external members and some of them come from the private sector.

Access to e-infrastructures is supported by the creation in 2012 of the Danish e-Infrastructures Cooperation providing a platform for initiatives such as research data platform, which will be established in cooperation with the Denmark's Electronic Research Library. Denmark is member of EDUgain through WAYF.

EFFECTIVENESS

The research and development and innovation (RDI) system in Estonia was mainly set up in the beginning of 1990's when the whole public functional system was created. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.79% in 2011. Total GBAORD per capita steadily rose until 2012. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Estonia was of 2.06% in 2011. Policy design and evaluation is mainly carried out by the Ministry of Economic Affairs and Communications (MEAC) and the Ministry of Education and Research (MER). MER is responsible for research and education policies, the financing and evaluation of research institutes and coordination of international cooperation in research. During the 1990s the majority of former research institutes of the Estonian Academy of Science were incorporated into universities. 80% of research is now performed by universities.

MEAC governs two funding agencies Enterprise Estonia Foundation and Foundation KredEx, while MER governed 3 agencies the Archimedes Foundation, the Estonian Science Foundation and the Innove Foundation. The creation of the Estonian Research Council (substituting the Estonian Science Foundation) in March 2012 aimed to concentrate all R&D and research financing instruments under the same umbrella in order to improve synergies and avoid duplication.

To increase the effectiveness of the national research system, the Research and Innovation Policy Monitoring Programme for 2011-2015 (TIPS Programme) was launched in 2011. The aim of the programme is to analyse the impact of current policy measures, to give policy recommendations for the implementation of the current Estonian RDI Strategy for 2007-2013 "Knowledge-based Estonia 2007-2013" (2007-2013) and for designing both the new Estonian RDI strategy (2014-2020) and policy measures.

In the new RDI strategy for 2014-2020 (planned to be launched in 2013), there will be more focus on increasing the impact of R&D on economy and society (selection of key R&D areas, Smart Specialisation, enhanced collaboration between government institutions, business and academia, and increasing investments into tertiary education).

The share of competitive versus institutional funding in the R&D national budget of the MER was 69% and 31% respectively in 2001. Most of the funding from the budget of the MEAC is competitive.

Annual baseline funding was introduced in law in 2005 and is allocated on the basis of R&D performance indicators of R&D institutions. Criteria for allocating block funds for R&D institutions are set in the Organisation of Research and Development Act (introduced in 1997, last update in 2012). The evaluation of the research performance of Higher Education Institutions and Public Research Organisations follows international standards and is regulated by Conditions and Procedure for Evaluation of Research and Development Institutions (introduced in 2009, last update in 2012).

TRANSNATIONAL COOPERATION

The Estonia's European Union Policy 2011-2015 launched in 2011 states that Estonia places importance on scientific mobility within sectors and Member States, open and harmonised recruitment conditions, integrated and simple financing rules and procedures and open access to the R&D results and scientific infrastructures of Member States by the research community of the EU.

In particular the Implementation Plan for achieving the objectives of the Estonian Research and Development and Innovation Strategy 2007-2013 "Knowledge-based Estonia" in 2012-2013 states that participation of Estonian researchers, R&D institutions and enterprises in international cooperation networks, in the EU Framework Programmes, in EUREKA, in the Eurostars programme and Article 185 initiatives, will be supported. The participation of Estonia in the EU FP is 0.39%. Estonia received 0.21% of total EC contributions. FP funding represents 51 Euros per head of population. The country is involved in 3 JPIs and 3 Article 185.

Furthermore the Implementation Plan states that as a good practice, international peer-review of large-scale state financed research and development projects will be introduced in all research fields in Estonia, while evaluations will be carried out with worldwide comparison in the corresponding fields. Field-specific quality criteria will also be taken into account in evaluations.

Joint financing is welcome and project partners are selected by excellence, not by country of origin. Universities and other R&D institutions are independent and can choose their partners from any country in the world.

Estonia launched the programme for internationalisation of science in 2011 with the aim to support joint activities such as sharing information, joint research agenda, joint calls, joint programming and also developing ex-post evaluation procedures. Most of joint financing actions are regulated by the 2007-2013 Structural Assistance Act and by the Organisation of Research and Development Act.

The Estonian Research Infrastructures Roadmap 2010 is a long-term (10-20 years) planning instrument, which lists research infrastructure of national importance which are either new or need to be upgraded. The Estonian Roadmap 2010 was updated in 2012 and will further update in 2013. It itemises national interest in specific ESFRI projects, but does not deal with rules on access to facilities.

The allocation of funds for developing infrastructure is described in the Implementation Plan for achieving the objectives of Estonian Research and Development and Innovation Strategy 2007-2013 "Knowledge-based Estonia" in 2012-2013.

OPEN LABOUR MARKET FOR RESEARCHERS

The number of researchers (FTE) in relation to the labour force was 5.9 per 1,000 in 2010. The number of new doctoral graduates per thousand population aged 25-34 was 0.9 and the

percentage of doctoral candidates with citizenship of another EU-27 Member State was 5.2% in 2010. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 1.5%.

The main obstacles identified to inward mobility are the low level of remuneration, difficulties to obtain Estonian visa/residence permit from countries where Estonia does not have a representation, and limited social guarantees. The Estonia 2020 Competitiveness Strategy 2011 include provisions aiming among others at attracting highly qualified researchers to come and work in Estonia. In 2012, 63% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The Estonian Research Council founded in 2012 provides institutional and personal research funding. Grant competitions are open to all permanent residents of the Republic of Estonia and citizens of a foreign country. Grants should be applied through an Estonian institution.

Through the researcher mobility programme *Mobilitas* (2008-2015) implemented by the Estonian Science Foundation, postdoctoral researchers (incoming or outgoing for Estonian) and top researchers (incoming) have a possibility to apply for a grant to carry out research in Estonia or abroad. The *ERMOS* Programme (2007-2013) implemented also by the Estonian Science Foundation aims to develop and diversify research potential through the mobility of researchers and the development of young researchers' careers.

The predecessor of the Estonian Research Council (Estonian Science Foundation) adhered to the *EUROHORCs Money Follows Researcher* Letter of Intent and agreed to finance research carried out in foreign institutes provided it would be initiated in an Estonian R&D institution. Grant holders can apply to transfer their research grants only if the institution of the host country has also signed up to the Letter of Intent.

As regards Human Resources policies, universities and other R&D institutions are relatively independent. In September 2011, the Rectors' Conference, representing all public universities in Estonia and one private university signed a "Quality Agreement" of which Point 10 refers to the implementation of the 'Charter & Code'. 6 Estonian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers.

The system for open, transparent and merit based recruitment of researchers has been in place since the beginning of 2000. Basic rules are set in the Organisation of Research and Development Act and detailed conditions and procedures are established by the Ministry or the body governing the institution.

Public Universities have signed the "Agreement on Good Practice" which supports the internationalisation of Estonia's Higher Education Institutions. The Agreement encourages the employment of foreign research staff and the enrolment of international students. All Universities hosting *EURAXESS* services have signed the Agreement.

Universities and R&D institutions are fully autonomous in their recruitment policies. Some universities are obliged to publish their vacancies in English, but not by Law.

The related regulations “The conditions of and procedure for the election of academy research professors” (introduced in 2002) and “The conditions of and procedure for organising a competition for research staff in a research and development institution under the area of government of the Ministry of Research and Education” (introduced in 2001, latest amendments in 2012) provides for some rules. The posts for professorship are published in (European) on-line platforms and open internationally. The use of EURAXESS is recommended. Selection panels are not systematically established and the composition of the panels are not published. These Regulations do not specify the need to include external members (national nor international) to the selection panel. The selection criteria are not always published together with the job advert, but are published in the employment regulation rules of the universities. The applicants can received feedback, but they are not offered the right to appeal.

EURAXESS Estonia has Service Centres in 7 large Estonian R&D institutions. In 2011, the number of researcher posts advertised through the EURAXESS Jobs was 15 portal per thousand researchers in the public sector.

As regards doctoral education the government focuses on the enhancement and quality of doctoral studies through doctoral schools, which were set up in 2005. In 2009, thirteen doctoral schools were selected for the period 2009-2015. Their aim is to improve the quality of tutoring and to increase interdisciplinarity, international and national cooperation. They also include training in transferable and social skills to enhance cooperation between universities and the private sector (based on the Standard of Higher Education 2008, last amendments in 2012). This is in conformity with the 2013 EU country-specific-recommendation “to enhance cooperation between businesses, higher education and research institutions”.

Furthermore the “Quality Agreement of Estonian Universities” specifies quality standards for doctoral studies, encourages interdisciplinary studies and research and transferable skills’ training. Last, the programme DoRa assists innovative companies to create doctoral student positions.

GENDER

The Gender Equality Act (adopted in 2004, last amendments in July 2012) promotes policies addressing gender balance and encourages the State, local governments, agencies, educational and research institutions, and private companies to support gender equality. Gender equality is explicitly referred to in the Constitution of the Republic of Estonia (Chapter II Fundamental Rights, Freedoms and Duties, § 12).

The Estonian Government has not introduced specific policies to promote equal opportunities for men and women in research area. Excellence is the main criterion for researchers to receive funding and to participate in decision-making bodies. Though the overall situation in

Estonia is better than in EU-27 in average, the proportion of women in scientific and management boards was lower in Estonia (26%) than in EU-27 (36%).

There are two main non-governmental organisations, focusing on gender issues. The Estonian Women's Studies and Resource Centre (ENUT established in 1997) is a non-profit non-governmental organisation with the aim to advance gender equality in all spheres of life and is located at the Tallinn University. The Estonian Women's Associations Roundtable (established in 2007) initiates projects, supports actions aimed at securing women's rights, protecting minority women's rights and advancing equality between women and men.

KNOWLEDGE CIRCULATION

The free access for the results of publicly funded research is stated by amendments of the Organisation of Research and Development Act (in 2012) and measures have been taken to develop R&D e-infrastructures.

The Estonian Information Society Strategy 2013 launched in 2006, planned to be updated in 2013, is a sector development plan, setting out the general framework, objectives and respective action fields for the broad employment of ICT in the development of knowledge-based economy and society in Estonia in 2007-2013.

The Implementation Plan for achieving the objectives of Estonian Research and Development and Innovation Strategy 2007-2013 "Knowledge-based Estonia" ensures that research libraries will be provided with all major databases of all research fields (including the support for joint and individual purchases of journals and databases for research and archive libraries). The Programme of Electronic Scientific Information launched in 2009 aims to supply Estonian R&D institutions with scientific information and to acquire access to scientific information and electronic publications for Estonian research libraries and organisations (Programme period 2010-2014). The Consortium of Estonian Libraries Network (established in 1996 with its statute renewed in 2011) and the research libraries have created conditions and access to scientific journals and electronic databases for national researchers.

The Estonian Research Information System established in 2006 is developed in a way that would allow it to be used as an open repository, so that the results of research that receive public funding are easily identifiable by appropriate technical means, including through meta-data attached to electronic versions of the research output.

As regards public-private cooperation the RDI Strategy 2007-2013 "Knowledge-Based Estonia" and Estonian Strategy for Competitiveness "Estonia 2020" give the framework for enhancing co-operation between private and public sector. The Entrepreneurial Growth Strategy 2020 targeting some related issues is planned to be launched in 2013.

R&D institutions can use services of private companies whenever they need their expertise. Research contracts are set up between HEIs and the industry, usually short-term (less than six months). Procurement of services is regulated by the Public Procurement Act introduced in 2007.

A number of measures to facilitate the partnerships between research institutions and the private sector are implemented since 2008-2009. The following measures are funded by MEAC and implemented by Enterprise Estonia Foundation: Business Incubation Programme, Competence Centre programme, Cluster Development, R&D grants, development grants to Manufacturing Companies, Knowledge and technology transfer baseline funding (SPINNO Programme), Innovation Voucher grant, Investments into test- and semi-industrial laboratories, Involvement of innovation staff, Prototyping Centre grants, Programme "Start-up Estonia" for new innovative enterprises. A science park was set up at the Tallinn University of Technology.

The Estonian higher education information and communications technology and research and development activities state program 2011-2015 launched in 2011 is a cooperation program between the universities, ICT sector and the state with the aim to raise the quality of ICT and develop cooperation between different partners. The STACC is a joint initiative between universities and several leading IT companies, which conducts industrial research in software technology by working on data mining and software engineering project.

The mission of the Estonian Information Technology Foundation for Education is to provide a high-quality national network infrastructure for Estonia's research, educational and cultural communities. Its services include a permanent Internet connection as well as webhosting, e-mail and consultations in the event of security problems.

Access to digital research services in other organisations (within the same country and in another country) is possible via "E-teadusinfo" launched in 2009 and access to publications is possible in all public libraries by using user name and password provided by a library. EENet is the Estonian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country. The Estonian Academic Authentication and Authorization Infrastructure (TAAT) enables electronic identities (user accounts) issued by education or research institutions to be used to access several web based services. TAAT functions via EENet and is in the process of joining eduGAIN.

EFFECTIVENESS

The Finnish research and innovation system is made up of four levels. The national government is supported by a high-level advisory body, the Research and Innovation Council. Ministries make up the second level with the Ministry of Education and Culture (MEC) and the Ministry of Employment and the Economy (MEE) who play the key role in R&D policy. MEC is responsible for higher education and science policy related matters. These two ministries account for over 80% of government research and innovation funding (with MEC totalling approximately 45% of funding and MEE around 36% in 2011). It should be noted that the share of MEC funding has increased in the last years mainly due to additional funding to universities and the Academy of Finland. The Academy of Finland and Tekes are the two key public funders, with the former funding basic research through competitive grants and the latter funding R&D projects carried out by businesses. Tekes is also a significant financier of research at universities and public research institutes. At the level of performers, the Finnish public research system includes universities and public research organisations.

The ‘Research and Innovation Policy Guidelines for 2011–2015’ (Research and Innovation Council) and the ‘Growth through expertise, Action plan for research and innovation policy’ (Ministry of Education and Culture and Ministry of Employment and the Economy, 2012) are two key policy documents which set out at national level the policy guidelines on the required measures and funding and detail out the actions required for the implementation of the government’s research and innovation policy.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 1.09% in 2011. Total GBAORD per capita rose until 2011, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Finland was of 2% in 2011. The share of GBAORD allocated as project based was 51.% in 2010.

The issue of project-based versus institutional funding and the effectiveness of research funding were at the core of the recent international evaluations of the Academy of Finland and TEKES. These two evaluations took place in a context where reforms of the funding system for university and public research institutes are being implemented.

Project-based funding by the Academy of Finland is allocated on a competitive basis and in line with the principles of peer review. Funding for R&D is also provided through calls for proposals by TEKES.

With regard to institutional funding, the on-going reform of the funding formula for universities and polytechnics aims at increasing the performance of Higher Education Institutions (HEIs) and addressing the fragmentation problem. The reform will introduce more competition in the way institutional funding is allocated, since the research performance of the university is a component in the funding formula. Another on-going structural reform targets public research institutions. It is deemed that public research institutions’ funding

could be more competitive. A decision on the reform of research institutions is expected before the summer break.

Peer review practices have been fully integrated into research evaluations over a decade ago and are routinely used by the Academy of Finland for its project-based funding. Moreover, the 'independence' and 'international' components of peer review evaluation have been strengthened under the Research and Innovation Policy Guidelines. The peer review mechanism is not used for TEKES project-based funding.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Finland in total participation is 1.9% so far, and Finland has received 2.2% of total EC contributions. FP funding represents 128 Euros per head of population. The country also participates in Joint Programming. Finland participates as a member in 9 initiatives. The country also participates in 5 Article 185 initiative(s) and leads 1 of them. Finland is also a key player in the Nordic cooperation (NordForsk).

There is no overarching legislation governing Finland's participation in joint initiatives. However, the Research and Innovation Policy Guidelines for 2011-2015 support the opening up of programmes for voluntary joint pilot projects of Member States. Given that Finland is a relatively small country, participating in cross-border joint initiatives has typically ranked high on the R&I agenda. In order to boost research related to grand challenges, the Finnish government has recently proposed the setting up of a 'Strategic Research Council' that would act as a 'third funder' (proposed budget €200 million).

Regarding the mutual recognition of evaluations based on international peer review, these are routinely performed as part of joint calls. According to the Research and Innovation Policy Guidelines for 2011-2015, the 'independence' of evaluations and their 'international' component are strengthened.

With regard to the cross-border interoperability of national programmes, the Research and Innovation Policy Guidelines for 2011-2015 support the implementation of effective principles, procedures and criteria and the harmonisation of legislation.

Finland has recently adopted a number of measures to strengthen its research infrastructure policy. The Finnish Research Infrastructure Committee (FIRI) Committee, set up by the Academy of Finland, is due to update the 2009 national roadmap for infrastructures in 2013. The current 2009 roadmap includes 20 projects, 13 of which are linked to the ESFRI roadmap. The updated roadmap will be published in early 2014. 'With the Growth through expertise' Action Plan, the Finnish government has allocated an additional funding of €18.5 million per year for research infrastructures, whilst structural funds will be directed to research infrastructures which are either national or located in Finland. Given that Finland is a relatively small country, the scope for developing regional or local research infrastructures remains limited. This accounts for Finland's active participation in several European or international research infrastructure initiatives (e.g. EMBL, CERN, ESA, ESO).

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 15.5 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 2.6. The shares of non-national doctoral candidates were 5.8% from another EU-27 Member State and 5.9% from non-EU countries.

The Strategy for the Internationalisation of Higher Education Institutions in Finland (2009-2015) implements the principles of open, transparent and merit-based recruitment as laid down in the Charter and Code. Moreover, soft law measures (e.g. Research and Innovation Policy Guidelines for 2011-2015 and the FiDIPro Programme) further contribute to the opening up of the recruitment system with a view to attracting foreign researchers. In 2012, 56% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Regarding the Charter and Code, it should be noted that the Rectors' Council of the Finnish universities and the academy of Finland have signed up to it. Moreover, the steering of HEIs process and the 2012 agreement between national authorities and HEIs support the latter to prioritise and focus on improving research careers. Twelve Finnish organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which three have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

Grants are by and large open to non-domestic/foreign researchers and portable to other EU countries (e.g. Academy of Finland grants and fellowships), and the Academy of Finland has signed up to the Money Follows Researcher agreement.

The Euraxess Finland portal provides administrative assistance and information on entry conditions, social security and pension contributions and accommodation.

The reform of the doctoral training system and the National Guidelines for the Development of Doctoral Training support the implementation of the principles of innovative doctoral training.

Finally, the Strategy for the Internationalisation of Higher Education Institutions in Finland (2009-2015) facilitates the entry of foreign researchers and their access to research positions in Finland.

More detailed information can be found in the country profile for Finland in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

In addition to the Equality Act which supports gender equality in HEIs and PROs, Finland has also adopted measures to support gender equality when decisions on research positions and research funding are made (Government Action Plan for Gender Equality (2012-2015) and Academy of Finland 'Criteria for research funding decisions'). As part of the steering of HEIs

process and the 2012 agreement between national authorities and HEIs, the latter are required to report on the implementation of their gender equality strategies.

KNOWLEDGE CIRCULATION

The Strategic Centres for Science, Technology and Innovation (SHOKs) have constituted one of the key instruments supporting cooperation between academia, research institutes and the private sector. The recent international evaluation of the Strategic Centres for Science, Technology and Innovation indicates that progress could have been faster.

Although open access-related measures have been adopted as early as 2005, there is no overall legislative provision supporting open access to publications and data. Open access is not a mandatory funding criterion within the Academy of Finland funding programmes. A national policy for the long term storage and reservation of data is not available yet, however recent measures such as the Open Data Programme and the Working group on open access to publications and research data as part of the National Research Data Project (TTA) specifically aim at addressing this issue.

Finland is member of EDUgain through HAKA. FUNET is the Finnish National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

Finland has recently adopted two overarching policy measures supporting the development of digital research services (i.e. 'Putting data into use', 'Roadmap for the utilisation of electronic data in research') and infrastructures for storing and managing research data (i.e. 'Growth through expertise: Action plan for research and innovation policy'). No overarching policy on electronic identity for researchers has been identified, although electronic identity is implemented.

EFFECTIVENESS

Two main government ministries share the overall responsibility for research and innovation policy in France. The Ministry of Higher Education and Research (MESR) designs and coordinates research policy. The Ministry for Industrial Renewal is responsible for industrial and energy research and plays a specific role in relation to private sector research. All funding devoted to research and innovation is channelled through the general budget of the Research and Higher Education Inter-ministerial Mission (MIRE). The GBOARD as share of GDP was 0.84% in 2011.

Few agencies are responsible for implementing research and innovation policy in France:

- The National Agency for Research (ANR) was created in 2005. It covers basic research, applied research, innovation and technology transfer, supported through public/public and public/private partnerships. ANR funds research projects on a competitive basis and applies international peer review process.
- OSEO provides support for R&D and innovation projects to businesses, in particular SMEs, as well as public-private partnership. OSEO and a number of other entities (CDC Entreprises, FSI and FSI Régions) were grouped in 2012 into the Banque publique d'investissement, in order to improve support for SMEs, medium-sized and innovative companies.
- The Agency for Environment and Energy Management (ADEME) was created in 1991 to support and fund partnership-based environment and energy research activities.

Public research organisations are also involved in policy implementation.

Public research activities are primarily carried out by universities, which are now the largest public research performers. The implementation of the law on the autonomy of universities (LRU) in 2008 significantly modified the university governance.

The share of project-based funding has been rising continuously with the creation of the ANR until 2013. In addition an increasing part of the institutional R&D funding is based on the performance of the public research institutions. The latter are evaluated by the Evaluation Agency for Research and Higher Education (AERES).

AERES was established in 2007 as an independent administrative authority to evaluate, among others, Research and Higher Education Institutions, Research Organisations and research units. AERES has been replaced by a new independent administrative authority "Haut Conseil de l'évaluation de la Recherche et de l'Enseignement supérieur" in 2013. It will guarantee an homogeneous evaluation according to international standards for research organisations and look after the quality of evaluations.

The general trend in research innovation governance over the last years has been to bring research and innovation stakeholders closer in order to coordinate better their activities, namely through the creation of Research and Higher Education Clusters (PRES), the research programming coordination institutions in 5 fields called "Alliances" and the Competitiveness

clusters ("pôles de compétitivité"). The system has also been significantly strengthened through a new dedicated investment plan ("Programme d'investissements d'avenir"), which was launched at the end of 2009.

The new Law on Higher Education Research adopted in July 2013 has 4 main objectives: better ensure the employability of students; simplify the organisation of research and its assessment; facilitate the decompartmentalization between schools, universities and research organizations and reconcile efficiency and collegiality in academic forums.

In particular, it will regroup existing Higher Education and Research institutions into new structures with simplified rules (replacing PRES) and under contract with the Government (including policy coordination, training, research strategy and transfer), include knowledge transfer as an additional mission of Higher Education institutions, develop a new national research strategy consistent with the European research strategy, and ensure coordination between national and European research programmes (through the ANR).

The strategy on research is enshrined in Law for the first time. The first National Research and Innovation Strategy was launched in January 2009. It guides policy decisions in the field of research and innovation and run for five years. The new national strategy is under preparation.

The government acknowledges that the efficiency of the national strategy requires a stronger articulation between funds allocated at European, national and regional level. On the basis of orientations which will be proposed by the Strategic Research Council chaired by the Prime Minister, the new national strategy for research will be developed in line with the European Union research strategy. The programming of the ANR will be designed in a coordinated manner with European programmes. Besides, the regions will define a regional scheme for higher education, research and innovation identifying principles and priorities in their intervention.

The streamlining attribution of appropriations on calls for projects (EU Framework Programme, ANR, 'Investissements d'avenir') will rebalance these appropriations at national level to the benefit of institutional funding.

TRANSNATIONAL COOPERATION

While some major cooperative programmes are overseen by the National Agency for Research (ANR), cross-border cooperation is still largely monitored at the institutional level.

Non-nationals and non-residents may participate in applied research projects supported by ANR, the exact rules being set out in the individual competitions and calls for proposals. Any international partner must pay its own costs.

15% of projects funded by ANR are performed within European collaboration. They are either joint projects through ERA-nets or Art. 185 or national programmes, thematic or not, open to transnational cooperation. France is member of the 10 JPIs and coordinates two of them. France intends to create mirror groups of each JPI at national level. The "Programme

Blanc International” has become the Agency’s main funding instrument for transnational projects. The share of participation of France in the FP is 9.14%. France has received 10.85% of total EC contributions. FP funding represents 60 Euros per head of population.

France is involved in many bilateral programmes. Bi- or multi-national partnerships were set up between ANR and BMF/DFG (Germany), ESRC (UK), NWO (Netherlands), FWF (Austria), MICINN (Spain) and ANC (Romania). In 2011 the ANR acted as Lead agency for the first time with FWF.

Policy coordination with Germany is addressed through the French-German Agenda 2020. A Roadmap for research has been adopted by the French German Minister Council in 2012.

The new strategic agenda foreseen under the new law on Higher Education and Research will define strategies at national level to respond to the challenges identified in Horizon 2020. The strategy aims to improve efficiency and visibility of the national system in the context of European partnership, competition and worldwide changes. The strategy will mainly be implemented by the multiannual contracts between the State and Higher Education Institutes and Public Research Institutes and the programming of the ANR. The evaluation of the strategy will be made by the Parliamentary Office of evaluation of scientific and technological choices (OPECST).

The first national Roadmap on research infrastructures “Investments for the Future” programme was published in December 2008. The Roadmap includes 92 Research Infrastructures into three categories "Existing" (46 running infrastructures at the date of the publication of the roadmap); "Decided" (19 infrastructures not yet operational, but with expected financing) and "At the planning stage" (27 infrastructures of which the design is at an advanced stage, but financing is not assured yet). Existing research infrastructures account for 600 M€ for the 2007 budget.

In addition to the adoption of a new strategic roadmap for research infrastructures, a new governance and a new steering of very large research infrastructures (TGIR) were put in place at the end of the year 2012. The TGIR Steering Committee shall decide on the national strategy of research infrastructures, its multiannual programming (2012-2021) as well as on decisions for the structuring of TGIR and participation in international organisations. It may seek scientific advice of the High Council for TGIR.

OPEN LABOUR MARKET FOR RESEARCHERS

The number of researchers (FTE) in relation to the labour force was 8.4 per 1,000 in 2010. The number of new doctoral graduates per thousand population aged 25-34 was 1.6 and the percentage of doctoral candidates with citizenship of another EU-27 Member State was 8.0% in 2010. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 35.4%.

Institutions establish selection panels for statutory and long-term contracts. Public Research organisations are obliged to safeguard gender balance in the selection panels and to have one

external expert, or to justify non-compliance. Institutions publish the composition of the selection panels but not the selection criteria. Institutions do not offer applicants the right to receive adequate feedback, while appeal against a decision is possible.

In 2006, France passed a Programme Law for Research 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.

There are two key aspects to the reform of the training agenda for researchers with regard to the doctoral training cooperation with industry and other relevant employment sectors: refocusing the doctoral programmes on preparing doctoral students for entering the market and linking doctoral training and R&D better with the socio-economic sectors.

The French Ministry of Higher Education and Research launched the first national Careers Plan in 2009 in order to strengthen the management of human resources in higher education in general and to promote careers in higher education and research in particular. Prior to the university reforms of 2009, the national higher education system had been very centralised with most appointments and promotions managed by the Ministry. The University Freedoms and Responsibilities Act of 2007 provides that by 1st January 2013 all universities will have budgetary autonomy and will be responsible for their own resources management.

The Plan applies to all higher education and research staff employed by the Ministry of Higher Education and Research. It is a wide-ranging reform agenda that is intended to modernise key aspects of the traditional university and research career advancement system (appraisal systems, mentoring, training courses, small bonuses to reward scientific excellence and encourage mobility). The Plan requires universities to support and reward individual members of staff based on their personal performance. The system remains centralised, however based on collegial, independent and transparent evaluation process.

A national-level staff appraisal system was established as a safeguard to institutional autonomy. The National Universities Council was in charge of the evaluation process which occurred every four year for every teacher and researcher.

A national platform GALAXIE has been developed to make recruitment more transparent. The universities have a statutory requirement to post all universities public jobs vacancies for researchers with a teaching position on this platform. All 'Galaxie' job vacancies are published in EURAXESS since March 2010. Some public research organisations also post their job vacancies on EURAXESS. France rates in the EU-27 average as regards the number of researchers' posts published through EURAXESS (25 per 1,000 in 2011). In 2012, 57% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Since 2008, 26 public research organisations have committed to implement the principles of the 'Charter& Code', which have been promoted since then through the EURAXESS

Network. The implementation of the Human Resources Strategy for Researchers is being promoted through a dedicated HR network “GTN RH”. 12 French organisations are actively engaged in the Human Resources Strategy for Researchers of which 1 has received the "HR Excellence in Research" logo for its progress in implementing the Charter & Code.

The Career Plan contributes to attract French researchers working abroad. The dedicated programme “Retour post-doctorants” run by ANR supports the continuation of their research projects in France and future employment in a research performing organisation or in the private sector (112 projects between 2009 and 2012).

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 (National Centre for Scientific Research) and INSERM (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. Fellowships are open to non-residents, as are those of all French research organisations.

France supports the EU’s Scientific Visa package. The extended-stay scientific visa is reserved for individuals holding a master's degree or higher and who wish to come to France to conduct research or teach at the university level. Public and private research organisations and institutions of higher education use this visa category to host doctoral candidates, postdoctoral scholars, research scientists, and professors visiting France to teach or conduct research (4600 visas for non Europeans delivered in 2011).

The programme “Chaires d’excellence” welcomes high-level researchers from abroad (38 projects in the last 3 years).

The new Law on Higher Education and Research promotes student mobility and researchers’ mobility by supporting stays.

GENDER

The number of women at management positions in universities decreased between 2008 and 2012 from 16% to 8%. However, parity is now embedded in Law. According to the Law of 12 March 2012, there should be as of 1st January 2015 at least 40% persons of the same sex in the recruiting and promoting juries in the public sector. Likewise at least 40% of persons of the same sex should be designed as qualified for elections in the Councils of research organisations as of the second mandate renewal of those organisations.

Furthermore the new Law on Higher Education and Research requires parity in all governing bodies of Universities and other Higher Education Organisations as well as in the National Council for Higher Education and Research, in the Board of the new High Council for Evaluation and the new Strategic Research Council.

The measures are part of a more global Action Plan lead by the Ministry of Higher Education and Research in close link with the Ministry for Women Rights. The Plan is declined in 40 measures aiming at implementing parity between men and women in Universities.

The Ministry supports the Conference of Rectors for the implementation of the Charter for gender equality in Higher Education and Research Organisations signed in 2009. The Charter contributes to enhance equality and requires among others a contact point to be nominated in each organisation.

KNOWLEDGE CIRCULATION

An Action Plan on open access has been announced at the beginning of 2013. It will contribute to the development of open access to publications and open archives. It supports the development of green open access, gold open access, Platinum Road, a national contract model for publication, as well as the optimisation HAL Platform (Online Hyper Articles Platform) with institutional archives. ANR funded projects have to be integrated in the HAL open archive Platform.

A Partnership via a Memorandum of Understanding has been created between Research Institutions, Universities and 'Grandes Ecoles' for the joint development and management of a shared Platform to store scientific outputs (use of HAL).

The project "Bibliothèque scientifique numérique" was set in place in 2011 for staff in research and higher education to access to scientific resources. A Steering Group representing all actors in the field of scientific and technical information has been established to ensure coordination and issue recommendations.

As regards knowledge transfer the French national Law on Innovation and Research of 1999 permits all public research institutions to seek to commercialise the results of publicly funded research and to pursue innovations. The law also foresees the possibility that individual civil servants (employees of these public research organisations) may take on a personal role in this commercialisation process, as a founder, partner or officer of a new or existing company that has been contracted by the public institution to pursue a given innovation. The law encourages researchers to play a personal and active role in the commercialisation of the institution's intellectual property. The new Law on Higher Education and Research underlines European Community preference for the industrial exploitation of intellectual property rights.

Furthermore several initiatives have been launched in the recent years, or are planned to be launched, to enhance transfer of technology.

Through the programme "Investissements d'avenir", 11 technology transfer acceleration entities (SATT) have been financed or have been subject of a financing decision. The system is supplemented by the creation of six thematic valorisation consortia (CVT), which will be equipped EUR 10 million each for the next decade and will be responsible for the exploitation of thematic research alliances and commercialisation of research.

As a complement to SATT and CVT, the programme ‘Investissements d’Avenir’ reinforces the innovation ecosystems and public-private linkages by the creation of 8 “Instituts de recherche technologique » (IRT) and 9 « Instituts d’excellence sur les énergies décarbonées ».

The Instituts Carnot launched in 2006 aimed to increase research partnership between Research Performing Organisations and firms (network of 34 Institutes) and thus contribute to developing knowledge transfer.

Under the new National Pact for Growth, Competitiveness and Employment, the government decided to pursue the Competitiveness clusters policy and to launch their third phase. The new phase will refocus the activities of the clusters towards markets and dissemination of innovative products and services. This goes into the direction of the June 2013 Council Recommendation No 3 “enhancing technology transfer and the commercial exploitation of research, including through a reorientation of the competitiveness poles.”

Most importantly, the new law on Higher Education and Research adds the transfer, in the same way as dissemination and valorisation, in the mission of Higher Education and Research Institutions. This reinforces the Transfer Plan launched at the end of 2012, comprising 15 specific measures to enhance transfer. Some measures are already planned to be implemented by end of 2013.

With regards to PhD education doctoral schools are established under an agreement between the State and Universities. They provide training and development, and preparation to enter the labour market. The Research program Law of 2006 on doctoral training includes actions to better link doctoral training with socio-economic sectors.

The scheme supporting PhD contracts in industry will be continued (CIFRE). It has likely contributed to doubling the number of PhDs in industry in the last 10 years. Seminars (‘doctoriales’) are taking place to initiate the PhDs to the private sector. It is accompanied by specific trainings to enhance employability.

RENATER, the French Research and Education Network, was launched in 1993 in order to federate telecommunication infrastructures for Research and Education. It functions as the National Research and Education Network (NREN) and provides dedicated specialised internet service for the needs of the research and education communities within the country. It is the French partner of GEANT and eduGAIN.

EFFECTIVENESS

Germany is a leader in science, research and innovation. Approximately 574,700 people (full-time equivalent) were employed in research and development (R&D) in 2011. This is roughly one fifth (22%) of R&D personnel in the EU27. Germany increased its government expenditure on R&D despite the economic and financial crisis. In absolute figures, Germany spent more than any other European country on R&D in 2011 (€75.5 billion) and accounted for 29% of EU27 expenditure. Total GBAORD as a % of total general government expenditure, as a measure of the effort by national authorities to research in their country, has initially increased from 1.64% in 2004 to 1.9% in 2009, further increased to 1.93 % in 2010, and 2% in 2011.

Germany has made good progress towards achieving the 3% target with R&D expenditure. The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product (GDP) was 2.80% in 2011 and 2.91% of Gross National Product(GNP) in 2011. Federal and regional governments set themselves the target to spend altogether ten percent of GDP on education and research (7% and 3%, respectively "Qualification Initiative"). With the Higher Education Pact 2020, the Federal Government and the Länder are investing additional funds in the expansion of study opportunities, thereby providing appropriate solutions to the increasing demand for higher education.

A large variety of stakeholders are performing specific tasks in a highly differentiated German research landscape.

Firstly, the research performing organisations and institutions include primarily higher education institutions and non-university research institutions, both of which are of similar importance to the German research system in terms of their research resources. The institutions of higher education, that is, government-funded and private universities, universities of applied sciences and other academic institutions, combine both academic teaching and research. All other public or publicly funded research institutions are "non-university research institutions", which carry out research in specific fields but are not directly involved in academic teaching. The non-university research sector includes the large research organisations, namely Max Planck Society (MPG), Fraunhofer (FhG), Helmholtz Association (HGF) and Leibniz Association (WGL), the academies of science, the departmental research institutions of the Federal Government and the Länder, the publicly funded scientific libraries, archives, specialised information centres and museums with R&D tasks as well as other research institutions which receive their basic funding largely from the public sector (Federal Government, Länder, local authorities).

The German Bundestag has adopted the Academic Freedom Act ("Law to increase the flexibility of budgetary provisions governing non-university academic institutions") on 12 December 2012. As a result, non-university research institutions will have more freedom in matters of finance and staffing decisions, the acquisition of shares in companies and in construction projects. Bureaucracy will be minimized, competences will be pooled and authorization procedures will be accelerated.

Secondly, research-funding organisations: As in many other countries, central responsibility for research, technology and innovation policy lies with two ministries in Germany. The Federal Ministry of Education and Research (BMBF) is mainly responsible for public research, while the Federal Ministry of Economics and Technology (BMWi) focuses on funding innovation and research in the business sector. In addition, other Federal Ministries provide funding for research in their respective spheres of competence, particularly the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), the Federal Ministry of Health (BMG), the Federal Ministry of Transport, Building and Urban Development (BMVBS) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

The 16 Länder also provide funding for research and innovation under their own programmes. Regional research and innovation policy is to some extent based on the Federal Government's research funding priorities but also follows regional funding agendas. The Länder are responsible for higher education legislation and for financing institutions of higher education. The Federal Government steers activities mainly by providing additional funding under individual programmes and initiatives (see Initiative for Excellence, Higher Education Pact). The Federal Government and the Länder jointly support the Deutsche Forschungsgemeinschaft (DFG). The central task of this self-governing organisation of science and research in Germany is to award research funding to universities in a competitive procedure. Joint federal and Länder support is also provided for the above-mentioned non-university research institutions of the large research organisations.

The German Academic Exchange Service (DAAD), which is mainly financed by the Federal Government, supports international exchanges of students, graduates and researchers. It is the world's largest funding organisation for cross-border academic exchange. Other public and private foundations also provide funding for research, for example the Volkswagen Foundation, the Humboldt Foundation (AvH), the German Environment Foundation DBU, the German Foundation for Peace Research (DSF), and the twelve organisations for the promotion of young talent in higher education.

Thirdly, companies: German industry is an important stakeholder in the German research and innovation system. The business enterprise sector accounted for 67.7% of R&D expenditure in 2011. The level of business involvement has remained stable since 2005, amounting to roughly two thirds of both the funding and performance of R&D. There are particularly close relations between R&D-performing organisations and companies in Germany. Many companies, particularly SMEs, are global technology and systems leaders in their specific fields. Almost one in two companies is engaged in innovation according to the 2011 innovation survey of the Centre for European Economic Research (ZEW).

The Federal Government and the Länder provide joint basic funding to the following research organisations and institutions on a long-term basis and in a competitive procedure: Helmholtz Association (HGF), Max Planck Society (MPG), Fraunhofer-Gesellschaft (FhG), Leibniz Association (WGL), National Academy of Science and Engineering (acatech), Institute for

Advanced Study Berlin (WK), German National Academy of Sciences (Leopoldina), Deutsche Forschungsgemeinschaft (DFG). The larger of these institutions (HGF, FhG, MPG, WGL) make specific funds available for internal competition.

Increasing the effectiveness of the national research system has been at the core of the German policy agenda. Beside of just increasing the resources made available for R&D and innovation, in Germany, competitive funding plays an increasing role in Germany. The share of GBAORD allocated as project based was 33,62% in 2008. A comprehensive multi-layer system has been established in Germany to evaluate individual proposals as well as institutions relevant for research and innovation funding, bringing in increasingly the spirit of competitive funding while relying on appropriate forms of peer reviewing, benchmarking and impact assessment analyses (ex-ante/ex-post). Assessments are performed at individual research performance level, at programme level, as well as at research institutions' level.

The funding procedures of the Deutsche Forschungsgemeinschaft (DFG) are a major element of competition between organisations in the German research system both in quantitative and in qualitative terms. Successful university participation in the funding procedures of the DFG is generally seen as an important indicator of the individual university's position in the overall competition; the coordinated funding programmes (collaborative research centres, research centres, research training groups, priority programmes and research units), which involve participation by universities and the research organisations' cooperating with them in projects, are of special importance in this context. Peer review is the predominant evaluation instrument of the Deutsche Forschungs Gemeinschaft (DFG).

Under the High School Pact, the federal government and the Länder created a needs based range of study programmes thereby ensuring the quantitative expansion of the academic training. The federal government and the Länder have also decided to participate in the overhead financing as part of the research funding programme by the German Research Foundation (DFG). Universities that are very active in the research field can further strengthen their strategic manoeuvring capability thanks to the introduction of the DFG programme lump sum, which totals 20 % of the direct project funds. Until 2015, the federal government will continue to bear these costs alone, which total around 1.7 billion euros.

With their Initiative for Excellence in higher education, the Federal Government and the Länder want to strengthen academic research in Germany on a lasting basis, enhance its international competitiveness and increase the visibility of cutting-edge research at German universities. The Initiative for Excellence was launched in 2005/2006, its second phase covers the period 2012 to 2017. Total funds of €2.7 billion are being provided in the second phase to support 45 graduate schools, 43 clusters of excellence and 11 institutional strategies at 39 universities. In 2013, these universities are set to receive approximately 360 million euros from the Federal Government alone. International networking plays a major role in all these efforts as a cross-cutting, high-level task.

The Federal Government and the Länder concluded a Pact for Research and Innovation with the science and research organisations (DFG; FhG, HGF, WGL and MPG) in 2005. The Pact

was renewed in 2009 to cover the period up to 2015. It is an agreed objective of this joint initiative to launch suitable measures to ensure and optimize the quality, efficiency and performance of science and research institutions which receive institutional funding. The initiative enables scientific and research organisations to pursue strategic goals and investigate new fields. In addition, the promotion of junior scientists and the inter-organisational network and internationalisation (incl. ERA), the main goals of the pact are the transfer of knowledge and technology and the formation of sustainable partnerships with commercial partners. To this end, the Federal Government and the Länder have increased the annual aid provided to the following large scientific and research organisations by 5% from 2011 to 2015: Helmholtz Association (HGF); Max Planck Society (MPG), Fraunhofer Society (FhG), Leibniz Association (WGL) and the German Research Association (DFG). The non-university research institutes (incl. DFG as the funding organisation of university research) can secure their position among the best in the world in the long term.

As part of the Federal Government's High-Tech Strategy, excellent clusters are funded in Germany's innovation policy by a competitive scheme (Leading-Edge Cluster Competition) to take a leading position in international competition. The regional clusters are to integrate their ideas faster in products, processes and services in order to sustainably improve their added value.

Innovation Alliances are a relatively new competitive instrument for research and innovation policy within the framework of the High-Tech Strategy initiated by the Federal Ministry of Education and Research (BMBF). Alliances are arranged with respect to specific application areas or future markets. They exercise a particular economic leverage effect.

The BMBF has set up the KMU-innovativ funding initiative within the thematic R&D programmes to facilitate access to these complex programmes for SMEs, particularly for first-time applications, with the aim to support excellence in R&D and innovation in SMEs. It offers specific, need-dependent access to the technology fields. The funding triggers additional investment in R&D in companies, which subsequently has a positive effect on the market and jobs in the medium to long-term. By the end of 2011, eight thematic R&D programmes participated in the initiative, with a yearly budget of 80 million €.

The Central Innovation Programme for SMEs (ZIM) is a nationwide, technologically and sectorally unrestricted funding programme for SMEs, including the industry-related research institutions with which they cooperate. In particular it funds cooperative projects between companies and research institutes, but also innovation projects by individual companies. The funding for research and development projects allows companies to directly implement innovative ideas for new products, production procedures or services, thereby realising innovation profits quickly. ZIM is managed by the Federal Ministry of Economics and Technology (BMW).i).

For science and research funding to be successful, international peer review principles like excellence, objectivity, transparency, confidentiality and ethics of science are an integral part of the German science and research system. It is an agreed objective of the national Pact for

Research and Innovation to launch suitable measures to ensure and optimize the quality, efficiency and performance of science and research institutions which receive institutional funding. Competitive, peer review-based allocation of funds is the main procedure applied at DFG. In 2012, 26% of DFG expert opinions were prepared by experts abroad. The evaluation of the German science system has also become increasingly international since 2008. Participation by foreign researchers in the evaluation of German scientific performance and research strategies contributes to stronger links with the global scientific community – as does participation by German researchers in the evaluation of the performance of institutes abroad. International science is represented on the permanent advisory boards of the institutes of research organisations as well as on the commissions for institutional and programme evaluation. A majority of European and non-European experts are engaged in the Initiative of Excellence of the Federal Government and the Länder.

TRANSNATIONAL COOPERATION

FP funding represents 67 Euros per head of population.

The implementation of joint research agendas addressing grand challenges by Germany should be seen in the perspective of the federal government's research and innovation policy objectives, in conjunction with Europe's declared intention to become the world's most competitive science-based economy, which called for better exploitation of the opportunities presented by increasing internationalism. The federal government has responded to these challenges in its first strategy to internationalise science and research in 2008. The combination of the High-Tech Strategy, the Joint Initiative for Research and Innovation and the Initiative for Excellence makes this Strategy of the Federal Government for the Internationalization of Science and Research a core element of German research policy.

The Strategy of the Federal Government for the Internationalization of Science and Research has four designated priority fields that form the central theme of the international activities of German science and research: Strengthen cooperation with the world's best, Developing innovation potential at an international level, Strengthening the cooperation with developing countries in education and research in the long term, Assuming international responsibility and coping with global challenges. EU level instruments are being used for national goals, and there are attempts to influence the European level policy with core ideas as set out in the German "Internationalisation Strategy" and the "High Tech-Strategy".

Over the last years a strategic thinking and action towards the ERA has been developed in Germany and there is (now) a strong involvement of the national policy makers into European issues. Triggered by a broadening of R&D policy and innovation policy at EU level, there have been steps towards a more functional "horizontalisation" at national level, i.e. European involvement is becoming part of the strategic thinking and there is a stronger awareness of European issues across all ministries. This is visible in a generally strong participation in cooperation under the EU Framework Programme and all new multilateral joint initiatives at the European level.

The share of participation of Germany in total participation in the Seventh Framework Programme is 13,1% so far, and Germany has received 16,8% of total EC contributions. The country also participates in almost all Joint Programming Initiatives. Germany participates as a member in 7 initiatives, is observer in 1. and coordinates Connecting Climate Knowledge for Europe (Clik'EU) and The Demographic change More Years, Better Life. Germany also participates in most ERA-Nets, in all joint research programmes undertaken under Article 185 of the Treaty of Lisbon (European and Developing Countries Clinical Trials Partnership, Ambient Assisted Living, EUROSTARS, EMRP and Bonus). German partners are also involved in European Technology Platforms (ETP) and the FET Flagship "Human Brain Project".

Examples for this international commitment can also be seen in the establishment of the "Initiative on Multilateral Research Funding" under the leadership of the DFG in 2010. This programme's medium-term goal is to establish a large pool of multilateral projects which can be supported by the national programmes of DFG and its partner organisations at any time. Joint international-level research programmes have also been part of jointly financed large projects and research facilities such as EMBL, CERN, ESA and telescopes for decades. Germany contributes a substantial, and often increasing, share to the required funding. An example of an interregional joint research programming is the initiative German Länder of Baden-Württemberg and Rhineland-Palatinate and the French Alsace region to launch the Upper Rhine Trinational Metropolitan Region science programme in November 2011.

The general importance of international cooperation – especially with regard to solving the "grand challenges" – has been highlighted and reinforced in the High-Tech-Strategy 2020 (revised strategy released in 2010). The High-Tech Strategy is intended to help Germany assume a leading role in the solution of global challenges. It encompasses the Federal Government's R&D activities in five high-demand areas: climate/energy, health/nutrition, communications, mobility and security. It focuses the Federal Government's research and innovation policy on selected forward-looking projects. These projects pursue specific objectives related to scientific and technological developments over a period of ten to fifteen years. They develop strategies for innovation and plan the steps towards their realization.

According to the NRP 2013, the High-Tech Strategy has contributed to higher and more efficient investments in education and research. There is a growing number of bi-/multilateral agreements on cooperation / joint activities in terms of research and innovation (and education). The initiative launched by BMBF to "Promote Innovation and Research in Germany" has been presenting Germany's research achievements and opportunities to the international community since November 2006 under the brand "Research in Germany - Land of Ideas".

Mutual recognition of evaluations that conform to international peer-review standards by German is influenced by the 2008 Guidelines for the participation of the BMBF in the preparation and implementation of transnational calls for proposals (Leitfaden des BMBF zur transnationalen Zusammenarbeit). This was developed by the BMBF in the light of the fact

that transnational networking of funding programmes was an issue of increasing importance for the Directorates-General of the BMBF. The range of joint calls issued or planned covers the European as well as the bilateral and multilateral level. The central goal of the guidelines is to provide the programme owners and administrators (BMBF and project management organizations) with a basis for the implementation of transnational calls for proposals within existing funding schemes, based on best practice and experience gained in bilateral and joint ERA-Net calls.

When transnational project funding initiatives (e.g. ERA-NETs, Art. 185 measures) include joint evaluation procedures, the scientific and technical results of such evaluations are usually recognised in Germany, based on the BMBF guidelines and on procedural rules agreed in individual initiatives. The D-A-CH scheme contributes to simplifying of cross-border funding, especially in terms of evaluation (2003) and Joint Proposal Submission since 2009. Under the Eurostars programme, the participating Member States inter alia Germany have agreed to coordinate and implement jointly activities aimed at contributing to the Eurostars Joint Programme. The G8 Research Councils Initiative on Multilateral Research Funding medium-term goal is to establish a large pool of multilateral projects which can be supported by the national programmes of the German Research Foundation (DFG) and its partner organisations at any time.

The D-A-CH collaboration contributes to the cross-border interoperability of national research programmes as envisaged by the ERA Communication. German research stakeholders have gained valuable experience with the Lead Agency principle under the D-A-CH agreement for basic research signed with Austria and Switzerland. The Eurostars Joint Programme is also aimed at aligning and synchronising the relevant national research and innovation programmes to establish a joint programme, featuring scientific, management and financial integration, marking an important contribution towards the realisation of the ERA. The Joint Initiative for Research and Innovation II calls upon the research organisations to continuously review and develop their internationalisation strategies in terms of their contribution to increasing institutional performance. The organisations establish and expand research collaborations on important topics with excellent international partners and strategic countries, gain access to research objects including those abroad and open up their own research infrastructures to foreign researchers, become involved in global knowledge flows and play an active part in shaping the ERA. The science organisations described major aspects of this effort in their 2011 Pact Monitoring Report and presented a joint position paper on internationalisation. The German federal government has signed a number of bilateral agreements with EU and non-EU countries in order to launch and/or further intensify cooperation in research and education, thus removing barriers for and/or explicitly permitting joint financing of projects and programmes.

Concerning financial commitments for the construction and operation of ESFRI, Germany participates in many of the 48 projects of the ESFRI Roadmap. It hosts the European XFEL in Hamburg and FAIR in Darmstadt as well as INFRAFRONTIER in Munich. SHARE-ERIC, the first ERIC founded in the Netherlands and coordinated by Germany, will soon move its

headquarters to Munich. The legal basis for implementing a European Research Infrastructure Consortium (ERIC) was adopted in Germany on 7 June 2013.

The Roadmap of Research Infrastructures – a BMBF pilot project – was presented to the public by Minister Wanka on 29 April 2013. It is the first German overview of priority research infrastructure projects which the BMBF is planning to realise in the coming 10-15 years. In addition to previously prioritised projects on which work has already started, the Roadmap includes three new ESFRI projects: the Cherenkov-Telescope Array, IAGOS and EU-Openscreen. Inclusion in the Roadmap requires a German financial commitment to the project in question. The ESFRI projects which have already been given priority by Germany include: CESSDA, CLARIN, DARIAH, ECRIN, E-ELT, ELI ESS social, ESS spallation and ICOS. Priorities outside of ESFRI are for example: several research vessels, the Gauss Centre for Supercomputing, and W 7-X. An update of the Roadmap is planned so that further projects can be added, including areas for which other government departments are responsible (health, environment, energy).

Germany runs already comprehensive thematic R&D support programmes (providing direct support to business R&D by means of grants and loans) which are increasingly aligned to the ESFRI roadmap. Overall, by middle of 2011, there were more than 60 on-going main thematic programmes (excluding defence research and technology). Germany's partnership agreement with the EU will provide for the possibility of spending structural funds on ESFRI projects between 2014 and 2020. The Federal Government called upon the Länder to include ESFRI projects in their operational programmes at Länder level.

The DFG supports the establishment of research infrastructure at universities in particular. Infrastructure is understood broadly and refers not only to the funding of equipment but also to the construction and establishment of core facilities as well as to the information infrastructure. Under the principles of the DFG, funding can take the form of an investment or is provided for a project to promote structure-building. The funded institutions must ensure the operation of the infrastructures in the long term. A number of DFG open programmes offer universities and scientific communities infrastructure funding which is not subject to thematic requirements or priority-setting. This can lead to DFG-funded projects which can supplement the European infrastructure or become part of specific ESFRI projects. Special funding is also aimed at projects which give broad access to publications and research data in order to enable them to be used and processed cooperatively via data networks.

While the main goal is promoting innovation and research in Germany by internationalising its R&D and innovation landscape, adopting bi- /multilateral cooperation agreements also contributes to “removing legal and other barriers” to R&D and innovation. The overall idea is joining the forces and resources, using infrastructures more efficiently and to the mutual benefit. The research organisations HGF, MPG, WGL and DFG and the German Council of Science and Humanities contributed to the FP7-funded project "MERIL, Mapping of the European Research Infrastructure Landscape". The MERIL database, which is under

construction, currently lists 119 national research infrastructures which offer transnational access and are therefore relevant for the ERA.

OPEN LABOUR MARKET FOR RESEARCHERS

The number of researchers (FTE) in relation to the labour force was 7.9 in 2010 and the number of new doctoral graduates per thousand population aged 25-34 was 2.7.

HEIs and PROs in Germany have a wide autonomy in recruiting their staff and, in general, education and research, to a major extent, falls in the responsibility of the regions rather than the federal government. Hence, across Germany, it is difficult to refer to fully homogeneous standards and procedures in terms of recruitment (especially at HEIs). However, in general, there are no obvious barriers to the application of open, transparent and merit based recruitment of researchers in Germany. The constitutional principle of the 'selection of the best' ensures the openness of recruitment procedures in this sector, aided by the provisions of equality legislation (gender mainstreaming) and the General Anti-Discrimination Act of 2006. The international advertising of every fixed-term or permanent vacancy for researchers is widely common practise (although not a compulsory rule). The 2009 and 2010 Reports on Researcher Partnerships state that the Basic Law and the Länder Higher Education Laws stipulate the public and increasingly also international announcement of professorships. Public announcements of vacancies are also the norm for junior academic staff positions. Certain exceptions are possible and advisable, for example in the case of short-term employment periods or where candidates must satisfy special requirements. In 2012, 62% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Recruitment procedures for university teachers in Germany are traditionally strongly competition-based. The Academic Freedom Act makes provisions for more autonomy in staffing decisions. Institutions will be allowed to make greater use of third-party private funds in order to attract or keep highly qualified researchers. Under current Länder law, the Länder Ministries are increasingly transferring the right to appoint staff to the respective universities and research institutions. Furthermore, the openness of advertisement and recruitment procedures in the higher education sector is guaranteed under the Länder Higher Education Laws. The most recent laws not only stipulate the traditional supra-regional and public advertising of vacancies, but also explicitly demand that vacancies are advertised internationally and only allow exceptions in special cases. The involvement of external experts along with a comparative evaluation of applications guarantees the transparency and competitiveness of the recruitment of university teachers (professors) in Germany. Moreover, in Germany, it is traditionally not possible to become a professor at the institution of higher education where one received one's academic training.

The principles that apply for the Fraunhofer Society, the Helmholtz Association and the Max Planck Society regarding the appointment of research staff in positions that correspond to the W-salary scale for professors are intended to enable them to recruit top-class staff in the face

of international competition – particularly by appointing staff from the private sector, from abroad or from international organisations.

The EURAXESS Deutschland website (www.euraxess.de) contains updated information concerning entry regulations, social insurance, administrative support, etc. EURAXESS Germany is run by the Alexander von Humboldt Foundation, which encourages the individual service centres to implement the declaration of commitment. There is no legal obligation to use EURAXESS. Evidence suggests that - relative to its size as a science location - Germany tends to make little use of the EURAXESS Jobs Portal portal compared with its European partners (in terms number of vacancies entered into the data bank). Reason may be that the homepage of the German Rectors' Conference provides links to the job exchanges of the individual Member States and in addition, the BMBF-funded "Information and Communication Platform for Young Researchers" (KISSWIN) has been operating since 2008. KISSWIN is an online communication and information platform for young researchers. The project aims at making the German research funding system and career opportunities transparent. However, Germany is seeing more recently a strong increase in participation in the EURAXESS network: twenty-one of the 70 EURAXESS service centres in Germany have already signed the declaration of commitment, 15 of them in the course of 2012 and 2013.

Since 1 April 2012, opportunities to have foreign professional qualifications recognized in Germany have improved significantly. The Federal Government's Recognition Act introduces the legal right to have qualifications gained abroad assessed in comparison to the equivalent profession in Germany. The process and criteria for occupational recognition have been standardised, expanded and improved. This makes a sustainable contribution to securing a skilled labour force and facilitates the integration of persons with good foreign qualifications on the job market.

The Deutsche Forschungsgemeinschaft introduced the concept of “postgraduate research groups” in 1990. This remains an important programme to encourage institutions to provide structured post-graduate training and was complemented by the “Graduate Schools” programme under the Initiative for Excellence in 2006. On 15 June 2012, the Grants Committee selected a total of 39 universities from 13 Länder including 45 graduate schools. The initiative’s budget is administered by the DFG. Following a competitive procedure, Baden-Württemberg launched eight “Cooperative Doctoral Programmes” at the end of 2010 in which universities and universities of applied sciences conduct doctoral courses together and on an equal footing.

The German higher education institutions – often in partnership with non-university research institutions – already began reforming the doctoral phase of training around 20 years ago in order to ensure the critical mass of research environment and variety of research methods which a doctoral candidate needs. This has led to the development of programmes for additional qualifications and skills and more structured doctoral training programmes across the board at all universities and at a number of non-university research institutions. At

European level, this process was encouraged by the Salzburg II Recommendations of the European University Association (EUA) and its Council of Doctoral Education (EUA-CDE).

Since it first appeared in 2008, the Federal Government Report on the Promotion of Young Researchers (BuWiN), has contributed to improving the situation of young researchers in Germany. The National Report on Junior Scholars was published for the second time in 2013, provides sound data and the latest findings on qualifications and career pathways as well as on career prospects for doctoral candidates and postdocs in Germany. The report's sound scientific monitoring is an important basis for the empirically-based steering of political processes.

Cross-border access to and portability of grants is mainly considered as a issue for the research actors themselves. The higher education institutions and non-university research institutions are endeavouring to recruit foreign researchers at all career levels and offer their research staff opportunities to spend research periods abroad. It is even becoming increasingly the norm in the German science system for German researchers to spend periods abroad. There are a number of programmes offering financial support, such as for example the DAAD Postdoctoral Programme (DAAD), DFG Programmes (DFG), Otto Hahn Award (MPG), et cetera.

The EURAXESS Deutschland website (www.euraxess.de) contains updated information concerning entry regulations, social insurance, administrative support, etc. In general, scholarships are increasingly being advertised internationally. For example, the German Research Foundation (DFG) expects that scholarships are advertised internationally within the framework of its scholarship funding for research training groups and graduate schools. This has resulted in an increasing number of applications from abroad. Scholarship-holders in Germany are commonly selected in a procedure involving experts (peer-review process) and the applicant's nationality is thus generally considered irrelevant.

Germany has decided in favour of voluntary advisory services to improve the quality of human resource management in the science institutions. The principles of the Charter & Code are already applied in Germany under observation of national peculiarities and taking into account the reservations expressed by the respective science organisations when the agreements were signed. The self-commitment of the science institutions and organisations and the statutory provisions governing wage agreements of the social partners, the equality standards of the science organisations and quality assurance measures such as the National Report on Junior Scholars (BuWin), the "Family-Friendly University Audit" or the "Total E-Quality" award play an important role in this context.

Over the last decade, the Alexander von Humboldt Foundation has launched several ideas competitions, some of them in association with partners. Examples include a prize for the friendliest Foreigners Office, the "Welcome Centres", and the "Researcher-Alumni" competition to support alumni work at universities in Germany. The majority of institutions have set up Dual Career Offices und Welcome Centres.

Germany's research funding organisations support current efforts to develop models for cross-border cooperation. The "Money Follows Cooperation Line" under the D-A-CH collaboration contributes since 2009 to cross-border portability of research grants. The D-A-CH collaboration also contributes to the interoperability of national research programmes, as well as to simplifying of cross-border funding, especially in terms of evaluation (2003) and Joint Proposal Submission with Austria and Switzerland (D-A-CH) since 2009.

Funding organisations such as the Alexander von Humboldt Foundation (AvH) and scientific organisations such as the Max Planck Society (MPG) provide scholarships for shorter or longer stays abroad which are necessary for research purposes. Within the scope of D-A-CH collaboration, an agreement has been signed between the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) and its partner organisations, the FWF (Austrian Science Fund, Austria) and the SNSF (Swiss National Science Foundation, Switzerland), regarding the mutual opening of the respective funding programmes ("Lead Agency" process) and cross-border funding ("Money Follows Cooperation Line") to simplify the mobility of researchers and the execution of cross-border research projects. The mutual opening of the respective funding programmes ("Lead Agency" process) contributes to cross-border access to research funds.

There are numerous programmes that encourage excellent foreign scientists to spend research periods in Germany, for example, such as for example the Sofia Kovalevskaya Award and the Alexander von Humboldt Professorship, which provide research scholarships to enable outstanding researchers from abroad to complete long-term and ground-breaking research stays at research institutions in Germany.

More detailed information can be found in the country profile for Germany in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>.

GENDER

General Anti-Discrimination laws (with as most important the General Law on Equal Treatment of 18 August 2006) are in place to avoid discrimination based on sex and provide support in case of discrimination. The Germany's Federal Bodies Law (Bundesgremienbesetzungsgesetz) of June 1994 (BGremBG) provides a suitable framework for ensuring equal participation by men and women. In general, "equal opportunities" and thus also the responsibility for "equal opportunity commissioners" in Germany falls into the competence of the Federal Ministry for Family, Senior Citizens, Women and Youth. The German government has set out the plan to conduct and publish a comprehensive report on equal opportunities (Gleichstellungsbericht der Bundesregierung). The first report was published in summer 2011, a second edition was presented in 2012.

The goal of realising equal opportunities for men and women and removing existing disadvantages at universities is firmly established in the Higher Education Laws of the Länder. Germany is planning to actively remedy the underrepresentation of women in academia by means of various recruitment efforts and target quotas. The Federal Government

considers that Member States and institutions should find their own solutions for increasing participation by women and that fixed quota may lead to a situation in which women researchers in areas where they have so far been heavily under-represented have to shoulder a disproportionately greater workload than their male colleagues due to committee duties in addition to research. A so-called cascade model or a cross-disciplinary target quota would balance out numbers between the fields instead of applying a fixed quota, and the institutions should implement this measure as they see fit, the Federal Government has indicated.

Special attention is also given to the problem of balancing research and family life. For example, Section 2 para 5 of the Academic Fixed-Term Contract Law (Wissenschaftszeitvertragsgesetz) of April 2007 provides that fixed-term contracts may be extended where leave is granted for the purpose of caring for one or several children under the age of 18 or other relatives in need of long-term care or where there is an entitlement to statutory parental leave. The question of childcare, particularly for under-three-year-olds, and the provision of full-day care facilities has been a problem in Germany for a long time, making it very difficult for women to pursue a career in the science sector. The Federal and Länder governments have made improvements in this field a declared political goal and have provided additional funding.

Women are still under-represented in leadership positions in science in Germany (although numbers are rising). All stakeholders in the government and science sector are aware of this deficit. A variety of measures have been introduced to remedy the situation in science. This has been made to be one of the BMBF's central tasks, which created an 'Equal Opportunities in Education and Research Division' with the task of implementing these key strategic areas with the help of its own budget. The German government has implemented a number of initiatives aiming at improving gender balance in research. BMBF supports activities which raise awareness of issues in terms of equal opportunities and is aiming to stimulate innovative research and cooperation on the matter, national and international collaborations, the exchange of competence and knowledge and, in this regard, the thematic networking (including organisation of thematic workshops, etc.). The Länder have in addition their own programmes to enhance equal opportunities at universities.

The BMBF programme *Frauen an die Spitze* (Women at the Top) was launched in 2007 with funding from the European Social Fund (ESF). It studies gender issues, interdisciplinary research on a number of related thematic fields in order to develop new to gain insight into the causes why the number of women in academia as well as in leadership positions in general does not yet match the number of well qualified women. It also includes and tests new action schemes in Germany as a basis for new approaches towards increasing equal opportunities.

The Federal Government and the Länder are providing funding of approx. €150 million under the Female Professors Programme (2007-2012, decision on second phase on 27 December 2012) to increase the participation of women at all levels of academic training. The first and second rounds of the program, each with a total budget of 150 million Euros, were financed equally by the BMBF and the Länder. On the basis of a positive appraisal of their equality

policies, higher education institutions have the opportunity to receive funding for up to three professorships for women. Gender equality has thus soon become an important competitive factor in higher education. The Female Professors Programme has met with great acceptance: 77% of all universities, almost 40% of the universities of applied sciences and more than 25% of the colleges of art and music are participating. The percentage of women professors almost doubled between 2002 and 2010 from 8% to 15% (She figures 2012).

The Centre of Excellence Women and Science (CEWS) aims to increase the number of women in leading positions at universities and research institutions, to raise the efficiency of political measures aimed at equality and to introduce gender mainstreaming in all areas of science and research. The FemConsult database, which contains current profiles of several thousand women academics, is a central instrument for increasing the number of women in leading positions. With regard to HEI, CEWS has issued rankings of institutions of higher education based on equality aspects every two years since 2003, and this has become an established instrument of equal opportunities quality control within the higher education system. Since 2009, the rankings have also been offered in relation to other equal opportunity evaluations, such as those of the Federal and State Programme for Women Professors, the Total-E-Quality Advisory Service (established in 2001), and the Family Friendly University Audit (established in 1998).

The higher education institutions' "Guidelines on fixed-term employment contracts" of April 2012 state that fixed-term employment should enable a higher proportion of women to work towards academic qualifications which are relevant to their careers and that family-related funding opportunities should be used in every individual case. Furthermore, equal opportunities policy is defined as a task for the institutions' senior management. The goal of equal participation by men and women is part of the institutional concept of many universities.

The 2007 German Pact for Research and Innovation firmly established the requirement that research organisations should develop strategies to ensure that women's research potential is fully used. The organisations are expected to implement significant changes in the quantitative representation of women in the research system, particularly in leading positions. The research organisations report on the progress made at the individual levels in clear terms and explaining their actions as part of the annual monitoring exercise under the Pact. Gender equity is also an integral part of the Initiative for Excellence of the Federal Government and the Länder. The experts evaluating the proposals also consider whether the proposed measures can promote equal opportunities for men and women in research.

In 2006 the organisations of the Research Alliance (DFG, HRK, HGF, FhG, MPG, WGL, AvH, DAAD, Leopoldina, Wissenschaftsrat) launched a campaign to promote equal opportunities for men and women in research (Offensive für Chancengleichheit von Wissenschaftlerinnen und Wissenschaftlern) (reviewed in May 2012) with the aim of markedly increasing the proportion of women in leading academic positions within the following five years. In 2010 women accounted for 21% of the members of university bodies

and 12% of senior management positions at universities were held by women (She figures 2012).

A decision of the Joint Science Conference (GWK) of 7 November 2011 calls upon all research institutions and universities to introduce flexible target quotas for the recruitment of young female researchers and managerial staff. The Federal Government and the Länder expect the research organisations to implement the GWK decision by establishing flexible target quotas in keeping with the "cascade model" of the DFG's research-oriented standards on gender equality. The organisations are expected to agree targets at management level to ensure that the quotas are achieved. The four research organisations HGF, FhG, MPG and WGL developed their own specific procedures for the application of the "cascade model" and established target quotas in 2012.

Since 2008, it has been possible to apply for funds for equal opportunities measures in all collaborative projects of the German Research Association (DFG). This ring-fenced funding can be used to increase the number of women researchers at project manager level, support young women researchers involved in the research collaboration in pursuing their research careers, or making researchers' workplaces more family-friendly. In addition, funds to compensate for the loss of working hours resulting from maternity leave, parental leave or nursing care leave can be applied for in all DFG research projects.

The DFG together with its member institutions also adopted "Research-oriented standards on gender equality" in 2008. With this self-commitment, the institutions define personnel and structural standards for a sustainable gender equality policy in research and higher education. A working group set up by the DFG General Assembly supports the member institutions in the implementation of the gender equality standards and assesses their gender equality strategies and the progress they have made in increasing female representation. The joint goal is to markedly increase the proportion of women at all scientific career levels in science by 2013 following the "cascade model". This means that the target percentage of women at each career level follows on from the proportion of women at the level immediately below. In this process, the DFG developed a toolbox which contains a collection of equal opportunities measures. This freely accessible, quality-assured information system provides selected practical examples particularly for universities and research institutions. The standards on gender equality have given a clear signal in recent years. As a result, gender equality is now increasingly understood as a horizontal and managerial task, gender mainstreaming activities are being professionalised and concrete measures in member institutions consolidated.

Numerous partners from academia, research, industry, politics, associations, labour and management and the media concluded the National Pact for Women in MINT Careers in 2008 in order to increase the percentage of women in mathematics, informatics, natural science and technology. Efforts are being made to attract young women to studies and careers in science and technology, to encourage female university graduates to opt for careers in industry, and to increase the number of study places offered in natural science and technology disciplines.

KNOWLEDGE CIRCULATION

Circulating research knowledge and transferring it into markets and products will be crucial to maintain the productivity of the German economy; creates and preserves jobs and thereby ensures Germany's prosperity. Cooperation between HEI and industry is traditionally close in Germany in areas such as engineering and chemistry. According to OECD figures, 53 % of all German companies which engage in extra-mural innovation activities cooperate with universities. Many doctoral theses are completed in close cooperation with industry. For example, industry very often funds doctoral students or provides grants. Knowledge and technology transfer, and thus shaping innovations, is however not yet sufficiently fostered in academia, as illustrated by a series of activities which Germany has launched and/or is internationally involved in which tackle optimal circulation, access to and transfer of scientific knowledge.

The Higher Education Laws in all of Germany's 16 Länder have now identified knowledge and technology transfer as a task for institutions of higher education. Moreover, the Länder Hesse, Lower Saxony, North-Rhine Westphalia (NRW) and Thuringia have taken up the development of an intellectual property strategy in the target and performance agreements between the Länder and the universities. The programme Research at Universities of Applied Sciences programme funds R&D projects at the 190 universities of applied science ('Fachhochschulen') in order to improve knowledge transfer capacities at these institutions. Technology transfer networks have been established in many Länder. Transfer and patent agencies have been set up in the research institutions or at Länder level. All Länder and many institutions have facilities which advise people intending to set up in business / becoming an entrepreneur.

Other special programmes are often funded by the Economics Ministries at federal or Länder level and explicitly encourage mobility and exchanges of scientists between research institutions and SMEs. Validation of Innovation Potentials – VIP is a part of High-Tech Strategy 2020 and stimulates Knowledge Transfer by public research organisations. The Networks of Competence scheme stimulates the establishment of sector networks to promote cluster building and international awareness of industrial networks in Germany. The Research Campus programme contributes to Knowledge Circulation by enhancing partnerships which are aiming to develop new technologies in areas with high technological complexity and a great potential for radical innovation. Innovation Alliances represent a new instrument for research and innovation policy within the framework of the High-Tech Strategy initiated by the Federal Ministry of Education and Research (BMBF). Currently, there are nine Innovation Alliances and a large number of "strategic partnerships" created by the BMBF, the scientific community and industry. The EXIST program is also part of the German government's "High-tech Strategy for Germany" and is aiming to Improving the entrepreneurial environment at universities and research institutions and increasing the number of technology and knowledge based business start-ups. TechnologieAllianz unites patent marketing agencies and technology transfer agencies in a single network. The nationwide association representing over 200 scientific institutes provides enterprises with access to the entire range of innovative research results from German universities and non-university research institutions. The Go-innovativ programme provides vouchers to companies for consultancy services on innovation

management in order to enhance learning from successful innovators. The High-Tech Business Start-up Grant is a joint initiative of the federal government, the industrial companies BASF, Deutsche Telekom and Siemens as well as KfW Mittelstandsbank within the framework of "Partners for Innovation". In total, € 262 million will be provided over the next five years. The objective of the ERP Start-up Fund is to leveraging access to finance for start-ups via venture capital. The focus is on technology-based company foundations. The National Agency for Women Start-ups Activities and Services (bga) aims to increase the number of businesses started by women.

The Federal Government has initiated a number of activities to promote open access such as a dialogue between science organizations and scientific publishing companies. The Federal Ministry of Education and Research also plans to add a clause on open access to the auxiliary terms and conditions governing its project funding [Check state of play]. The players in German research organizations are actively promoting open access, for example through the Priority Initiative "Digital Information".

For Germany as a high-tech location, information and communication technologies (ICT) play a decisive role. They are the key to productivity in all industries. Measured by gross value added today, the ICT industry itself is ahead of mechanical engineering and motor-vehicle manufacturing. However, Germany needs to better harness the large potential of ICT for growth and employment. Smart networking through modern ICT in traditional sectors, such as energy, transport, health, education, leisure, tourism and administration, affords new opportunities but also poses new challenges, especially in data protection. This is why the Federal Government has developed a new ICT strategy for the digital future of Germany: Digital Germany 2015. It sets out the government ICT policy framework, i.e. the priorities, tasks and projects for the period up to 2015. The strategy, which also deals with R&D and Education aspects, will be carried out in close interaction among policymakers, industry and scientists. The Federal Ministry of Economics and Technology, BMWi, is in charge of coordinating the implementation under the specific purviews of the various ministries. A major role here is played by the National IT Summit.

The Federal Government gives high priority to the topic of scientific information infrastructures, because they play a key role in the storage of scientific knowledge and in making it accessible. The German Council of Science and Humanities (Wissenschaftsrat) issued recommendations for the further development of scientific information infrastructures in July 2012. The Federal Government and the Länder have appointed a working group on the implementation of the Council's recommendations, which will also review the various European Commission proposals.

The Deutsche Forschungsnetz (DFN) is the German National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country. Through DFN, Germany is a member of GEANT and eduGAIN.

EFFECTIVENESS

The Greek Research Technological Development and Innovation (RTDI) system has been affected by the economic crisis and is strongly dependent on foreign support (EU Framework Programme and Structural Funds).

In 2011 Greece set an R&D intensity target of 2%. The National Reform Programme (NRP) for 2013 revises this target downwards to 0.67%, which the authorities consider more consistent with the current trends and the economic outlook. EU structural funds continue to play an increasingly important role in promoting R&D and innovation. The measures included in the NRP for the achievement of the R&D intensity target are being implemented in the context of the current National Strategic Reference Framework (NSRF) or envisaged in preparation of the next programming period.

The General Secretariat for Research and Technology (GSRT) operating under the auspices of the Ministry of Education Religion, Culture and Sports is the main organisation designing and implementing RTDI policy. The policy environment and the frequent changes in the governance of GSRT in the last three years have slowed down the reforms of the governance system. Furthermore the positioning of GSRT within the auspices of the Ministry of Education, Religion, Culture and Sports does not facilitate the coordination of innovation policies between Ministries and other bodies. Several attempts to introduce a new law for Research have failed. The law adopted by the Parliament in 2007 was never implemented. A new law is currently in preparation by the GSRT.

The Greek authorities are rationalising the system of Higher Education Institutions (HEIs). The Plan "ATHINA" foresees a process of consolidation and mergers of HEIs to achieve economies of scale and adapt skills to the labour market. In March 2013, the Greek Parliament transferred power to the Minister of Education, Religion, Culture and Sports to implement the Plan. Law 4046/2012 (29.02.2012) foresees the mergers of research organisations, with the purpose to enhance scientific cooperation and synergies in the same research fields, create a critical mass of researchers, decrease administrative and operational costs. Following the application of the Law, research organisations are expected to decrease from 56 to 31 and new governance procedures will be introduced. A first wave of consolidation/mergers of departments has been finalised in the framework of the ATHINA project. In the next academic year, the number of HEIs will be reduced from 40 to 36, and the number of departments from 528 to 4.

In August 2012, Law 4076/2012 on Higher Education was issued amending the Law of 4009/2011. Both contain measures to allow for external evaluation of Higher Education Institutions (HEIs). The Laws also provide for a reform of the governance structure of HEIs which is being implemented. Law 4076/2012 contains limited changes but includes provisions to facilitate the transition to more university autonomy (introducing an external management board for the first time) and prescribing the regulations for the election of professors/assistant professors/lecturers.

The national strategy for research and innovation follows the programming cycle of the Structural Funds. The strategy for the current programming cycle was developed in 2007 and is described in the “Strategic Development Plan for Research, Technology and Innovation” (SDP) and the Operational Programme “Competitiveness and Entrepreneurship”. Further to a consultation process in 2012 the GSRT and the National Council are elaborating the new National Strategic Framework for Research, Technological Development and Innovation that would run up to 2020. As specified in the National Reform Programme for 2013, the Greek authorities are developing a national research and innovation framework for smart specialisation taking into account the regional perspectives.

In 2011, the Hellenic National Reform Programme 2011-2014 identified key priority areas for research. The government intends to pursue these areas through calls addressed to strengthen and support the scientific/research personnel, encourage links between the scientific/research community and businesses and entrepreneurs, the support of bilateral and European and international collaboration and the promotion of research outreach to the community.

As regards institutional evaluation they are undertaken regularly and a Higher Education Institutions accreditation mechanism has been set up. The Hellenic Quality Assurance Agency for Higher Education (QAAHE) has been established since 2005 by Law 3374/2005 to create a methodological framework for evaluating capacity and monitoring the evaluation process of Higher Education Institutions. More recently, by law 4009/2011, QAAHE undertook also the role to negotiate with Higher Education Institutions the quality targets they have to achieve in order to be entitled to additional funding. Finally QAAHE decided in August 2012 to suspend the evaluation of academic units due to tensions between the government and the academic community.

Research organisations are evaluated by GSRT every 4-5 year without a formal process. The Law provides for an evaluation of the research organisations every 4 year and stipulates that if an evaluation does not take place within 5 years due to lack of data provided by the research organisation evaluated then this organisation would stop receiving funding from the government. The law stipulates that the overall academic performance of the organisation is evaluated with respect to academic publications and personnel. According to the new law the research centres will be evaluated every two year by thematic expert panels.

The evaluation results are however not influencing the attribution of block funding. Institutional funding for public research organisations and Higher Education Institutions covers mainly the salaries of the permanent staff and the operational costs.

As regards competitive funding, Law 3777/2009 sets its principles. Research projects are funded on a competitive basis through open selection procedures with emphasis on scientific excellence. All non-block funding is distributed via calls from the GSRT (for applied research and innovation), the Ministry of Education (for basic research) and the General Secretariat for Industry (for entrepreneurship including new technologies). There is no formal provision for adopting international peer review. However, both the GSRT and the Ministry have been increasingly adopting international peer review for calls for proposals. The recent

programmes “Clusters”, “Innovation Poles”, “Cooperation” and “Excellence” were also evaluated by international panels.

Regions have their own research budgets in the current programming period but the majority of their funds are transferred to the GSRT, which launches central calls and selects proposals complying with the regional budget lines.

Another relevant change in 2012 was the launch by GSRT of the Programme “Development Proposals of Research Organisations-KRIPIS” aiming to strengthen research (basic research, industrial/applied research and pilot development) and to make use of its results through the implementation of projects. The programme has a total budget of €32m, will run until 2015 and is co funded by ERDF and public funds. Only research centres may apply for grants under this call.

TRANSNATIONAL COOPERATION

In the last years research funding has decreased considerably. Research on grand challenges is pursued mainly in the context of EU policies.

In the last three years, participation in European initiatives for the design and implementation of collaborative programmes and research infrastructures also gained importance. In addition to the €31m for ESFRI, an additional amount of €34m has been allocated for supporting the participation in the Joint Technology Initiatives (€13m), in ERA-NETs (€17.5m) and in bilateral research agreements (€3.5m). The share of participation of Greece in the EU FP is 2.75%. Greece has received 2.36% of total EC contributions. FP funding represents 72 Euros per head of population. Greece is involved in 4 JPIs 5 Article185 Initiatives and lead one of them.

As regard transnational cooperation the budget is thinly distributed to several initiatives driven by bottom-up initiatives with an average budget between €0.4m and €0.5m. A scheme containing fewer but larger agreements is considered by GRST.

Greece is member of all major European research facilities. Few national research infrastructures (RI) are large enough to be of global relevance. There are however no financial commitments for ESFRI yet. A national Strategy including a Roadmap are being developed. They aim to support the decision making process and to enhance the effectiveness of investment in Ris at national and regional level, as well to support the development of an evidence-based national strategy in the framework of international negotiations linked to EU priorities and, where appropriate, ESFRI. Investments in the development of research infrastructures are also subject to competitive selection. Investments in research infrastructures amount to €140m. Decisions on the participation in specific ESFRI infrastructures are expected in the context of the planning of the new programming period 2014-2020.

OPEN LABOUR MARKET FOR RESEARCHERS

The number of researchers (FTE) in relation to the labour force was 4.6 per 1,000 in 2010. The number of new doctoral graduates per thousand population aged 25-34 was 1.2 and the percentage of doctoral candidates with citizenship of another EU-27 Member State was 7.3%. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 1.0%.

Researcher brain drain has increased in the last two years and is expected to further increase due to the salary reductions in Higher Education Institutions and Public Research Organisations in 2013 (Law 4093).

Each research and academic institution develops its own regulatory framework related to researchers' confidentiality rights, membership in management bodies, freedom to carry out research and access to information. In 2012, Law 4076 introduced new regulations for the election of academic staff. The new Law on Research, Technology and Innovation is expected to include mechanisms for researchers' career development, outbound mobility, fellowships for early-stage and post-doc researchers.

Inward mobility remains limited, while the system is in principle open. Both Greek and foreign researchers employed in higher education and research institutions abroad can apply for a researcher's position in a Greek institution. The Greek language constitutes a barrier for inward mobility of researchers.

Up until 2012, inward and outward mobility was only supported by the measure "Support of Postdoctoral Researchers" which has been in place since 2010. The measure provides research grants for Greeks or non-nationals that have acquired their PhD from a non-Greek university in order to conduct research in Greece. It also supports Greeks with a PhD from a Greek university to conduct research in another Greek or a foreign research organisation.

In November 2012, the Ministry of Education, Religion, Culture and Sports launched a call for Higher Education Institutions in Greece for a pilot programme for the mobility of young researchers of the Mediterranean Office for Youth (MOY). The Programme aims to develop joint higher educational programmes, with the participation of at least two higher educational institutions from participating countries, at a postgraduate or at doctorate level, and is expected to enhance transnational mobility.

As regards portability of grants, the publicly funded grants or fellowships are not portable. Most grants are open to Greek and foreign candidates. However, the recipient of the grant must be located in a Greek research institution.

Law 2004/2011 enables a national researcher to leave for up to 3 years to participate in research projects abroad. An estimated 10% of researchers are using this opportunity. In 2012, 45% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Academic promotion depends on open and competitive procedures and has in recent years been re-organised to include foreign researchers in the selection panels. Institutions systematically establish selection panels in accordance with national legislation and have clear policies for establishing the composition of such panels. Selection criteria are published together with the job advert. Researchers have a right to receive feedback and appeal against the decision.

Until recently higher education institutions published job vacancies only in Greek and on their own websites. The EURAXESS services are increasingly used by the authorities and the education institutions. There are 12 EURAXESS Services Centres in 8 different cities in Greece. In 2011, the number of researcher posts advertised through the EURAXESS Jobs portal per thousands of researchers in the public sector was 32 in Greece.

In October 2010, the 65th Rectors' Assembly unanimously adopted the 'Charter & Code' encouraging all Greek higher education institutions to sign it and use it to promote their human resource strategies. The law 4009/2011 strongly promotes the 'Charter & Code' principles on excellence and innovation.

The Aristotle University of Thessaloniki, Euroscience, Greek Rectors' Conference, International Hellenic University, the Marie Curie Fellows Association, the National Hellenic Research Foundation, the University of Crete, the University of Ioannina, the University of Patras and the University of Thessaly have undersigned the Charter&Code.⁹ Greek organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 2 (The Centre for Research & Technology Hellas and the University of Crete) have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

Higher education institutions have the possibility to increase the quality of doctoral training through collaboration with national and international higher education and research institutions (Part IV of Law 4009/2011). Some PhD programmes explicitly follow the "Principles for Innovative Doctoral Training", while many comply implicitly with some of the seven principles.

GENDER

The Greek legislation (PD 176/1997, Law 3488/2006, Law 3996/2011) is fully aligned with provisions aiming at removing legal and other barriers to the recruitment, retention and career progression of female researchers.

Law 2839/2000 introduced provisions for the balanced participation of men and women in the Public Sector, Public and Private Law entities, as well as in municipalities. Law 3653/2008 addressed gender imbalances in the decision-making process in the research sector for the recruitment from National bodies, Research and Technology Committees, provided that the candidates have the same qualifications.

Gender equality is encouraged in the research profession by guaranteeing female representation in all top-level positions and decision-making bodies in a ratio of at least one-third (based on Article 16 of the Greek Constitution). However, the number of women researchers in particular in senior positions is limited. Female researchers are entitled to maternity leave only if they have signed a fixed-term contract with a research institution

There are no explicit policies to foster cultural and institutional change on gender by the funding agencies and there are no specific initiatives to strengthen the gender dimension in research programmes.

KNOWLEDGE CIRCULATION

GSRT has been established as the National Point of Reference for open access in Greece in January 2013 and elaborates a national policy framework for open access to scientific publications and research data, on preservation and re-use of scientific information, and their implementation and monitoring on related e-infrastructures

GSRT has set up a working group consisting of the main public stakeholders in O.A. (GREEK RESEARCH & TECHNOLOGY NETWORK (GRNET S.A), Research Centre ATHENA, EKT/NHRF and the Hellenic Academic Libraries Link (HEAL Link)). Through this process, harmonization and focused implementation of open access initiatives will be ensured, in line with the need for sustainable e-infrastructures, repositories and viable business models for access and preservation of scientific information. Open access will be made mandatory for scientific publications resulting from publicly funded research. Relevant changes to the legislative framework of funding terms are under progress.

In April 2013, there were 18 open access repositories operating in Greece in 9 Universities and 2 research organisations.

The Greek Open Knowledge Foundation Network (OKFN) was created following an initiative from the Aristotle University of Thessaloniki. The OKFN will focus on open linked data and aims to enhance governance of local research procedures, improve transparency and access to research, cultural and financial data.

Greek researchers have access to Eduroam, a secure world-wide roaming access service developed for the international research and education community.

As regards public/private cooperation the Presidential Degree 274/2000 and Law 3777/2009 encourage collaboration between universities and the private sector. Researchers from public research centres can be recruited by private companies under specific agreements. Recognised scientists in the private or public sector can be offered to conduct specific research project or to collaborate on partial employment basis with national research centres.

Initiatives to encourage collaboration between industry and academia are performed mainly through bilateral cooperation programmes. In the last years new programmes have been established: the Clusters Programme (2007-2013), the Cooperation 2011 Programme, the Creation Programme (2007-2013), Innovation Vouchers for SMEs (2009-2015) as well as a

scheme to support business with employment of highly qualified scientific personnel under the Human Resources Development Operational programme (2007-2013).

In 2012, competitive calls were announced, focusing on the development of human capital for research in a knowledge economy (including support to excellent researchers, support to mobility of researchers towards enterprises and support to training for innovation activities), with a total financing in excess of €150m in the period 2011-2013.

In addition to direct support measures, the development of an entrepreneurial and innovation friendly culture in the higher education sector aims to facilitate collaboration. To this end, €101m are budgeted for the development of offices in universities and Technical Education Institutions that combine career development counselling activities with the promotion of business planning competitions, as well as for the creation of entrepreneurship clubs and the development of courses on entrepreneurship. The 2011 law for Higher Education Institutions recognises these offices and gives them the status of “Innovation and Liaison Offices” which are also responsible for IPRs. Greece is member of EDUgain through GRNet. GRNet is the Greek National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The highest-level political body in the field of STI policy, the National Research, Innovation and Science Policy Council (NKITT), was set up in December 2010 to co-ordinate governmental STI policy decisions. It was replaced by the National Development Cabinet (NFK) in July 2012, chaired by the prime minister. Its members are the secretary of state heading the Prime Minister's Office, the ministers responsible for the national economy, and national development, respectively. The National Innovation Office (NIH) is responsible for the government's technology and innovation policy. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.3% in 2011. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Hungary was of 0.6% in 2011.

Two strategies and an action plan, together with several other measures aim at improving effectiveness of the national system. The new National Research and Development and Innovation Strategy 2020 will ensure, amongst others, that the funding targets (R&D expenditure to reach 1.8% of the GDP by 2020) are met. The new Science Policy Strategy sets the framework for the financing of the academic sector. The National Research and Development and Innovation Strategy is accompanied by a two-year Action Plan to contribute to its implementation.

Funds allocated through the Operational Programmes of the New Hungary Development Plan (2007-13) are managed by the National Development Agency (NFU). The Hungarian Academy of Science (MTA) also allocates funds to its own research institutes, as well as to research units affiliated with universities. The main objectives of the MTA are to support and represent various scientific fields, to distribute scientific results and to foster international relations in the field of sciences.

Project based funding is a major mechanism for public support to RTDI activities in Hungary. The two most important financial sources providing competitive funding for R&D activities are the Research and Technological Innovation Fund (RTIF), and the various Operational Programmes of the New Hungary Development Plan co-financed by the EU Structural Funds (EDOP). Relevant as well is the Hungarian Scientific Research Fund (OTKA), that provides financial support to basic research via competitive funding.

The share of competitive versus institutional funding is of about 40% to 60% and the share of the former is expected to grow in the years to come. In this context, for instance, the EEA (European Economic Area) Financial Mechanism provides 24.3 million euro in 2013-2014 competitive funding to joint research activities and young researchers.

The use of international peer review is not widespread. The Hungarian Academy of Science (MTA) applies more and more this type of evaluation in its funding programmes.

The Hungarian smart specialization strategy, currently being drafted, is expected to be in line with the national research and development and innovation strategy. The input documents

from the seven Hungarian regions (RIS3 strategies) will be delivered by the regional innovation agencies in 2013, under the coordination of the National Innovation Office.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Hungary in total participation is 1.18 % so far, and Hungary has received 0.67 % of total EC contributions. FP funding represents 23 Euros per head of population. The country also participates in Joint Programming. Hungary participates as a member in 2 initiatives and also in 3 Article 185 initiatives.

The 'National Research, Development and Innovation Strategy 2013' explicitly addresses tackling grand challenges. It also highlights the importance of having excellent research infrastructures. Several schemes provide funding to research projects addressing this issue. And the Hungarian Academy of Sciences (MTA) has joined the initiative "Teaming for Excellence" from the Max Planck Society.

The Visegrad fund promotes research cooperation with the Czech Republic, Hungary, the Republic of Poland, and the Slovak Republic. It provides research grants from a common pot contribution of all countries involved.

With reference to ESFRI, the National Research Infrastructure Survey and Roadmap (NEKIFUT) done in 2012 provides an assessment of the Hungarian research infrastructures, and a unified national report and programme for the development of research infrastructures. In addition, Hungary has decided to participate in two research infrastructures from ESFRI: XFEL and ELI. Moreover, Hungary has joined several inter-governmental agreements, organisations and large Ris, but there is not much funding allocated for those collaborations. A National Research Infrastructure register is in place and provides information on the main Ris in Hungary.

With the aim of facilitating access of foreigners to Hungarian Ris, several programmes invite outstanding foreign researchers to workshops and other activities in Hungarian research infrastructures.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 5.0 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.8. The shares of non-national doctoral candidates were 5.7% from another EU-27 Member State and 2.6% from non-EU countries.

Research positions at public research institutions are open to non-nationals and no special or additional requirements are demanded to foreigners. However, in most cases, command of the Hungarian language is required. In 2012, 46% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Retaining talented researchers is a major concern (more than attracting foreign researchers) and several programmes provide funding to that aim. For instance, the Momentum program provides currently financial support to 28 young scientists to conduct internationally competitive research projects with a total funding of HUF 1.1 bn. A new call is open, with a financial allocation of HUF 600 million. In this line, the National Excellence programme provides support to students and researchers and the Bolyai Janos scheme provides scholarships to 180 researchers under the age of 45.

EURAXESS Hungary or the Hungarian Mobility Centre provide information and services to foreign researchers, but Hungarian research institutes advertise very few (10 in March 2013) vacancies for researcher positions on the Euraxess website.

Publicly funded grants or fellowships are not portable to other EU countries. National grants are basically not open to students or researchers from other countries.

As regards the Charter and Code, the Hungarian Rectors Conference called the attention of the rectors by mail in January 2013 to join to the Code of Conduct for the Recruitment of Researchers that aims to improve recruitment, to make selection procedures fairer and more transparent and proposes different means of judging merit. Two Hungarian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers.

More detailed information can be found in the country profile for Hungary in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

There are no specific provisions for female researchers in Hungary. Gender quotas have been discussed in order to reduce the gap between the representation of men and women in various professions and bodies, but have not been introduced.

In the new Labour Code the positions of women on maternity leave are no longer safeguarded. The rule in this respect changed significantly in the new Labour Code in effect from 1 July 2012. The restoration of the same position after maternity leave is no longer guaranteed. In contrast to this, the Hungarian Academy of Sciences (MTA) introduced in 2012 a framework programme for equal opportunities that allow for female researchers with children under 10 years old to apply for grants over two years of age limit compared to male researchers. The Economic Development Operational Programme aims at creating work place environments that ensure equal opportunities for efficient work for female employees or employees who return to the labour market after a period of receiving child care fees (GYED) or child care benefits (GYES), and help integrate these groups into the labour market.

The L'ORÉAL-UNESCO Hungarian Grant for Women and Science provides financial support to young female scientists in the field of natural sciences. The financial allocation is 11,000 euro per year. The Hungarian Academy of Sciences (MTA) has a special prize for female researchers, which is handed over annually at the "Week of Hungarian Science". In addition several universities give prizes to female researchers.

KNOWLEDGE CIRCULATION

The National Research and Development and Innovation Strategy 2020 (RDI Strategy) specifically supports efficient knowledge and technology transfer collaborations.

Regarding the policies on access and preservation of scientific information, the President of the Hungarian Academy of Sciences (MTA) issued an Open Access Mandate, according to which researchers and employees of the MTA should make their scientific publications open access; and various online portals, such as the Hungarian National Scientific Bibliography, REAL (repository of the Hungarian Academy of Sciences' Library) or the Hungarian Open Access Journals portal, have been put in place providing free access to publications, journals and information about Hungarian researchers.

Initiated by the National Innovation Office in early 2013, discussions started with key stakeholders in order to formulate a national policy to promote knowledge transfer, although currently no specific funding is available for technology transfer offices that are operated at major Hungarian universities. A 2012 regulation introduces mechanisms for the protection and management of intellectual property rights of research outputs, ensuring that the patent rights of institutional and employee inventions created in research centres belong to these centres. The 2013 EU country-specific-recommendation (CSR) emphasises the need “ to provide targeted incentives to support innovative enterprises”.

The National Information Infrastructure Development (NIIF) provides the framework for the development and operation of the research network in Hungary. In concrete, it provides an integrated computer networking infrastructure and, on the basis of that, a wide range of communication, information, and co-operation services, leading-edge environment for networking applications, as well as advanced framework for content generation and provision. Hungary is member of EDUgain through eduId.hu. HUNGARNet is the Hungarian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The Science, Technology and Innovation system in Ireland is evolving towards a strong prioritisation of research areas, focused on innovation for growth and jobs. Well aligned with the ERA priority to promote effective national research systems, peer-reviewed competitive funding continues to prevail in Ireland.

Science, Technology and Innovation policy is centralised in Ireland. The two main ministries with responsibility for research and innovation policy are the Department of Jobs, Enterprise and Innovation and the Department of Education and Skills. Forfás, an agency of the Department of Jobs, Enterprise and Innovation, acts as policy advisory board for enterprise, trade, science, technology and innovation. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.5% in 2011. Total GBAORD per capita rose until 2008, when it started to decline. The national public effort on Research and development, measured as the share of total GBAORD in national expenditures in Ireland was of 1.05% in 2011.

Key implementing bodies include Science Foundation Ireland, Enterprise Ireland and IDA Ireland (under the aegis of the Department of Jobs, Enterprise and Innovation) and the Higher Education Authority and IRC (under the aegis of the Department of Education and Skills). Science Foundation Ireland (SFI) acts as funding agency for academic researchers and research teams. It advances co-operative efforts among education, government, and industry that support its fields of emphasis and promotes Ireland's ensuing achievements around the world. Enterprise Ireland is the government organisation responsible for the development and growth of Irish enterprises in world markets. It works in partnership with Irish enterprises to help them start, grow, innovate and win export sales on global markets. In this way, it support sustainable economic growth, regional development and secure employment. The role of the Higher Education Authority (HEA) is to create a higher education system that maximises opportunities and ensures a high quality experience for students. As regulator of the higher education system, HEA is required to implement funding responsibilities and a process of effective strategic engagement to ensure well-functioning, well-governed, accessible and accountable higher education institutions, operating to high standards in all areas. The HEA advises the Minister for Education and Skills on the objectives to be set for the higher education system and performance indicators to be applied. It is the HEA's responsibility to ensure that national objectives are aligned with institutional objectives, that performance is measured against these and funding allocations made accordingly.

The National Research Prioritisation Strategy adopted in March 2012 prioritizes competitive Exchequer funding in 14 priority areas and 6 underpinning platform technologies. The Action Plan for Jobs 2013 presents a set of measures to drive job creation, among which there is a section specifying several actions in the area of research and innovation. The strategy for Higher Education to 2030, also adopted in 2012, establishes a new performance framework for public Higher Education Institutions.

Project based funding received around 51,43 % of GBAORD in 2008 according to OECD. SFI uses an international merit review process to choose far-reaching, high-impact research for support in its target areas and to fund excellent scientists and engineers on the dynamic intellectual frontiers of Biotechnology, Information Communications Technology (ICT) and Sustainable Energy & Energy Efficient Technologies (Energy). Recurrent (institutional) funding to universities, institutes of technology and other designated colleges is allocated by HEA using different methods which depend on the use of the funding. It includes core recurrent grants based on the “Recurrent Grant Allocation Model”, grants in respect of the “Free Fees” Scheme, funding in respect of increased student intake, supplementary funding requirements, and other miscellaneous initiatives that may require funding.

The use of international peer reviews to evaluate funding programme applications has been used extensively since 2000 by major R&D funding agencies such as Science Foundation Ireland and the Higher Education Authority.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Ireland in total participation is 1.42 % so far, and Ireland has received 1.29 % of total EC contributions. FP funding represents 107 Euros per head of population. The country also participates in nine Joint Programming initiatives. The country also leads one Article 185 and participates in four others Art. 185 initiatives and in seven ERANET +. Ireland also has signed several bilateral research agreements with countries outside the EU. The amendment of the Science Foundation Bill will provide the legal basis for funding research activities in fourteen priority strategic areas, notably with Northern Ireland.

The development of research infrastructures has been a key element of national STI strategies and the Programme for Research in Third Level Institutions has been a major funding vehicle to facilitate higher education institutions to invest in new facilities. The fifth and current cycle of the programme covering the period 2010-2015 will involve an estimated investment of €348m in the higher education sector dealing with a range of projects including infrastructure. The ESFRI road-map has influenced the contents of the Programme for Research in Third Level Institutions investment, the 2012 infrastructure-related funding programme and the Research Infrastructure Call 2012 Programme, developed by Science Foundation Ireland. All these instruments continue to provide for building and sustaining research infrastructures to accomplish high quality, high impact and innovative research.

Ireland endorses the facilitation of trans-national access to infrastructures (in person and remotely). It also devotes significant resources to helping researchers to secure right of access to specialist facilities in Europe, particularly those linked to Ireland’s research priorities and/or having relevance to enterprise goals.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010, the number of researchers (FTE) in relation to the labour force was 6.6 per 1,000, and the number of new doctoral graduates per thousand population aged 25-34 was 1.6. The

share of non-national doctoral candidates was 16.0% with citizenship of another EU-27 Member State and 22.3% from outside the EU.

There are no restrictions on access by EU and non-EU researchers to national grants. However, grants usually stipulate that research must be carried out in Ireland. There are a number of exceptions where the funding support measure seeks to encourage Irish researchers to collaborate with researchers in other countries such as the SFI US-Ireland R&D Partnership Programme.

The Employment equality legislative framework ensures that job opportunities are open to all, nationals and from abroad. This also applies to access by international researchers to research positions in the Irish higher education and enterprise sectors. A key focus of Government policy has been to attract high calibre researchers to Ireland and this is reflected in a number of support measures to assist international researchers and their families to locate in Ireland. Researchers applying for research positions in accredited research organisations can avail of a fast-track agreement that will allow the research organisation to employ them without recourse to the usual Green Card or work permit. In 2012, 71% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

All nine Irish universities along with one funding organisation and the representative body for contract researchers have endorsed the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers. 16 Irish organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which three Irish higher education institutions have received EU Commission acknowledgement for their progress in relation to the HR Strategy incorporating the Charter and Code.

EURAXESS accompanies the process, providing free advice and guidance to researchers from abroad. It has now expanded its scope to also cover research employment opportunities in the industrial sector. It is administered by the Irish Universities Association.

Several actions address a more effective connection between doctoral training programmes and industrial needs. The National Research Prioritisation Strategy has put considerable emphasis on the development of innovative fourth level training provision e.g. structured PhD courses that preserve the PhD's traditional strengths and embed activities that support the acquisition of a range of relevant specialist and generic skills. The fifth cycle (2010-2015) of the Programme for Research in Third Level Institutions is funding a number of innovative doctoral training programmes.

More detailed information can be found in the country profile for Ireland in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Several actions address gender equality and gender contents in science. For example, the Women in Technology and Science (WITS) network was established in 1990 to actively

promote women's participation in science and technology; and the Centre for Women in Science & Engineering Research (WiSER) in Trinity College Dublin seeks to develop sustainable practices to ensure that women can compete in research on an equal basis using their scientific expertise, knowledge and potential. Also, Science Foundation Ireland (SFI) funded a number of programmes that sought to encourage the entry of women into science and technology and to facilitate researchers (male and female) to resume their careers after family care breaks. One of these programmes was the Principal Investigator Career Advancement (PICA) support measure which supported researchers returning to active academic research after a family care career break. While PICA has been discontinued as a separate programme, the supports it provided have been integrated into another SFI programme, the Principal Investigators Programme. The Irish Research Council is a partner, along with Intel and Accenture, in the Women Invent Tomorrow initiative organised by Silicon Republic, which seeks to champion the role of women in science, technology, engineering and mathematics.

In 1995, the Irish Government introduced a requirement for a minimum of 40% of women and men appointed to all State boards. In March 2011, the incoming Government in its 'Programme for Government' announced that it would be taking steps to ensure that all State boards have at least 40% of each gender. These targets apply for public institutions.

KNOWLEDGE CIRCULATION

The statement presenting the National principles for Open Access Policy provides the overall framework in support of Open access to scientific publications.

The 2012 National Intellectual Property Protocol recommends that the development of a Central Technology Transfer Office act as a "one-stop-shop" to facilitate industrial access to public research results. It is hosted by Enterprise Ireland and will work closely with existing Technology Transfer Offices within higher education institutions. Ireland is also well advance in the implementation of the Commission Recommendation on knowledge transfer (COM (2008) 1329 final).

Access to Digital research services and fostering electronic identities are respectively supported by Ireland's participation to DARIAH consortium and EDUROAM. HEAnet is the Irish National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The Ministry for Education, Universities and Research (MIUR) is a key player in the Italian research system. MIUR is in charge of policy-making and provides funding to universities and research agencies. MIUR also coordinates the preparation of the three-year National Research Programme (PNR), the main government document for R&D planning, which sets the strategies for the national system. The overall coordination of S&T policy falls under the remit of the Inter-ministry Committee for Economic Planning (CIPE). Universities and public research organisations (PROs) are the core performers of the public research sector. The Council of National Research (CNR) is the largest PRO operating under the supervision of the MIUR.

Horizon Italia 2020 (HIT2020), published by the MIUR in March 2013, is the key document outlining Italy's research and innovation strategy between 2014 and 2020 in line with Europe2020 goals. The National Research Programme covers the period 2011-2013.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.56% in 2011. The national public effort on Research and development, measured as the share of total GBAORD in national expenditures in Italy was of 1.13% in 2011. The share of GBAORD allocated as project based is unknown.

The recent 2009 and 2010 laws have introduced mechanisms for allocating a share of institutional funding to universities and public research organisations on the basis of competitive and performance-based criteria. It is envisaged that this share of funding will increase. Project-based funding by the MIUR has been allocated through the Research Projects of National Interest (PRIN), Fund for investments in fundamental research (FIRB) and Smart Cities competitive calls.

The use of peer review as a standard method for evaluating research proposals was recently introduced by Law no.134 (2012) and further reinforced by HIT2020, according to which peer review shall be applied for all project-based funding. According to HIT2020, the implementation of peer review is a priority with a view to increase the quality and competitiveness of research in the country. Peer review with the use of foreign experts has been implemented for the main calls managed by the MIUR (e.g. FIRB, PRIN, Smart Cities). However, the peer review reform does not apply to public research organisations that do not fall under MIUR's supervision.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Italy in total participation is 8.6% so far, and Italy has received 8.4% of total EC contributions. FP funding represents 45 Euros per head of population. The country also participates in Joint Programming. Italy participates in 11 initiatives. The country also participates in 5 Article 185 initiatives and leads one of them. HIT2020 reinforces MIUR policy towards a higher degree of integration into the EU research agenda and acknowledges the need to reinforce joint programming.

Regarding the mutual recognition of evaluations, Italy has adopted two regulations (i.e. Law 4/2012 and 134/2012) which create the legal basis for the domestic recognition of evaluation of international research projects selected by EU programmes. The Operational procedures 556/2013 support the recognition of ex-ante and interim international evaluation of projects, however it does not apply to the recognition of ex-post evaluations.

Regarding the interoperability of programmes, Law 4/2012 has introduced several changes to eligibility definitions and eligibility of costs as well as the simplification of rules of research projects with a view to align national practice with EU legislation and practice.

Italy hosts a significant number of research infrastructures, many of which are linked to EU programmes. An update to the national roadmap of research infrastructures of pan-European interest took place in 2010. The ordinary fund for research institutes (FOE) constitutes the main source for financing research infrastructures on the Italian territory.

In addition, HIT2020 provides guidelines for identifying strategic research infrastructures in line with ESFRI criteria and for the definition of a national plan for research infrastructures. The Italian strategy focuses by and large on the adoption of smart specialisation for selecting regions for research infrastructures and on increased integration at EU level of selected research infrastructures (as opposed to developing more research infrastructures).

According to HIT2020, the setting up of a specific fund for financing research infrastructures is foreseen, however it is not clear whether a timeframe and budget line have been identified.

Regarding researchers' access to research infrastructures, HIT2020 also envisages support to researchers' mobility across pan-European research infrastructures. Law 35/2012 and Law 134/2012 removed some barriers to researchers' access to research infrastructures. Law 35/2012 allows researchers from HEIs and PROs participating to international projects to leave their employer for the whole duration of the project or for a maximum period of five years. However, certain categories of researchers (e.g. fixed term researchers, researcher with atypical contracts, researchers employed by PROs not under MIUR control) are excluded from this provision.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 4.1 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.6. The shares of non-national doctoral candidates were 3.1% from another EU-27 Member State and 6.2% from non-EU countries.

Italy has adopted several measures targeting researchers.

Changes to the recruitment rules for researchers and professors were introduced by Law 240/2010 and Law 1/2009 with a view to making recruitment more open, transparent and merit-based. These new regulatory provisions were implemented with the first call for professors in July 2012 (eligibility criteria, guidelines for selection and the composition of selection panels are publicised and candidates can appeal). In 2012, 31% of university-based

researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Euraxess Italy provides updated information on vacancies, fellowships, administrative matters and tailored services to mobile researchers. However, there is no specific budget line at national level for the management of the Euraxess portal.

Law 35/2012 removed legal barriers to grant portability, which means that researchers can leave their employer to spend a maximum period of five years abroad in a public, private or international organisation.

Access to national grants by foreigners is restricted. However, some programmes provide grants to foreign researchers regardless of their citizenship (e.g. 'Rita Levi Montalcini' programme).

A series of regulatory measures have been recently introduced to reform the Italian doctoral training system. Law 240/2010, Law 4/2012 and HIT2020 introduced changes with a view to creating an attractive and competitive doctoral system. Some regulations (Law 240/2010, Regulation 94/2013) draw on the principles of innovative doctoral training (e.g. cooperation with the private sector, international research, IPRs). Moreover, funding support for the development of research doctoral schools is allocated by regional programmes and Law 4/2012.

Two regulatory measures (Law 240/2010 and Government Decree 213/2009) explicitly acknowledged the Charter and Code principles and support their inclusion into research organisations' statutory regulations. However, there is no specific funding line at national level to support the implementation of the Charter and Code. Eighteen Italian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 4 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

More detailed information can be found in the country profile for Italy in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Besides general legislation on gender equality (e.g. Law 215/2012 which introduced the 'quote rosa' for selection panels and boards of public companies), no specific measures addressing gender equality in research have been adopted yet. However, the need to achieve gender balance for peer review selection panels has been formally acknowledged in MIUR HIT2020. Moreover, an agreement on gender equality between MIUR and DPO (Dipartimento per le Pari Opportunità) was formalised in January 2013.

KNOWLEDGE CIRCULATION

Italy has not put in place yet a general regulatory framework addressing the issue of open access to publications and data and data preservation. Several measures have supported the

voluntary adoption of open access by universities and research organisations (e.g. 2004 Declaration of Messina, CRUI Working Group on Open Access and related guidelines), whilst the Cohesion Action Plan supports the setting up of open access infrastructures in the convergence regions.

With regard to digital services, funding is provided to universities and research organisations and for the dissemination of research data as part of the Cohesion Action Plan and the Funding programme for start-ups in the convergence regions, 'Big Data'. Italy is member of EDUgain through IDEM. GARR is the Italian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

The 2013 NRP announced several hard and soft law measures aiming at reinforcing academia-SME cooperation and researchers' sectoral mobility. A funding programme supports researchers' mobility between industry and academia (Project 'Messengers'). The 2013 Country Specific Recommendation stressed the need to foster firms' "innovation capacity and growth"

EFFECTIVENESS

The Ministry of Education and Science (Research and Development) and the Ministry of Economics (innovation policy, influencing the research domain, mainly through selected innovation policy measures) share the governance of the national research and innovation system. The Declaration of intended activities of the new Cabinet of Ministers proposed in November 2011 envisages transferring the development of the innovation policy to the Ministry of Education and Science, but until early 2013 the transfer has not been implemented. At the political level, a new national authority, namely, the Prime Minister's Cross-sector Coordination Centre started to coordinate and monitor national development planning in 2012.

The Science, Technology and Innovation system in Latvia has been strongly affected since 2008 by the crisis. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.15 % in 2011. Total GBAORD per capita rose until 2008, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Latvia was of 0.38% in 2011. The National Development Plan (adopted at 20.12.2012) foresees to invest on average 1.5% of GDP in research by 2020, which comprises expenditures from national sources and financing from abroad. Funding for the research system is very linked with EU funding (EU Structural Funds and the 7th Framework Programme): in 2010/11 it constituted 50.7% of GERD.

Public R&D funds are provided via a mix of institutional and project based competitive funding, with similar overall shares. The allocation principles of the state budget resources are in the process to being changed, thus promoting concentration of excellence and human resources, fostering cooperation with industry and strengthening national identity. In 2013, public and private scientific institutions are being evaluated. The 2013 Country Specific Recommendation advises to "take further steps to modernise research institutions based on the on-going independent assessment".

National research centres are being established to strengthen excellence and concentrate resources in the following areas: Innovative Technologies for High-Quality, Safe and Healthy Food Production from Genetically, Physiologically and Biochemically Diverse Plant and Animal Material; New Medicines and Biocorrection Tools: Design, Transports and Mechanisms of Action; Research and Elaboration of Modern Methods and Developed Technologies in the Field of Energy: Environmentally Friendly Energy, Security of Energy Supply and Energy Efficiency; Scientific Foundation of Information Technology; "Letonika" (Latvian Studies): Studies of History, Language and Culture; Development of Advanced Functional Materials for Microelectronics, Nanoelectronics, Photonics, Biomedicine and Constructional Composites, as well as Related Technologies; Substantiation of Deciduous Trees Cultivation and Rational Utilization, New Products and Technologies; Multi-Disciplinary Research Consortium on Major Pathologies Threatening the Life Expectancy and Quality of Life of the Latvian Population; and Climate Change Impact on Water Environment in Latvia (Kalme).

Peer review is used for project based funding since Latvia regained independence in 1990. New rules for the evaluation of proposals on the basis of international peer review have been proposed and are expected to be implemented next year.

A Smart Specialisation strategy is being prepared, which also addresses transnational and international cooperation in research and innovation.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participations of Latvia in total participations is 0.23 % so far, and Latvia has received 0.09 % of total EC contributions. FP funding represents 15 Euros per head of population. The country also participates as observer in one Joint Programming initiative. The country also leads one Article 185 initiative and participates in 3 other Art. 185 initiatives and in five ERANet +. Bilateral and trilateral cooperation agreements on research and innovation with some countries have been established and several activities are being developed. The country continues developing with Lithuania and Estonia the proposal for the Baltic Innovative Research and Technology Infrastructure (BIRTI) platform, whose aim is to create favourable conditions for the innovation process, scientists, engineers, designers and contractors, working together on a competitive knowledge-based world-class product development and manufacturing. As support of this platform, the Memorandum of Understanding between ministries of Education and Science of the Republic of Latvia, the Republic of Lithuania and the Republic of Estonia has been signed.

The Latvian Academy of Science participates in the Joint Baltic Sea Research and Development Programme (BONUS), an Article 185 initiative co-funded by the Baltic Member States and the European Union. The main aim of BONUS is to generate and disseminate knowledge and provide necessary know-how in order to resolve successfully major challenges facing the Baltic Sea region in the coming decade and beyond on Adapting to the climate change and its effects; Restoring good environmental status of the Baltic Sea and its coasts; Achieving sustainable and safe use of the exploited coastal and marine ecosystem goods and services; Creating cost-efficient environmental information system; Evaluating and developing relevant policies and collective governance and Adapting to a sustainable way of living.

On research infrastructures improvement, the government supports the development of the national programme.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 3.4 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.4. The shares of non-national doctoral candidates were 0.8% from another EU-27 Member State and 0.6% from non-EU countries.

The “Law on Institutions of Higher Education” (1995) provides for the autonomy of Higher Education Institutions. It indicates that open competitions are announced for vacant professor and associate professor positions. They are elected by the Council of Professors in the relevant subject area. Each applicant who is a candidate for the position of professor receives an independent international evaluation organised by the Council of Professors in the relevant subject area. Vacancies for academic positions and top-level positions (e.g. directors) in publicly-funded scientific institutions and publicly-funded higher education institutions are advertised in the official newspaper. The EURAXESS Jobs portal provides a link to the official newspaper. Institutions can take additional measures in order to advertise job vacancies. The Law on Scientific activity defines the rights, duties and liability of researchers. It does not mention the conditions for recruitment. In 2012, 61 % of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012). The regulation on Attraction of Human Resources to science promotes the attraction of additional human resources in the public sector, funded with the contribution of the European Social Fund.

A number of Latvian universities have implemented dedicated study programmes (Master and doctoral studies) aimed at promoting researchers’ skills sets and career prospects, including inter-sector cooperation and mobility. The implementation of the ‘European Charter for Researchers’ and the ‘Code of Conduct for the Recruitment of Researchers’ is not directly promoted at national level. In 2011, the Riga University - as the first institution in Latvia - signed the ‘Charter & Code’. One Latvian organisation is actively engaged in the Commission’s Human Resources Strategy for Researchers.

Mobility is supported by several measures. While research grants are portable to another national research institution, the current law does not regulate the portability of grants to another country. Some of them address inward “return-mobility”, others seek to attract foreign researchers and sets up the conditions for hiring foreigners.

Contracts on publicly-financed research activities are concluded between the funding agencies and the research institutions or higher education institutions. Therefore, national grants are also open to non-residents provided that these people are employees of a contracting institution.

National fellowships are also open to non-residents providing they people are students of the same study programme that provides the fellowship.

Some grants seek to induce a higher degree of integration between PhD programmes and industry. However, these grants are seldom implemented and there seems to be little follow up by industry in terms of hiring the graduates after degrees are granted.

More detailed information can be found in the country profile for Latvia in the Researchers’ Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

The Labour Law includes gender among the principle of non-discrimination. In 2007, the percentage of women grade A academic staff was 29.1% in Latvia. The proportion of women working in the science sector is among the highest in the EU-27: in 2009, the percentage of women scientists was 53.8%. The share of women scientist is above 0.5 in the category of female graduates (ISCED6) per 1,000 population aged 25-34, while it is 0.3 for the case of men. However, male scientists dominate in leadership positions in Latvia. As of 2011, the Latvian Government had not introduced any new measures aimed at supporting women in top-level positions.

The European Structural Funds co-funded activities aim at promoting gender equality in the research profession. For example, promotion of gender equality is one of the criteria for the evaluation of grant proposals in the context of the ESF activities within the field of higher education and science.

KNOWLEDGE CIRCULATION

On open access to publications and data, a national repository of research data, MIDAS, is been set up. Public funded projects through competitive VEGA grants are requested to upload and make available scientific publications and/or include them in the national repository.

Knowledge transfer also receives attention from national authorities. The amendment of the Law on Scientific Activity will ensure, once adopted, the efficient protection of inventions from the public sector. Support is also being provided for the establishment of technology transfer units in eight Higher Education Institutions (University of Latvia; Riga Technical University; Ventspils University College; Rezekne Higher Education Institution; Latvia University of Agriculture; Riga Stradins University; Daugavpils University; Laboratory of Design innovation and technologies at the Art Academy of Latvia). Leading scientists from major universities of Latvia and fifty innovative entrepreneurs have teamed up to establish technology transfer centre for innovative products. Baltic Innovative Research and Technology Infrastructure (BIRTI) unite and coordinate cooperation between universities, scientific institutes and entrepreneurs.

In relation with Digital ERA, Latvia is gradually building a hi-tech industry - with a range of innovative projects pointing to rapid progress. Notably, the University of Latvia has been very active in projects such as QCS in the field of quantum computing, Osiris which aims to help European countries establish a coordinated approach to large-scale investments in transnational ICT research infrastructures, Geo-Seas, which is expanding researchers' access to information about Europe's seas and marine environment; Choreos to bear on some of the main challenges of the Future Internet of services; Accurat, which develops new tools and methods for identifying and analysing comparable bodies, or 'corpora', of texts between different language pairs, and especially in specific domains, in an effort to improve existing machine translation technology and TAAS, which focuses on creating a cloud-based platform for acquiring, cleaning up, sharing and reusing multilingual terminological data. Latvia is a member of EDUgain through LAIFE. LATNET is the Latvian National Research and

Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product were 0.58 % in 2011. Total GBAORD as a % of total general government expenditure, as a measure of the effort by national authorities to research in their country, notably in times of crisis, has initially increased from 1.09% in 2004 to 1.26% in 2008, dropped to 1.05 % in 2010, and increased again to 1.19% in 2011. The share of GBAORD allocated as project based is unknown.

In 2012, in addition to existing strategies and programmes, a number of new strategic documents with relevance for research and innovations which addressed the Knowledge Triangle were published: the National Progress Programme for Lithuania for the period 2014-2020; the Concept of the Establishment and Development of Integrated Science, Studies and Business Centres (Valleys); the State Studies and R&D Programme for 2013-2020. These added to the existing Lithuanian Innovation Strategy for 2010-2020 (adopted in 2010), the General National Research and Science and Business Cooperation Programme (adopted in 2008).

Lithuania has witnessed an increasing share of government budgetary funding for research allocated on competitive basis. The new Law on Higher Education and Research (adopted in 2009) and accompanying bylaws (Decisions) were a major policy shift and led to considerable increase in the share funds that are allocated through competitive procedures. The reforms had the largest impact on two streams of funding for public higher education institutions (HEIs) and research institutes: firstly on basic institutional funding, secondly, on grants for research projects, introducing a competitive procedure. The Research Council of Lithuania (LMT) acquired the functions of a funding agency. It provides grants to research projects through competitive calls for proposals that are subject to peer review. The scale of grant-based funding has significantly increased and reached more than €21m in 2012.

As a result, the proportion of competitive funding has increased from 12.1% in 2006 to approx. 40% in 2011. In 2012 around 50% of all research funding would be allocated on a competitive basis, but statistics on the share of GBAORD allocated as project based are not yet available.

The 2009 Decision (as amended in 2010 and 2012) established that 40% in 2010 and 50% in 2011 and subsequent years of basic funding will be allocated to public HEIs and research institutions on the basis of results of assessment of R&D activities. Since 2011, the remaining 50% is allocated on the basis of “normative number of staff” that is approved for each institution by the decree of Minister of Education and Research.

From 2012 onwards, the “competitive” half of basic funding will be reallocated every three years taking into consideration the results of assessment of R&D activities. This will be based on four criteria: a) funding received from participation in international research projects; b) the funding received from R&D contracts with private establishments; c) the public funding from participation in joint R&D projects with private establishments; d) the evaluation of

research production, focussing on publications and patents, annually carried out in accordance with the principles of international peer review.

Evaluation of R&D activities and outputs should be in line with international peer review standards. The peer-review process is organized and managed by Research Council of Lithuania (LMT). In 2012, the peer review was applied for a) Competitive calls for proposals for national and international research grants and b) Evaluation of research production. The results of evaluation have an impact on basic funding of research carried out in public HEIs and research institutions. The first evaluation was completed in 2010. In principle participation of international peers is not limited, but in practice a majority of grant proposals are submitted in Lithuanian language, which could pose linguistic barriers to participation of international reviewers. There are no publicly available data on the extent to which the peer review involves international scholars.

The updated Concept of the Establishment and Development of Integrated Science, Studies and Business Centres – Valleys (adopted in October 2012) provides the basis for continuation of investments into five science ‘valleys’, but also defines steps on setting the priorities for investments into research and innovation in the context of smart specialisation.

TRANSNATIONAL COOPERATION

The developments since 2010 have paved the way for closer integration of Lithuanian research system into ERA. This includes preparation of the Roadmap for Research Infrastructures of Lithuania (in 2011) and accompanying documents that regulate Lithuanian research institutions’ involvement in international research infrastructures (Ris); participation in Joint Programming Initiatives and six other international research programmes; launch of bilateral research programmes.

Overall, since 2010, Lithuania stepped up efforts to implement joint research agendas through Joint Programming Initiatives, international programmes, and bilateral programmes. Financial commitments to joint research agendas are however rather limited and national research programmes are only implicitly aligned with research priorities pursued at ERA.

Co-operation between countries is fostered by the Framework Programme. The share of participation of Lithuania in total participation is 0.33 % so far, and Lithuania has received 0.15 % of total EC contributions. FP funding represents 13 Euros per head of population. The country also participates in Joint Programming. Lithuania participates as a member in 2 initiatives. The country also participates in 2 Article 185 initiative(s).

Since 2010 Lithuania participates in two Joint Programming Initiatives: "Cultural Heritage and Global Change: a new Challenge for Europe" and "Healthy and Productive Seas and Oceans". Lithuania together with partner countries also contributes to six international programmes: the Joint Baltic Sea Research and Development Programme (BON US); the ERA-NETS "BiodivERsA2"m "EuroNanoMed", "M-era.NE T", as well as "HERA (Humanities in the European Research Area) Network Programme on Cultural Encounters

and (contribution to 2nd calls for proposals launched in 2012) and "LILAN": Nordic Baltic Programme on Living Labs.

Lithuania was also involved in the drafting and adoption of the European Union Strategy for the Baltic Sea Region, which is the first macro-regional strategy in Europe, adopted by the European Council in 2009. It aims at reinforcing cooperation within the Baltic Sea region in order to face several challenges by working together as well as promoting a more balanced development in the area. Lithuania also participates in the Joint Baltic Sea Research and Development Programme (BONUS). The main aim of this article 185 programme is to generate and disseminate knowledge and provide necessary know-how in order to resolve successfully major challenges facing the Baltic Sea region in the coming decade and beyond on adapting to the climate change and its effects; restoring good environmental status of the Baltic Sea and its coasts; achieving sustainable and safe use of the exploited coastal and marine ecosystem goods and services; creating a cost-efficient environmental information system; evaluating and developing relevant policies and collective governance and adapting to a sustainable way of living. The Lithuanian Ministry of Economy (ŪM) actively seeks participation in the international innovation programmes which support international innovation networks, especially in the Baltic Sea Region. One example is a project supported by the 'BSR Stars Programme' and coordinated by ŪM together with Swedish partners, that aims at the preparation of a development programme for the Baltic Sea SME innovation clusters (part of the Art.185 initiatives – the 'Eurostars' joint research programme). The objectives of this project include implementation of international collaboration projects and creation of a macro-regional communication platform based on digital technology. The programme is a joint effort which has been developed over a period of one and a half years, involving approximately forty people from ten countries' ministries and national innovation agencies from Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland and Sweden.

In addition, in 2011 five bilateral or trilateral programmes (with Belarus, Latvia and Taiwan, France, Ukraine and Switzerland) funded 39 collaborative research projects with the total budget of €0.2m. The objectives of these programmes are not explicitly aligned with broader grand challenges and the funded projects covered a wide range of research areas.

Evaluations of research projects carried out within the framework of ERA, bilateral and trilateral programmes are recognized in Lithuania, which typically results in funding of the projects within the limits of financial commitments made for the programmes.

The Roadmap for Research Infrastructures of Lithuania was approved in 2011. An international group of experts reviewed 20 project proposals submitted by consortia of Lithuanian HEIs and research institutes and identified 15 mature or promising projects. The Roadmap also presented the selected list of the European Research Infrastructures to be considered attractive for some national research infrastructures. No financial commitments for construction and operation of the global, national or regional Ris has been made to date (March 2013).

A Decree of the Minister of Education and Science established that Lithuanian research institutions can submit applications for joining international research infrastructures on a continuous basis and the Roadmap should be subject to major revision every 5 years. The applications will be regularly assessed by the Research Council of Lithuania (LMT). The latter in December 2012 approved internal Guidelines regulating the assessment and selection procedures ("Decision of the Research Council of Lithuania on procedures for initiation of participation in international RIS").

Research infrastructure in Lithuania operates on the principle of open access - this means that RI are openly available for business (SMEs included), students and researchers from other institutions or abroad. Regulation on "Open Access Centres" – R&D infrastructures in higher education and research institutions or in other public and private entities in the Republic of Lithuania - was approved by the Minister of Education and Science in 2011. The Open Access Centres are registered by MITA.

There were no such legal development regarding removal of barriers for international access of Lithuanian Research Infrastructures. However, the following "Open Access Centres of Information Technologies" were created: the Competence Centre of Food Science and Technology, Civil Engineering Centre of the Vilnius Gediminas Technical University, and the Centre of Animal Health and Quality of Raw Materials of Animal Origin. These centres provides services necessary for the performance of scientific research and (or) experiments.

On the basis of 'Lithuania 2030', on 28 November 2012 the Government approved the National Progress Programme for Lithuania for the period 2014-2020, providing a basis for the European Structural Funds support under the next programming period. It is projected that 14.23% of funds will be invested in education, culture and basic research (e.g. mobility, research infrastructures, competitive research funding, etc.).

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 5.3 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.9. The shares of non-national doctoral candidates were 0.3% from another EU-27 Member State and 0.2% from non-EU countries. One Lithuanian organisation is actively engaged in the Commission's Human Resources Strategy for Researchers.

Lithuania has made some recent progress in creating an open labour market for researchers, and has recently put in place measures to meet its R&D target and at promoting attractive employment conditions in public research institutions (Researchers Report 2012). However, practice suggests that more needs to be done in ensuring competitiveness of the recruitment process, in terms of transparency in institutional recruitment of outsiders and access for foreign researchers to national grants. In 2012, 46% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The Law on Higher Education and Research (adopted in 2009) establishes necessary conditions for open, transparent and merit based recruitment of researchers. Public HEIs and research institutes are legally obliged to: publish information on vacancies, establish selection panel, publish selection criteria, provide adequate time period (three months) between vacancy publication and submission of applications, offer the right of appeal, etc.

There is an internet portal that should include all vacancy publications and the Lithuanian EURAXESS portal should provide relevant and up-to-date background information on Lithuanian higher education and research landscape, vacancies, social insurance, work permits, etc. In 2011, LMT took over from the Centre of Quality Assessment in Higher Education the functions of the coordinator of the Lithuanian national EURAXESS centres, but there is still scope to improve the relevance and quality of its services.

In principle researchers from EU and non-EU countries can apply for grants administered by LMT. However, the number of participating foreign researchers remains limited. Application needs to be submitted in Lithuanian. There is a legal requirement that beneficiaries of grants have to be employed in a Lithuanian institution. This poses considerable barriers due to low level of salaries and careers (contractual agreements) elsewhere. National grants are not portable as they are awarded to specific institutions and therefore cannot be transferred to other institutions (in Lithuania or abroad). There are no specific measures supporting the portability of grants (Researchers Report 2012).

The decree of the Minister of Education and Science on procedures for establishing the right to offer PhD studies stipulates that institutions willing to register new PhD programmes have to comply with considerably more stringent requirements in terms of excellence of research, relevance of proposed research programmes, human and physical resources, etc. As a result, an increasing number of Lithuanian institutions establish joint PhD programmes, with the view of pooling intellectual resources and research infrastructure. Furthermore, several universities have started Joint international PhD programmes, (some of them funded by Erasmus Mundus). The use of the principles for Innovative Doctoral Training has not been identified.

More detailed information can be found in the country profile for Lithuania in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Despite the relatively high proportion of women researchers, they are grossly under-represented in senior academic (less than 20% of professors are women) and managerial positions. A Strategy on Equal Opportunities was adopted in 2008, endorsing gender equality in science and research in Lithuania. It provides legal foundations for introduction of "Gender equity and gender mainstreaming" as a horizontal principles in other strategies and programmes (for example, Researchers Career Programme). Since 2011, the Lithuanian Academy of Sciences implements a project "Promotion of gender equality in sciences". These steps, however, do not seem to be sufficient to counter historically embedded barriers to

gender equality in research. At the moment, there is no systemic approach or legal regulations to promote gender equality on academic and research committees, boards and governing bodies in Lithuania.

With the view of tackling practical issues related to gender equality project the Lithuanian Academy of Sciences and its partners LMT, association "BASNET Forumas" and the National Union of Student Representations of Lithuania implement the national project "Promotion of gender equality in sciences" (LYMOS). The project started in 2011 and runs until beginning of 2013. It has issued several analytical reports, provided recommendations for updating the Strategy on Equal Opportunities, to research and higher education institutions of Lithuania with measures helping to ensure gender equality in science and its management and provided grants to researchers after maternity (paternity) leave (budget for 2011-2012 was €0.09m). This project is the only example of a partnership related to gender issues, as proposed in the ERA Communication.

KNOWLEDGE CIRCULATION

The Law on Higher Education and Research stipulates that all results obtained from research activities carried out in State higher education and research institutions or in education research institutions using State budget funds must be publicly announced (in the Internet or any other way) and that the results of research conducted in non-State higher education and research institutions with funds of the State budget shall be announced publicly (in the Internet or any other way).

In order to address the insufficient incentives for institutions and researchers to ensure open access to research results, and the fragmented public support, in 2012, the Minister of Education and Science approved the Programme for Development of Lithuanian Research and Studies Informational Infrastructure for 2013-2016 (total budget €18m). It seeks better integration of previously developed databases and increased accessibility of research outputs (publications, etc.) and data. The target is that 40% of publications and at least 10% of collected data should be publicly available free of charge by 2016. The allocation of €4.3m in 2011 to Vilnius University for implementation of the project "National open access archive of research information (MIDAS)" seeks to provide infrastructure for preservation and open access to research data. It is planned to integrate it with other databases.

The year 2012 witnessed proliferation of new strategic documents with relevance for innovation and knowledge transfer between public research and private enterprises: the National Progress Programme for Lithuania for the period 2014-2020; the Concept of the Establishment and Development of Integrated Science, Studies and Business Centres (Valleys); the State Studies and R&D Programme for 2013-2020 which addresses the knowledge triangle, adding to existing strategies and programmes: the Lithuanian Innovation Strategy for 2010-2020 (adopted in 2010), the General National Research and Science and Business Cooperation Programme (adopted in 2008).

A dedicated programme to promotion of High-Level International Scientific Research has as goal to promote the execution of high-level international research directed towards the priority areas of economy that will determine the future prosperity and competitiveness of Lithuania, as provided for in the Lithuanian Innovation Strategy for 2010–2020. Applications for the execution of 25 projects in the amount of LTL 41.41 million were received in 2012. Currently, there are 15 agreements signed for the total of LTL 25.71 million.

Investments in five so called “Integrated science, studies and business centres – valleys” constitute the most important instrument (worth around € 597m) for fostering open innovation and transfer of knowledge between public research and private enterprises. The initial idea behind the “valleys” projects was to establish state-of-art business-science collaboration centres/clusters with respective research infrastructure and supporting services (knowledge and IPR transfer services, commercialization units, etc.). However, systemic and legal obstacles prevented business from entering R&D collaboration with universities (and vice versa).

The updated Concept of the Establishment and Development of Integrated Science, Studies and Business Centres – Valleys (adopted in October 2012) seeks to address some of the drawbacks. It provides the basis for continuation of investments into five science ‘valleys’, but also defines steps on setting the priorities for investments into research and innovation in the context of smart specialisation and should launch a specific programme for funding the ‘joint projects’ in defined priority areas. The Agency for Science, Innovation and Technology (MITA) received a mandate to coordinate the implementation of ‘joint projects’. A new coordinating body – the Strategic Council for Research, Development and Innovation under the Prime Minister’s Office will be set up. MITA together with other institutions (ŪM and ŠMM) belongs to secretariat of this new coordinating body.

The Ministry of Economy has prepared and announced a draft description of conditions for financing under the measure “Intellect LT”. In accordance with this description the activities of the commercialization of research results will be financed. Currently there are 15 applications for projects funded by the Ministry of Education and Science that have been assessed by the European Social Fund Agency; also, contracts on project funding and administration are being concluded. The implementation of the projects is scheduled to start in 2013.

In 2012, the Agency for Science, Innovation and Technology (MITA) implemented a call for applications for the funding of commercialization projects of scientific research and development results. 13 projects were financed, 13 companies established for commercialization of R&D results. In order to promote more active business-science cooperation and technology transfer processes, the implementation of the project “Science and Technology for Innovative Businesses” aiming at the provision of innovation-related services for small and medium-sized enterprises (SMEs) was started. The funding in the amount of LTL 6.2 million was allocated for the project.

Around € 100 mln are allocated for other measures foreseen for 2007-2013 aiming at direct support for fostering public-private cooperation and for the promotion of clusterization are allocated around € 100 mln and include: “PRO LT”, “Inoklaster LT”, “Inogeb LT-1”, “Inogeb LT-2”, “Inogeb LT-3”, “Advanced technologies development programme”, “Biotechnologies development programme”, „Innovation vouchers”, “Eurostars” and “Eureka”. The implementation of the programme “BSR Stars” and the project “StarDust” aimed at the development of innovations, clusters and small and medium-sized enterprise networks was being continued in 2012. Under the “BSR Starts” programme, 11 new clusters, 3 of which were international, were created. The country continues developing the proposal for the BIRTI platform, whose aim is to create favourable conditions for the innovation process, scientists, engineers, designers and contractors, working together on a competitive knowledge-based world-class product development and manufacturing.

As a general rule publicly funded e-infrastructures are accessible to researchers from public and private sectors without major restrictions. In late 2012 there have been discussions to set up a portal that could provide e-services to public research institutions and private enterprises. The overall objective of the initiative is to facilitate commercialisation of ideas generated in research institutions and foster cooperation between public and private sectors. In 2012, 47 Lithuanian research and higher education institutions were provided with a possibility to use the information system of the Lithuanian academic e-library. The Lithuanian e-learning infrastructure was created and ensured. In 2012, the Lithuanian Distance Education Network (LieDM) supported distance learning (e-learning) in Lithuania in 2012. The implementation of the Lithuanian Virtual University Programme for 2007–2012 was completed. Its continuation in 2013–2016 was approved under the name "Lithuanian higher education and science institutions' informational infrastructure development programme" (LITMIS). LITNet is the Lithuanian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

Luxembourg has a young public research system. Its public research institutions are slightly more than two decades old and its sole university was formed in 2003. The GBOARD as a share of GDP was 0.58% in 2011. Luxembourg's national RDI strategy is founded on multi-annual planning and focuses on targeted priorities defined in the strategy Luxembourg 2020.

The Ministry of Higher Education and Research (MESR) is in charge of research performers University of Luxembourg, the public research institutions Gabriel Lippmann, Henri Tudor, Santé and CEPS/INSTEAD. The MESR oversees also the National Research Fund (NRF). Founded in 1999, the NRF oversees funding for public sector research programmes and administers the national funding programme for doctorate and post-doctorate studies (Aid for Research Training-AFR).

The Ministry of the Economy and Foreign Trade (MECE) supports private sector research under the law of 5 June 2009. Luxinnovation, the National Agency for Innovation and Research, bridges the public and private sectors, while a governmental Superior Committee for Research and Innovation (Comité Supérieur de la Recherche et de l'Innovation) ensures consistency and coherence in the research policy mix.

The most important recent developments have been the establishment of performance contracts with the major research actors in the public sector (all PROs, FNR, Luxinnovation) in 2008 and the law of 5 June 2009 for government support of activities in the private sector. Performance contracts provide the institutions with quite large autonomy in defining and implementing a 3-year research development strategy. They include funding commitments and targets for external funding as well as provisions for human resources development for researchers. Increasing amounts of competitive and project-based funding as well as mandatory annual evaluations of the public research centres (or one of its departments) by international peer review are mandated by performance contracts. The University of Luxembourg is also evaluated on a regular basis under the law of 12 August 2003. The results of evaluations of the public research centres are published on the MESR website and, for the University, on its website. All evaluations are conducted through a peer review by independent, international experts.

In order to further consolidate and harmonise the national research system, new legislation was submitted to the Parliament in 2012 modifying the law of 31 May 1999 on the National Research Fund as well as new legislation concerning the public research centres ("Law on Public Research Institutions"). According to the new legislation the Public Research Centres (PRCs) Gabriel Lippmann and Henri Tudor will be merged and the Integrated BioBank of Luxembourg (IBBL) will be integrated into PRC Santé. This implies that the University of Luxembourg will focus on the creation of new scientific knowledge, fundamental research and academic teaching whereas the "New PRC" will focus on applied research.

About 60% of the Luxembourgish GBOARD is allocated through calls for proposals. This is one of the highest shares of all EU Member States. All programmes funded through the NFR

operate through calls. The ATTRACT (2006-2013), CORE (2008-2013) and OPEN programmes have annual calls and the INTER programme (2006-2014) has regular calls, while calls for the PEARL programme (2011-2013) are open over the whole year. Funding programmes of the NRF imply proposals to be reviewed by independent, international experts. NRF adheres to the core principles of international peer review.

The NRF CORE programme, which is the main public research funding instrument, covers five thematic domains for a budget of €69 million for 2011-2013. The launch of the NRF OPEN programme intends to provide funding for a limited number of high quality research projects that do not fit into areas covered by the NRF's thematic CORE programme. It aims at supporting established researchers to pursue new and emerging developments in their research fields. The first call for proposals is taking place in early 2013 with an annual budget set at €1 million.

TRANSNATIONAL COOPERATION

The NRF actively encourages research collaboration between researchers in Luxembourg and abroad. In order to optimise the visibility of Luxembourg as an attractive location for research activities within Europe, the NRF plans to reinforce collaborations with selected countries as well as its own international cooperation instruments. In the Luxembourg 2020 strategy, the government agrees that significant augmentation of participation in international programs and initiatives is needed.

Luxembourg has always been committed to transnational co-operation and the NRF has established widespread bi-lateral and multi-lateral agreements with other international research performers and consortia. These include participation in seven ERA-Nets as well European Cooperation in Science and Technology (COST), European Research Consortium in Informatics and Mathematics (ERCIM) and ESF Research Networking Programmes. The share of participation of Luxembourg in the EU FP is 0.14%. Luxembourg has received 0.08% of total EC contributions. FP funding represents 86 Euros per head of population. Luxembourg participates in one JPI and 4 Article 185 initiatives, and leads one of them.

Luxembourg has multiple bi-lateral agreements with SNF (CH), DFG (DE), NCBR (PL), FWO (BE), FWF (AT) and CNRS (FR), which follow the Lead Agency principle in which the rules and evaluation procedures of the agency to whom the proposal is submitted apply. When not itself the Lead Agent, Luxembourg accepts the decision of the Lead Agent as the basis of the funding decision and funds the research activities carried out in Luxembourg. Since 2012, proposals under the bi-lateral agreements with Germany's DFG and Switzerland's SNF are submitted under the NRF CORE programme. It requires peer review by three independent international experts and a panel review including one of those experts.

The NRF INTER programme funds Luxembourg researcher participation in international projects. The aim of the programme is to promote international scientific cooperation, to create synergies between research centres within and outside Luxembourg, to achieve a

critical mass in certain fields and to increase the visibility and competitiveness of research in Luxembourg.

NRF participates in European Heads of Research Councils (EUROHORCs), the European Science Foundation (ESF) and the International Council for Science (ICSU). NRF is also a member of Science Europe.

There is no European Strategy Forum on Research Infrastructures (ESFRI) roadmap for Luxembourg. Luxembourg does not participate in large-scale, intergovernmental RI projects. This is not considered to be an issue or detrimental to its national research strategy.

OPEN LABOUR MARKET FOR RESEARCHERS

The number of researchers (FTE) in relation to the labour force was 11.4 per 1,000 in 2010. The number of new doctoral graduates per thousand population aged 25-34 was 0.8 in 2010 and the percentage of doctoral candidates with citizenship of another EU-27 Member State was 67.9%. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 20.4%.

Most researchers working in Luxembourg are foreigners. Grants are fully open to non-residents and are portable to other EU countries on condition that the project objectives and deliverables remain the same abroad.

The AFR programme, which funds PhD and post-doc work and is run by NRF, is currently supporting around 600 researchers. The ATTRACT and PEARL programmes also aim to attract outstanding researchers. The ATTRACT programme is targeted at outstanding younger researchers from abroad two-to-eight years beyond their doctorates, while the PEARL programme offers PROs the means to recruit senior researchers in areas of strategic importance to Luxembourg. The NRF accompanying measure on Training and Mobility is dedicated to the support of both inward and outward mobility from one month up to one year.

The public research centres enjoy full autonomy in their recruitment policy, while the University autonomy is limited. All the public research organisations in Luxembourg have signed the Declaration of Commitment (including the NRF and STATEC -Institut National de la Statistique et des Etudes Economiques). The University and all PROs are in the process of developing a human resource policy under the provisions of the Charter and Code, as is the MESR. Under the future new Law on public research institutions, the implementation of the "Charter & Code" will become mandatory. 6 Luxembourg organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 2 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

The AFR funding programme is in compliance with the principles advocated in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers and follows the guidelines "Towards a European Framework for Research Careers."

Job vacancies are posted on the Luxembourg's Euraxess website (83 posts per 1,000 researchers) as well as on the websites of its PROs. All new positions in the University are

open to external researchers. English is the preferred language for non-administrative posts. The Luxembourg Portal for Innovation and Research has links to researcher job openings and internships and all PROs also list openings for researchers, including PhD and post-doc positions. However, selection criteria are not published and limited information is provided on the selection process or selection panels (composition not published). The University of Luxembourg includes international experts in its selection panels. Institutions do neither offer the right to receive feedback nor to appeal. In 2012, 72% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

In the future the government is planning to set up a series of doctoral schools for PhD candidates to improve researchers' employment skills and competencies. The government is also plans to define supervision criteria to monitor the advancement of funded PhD projects. The AFR funding programme meets the "Principles for Innovative Doctoral Training".

Last, Luxembourg offers full social benefits to researchers at all levels, including PhDs and post docs.

GENDER

There are laws prohibiting discrimination based on gender.

Eleven Luxembourg public research institutions have signed the Code of Conduct for the Recruitment of Researchers that supports gender equality. Gender is highlighted in all performance contracts and gender balance is taken into consideration for the nomination of board personnel.

There are however no quotas or national targets or other measures to ensure representative gender balance for researchers. Luxembourg ranks at the bottom of the EU as regards the proportion of female researchers, women in Grade A academic positions and women in PROs' boards.

NRF encourages Luxembourg PROs to support female candidates for ATTRACT and PEARL grants. Despite this, there are only 2 out of eight women as ATTRACT fellows, and none out of 4 as PEARL grant recipients. The AFR PhD and post doc grant programme is also supportive of women candidates.

KNOWLEDGE CIRCULATION

The University of Luxembourg has chosen to support the Open Access "Green Road". In cooperation with the University of Liège, the University of Luxembourg is implementing an Institutional Repository. The NRF is also developing a policy on Open Access.

In addition to its own digital repository, the University Library is in the process of becoming Luxembourg's National Open Access Desk (NOAD) for the European Commission's Openair project. The role of the NOAD is to provide a nationally accessible helpdesk which will advise all authors financed by FP7 and H2020, whether they are in the University or not.

All PROs and the University of Luxembourg offer listings of their publications. CEPS/Insead publishes its papers which are not published in commercial journals. The NRF provides the final reports of the projects it funds.

While there is no federated electronic identity for Luxembourg researchers, all Luxembourg residents, including researchers and private sector employees, can obtain free online access to the National Library's digital resources. The National Library also has initiatives in capturing digital content for researchers. The "Digital Humanities" project offers public access via the internet to digital copies of previously inaccessible works and is being extended to the national digitisation platforms.

The University library has an e-resource which provides online access to e-books and journals to the university community, as well as links to the National Library's digital services.

As regards public-private cooperation the AFR programme promotes it by paying an incentive for research projects carried out in collaboration with the private sector. Furthermore the law of 5 June 2009 supports the secondment of researchers from the public sector to private enterprise.

All the performance contracts between the MESR and Luxembourg's PROs and the University foresee public-private partnerships as a key component. The Cité des Sciences being built in Esch-Belval will provide facilities for public-private partnerships and a business incubator. Several PRO performance contracts include the creation of spin-offs using IP from research activities, though with limited results in spin-offs and patents up to now.

A new initiative increases links between the NRF and Luxinnovation. To support the valorisation of the research results of NRF-funded projects, each funded CORE project will be assessed by the NRF together with Luxinnovation in terms of its potential economic impact. If a potential is identified for a given project, the researchers are invited to collaborate with Luxinnovation in order to explore its possible valorisation.

In June 2013 the Council recommended that Luxembourg should take further measures "fostering private investment in research, notably by developing cooperation between public research and firms." (Council Recommendation No. 4)

The Réseau Téléinformatique de l'Education Nationale et de la Recherche (RESTENA) is the very high speed network for the education and research community of Luxembourg (NREN). It is a partner in the GÉANT project

EFFECTIVENESS

Malta's research governance system consists of the Malta Council for Science and Technology (MCST) and Malta Enterprise. MCST, which has recently moved under the Ministry for Education and Employment, is responsible for research and innovation policy and manages the implementation of the national research and innovation funding programme. Malta Enterprise, which answers to the Ministry of Economy, Investment and Small Business, is the national development agency responsible for the growth and development of Maltese enterprise and operates a number of R&D schemes. The development of R&I policy (including the R&I funding programme) started only recently with Malta's accession to the EU in 2004. Malta's research landscape is relatively small with one public university, the University of Malta, which is the main research performer in the higher education sector. Malta has only one public research organisation, the Malta Aquaculture Research Centre. A number of government departments may be involved in research activities to a small degree, but do not have a dedicated research budget.

The draft National Research and Innovation Strategy (2011-2020) is expected to be adopted by September 2013. The previous strategy, the National R&I Strategic Plan covered the period 2007 – 2010. The implementation of research policy is carried out through annual research and innovation programmes (the 2013 National R&I Programme is currently on-going).

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.22% in 2011. Total GBAORD per capita rose until 2010, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Malta was of 0.53% in 2011. The share of GBAORD allocated as project based is unknown.

Project-based funding is allocated on a competitive basis through the National Research and Innovation (R&I) Programme. The annual budget for Malta's national R&I programme amounts to approx. 1.6 million Euros and funding allocation is done using international peer review. Although it is not clear whether the evaluation process is in line with the international peer review principles, competition amongst applicants is fierce and the programme is systematically over-subscribed. It can be assumed that the quality of research proposals is high considering the strong competition for the limited amount of funding available.

There are no institutional assessments of the University of Malta or the public research centre and the allocation of institutional funding is hence not based on performance. In a country with so few public research organisations, competitive allocation of institutional funding is not considered realistic or effective.

Malta is currently elaborating its smart specialisation strategy with eight areas of national interest having been identified. It is expected that the strategy will be endorsed by September 2013.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Malta in total participation is 0.14% so far, and Malta has received 0.04% of total EC contributions. FP funding represents 36 Euros per head of population. The country also participates in two Joint Programming and in one Article 185 initiative

Malta typically faces the issues of a small country with limited R&D capacity and funding to engage in cross-border cooperation. Given the relative short history of R&D policy in Malta, the bulk of efforts have been directed towards Malta's participation in the EU Framework Programme. The draft R&I Strategy emphasises the importance of international cooperation but the document does not detail out specific policies or actions supporting joint activities. The identification of strategic areas for cross-border cooperation (e.g. microelectronics, health) is linked to the on-going elaboration of the smart specialisation strategy.

Given Malta's small R&D base (and limited research funding available), participation in the ESFRI Roadmap is not a priority for the time being. However, the draft National R&I Strategy (2011-2020) recommends the preparation of a national strategy on research infrastructures. There is no timeframe or financial target specified in the recommendation. The construction of the LifeSciences Centre may be considered a first step towards the development of a national research infrastructure.

The draft National R&I Strategy (2011-2020) includes a recommendation supporting Maltese researchers' access to research infrastructures of interest outside Malta. According to national authorities, access to research infrastructures outside Malta has been recognised as problematic, mainly due to the high costs involved.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 3.4 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.2. The shares of non-national doctoral candidates were 4.1% from another EU-27 Member State and 4.1% from non-EU countries.

Considering that R&I policies were put in place only recently (with Malta's accession to the EU in 2004), the key priority for Maltese authorities is to strengthen Malta's S&T basis. In particular, a key challenge identified by Maltese authorities is to ensure that the country trains a sufficient number of researchers and highly-skilled people and is able to retain them locally. This has resulted in a series of measures aiming at raising the attractiveness of research careers and R&I environment.

With regard to researchers' recruitment and according to the Deloitte Researchers report, the job profile, competence and eligibility criteria are published with the vacancy. The setting up of selection panel is clearly defined and candidates can receive feedback and appeal. However, the composition of selection panel is not published and it is not common practice to include external national or international members in the selection panel. In 2012, 55% of

university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Malta Euraxess website provides links to researchers' positions published on other websites.

The portability of public PhD scholarships managed by the Ministry of Education and Employment is allowed. However, access to grants is restricted for non-resident researchers.

The Charter and Code were officially endorsed by the Office of the Prime Minister in 2005 and the Draft National R&I Strategy (2011-2020) explicitly supports the implementation of the 'Charter and Code principles' by research organisations. However, the draft National R&I strategy does not detail concrete actions to support the implementation.

With regard to doctoral training, Malta has adopted several schemes and programmes (e.g. STEPS scheme, MGSS) which aim at creating a competitive and attractive research environment for PhD candidates.

More detailed information can be found in the country profile for Malta in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

No measures addressing gender equality in research are reported besides general legislation and soft law measures supporting gender equality (e.g. Gender Equality Action Plan 2009-2010)

KNOWLEDGE CIRCULATION

Malta has adopted a series of measures to support public-private linkages. Knowledge transfer has been at the core of Malta's national R&I Programme, which funds projects jointly undertaken by industry and academia. Projects financed by the national R&I Programme need also to demonstrate a strong commercialisation potential. The recently set-up knowledge transfer office at the University of Malta and the development of Malta Life Sciences Centre also constitute important steps towards the development of strong public-private linkages, although it is still too early to assess the effectiveness of these measures. In addition, Malta Enterprise runs several schemes (e.g. advisory services for researchers in search of venture capital, Loans for Highly Qualified Personnel, Royalty Income from Patents) supporting public-private cooperation in the field of industrial and experimental development.

UoM-CSC is the Maltese National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The Netherlands has set itself the target of spending 2.5% of gross domestic product on research and development (R&D) by 2020. The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product was 0.79 % in 2011. Total GBAORD as % of total general government expenditure, as a measure of the effort by national authorities to invest in research in their country, notably in times of crisis, has dropped from 1,78% in 2002, 1,77% in 2005 and 1,58% in 2011%. This figure does not take into account an increased emphasis on indirect funding via tax measures. The share of GBAORD allocated as project based was 31,01 % in 2008.

The Dutch government will pursue this ambitious target to achieve 2.5 of GDP by continuing the implementation its policy for the business sector ("Naar de Top") and the Quality in Diversity strategic agenda ("Kwaliteit in verscheidenheid"), which presents a long-term scenario for higher education, research and science.

The main actors and institutions responsible for allocating competitive funds for research and innovation in the Netherlands are the responsible ministries (Ministry of Education, Culture and Science and the Ministry of Economic Affairs) and a group of main funding bodies: the Netherlands Organisation for Scientific Research (NWO), the Royal Netherlands Academy of Arts and Sciences (KNAW) for scientific research, and NL Agency, for the allocation of grants and financing instruments aimed at industrial research, innovation and collaborative projects. Funding for scientific research in NL is provided in three steps: 1) block / institutional funding by the Ministry of Education, Culture and Science for the HEIs (including university hospitals with involvement of the Ministry of Public Health, Welfare and Sports) and; 2) competitive funding by NWO and KNAW; 3) projectbased funding from different sources. Both KNAW and N.W.O. also fund their own institutes. KNAW funds primarily own institutes but offers also limited competitive funding for some programmes (and prizes/awards). Research is also funded by some ministry's own knowledge institutes, and for policy-oriented research by their policy budgets.

A reform with effect on the effectiveness of the Dutch research system is firstly the new policy for the business sector ("Naar de Top") launched in 2012. The Top Sectors should promote synergy and coherence of research and innovation activities on economic and social priorities, and foster public-private cooperation and leverage private investments. PPP's are stimulated by means of the TKI-allowance (named after the 19 Topconsortia for Knowledge an Innovation that commenced the implementation of Top Sector research roadmaps) and the MIT (MKB Innovatiestimulerend Topsectoren), the latter targeting SME's. The new enterprise policy has coincided with the start of a major shift from direct funding of research and innovation to indirect funding. Thus, investments in private R&D will be stimulated primarily by tax measures, notably from 2012 onwards. Additional funds will be available for the Top Sectors (TKI allowance) and for fundamental research, the latter will continue to be allocated competitively based on scientific excellence by the research council N.W.O. The shift in funding of business R&D could lead to a larger share of user-inspired type of fundamental and applied research in the Netherlands' overall research output, with more

short-term economic and societal impact. The effect of the Top Sector policy on fundamental research will be closely monitored by KNAW, which will issue a second monitoring report by the of 2014.

Secondly, the reforms of the Dutch Higher Education institutions will have impact on research, knowledge transfer and cooperation with industry, aligned with the Top Sectors. Performance agreements as agreed in the autumn of 2012, combined with a financial sanction mechanism, should lead to better academic achievement (quality) and sharper profiles of the HE institutions. The HEI-funds in the period 2013-2016 will be awarded on the basis of the performance agreements with individual universities and colleges, with impact on both their education as well as research funding.

Project funding is normally reviewed by international independent experts in the case of NOW and KNAW, not in the case of the NL agency which has different procedures, depending on the type of grant or subsidy, but not automatically with an evaluation committee. The quality of the institutions for scientific research is regularly evaluated based on the national Standard Evaluation Protocol 2009-2015, which follows international evaluation standards and lays down four main assessment criteria: quality, productivity, feasibility/vitality and societal relevance. The ERiC project resulted in 2010 in guidance for evaluating the societal relevance of research. A report by Committee Theeuwes analysed in 2012 evaluation practices under the responsibility of the Ministry of Economic Affairs, with recommendations for improvements for the evaluation of R&D programmes.

A relatively new competitive scheme was launched in 2012. The Ministry of Education, Culture and Science initiated the programme 'Zwaartekracht' (Gravitation) which offers additional institutional funding for top research consortia in the Netherlands. This is competitive institutional funding for max 10 years and aims to support outstanding research in consortia (which can include research schools). The basic budget amounts to 50 million euros per year. For the 2012 round 167 million euros have been awarded for new commitments up to a maximum of ten years.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Netherlands in total participation is 5.79 % so far, and Netherlands has received 7.15 % of total EC contributions. FP funding represents 144 Euros per head of population. The country also participates in Joint Programming. Netherlands participates as a member in 10 initiatives, and coordinates Healthy Diet for Healthy Life. The country also participates in 5 Article 185 initiative(s) and leads 1 of them.

N.W.O. research funds and actions cover broad themes that relate to national and international agendas for the period 2011-14. The themes are agro food and horticulture, healthy living, water and climate, cultural and societal dynamics, high tech systems and materials, sustainable energy and connecting sustainable cities. Via these themes, N.W.O. is actively contributing to joint research agendas at global and European level, including ERA-nets,

article 185 initiatives and Joint Programming Initiatives. Representatives of the Top Sectors will update in 2013 the innovation contracts and will align these with Europe 2020 objectives. There is no overall coordination yet with the different Dutch research stakeholder organisations which relate to implementing joint research agendas addressing grand challenges, or to discuss Dutch contributions to European and international initiatives, but the possibilities for this are currently explored. This seems increasingly important given the relation with the Top Sectors and the increased budget for cofunding of Horizon 2020.

While the Dutch government has Memoranda of Understanding with non-EU countries to ease international cooperation, the details and implementation of international cooperation and therefore also mutual recognition of evaluations that conform to international peer review and cross-border interoperability, are determined at the level of the funding agencies. N.W.O. has several programmes supporting international collaboration, researcher mobility and international exchanges, which involve Memoranda of Understanding between N.W.O. with other research councils, and co-ordinated and joint evaluation procedures following international peer review standards. N.W.O. also experiments with the Lead Agency approach, for example in the ORA-Programme. N.W.O. has prioritised working with China (working closely together with KNAW), India and Brazil. In all of these countries the policy is regularly discussed in a joint committee with the main players both nationally and in the partner countries concerned. Also KNAW has two major international collaboration programmes, with China and Indonesia.

The Netherlands has a national roadmap with 28 large scale research facilities which are of interest for Dutch science. Based on the 2011 Strategic Agenda for Higher Education and Research, additional funds have become available for large research infrastructures. Each year, 40 million euro will be available for the facilities on the national roadmap, which are for a large part connected to the ESFRI roadmap. N.W.O. is implementing investment programmes for medium sized and large infrastructures. Excellence is one but not the only criterium in the selection under these programmes. Universities compete for support for their participation in national and European facilities. There are 3 ESFRI initiatives currently being implemented with the Netherlands as hosting country: (CLARIN-ERIC –Common Language Resources and Technology Infrastructure; SHARE-ERIC Survey of Health, Ageing and Retirement in Europe, EATRIS - European Advanced Translational Research Infrastructure in Medicine). The Dutch government gives grants to a number of European intergovernmental organisations, to provide researchers in the Netherlands access to large-scale facilities and international networks.

Access to large research facilities (via N.W.O.) is normally based on excellence, access conditions are however defined by the facilities themselves.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 6.1 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.9. The Dutch 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, including the funding by NWO of top researchers at universities and in world-class scientists (Researchers Report 2012).

All vacancies in the Dutch academic world are published on the international website Academic Transfer. In 2012, 63% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012). The government provides support to take part in EURAXESS initiatives, which provides personalised information and services to researchers and Phd students who want to study and/or work in the Netherlands or in another related country. EURAXESS cooperates intensively with the relevant ministries (Social Affairs and Employment, Interior, Foreign Affairs). The Dutch organisation NUFFIC delivers specific expertise to EURAXESS on immigration procedures, health insurance, social security and taxation; the University of Tilburg on social security and taxation and the agency AgentschapNL on the FP7 Marie Curie programme and research funding opportunities in general. EURAXESS is linked to Academic Transfer. In 2011, the number of researcher posts through Euraxess was 51 compared with an EU average of 24 (Researchers Report 2012).

The Netherlands encourages international mobility of researchers via a range of grants and fellowships designed to promote international cooperation between Dutch researchers and researchers of different nationalities. The NWO Rubicon scheme, since 2010 co-funded by the 7th Framework Programme Marie Curie COFUND scheme, gives for example postdoctoral researchers the chance to gain experience at top research institutions in other countries. The scheme, like NWO's Innovational Research Incentives Scheme (Vernieuwingsimpuls), is open to all disciplines and talented applicants with all nationalities. The research funded by the latter scheme must however be carried out at a research institute in the Netherlands. It allows for some grant portability. In the case of mobility the remainder of the grant may be transferred to the new institute, after approval by NWO on a "case by case" basis. Transfer of the remainder of the grant is more applicable for Veni laureates, as the grant always covers the salary costs of the PI and no other personnel is involved. PhD students and Postdocs mostly stay in the Netherlands.

Doctoral schools in the Netherlands are well aligned with the European principles for innovative doctoral training. Doctoral education is under development in the Netherlands. The Dutch HE-system contains an accreditation system by the Dutch Higher Education and Research Act (WHW, since 1997). However, PhD programmes are the responsibility of individual universities and outside the scope of the overall accreditation process. The Dutch Royal Academy for Science (KNAW) has a Research School Accreditation Committee (ECOS), which assesses teaching and research at Dutch research schools against specific quality criteria. Research schools are accredited by the ECOS. Transferable skills are considered important, as 75% of researchers will not reach the level of excellence needed and should ultimately find a job outside research. A next wave of top research schools may be funded in the near future. The NWO Graduate Programme is to create an excellent educational and research environment for highly talented young researchers. The NWO

Doctoral Grant for Teachers aims to increase the number of teachers holding a doctorate. The NOW programme Zwaartekracht, aiming to select the best research consortia in the Netherlands, is also open to Research Schools, with calls in 2013 and 2016.

Research institutions in the Netherlands are autonomous in the area of human resource management. Any initiatives by the Dutch government, for example towards the implementation of the Human Resources Strategy for Researchers, can only be taken in consultation and collaboration with these institutions (and, where relevant, the private sector). 15 Dutch organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 2 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

More detailed information can be found in the country profile for Netherlands in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

The Dutch government wants to promote the emancipation: the empowerment of girls and women, and the emancipation of lesbians, gay men, bisexuals and transgender (LGBT). The Minister of Education, Culture and Science is responsible for this policy and has as, in addition to general anti-discrimination law and regulations, as instruments specific laws and regulations, subsidies to institutions for women's and LGBT emancipation and project grants to civil society and communication actions. On 10 May 2013, the Minister presented her policy for the period 2013-2016 to Dutch parliament. The participation of women in science was not addressed in this policy letter, but the need for gender balance in health care and health research is a policy priority, and a number of measures for this policy area were announced. The Dutch situation on gender is rather diverse between disciplines and institutions.

As a general soft-law measure, the Charter "Towards the Top" was initiated in 2008 and aims to achieve a higher intake, promotion and retention of female talent in top jobs, and thus to promote gender diversity in the senior ranks of companies, organisations and institutions. The signatories need to indicate their baseline situation, commit themselves to objectives and strategies regarding gender balance and annual monitoring. The Dutch government will initiate a dialogue with those sectors which do not show improvements.

A number of other softer measures and financial incentives are in place for science. The Aspasia scheme is linked to the NWO Talent Scheme and is intended to encourage the promotion of female Vidi grant candidates to an associate professorship and female Vici grant candidates to a full professorship. The NWO programme Plural aims to move more women at Dutch universities to a position as a lecturer, in the area of Earth and Life Sciences. The Foundation for Fundamental Research on Matter (FOM) supports the appointment of a woman in permanent employment in physics and visibility of female physicists, including by the Minerva-Prize. "Girlsday" is an annual event aiming at awakening the interest of young girls aged 10-15 years in science and technology, which has become more and more

embedded in the curriculum of the schools and more and more companies are interested in the initiative. The Dutch network of women professors aims to promote proportionate representation of women within the university community and is supported by the Ministry of Education, Culture and Science as well as by the research council NWO.

KNOWLEDGE CIRCULATION

The Dutch government supports the principles of access to and dissemination of scientific information, but does not invest substantially in the furthering of open access and preservation of scientific information. A strategy on scientific information is under preparation, and a letter should be sent normally to Dutch parliament in September 2013.

The scientific community and libraries are very active at national (and international) level despite severe budget cuts. All Dutch universities have a green open access policy, although not all have the same policy and they do not make open access compulsory. The research council NWO encourages that research results acquired with N.W.O. funding are accessible to the public. The "Incentive Fund Open Access" is a pilot in the humanities for starting open access journals, and has launched a call for proposals for all disciplines served by N.W.O. for starting open access journals. N.W.O. also co-finances OAPEN (Open Access Publishing in European Networks) focusing on open access publishing of books. A new N.W.O. policy stimulating Access to research data is currently being implemented. DANS encourages researchers to archive and reuse data in a sustained manner, e.g. through the online archiving system EASY. The library of the Technological University Delft (TUD) has a national, cross-institutional task with respect to technological-scientific literature, for students, companies and citizens. The TUD receives a special subsidy for this task. Together with the Royal Library and the e-Science research centre, TUD works on Open Access and digitalising of scientific literature and an electronic documentation system (e-depot). One of the national tasks concerns support on scientific information management to companies. In June 2013, the government announced to cut the budget for this national task, expressing the hope for continuity of the activities funded by the regular budget for universities.

The EU country-specific recommendation 2012 for the Netherlands was to promote innovation, private R&D investment and closer science-business links, as well as foster industrial renewal by providing suitable incentives in the context of the enterprise policy. With its "Top sectors" strategy and related funding, the government is implementing this recommendation in association with the business sector, knowledge institutes and regional and local authorities. The government will promote private spending on research and development and fundamental research and the annual public funding for research and innovation will increase by more than 0.7 billion euro to around 6.4 billion euro in the period 2008-2016. In 2012, 19 Top Consortia for Knowledge and Innovation (TKIs) have been established, who started to implement the research agendas as agreed in innovation agreements.

Knowledge transfer or more broadly valorisation is considered now as an integral part of the mission of Dutch Higher Education institutions as laid down in Dutch law. This is illustrated

by the increased number of staff working in related activities, and knowledge transfer capacities which are increasingly rewarded in the human resources policies of the institutions. In the performance agreements between the government and the Higher Education institutions as agreed in autumn 2012, valorisation is one of the priorities. In MBO (Secondary Vocational Education) Centres for Innovative craftsmanship and in HBO (Universities of Applied Science) Centres of expertise entrepreneurs, scientists, lecturers and student cooperate to raise the quality of technology education. The RAAK programme is a competitive funding scheme for applied research in HBO institutions. Recently, budget cuts on this programme were prevented, but the government agreed with employers, partners of the Innovation Alliance and with the research council N.W.O. that the latter would implement the RAAK scheme as from 2014. In each call for proposals, NOW asks researchers to state the contribution their research will make to society and N.W.O. facilitates this contribution in various ways.

The National Platform Science & Technology was set up to ensure sufficient availability of people who have a background in scientific or technical education to meet the expected demand. Knowledge transfer and innovation may also benefit from a recent multi-annual strategy as recently agreed between a large range of Dutch stakeholders from industry, education, employers, regional authorities supported by additional funding by the Dutch government, in order to guarantee the availability of sufficient number of technology skilled people ("Techniek pact").

SURF unites Dutch research universities, universities of applied sciences, and research institutions into one foundation for ground breaking innovations in ICT allowing researchers and higher education institutions to make optimal use of the potential of ICT and improve their quality. Funds are made available in accordance with the government's response to the advice by ICTRegie on ICT research infrastructure in the Netherlands to strengthen the ICT research infrastructure such as computer networks (SURFnet, GigaPort), E-Science and High Performance Computing. SURF (which is the Dutch National Research and Education Network - NREN) is also member of the eduGAIN network which works towards the trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) Partners' federations.

EFFECTIVENESS

The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product was 0.34% in 2009. The share of GBAORD allocated as project based was 31.52% in 2008.

Major changes were introduced in the public R&D sector, resulting from numerous legislations enacted in 2010 (science reform) and 2011 (higher education reform) – altogether 8 laws and 92 ordinances. They establish new institutions and rules. The Ministry of Science and Education (MNiSW) manages the science budget and supervises two key fund distribution agencies: the National Science Centre (NCN), financing basic science projects, and the National Centre for Research and Development (NCBiR), financing applied research and innovative development, including R&D projects of business enterprises. The Polish Agency for Enterprise Development (PARP), agency of the Ministry of Economy (MG) funds R&I in business enterprises. The Foundation for Polish Science (FNP) is a non-governmental institution, partly funded from the science budget, the EU Structural Funds and other sources, awarding research grants and scholarships. In 2011, 105 public higher education institutions (PHEIs) and 207 public research organisations (PROs) were actively conducting R&D activities as well as the Polish Academy of Sciences (PAN). MNiSW is assisted by the Committee for Science Policy (KPN) for priority setting and Committee for Evaluation of Scientific Research Institutions (KEJN), evaluating the performance of public sector R&D performers. The Ministry of Regional Development (MRR) defines the policies and regulations related to the absorption of the EU funds. Several other ministries have dedicated programs, stimulating innovations and research projects in relevant sectors.

Since 2013 Poland has multi-annual research development and innovation (RDI) plan - The Strategy for the Innovation and Effectiveness of the Economy for the years 2012-2020 “Dynamic Poland” – coordinated by the Ministry of Economy. The strategy is the highest level policy document related to RDI in Poland and sets quantifiable objectives in R&D funding, indicators to measure their fulfilment and delegates specific tasks to different governmental institutions. The National Research Program “Foundations for the science and technology policy and innovation policy of the state” (NRP) issued in 2011 has set all-encompassing national R&D priorities.

The Act on principles of science financing (2010) established financing modalities for NCN and NCBiR, assuring gradual increases in the allocated funding for competitive calls. The share of competitive, project base funding has increased from 44.63% in 2009 to a planned 63.79% in 2012. In 2012, the eight programmes managed by NCN and the 19 programmes managed by NCBiR were distributing 52.67% of the science budget through open competitive calls. Besides those agencies, the Ministry of Science and Higher Education (MNiSW), the Foundation for Polish Science (FNP) and the Polish Agency for Enterprise Development (PARP) run each of them four research programmes.

In 2009, survey of Polish universities revealed that on average, 65% of their budgets were coming from core institutional funding and only 7% from competitive funding. Institutional

funding is partly statutory (based on number of researchers) and partly the result of an evaluation. In 2012, MNiSW amended the standards for the institutional assessment of public R&D organisations, promoting internationally significant research and successful commercialisation of research results. Nation-wide performance evaluations are managed by the newly established, independent Committee for Evaluation of Scientific Research Institutions (KEJN) and are based on transparent, pre-defined criteria. It is planned to enhance the use of bibliometric indicators in institutional assessments. The MNiSW develops a nation-wide online system POL-ON, which will make the results of institutional assessments publicly available alongside the bibliometric indicators. The Ministry has also set rules for selecting the leading research institutions in each scientific discipline so-called KNOWs – National Leading Scientific Centres.

National peer review is used by all funders NCN, NCBiR, MNiSW, FNP and PARP and peer-review rules are defined by publicly available procedures and compliant with international standards for peer-reviews. For NCN foreign reviewers are involved in the evaluation of selected proposal.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Poland in total participation is 1,73% so far, and Poland has received 1,05% of total EC contributions.

The National Research Program contains a list of priority areas partially coinciding with the grand challenges. These are reflected in the Strategic Research and Development Programs of NCBiR and the Resolution of the Council of NCN concerning priority areas for fundamental research. In 2013 a dedicated inter-disciplinary committee was set up to make recommendations on how funds for international research co-operation should be distributed by the MNiSW, while R&D funding agencies NCN and NCBiR have corresponding institutional arrangements since 2010. The draft Operational Program "Smart Growth" (POIR), which defines the rules for distribution of the EU Structural Funds in years 2014-2020, includes measures to foster the internationalisation of Polish science through support for the creation of international research agendas and to stimulate cross-border R&D.

Through NCBiR and NCN Poland is involved in seven JPIs and also participates in 5 Article 185 initiatives and leads one of them. It also participates via the same funding agencies in ERA-nets, ERA-nets+, EUREKA, EUROSTARS, ESA, and JTIs (ENIAC, ARTEMIS). Funding for those trans-national initiatives is allocated via ministerial ordinance.

Mutual recognition of evaluations that conform to peer review standards is illustrated by the program "Ideas Plus", established by MNiSW in 2010 and supporting the participants of the European Research Council competition "IDEAS", who did not qualify for funding from ERC. Funding within bilateral agreements is offered via NCN and NCBiR dedicated programmes (for ex. HARMONIA).

Cross-border interoperability of national programmes is based on the Act on principles of science financing (2010). There are standard procedures for co-funding of Polish researchers from academia or industry to participate in international initiatives and using international peer review in national funding decisions. Poland has bilateral cooperation programs with Norway, the Czech Republic, Israel, Luxemburg, Germany, Singapore and Taiwan (with co-funding managed by NCBiR). The Visegrad fund (between the Czech Republic, Hungary, the Republic of Poland, and the Slovak Republic) provides also research grants from a common pot contribution of all countries involved.

The Act on principles of science financing (2010) established open competitive calls for large R&D infrastructure investments. Several ordinances of the Minister of Science and Higher Education (MNiSW) (2010-2011) earmarked parts of science budget for RI, defined investment criteria, selection modes involving peer-reviews, and opened up the competitions to business enterprises as well. In 2011, the MNiSW published the Polish Roadmap of Research Infrastructure (PMDIB), compliant with ESFRI standards. In 2013, a call for updates to the Roadmap was announced.

The existing legal framework does not prevent foreign researchers from using the RIs in Poland. POIR includes measures which would help optimise the use of existing RIs for applied research and development, especially jointly with business enterprises and international partners. The MNiSW continues the development of an online system POL-ON, which will publish detailed information about scientific organisations, including the availability of research infrastructures.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 3.7 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 0.5. The shares of non-national doctoral candidates were 1.8% from another EU-27 Member State and 1.9% from non-EU countries.

The Act on higher education (including amendments from 2011) and the corresponding Act on the Polish Academy of Sciences (2010) and the Act on research institutes (2010) strengthen the autonomy of universities and eliminate direct influences from government bodies. Those acts define general employment conditions; provide general principles for career progression and set general conditions for offering doctoral studies. The above mentioned acts require university bylaws to define clear, transparent and competitive recruitment and promotion rules, as well as precisely defined criteria for award of scientific degrees and titles and ask for regular performance reviews for all researchers. Job offers at the public higher education institutes have to be published online on websites of the university, the MNiSW and EURAXESS. Additionally, Poland participates in the EU Scientific Visa package. In 2011, the MNiSW elaborated modalities to recognise foreign academic degrees and to allow under certain conditions foreign researchers to fill in professors positions. In 2012, 62% of university-based researchers were satisfied with the extent to which research

job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Publicly funded R&D projects can be ported to institutions in other countries within dedicated funding programs supporting international cooperation. Most grants are also available to foreigners (NCN, NCBiR), providing that the beneficiary institution is in Poland.

EURAXESS POLAND portal operates since 2009, with English-language online services, information portal, regular publication of job offers and calls for proposals, scholarships and fellowships in Poland. It currently maintains 10 EURAXESS Service Points in 10 different academic cities in Poland.

Several legislative acts support the excellence, interdisciplinary as well as internationalised doctoral training, providing certain rights to doctoral students and catering for the transparency of the process. They have formalised doctoral programmes, detailed specific requirements from doctoral candidates to be awarded PhDs and provided for documentation and quality assurance in doctoral awards and study programmes. The Polish Accreditation Committee conducts assessment of study programs.

The science and higher education reform from 2010-2011 incorporated many of the measures of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. In the meantime, several Polish HEIs have endorsed the Charter & Code. Six Polish organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 2 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

More detailed information can be found in the country profile for Poland in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Poland belongs to the EU countries with traditionally high shares of women involved in R&D activities. In 2011, 65.5% of all university graduates were women, including 51.5% of new doctorate graduates. Women are 22.05% of all professors employed in Poland and out of 524 members of the Polish Academy of Sciences, in 2011 20 (3.81%) were women.

General legislative acts prohibit discrimination and protect women during the pregnancy and maternity leave period. Recently, the government published a proposal to amend the Labour Code and the Act on financial benefits from social insurance in the case of sickness and maternity (2013). Also in 2013 it introduced measures on flexitime, paid parental leave, child care facilities and return to work after bringing-up a child and support and financially contributed to projects promoting equal opportunities for working men and women.

In the science and higher education field, the recruitment, retention and career progression of female researchers is fostered by several measures: fixed term contracts are extended by the periods of maternity leave and additional leaves to raise children; doctoral studies are prolonged in the same conditions, annual workloads of women giving birth to and raising

children are reduced. Periods of maternity leave and leave for taking care of children are not included in the calculation of maximum age for grants for young researchers for NCN and NCBiR's program LIDER. The Foundation for Polish Science runs a program "BRIDGE" ("POMOST"), with grants for researchers-young parents. In MNiSW there is a Steering Committee 'Women in Science' to monitor women's positions in academia.

Several soft measures are put in place to foster cultural and institutional change on gender. The Conference of Rectors of Polish Technical Universities manages a program "Girls on technical universities", compiling lists of "women-friendly" technical universities and establishing dedicated contact points for women. The MNiSW in cooperation with the magazine "ELLE" offers financial awards "Girls of the future" for outstanding female researchers. L'Oréal with the support of UNESCO offers scholarships for women-scientists. The Central Statistics Office (GUS) monitors gender balance at national level and many public sector R&D institutions publish corresponding data in their annual reports.

30% of the Polish Accreditation Committee appointed by the MNiSW should be women and there should be a balanced representation of women on the Main Council of Science and Higher Education and Central Committee for Scientific Degrees and Titles.

KNOWLEDGE CIRCULATION

Several measures have been put in place by MNiSW to guarantee open access for Polish researchers and students to a variety of research results: gold open access publications in Springer's journals; license to the Virtual Library of Science; digitisation of scientific journals and their electronic distribution. In 2012 MNiSW defined criteria and modalities for evaluation of Polish scientific journals: those journals get extra points if they publish contents of articles on-line. The NCBiR model agreement requires publications to be made available via open access and software to be free or open source. An on-going project called "Interdisciplinary System for Interactive Scientific and Scientific Technical Information (SYNAT)", funded by NCBiR and developed by University of Warsaw and Warsaw University of Technology, will establish an open repository of scientific publications and data for the use of all researchers and institutions in Poland. Additionally, patented inventions for scientific, non-commercial research can be used without the need to license the invention or pay royalties.

In 2012 several draft measures were proposed to grant open access to contents generated by government institutions (including public R&D organisations) and to facilitate the integration of ICT systems, with the purpose of supporting open access to publicly funded research results and assuring financing for this integration.

The Strategy for the Innovation and Effectiveness of the Economy for the years 2012-2020 (2013) stresses the importance of knowledge transfer and co-operation between scientific institutions and industry and supports open innovations. The draft Operational Program "Smart Growth" (POIR) includes measures to stimulate the cooperation between business and scientific organisations. Additionally, in January 2013, the Ministry of Economy published a

draft of the Enterprise Development Program (PRP) which proposes measures to foster industry-academia partnership such as building of mixt consortia and internships/secondments from business to academia; centralising funds for enterprises in a single agency and changes in the application and evaluation procedure of grants.

Several legislative acts set relevant rules regarding IPR, include the possibility or obligation to commercialise publicly funded research-results, encourage the establishment and use of academic spin-offs, oblige universities to set up technology transfer entities and include performance in commercial knowledge transfer as part of institutional assessments of R&D organisations. The National Reform Programme 2013 promotes the cross-sectoral mobility of researchers.

Under NCBiR several programmes foster academia-business collaboration (BRIDGE VC, BroTech, “Innovation Creator”, LIDER and SPIN-TECH). MNiSW manages also programmes of training for personnel in TTOs and hiring technology brokers for public universities and has published several guidebooks on the topic.

POIR includes measures which would fund and allow better use of e-infrastructures for open access.

The electronic identity of researchers is implemented by the Virtual Library of Science which is available to all universities in Poland and allows logging into multiple publication databases by means of institutional or individual authentication.

The Poznan Supercomputing and Networking Centre (PSNC) affiliated with the Institute of Bioorganic Chemistry at the Polish Academy of Sciences acts as National Research and Education Network and provides specialised Internet service dedicated to supporting the needs of the research and education communities within Poland. It is affiliated with the GÉANT project and network and operates PIONIER – the Polish Optical Internet network.

EFFECTIVENESS

The research and innovation system is supported by the prime minister's office and the main ministries in charge of R&D: the Ministry for Education and Science and the Ministry for the Economy and Employment. On the operational level, Portugal counts with operational programmes financing the research system together with the major executive agencies, notably the Foundation for Science and Technology (FCT).

The development of the academic research system until recently has been possible through the combination of national funds with resources from the EU structural funds. The basic management of this system has matured, with the FCT operating as the research council. The creation within the Portuguese Foundation for Science and Technology (FCT) of an Office for Evaluation and Programs, a Study and Strategy Office and a Technology Office are important steps in that direction. R&D Units is a scheme consisting of a system of incentives for the creation of R&D units in business firms. It gives support to projects aimed at enhancing the productivity, competitiveness and integration into the global market through the creation of R&D units in firms. And the R&D Projects of Scientific and Technological Development Research provide funding to research by HEI (high education institutions), public labs and the research non-profit sector.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 1,03% in 2011. Total GBAORD per capita rose until 2011, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Portugal was of 2.08% in 2011. The Portuguese government intends to increase the effectiveness and efficiency of the national S&T system.

Regarding institutional and project-based competitive funding, the trend has been for a rise of the second and in both there has been an increase of funding provided through peer review mechanisms, especially within the university system. On the subject of institutional funding, the culture of international peer review is widespread in the university system. An exception to this is the network of public laboratories, not subject to peer review mechanisms.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Portugal in total participation is 1,65% so far, and Portugal has received 1,14% of total EC contributions. FP funding represents 37 Euros per head of population. The country also participates in Joint Programming. Portugal participates as a member in 5 initiatives. The country also participates in 4 Article 185 initiatives.

The internationalisation of the research system is one of Portugal's main priorities. This is reflected, amongst others, in the large number of bilateral agreements that Portugal has with other EU countries and with several US universities.

Regarding ESFRI and in view of the preparation of a National Roadmap of Ris, Portugal is analysing the possible alignment of national research infrastructures with ESFRI's Roadmap through a national consultation launched in 2013. The consultation will help identify Ris of strategic interest. A very important RI is the International Iberian Nanotechnology Laboratory (INL), result of an agreement of the Spanish and Portuguese governments in 2005, which is the first fully international research organisation in Europe in the field of nanoscience and nanotechnology. Several countries are interested in cooperating (China and Brazil, for instance).

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 8.2 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.9. The shares of non-national doctoral candidates were 3.0% from another EU-27 Member State and 10.6% from non-EU countries.

The conditions in the research labour market in Portugal have changed in recent years. Many institutions have adapted harder tenure granting procedures and the recruitment of new researchers, even for replacement purposes, is much more difficult due to budgetary pressures. In this context, institutions have been able hire new people by contracting younger researchers for non-permanent positions, and by using Post-Doc grants which provide support from three up to six years. In 2012, 46% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Concerning the removal of barriers to open recruitment, the Statute of University Teaching Career, adopted in 1979 and amended in 2009, regulates the academic career at the universities. According to its Article 37, the competitions for the recruitment of full professors, associate professors and assistant professors cannot be restricted to nationals and should be open to foreigners.

The Regulation for Grants awarded by the Foundation for Science and Technology, amended in 2012, regulates the selection, hiring and legal regime applicable to all research fellows, funded directly or indirectly by the Science and Technology Foundation (FCT). Article 14 foresees that candidates applying for the grants awarded by the Science and Technology Foundation can be nationals of Portugal, EU citizens or non-EU citizens but holders of permanent residence or beneficiaries of the status of long-term residents in Portugal. Cross-border portability of grants is not foreseen.

High priority is given to the recruitment of the most qualified human resources, and to avoiding that talented scientists leave Portugal. Initiatives like 'FCT Investigator', which currently provides funding to 155 researchers, and FCT's Doctoral Programs, that provide funding to PhD programmes in line to the Principles for Innovative Doctoral Training, are important steps in this direction.

On doctoral education, the Programme of Applied Research and Technology Transfer to the Industry provides support to doctoral training, funding for post-docs in the industry and foresees national competitions to provide scholarships for PhD's in the areas defined in the R&D Strategy for Smart Specialisation.

Three Portuguese organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 1 has received the "HR Excellence in Research" logo for its progress in implementing the Charter & Code.

More detailed information can be found in the country profile for Portugal in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

PT has one of the lowest proportions of female heads of institutions in the high education sector in 2010 (7.3%), well below EU 27 average (15.5%). However, female participation in scientific and management boards in Portugal is 38%, slightly above the EU-27 average (36%). According to the 2012 SHE figures report, the private non-profit sector employs a share of researchers that is worth mentioning only in Italy, Portugal, and Cyprus in 2009.

Regarding the recruitment, retention and career progression of female researchers, the Fourth National Plan for Equality, Gender, Citizenship and Non-discrimination (2011-2013) aims at promoting equality as a trigger for competitiveness and development and dedicates one of its 14 strategic areas to research, and in particular to three actions: to consolidate the role of the gender Observatory; to consolidate the protocol between Science and Technology Foundation (FCT) and the Commission for Citizenship and Gender Equality (CIG) to promote research in the fields of gender and non-discrimination; and to monitor the evolution of the researcher population broken down by sex and scientific field. The same position is guaranteed by law after a maternity leave. There are no initiatives or regulations promoting equal gender representation in academic and research committees, boards and governing bodies.

GIC, the national mechanism for the promotion of gender equality, provides technical and financial support to the implementation of gender equality action plans in universities, focusing on the promotion of gender equality in organizational structures, management practices - selection/recruitment procedures, career development and rewarding mechanisms - , and on family-work life reconciliation. Two Portuguese universities have gender equality action plans.

Portugal hosts annually the L'Oréal Portugal Medals of Honor for Women in Science, intended for the study of advanced scientific research at post-doctoral level, in Portuguese universities or other institutions of recognised merit in the field of Health Sciences and Environmental Sciences.

KNOWLEDGE CIRCULATION

As regards open access, the Foundation for Science and Technology (FCT) is developing a proposal for a policy on open access. Portugal holds a recognised repository of publications

(RCAAP) to support open access. And an online Knowledge Library that provides unlimited access to researchers to a large database of scientific publications. FCT has also prepared a policy document on open access to data, more cautious than open access to publications though.

Concerning knowledge transfer, there is a relevant initiative under preparation, called GAIN (Global Innovation Acceleration Network), that aims at providing a national structure for technology transfer.

As regards Digital ERA, FCT has drafted an intellectual property policy for R&D projects financed through the main science funding agency. FCCN is the Portuguese National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

At the level of policy-making, the National Council for Science and Technology Policy is by law the government's highest level policy coordination body. The Ministry of National Education is another key player in research and innovation policy, with the National Authority of Scientific Research which is part of the Ministry of National Education and formulates and implements research policies. The Ministry of National Education cooperates with other sectoral ministries however the role of the latter in research policy tends to remain limited. At the level of R&D funding and implementation, the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), which is a public body under the authority of Ministry of National Education, plays a key role in coordinating the research and innovation plan and allocating higher education and research funding. The public research system also includes funding/coordinating organisations such as the Romanian Academy, the Academy of Medical Sciences, the Academy of Agriculture and Forestry Sciences and the Academy of Technical Sciences which fund their own network of institutes and research centres. R&D public performers include universities and public research institutes.

The bulk of public R&D funding (approximately 80%) is allocated to the National Authority of Scientific Research/Ministry of National Education. Approximately three quarters of the National Authority of Scientific Research budget finances calls under the National Research, Development and Innovation Plan (2007-2013), whilst the remaining 25% is allocated as institutional funding for the national R&D institutes. Of the remaining 20% of public R&D funding, less than half (approximately 8%) is allocated to the Romanian Academy, which subsequently funds its own institutes.

Romanian authorities are currently in the process of elaborating the National Strategy for Research, Technological Development and Innovation for 2014-2020 and the National Plan for Research, Development and Innovation 2014-2020 (their finalisation is due for October 2013). The previous National Strategy for Research, Development and Innovation covered the period 2007-2013.

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.27% in 2011. Total GBAORD per capita rose until 2008, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Romania (3) was of 0.68% in 2011. The share of GBAORD allocated as project based is unknown.

Several recent policy initiatives aim at reforming the current funding system for universities and public research institutes in order to better link the allocation of funding with their performance and thus increase the effectiveness of the Romanian public research system.

With regard to universities, it should be noted that from 1994 onwards Romanian universities did not receive any institutional funding for their research activities. The only source of funding for their research activities is through project-based funding. The reform introduced

by Law of Education 1/2011 aimed at reforming the current system by evaluating universities activities (and thus separating research universities from those oriented to teaching and local needs) and by setting up institutional funding for research-oriented universities (the allocation would be based on the research performance). The evaluation of Romanian universities has now been completed however no changes to institutional funding for research-oriented universities have been adopted yet.

The restructuring of public research institutes launched in 2011 foresaw the evaluation and certification of all public research institutes linked to a new method for allocating institutional funding. In practice however no restructuring has taken place yet (i.e. all institutes have been certified, which means that they will continue to qualify for institutional funding).

The use of international peer reviews has been in place since 2007. According to Romania's National Plan for Research, Development and Innovation (2007-2013), the allocation of project-based funding is carried out in line with the principles of international peer reviews. It should be noted that all proposals need to be drafted in Romanian and English. Moreover, earlier legislation foresaw the use of foreign evaluators for the evaluation of R&D projects, programmes and institutions (at least 50% foreign experts). However, this provision has been scrapped as part of the Government Ordinance 1241/2013.

Romania's 'Smart specialisation' approach is currently being drafted as part of the National Strategy for Research, Technological Development and Innovation for 2014-2020 and the National Plan for Research, Development and Innovation 2014-2020. On-going consultations and foresight activities are currently taking place with the aim of identifying R&D areas with the highest expected socio-economic impact.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the EU Framework Programme. The share of participation of Romania in total participation is 0.81% so far, and Romania has received 0.36% of total EC contributions. FP funding represents 5 Euros per head of population. The country also participates in Joint Programming. Romania participates in six initiatives. The country also participates in 3 'Article 185' initiatives. Moreover, Romania has research programmes inter alia with France, Switzerland, Norway, Island and Liechtenstein and it actively participates in the International Centre for Advanced Studies Danube River - Danube Delta - Black Sea

With regard to the recognition of international peer review evaluations, Romania routinely implements this mechanism as part of its joint programmes or bilateral agreements. For example, projects financed under the Swiss-Romanian cooperation programme are entirely evaluated in Switzerland. Moreover, the ERA-like grant scheme provides grants to researchers who have been successfully evaluated but not retained for funding by the ERC competition.

The national roadmap for research infrastructures was produced in 2007 by the Romanian Committee for Research Infrastructures (CRIC). Funding for research infrastructures is

provided through the 2007-2013 National RDI Plan (Capacities Programme). Romania participates in nine pan-European infrastructures and hosts the Extreme Light Infrastructure - Nuclear Physics (ELI-NP) infrastructure.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 2.0 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.4. The share of non-national doctoral candidates coming from another EU-27 Member State was 1.7% and the share of candidates coming from non-EU countries was 2.0%.

The recruitment system is regulated by the Government Decision on general principles for recruitment in the public sector (HG no.286/2011), the Law on the Statute of R&D personnel (Law no. 319/2003) and the National Education Law (Law 1/2011). HEIs and R&D institutions have their own internal procedures on recruitment that are in accordance with these laws and are generally published on the institutions' website. In 2012, 51% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The EURAXESS Network aims to support trans-national mobility. Romania is involved in two FP7 projects dealing with EURAXESS: 'Discover Europe' and 'EURAXESS T.O.P' (Transnational operation of the EURAXESS Services Network). However, the network has relatively low visibility among researchers, and the mobility of foreign researchers in Romania is low, due to the unattractive conditions.

With regard to grant portability, it should be noted that grants are open to non-resident researchers provided that the applicant secures a prior agreement with a Romanian organisation (the grant agreement is eventually signed with the institution).

Support to the development and strengthening of the doctoral training system is provided through EU Structural funds. The Sectoral Operational Programme 'Development of Human Resources' aims at funding international mobility (minimum periods of staying abroad) for 12,000 doctoral and 2,000 post-doctoral candidates. Several regulatory and 'soft law' measures were recently adopted with a view to reform the Romanian doctoral training system. Education Law 1/2011 and Government Ordinance 681/2011 and 92/2012 introduced changes to the organisation of doctoral schools and the delivery of doctoral training.

Three Romanian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers.

More detailed information can be found in the country profile for Romania in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

No measures addressing gender equality in research are reported besides a recently adopted government ordinance (Government Ordinance 111/2010), which supports career breaks for PhD candidates.

KNOWLEDGE CIRCULATION

Support to knowledge transfer has been mainly provided through funding schemes (e.g. National RDI Plan (2007-2013), SOP Increase of Economic Competitiveness and minimise aid for innovation vouchers). These schemes have financed partnerships between academia/research institutes and the private sector. The 2013 Country Specific Recommendation stressed the need to “ensure closer links between research, innovation and industry, in particular by prioritising research and development activities that have the potential to attract private investment”.

RoEduNet is the Romanian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

Government Budget Appropriations or Outlays for R&D (GBAORD) amounted to 0.47% of Gross Domestic Product (GDP) in 2011. The aim is to reach 1.2% GDP allocated to R&D in 2020. The share of GBAORD allocated as project based was 37,86% in 2008.

In the Slovak Republic legislative powers in higher education, research, development, and innovation policies lie at national level. Regions do not legislate and there are no regional research or innovation councils. Bratislava is the major centre of R&D activities. All research and innovation measures are designed and implemented by agencies of central government.

Since 2007, responsibilities for the research and innovation policies are separated between the Ministry of Economy (ME) and the Ministry of Education, Science, Research and Sports (MESRS). MESRS is the highest governmental body responsible for policy- and decision-making in the field of science and technology. The national science and technology policy is prepared and coordinated by the MESRS with co-operation of other ministries, the Slovak Academy of Sciences (SAS), higher education institutions (HEIs), associations of employers, and industrial research organisations. The Slovak Republic Government Board for Science and Technology (under MESRS) was the most important body for coordination of science and technology policies (S&T) until 2011 to be replaced by the Slovak Government Council for Science, Technology and Innovations (SGCI). SGCI is to coordinate central government agencies involved in development of the knowledge-based economy. The ME implements the Operational Programme of Competitiveness and Economic Growth (OPCEG). The MESRS implements the Operational Programme Research and Development (OPRD) and the Operational Programme Education (OPE). As to manage the OPRD and OPE, the MESRS established the Agency of the MESRS for the Structural Funds of the European Union (ASFEU).

Between 2010-2011 MESRS drafted the “The Fenix Strategy: Update of the Long-Term Objective of the State Science and Technology Policy up to 2015” and the Ministry of Finance “Minerva 2.0 for the knowledge-based economy”. The documents tried to integrate research and innovation policies, and suggest a range of institutional reforms for increasing quality of higher education and research, notably: reforming some key research performer institutions (the Research and Development Agency –RDA -and the SAS); implementing more efficient and transparent evaluation techniques; internationalisation of the Slovak R&D system; defining national priorities in building large-scale R&D infrastructures compatible with the ESFRI roadmap; creating a national system for technology transfers; introducing new programmes supporting new technology-based firms and innovation-oriented research and re-allocating finance provided by the Operational Programme Research and Development towards large-scale projects with strategic importance and removing administrative hurdles related to calls and projects supported by the Structural Funds. Systemic changes in support to R&D were also detailed in the 2010 New Model of Financing Science and Technology in the Slovak Republic. The support primarily is channelled to infrastructure building, applied research, and international scientific-technical cooperation. The MESRS and the ME started

preparatory works on the respective R&D and Innovation Strategies for planning period 2014-2020. The strategies should be ready in 2013.

In the medium- to long-term horizon, the Government would like to support physical and virtual (both thematic and regional) pooling of scientific and research institutions, organisation of institutes of applied sciences in university parks and concentrate basic research in academic centres. The Smart Specialisation Strategy for Slovakia until 2020 (S3) will have research and innovation as one of its main priorities, promote better links to industry and it is planned that it proposes a reform of the R&I sector, including its management and financing. Via amendments to different legislative acts (among others the Act on Research and Development Incentives and the Act on the Organisation of State Support for Research and Development) Slovakia envisages to provide long-term, effective, predictable and stable funding; increase private funding in research and innovation; set in place clear and transparent criteria for the funding projects; link institutional assessment to cooperation with the private sector and quality recruitment; foster mobility between the public and the private research sector; focus on excellence and prioritise the grand challenges fields and applied research for industry needs. (NRP 2013)

The MESRS supports basic and applied research via state budget allocations and competitive grants given to a network of organisations and agencies. The Slovak Academy of Sciences (SAS) is providing the bulk of basic research in Slovakia. Both the MESRS and SAS have their own chapters in the State Budget Laws. Competitive funding is managed via two agencies: The Scientific Grant Agency (VEGA) – funding basic research projects and the Research and Development Agency (RDA) – funding mostly applied research projects. VEGA is funded and managed by MESRS and SAS. It is funding research projects performed in the Slovak Academy of Science (SAS) and Higher Education Institutions (HEIs) in all fields of science. In 2012 VEGA allocated €13.34m in grants. RDA is giving research grants to public and private bodies. The RDA budget increased from €0.15m in 2001 to €21.81m in 2012 with a peak of €39.83m in 2009.

Institutional funding supports basic research in HEIs and is provided directly (via block grants) from the state budget divisions. Total volume of institutional funding from state budget was €39.43m in 2010, €106.42m in 201 and €145.02m in 2012. Competitive funding accounted for 17.5% and block transfers for 82.5% of the total HEIs funding in 2011 (The 2005-2011 annual reports on R&D, the 2006-2012 VEGA reports, and the 2005-2013 State Budget Laws).

Public bodies and support schemes in research and innovation are subject to regular evaluation, every six years. The main evaluation body for Universities is the Accreditation Commission of the MESRS. The composition and responsibilities of the Commission are set by the 131/2002 Law on Higher Education and include foreign experts. It evaluated 20 public, four private and three state HEIs in 2009-2010. MESRS plans to have new criteria for HEI accreditation including excellence starting with 2014.

The institutes of the Slovak Academy of Sciences (SAS) have been evaluated regularly by their own commission from 1992 onwards. The latest evaluation has been taking place in 2012 with one third of foreign experts taking part. Indicators prepared by the independent Academic Ranking and Rating Agency were used for the first time. The SAS may redistribute only 5% of total wage budget based on the evaluation result.

All competitive funding is subject to peer review, in which one expert has to be foreign.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Slovakia in total participation is 0.37% so far, and Slovakia has received 0.18% of total EC contributions. FP funding represents 11 Euros per head of population. The country also participates in three Joint Programming Initiatives and two Article 185 initiatives. In 2010 Slovakia joined the Joint Programming on combating neurodegenerative diseases, in particular Alzheimer's. The challenge is mentioned in the 2010 New Model of Financing Science and Technology in the Slovak Republic. The 'New Model' sets the MESRS responsible for participation in this cross-border initiative and budget €1m. Slovakia continues supporting a limited number of projects within COST and EUREKA programmes. Additionally, Slovakia participates in the EU Strategy for the Danube Region (EUSDR) as the coordinator of its priority area 7 – Knowledge society based on research, education and information and communication technologies.

The Information on International Co-operation in Science and Technology in 2011 (MESRS 2012) contains some policy recommendations on multilateral co-operation in S&T: (a) Slovakia should maintain its membership in multilateral S&T joint research agendas despite high membership cost; (b) Slovakia should consider joining the European Space Agency; © Slovakia must increase intensity of co-operation under EUREKA, European Molecular Biology Conference (EMBC) and ESFRI. Cross-border interoperability of national programmes is pictured by the same document which summarises bilateral and multilateral schemes in S&T co-operation managed by the RDA. In 2011 the bilateral schemes supported 159 projects (€0.31m) with eight ERA countries, and 43 projects (€0.12m) with three other countries. The Visegrad fund (between the Czech Republic, Hungary, the Republic of Poland, and the Slovak Republic) provides also research grants from a common pot contribution of all countries involved.

In 2010 MESRS drafted the 'National Research Infrastructures Roadmap'. By 2012 Slovakia participated through MESRS and its agencies in nine ESFRI projects (CLARIN, ESS Survey, EPOS, Erinha, INSTRUCT, ESRF Upgrade, European XFEL, ILL 20/20). The Slovak Republic also participates in six out of eight largest inter-governmental scientific research organisations that are responsible for infrastructures and laboratories (CERN, EFDA-JET, EMBL, ESA, ESO, ESRF, European XFEL and ILL). The most important cooperation is with CERN, the European X-Ray Laser Project and the Joint Institute for Nuclear Research in Dubna (Russia). Infrastructure projects are funded from the Structural Funds. Access to

Slovak research infrastructure is provided for foreign researchers under bilateral and multilateral schemes in S&T co-operation.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 5.6 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 3.1. The shares of non-national doctoral candidates were 6.3% from another EU-27 Member State and 1.4% from non-EU countries.

The Law 131/2002 on Higher Education Institutions provides that Slovak HEIs are self-governing institutions and can recruit researchers according to their needs, regardless of their nationality. HEI teachers and research workers are considered civil servants, therefore civil servant laws apply. Foreign researchers may apply for permanent jobs (including managerial) with SAS, HEIs and public research institutions. Many institutions require candidate to prove fluent Slovak language. In 2012, 52% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The government plans to reform the system of higher education and to promote merit-based recruitment of researchers. An amendment to the Law 131/2002 on Higher Education Institutions was adopted to tighten rules on the award of assistant professor and professor titles to meet more stringent (bibliometric-based) criteria (NRP 2013).

The Decree of the Government of the Slovak Republic No. 391/2004 enables access to Slovak labour market to citizens of all EU member states without any restrictions. The 404/2001 Law on Residence by Foreigners entered into force which enabled easier access to Slovak labour markets by researchers from third countries, including the 'research and development permit'. The MESRS drafted in October 2012 an amendment of Law on Qualification Degree Documents which makes mutual recognition of degrees easier for citizens of Slovakia, and European and third country nationals.

The Fenix strategy includes support measures to attract prominent foreign scientists and foreign research institutions to Slovakia. Several programmes support human resources in R&D, and international mobility by PhD students and researchers (for example 'Human Resources in Research and Development and Popularisation').

As far as cross-border access to and portability of national grants is concerned, the 172/2005 Law on Organisation of State support to R&D enables the participation by foreign researchers in Slovak research programmes. National funding for R&D is reserved for the Slovak nationals and/or HEIs and research bodies established in the Slovak Republic, except for the bilateral and multilateral co-operation programmes.

The Slovak Academic and Information Agency manages the Slovak version of the EURAXESS webpage. The services centres help researchers and their family to plan and organise their move to a foreign country or foreign researchers to Slovakia, providing

assistance in all matters related to mobility. All services of the EURAXESS Network are free of charge. Job vacancies in HEIs and the SAS have been published only in Slovakia so far. The Slovak public authorities plan to publish job vacancies in Slovakia and other countries on relevant Europe-wide online platforms (including EURAXESS) and use the English language (Deloitte 2012).

Two national research organisations signed the Charter for Researchers in Slovakia, the Rectors of the Slovak Higher Education Institutions and the Slovak Academy of Sciences. These two bodies represent about 80% of the total researchers in Slovakia. One Slovakian organisation is actively engaged in the Commission's Human Resources Strategy for Researchers.

More detailed information can be found in the country profile for Slovakia in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Gender equality is guaranteed by the Slovak Constitution (2001), Labour Code Law (Law No. 311/2011) and the Antidiscrimination Law (Law No. 365/2004). Under the Labour Code Female researchers have right to return to the same position after maternal leave, except for fixed term contracts.

Cultural change on gender is the Central Information Portal for Science and Technology which publishes information of Slovak female scientists: success stories, interviews and profiles of excellent Slovak women researchers, under the title "Women in Science".

KNOWLEDGE CIRCULATION

Open access policies are implemented via the Slovak Centre of Scientific and Technical Information (SCST). SCST is the national information centre and specialised scientific library of the Slovak Republic. It implements two projects financed from Structural Funds through the Operational Programme Research and Development. The first one is the 'National information system supporting research and development in Slovakia' invests €19.9m in the period 2009-2014. It collects, stores and maintains data on research projects funded from public sources, data on research project outputs and a register of R&D organisations and database of research personnel. A new research information system SK CRIS (CRIS = Current Research Information System) will become operational shortly and contain a publications repository.

The second one is the Data Centre for Research and Development a €33m project for period 2008-2014. It will store and process the complex information essential for R&D in Slovakia and provide auxiliary services.

These projects provide access to the scientific community, university students and businesses.

There is a strategy to create a national technology transfer system, by creating a National Technology Transfer Centre at SCST, with technology transfer centres at universities,

research institutes and the SAS as well as locally and a National Patent Fund to finance IPR protection. This strategy should be financed via Structural Funds and the State Budget.

Through the Operational Programme Research and Development two important programmes for technology transfer were put in place. The first one is the 'Transfer of knowledge and technology from research and development into practice' supporting the establishment of University science parks within HEIs and the SAS as well as applied research projects and academia-industry cooperation. Most financial assistance is provided via grants for technology transfers and supporting R&D co-operation networks. The second one, implemented via SCST is the 'National infrastructure supporting technology transfer in Slovakia' to support application of RTD results and the establishment of technology transfer centres in Universities and public research organisations. It also aims to establish a National Portal for Technology Transfer. Since May 2003 SCST maintains the Centre of Patent Information (PATLIB) and provides information on IP-related issues and IPR protection.

The State Budget supported six horizontal and three thematic State Research and Development Programmes (SRDPs) in period 2003-2010. The SRDPs should (among other goals) promote co-operation by private and public sector in research and development. Total support by the state budget was €91.36m and the private sector provided €20.94m in the above-mentioned period. The 2011 Innovation Policy suggested several new policy measures, amongst those the 'Support to the Industrial Cluster Organisations' scheme. The MESRS launched a 'tailor-made' call supporting five incumbent clusters in October 2012 where applicants have to prove co-operation with the Slovak Universities and the Slovak Academy of Sciences.

In June 2013 the Council recommended that Slovakia continues its efforts to foster effective knowledge transfer by promoting cooperation between academia, research and the business sector (Recommendation No 4).

The policies on access to research and education-related public e-infrastructures and associated digital research services are implemented through the Slovak Academic Network (SANET), the Slovakian NREN, who is a member of GÉANT. MESRS subsidises SANET services for high schools and universities. SANET is an independent civil association (non-profit body), members of which agreed with conditions to provide each other with Internet services. By 2013 the SANET had 322 members including all Slovak Universities, institutes of the Slovak Academy of Sciences, scientific libraries, 170 primary and secondary schools and several state institutions and municipalities. The SANET implemented some important projects in 2012:

- 'SANET2' project aimed at building high-speed (100 gigabyte) network for Slovak academic community. The network became a member of GEANT trans-European network and the Internet (assigned through resolution N° 383/2001 of the Slovakian Government);
- Implementing the Eduroam (education roaming) services for secure, world-wide roaming access service for the international research and education community.

- Issuing TERENA Certificate Service (TCS).

In 2012 there were 38 HEIs, 20 research institutes, 7 institutes of further education, 250 secondary schools, 100 primary schools and 6 libraries connected to TERENA in Slovakia.

EFFECTIVENESS

The technology policy is handled by the Ministry of Economic Development and Technology (MEDT) while the Ministry of Education, Science and Sports (MESS) is in charge of the education and science sectors and sports, with a new Directorate in charge of higher education and science. Research support is provided mainly by the Slovenian Research Agency (SRA), the Public Agency for Entrepreneurship and Foreign Investment (PAEFI) and the Technology Agency (TIA), established by the 2011 Law on Research and Development. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.55% in 2011. Total GBAORD per capita rose until 2009, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in Slovenia was of 1,09% in 2011. A number of support measures were not announced in 2012 due to lack of resources and also because the funding modality changed, especially for the measures supporting business R&D and innovation projects. However, national authorities have increase general tax incentives for investments in R&I, to attain 100% in 2012.

In 2010, the Research and Innovation Strategy of Slovenia (RISS) 2011–2020 was adopted, covering virtually all activities in the field of R&D. It fosters horizontal coordination of R&I policies and a shift towards target-oriented budget, aiming at a higher quality of life for all, using a critical reflection of the society, efficiency in addressing societal challenge, increased value added per employee, while providing more and better jobs. The National Higher Education Master Plan (NHEMP) 2011-2020 was also adopted in 2010 addresses a number of issues related with tertiary education.

Most of the public research is co-financed by the SRA on the competitive basis. The NHEMP introduces an incentive-based extra block funding element, which takes into account study programmes, internationalisation, quality assurance and social focus. The national reform programme 2013 proposes to increase institutional funding linked with regular evaluation of research institutes and universities. However, the share of GBAORD allocated as project based is unknown. Universities and technical colleges/polytechnics receive institutional funding.

Peer-review process for competitive research is enforced since 2008, after the adoption of the Rules on the Procedures of the (co)financing and Monitoring of Research Activities Implementation.

The national smart specialisation strategy (RIS3) is being prepared. On the basis of the results of an on-going public consultation, priority areas will be selected. Moreover, several Competence centres and Excellence centres are being developed to support Smart Specialisation (Nanosciences and Nanotechnology (CE NS and NT); Biosensors, Instrumentation and Process Control (CEBIC); Integrated Approaches in Chemistry and Biology of Proteins (CIPKeBiP); Low-Carbon Technologies (CoE LCT); Advanced Non-Metal Materials with Technologies of the Future (CE NAMASTE); Polymer Materials and Technologies (CE PoliMaT); Space: Science and Technology (CE Space.si); Studies in

Biotechnology, Pharmacy and Physics of Matter (CE EN-FIST)). During 2009-2010 the majority of additional R&I funds intended for the establishment of smart specialization.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participations of Slovenia in total participations is 0.67 % so far, and Slovenia has received 0.40 % of total EC contributions. FP funding represents 66 Euros per head of population. The country also participates in Joint Programming. Slovenia participates in four initiatives. The country also participates in three Article 185 initiatives and in ten ERANet+. The Research and Innovation Strategy of Slovenia (RISS) seeks to increase international bilateral and multilateral co-operations.

With regards to research infrastructures, the RISS supports the funding of the national roadmap, the cooperation in international Research Infrastructure projects and indicates the willingness to settle one of the key EU research infrastructure head office in the Country. The National reform programme 2013 announces the institutionalisation of at least five ESFRI projects.

The RISS proposes a systematic support of research infrastructure consortia that will enable their successful operation, long-term management and development of integrated services with regard to specific needs of particular areas, open access, necessary training of users, efficient use of equipment, and provision of support to users in interpreting the results.

OPEN LABOUR MARKET FOR RESEARCHERS

To facilitate mobility, the Research and Innovation Strategy of Slovenia (RISS) proposes to eliminate barriers hindering cross-border access of national grants and to opening-up tenders to participants from abroad.

The RISS also establishes the strategy for a merit-based rejuvenation of Human resources in Research and Development.

To achieve the merit base, RISS supports the implementation of open recruitment. Among the measures, the strategy includes the elimination of administrative, technical and tax barriers for international mobility, inwards and outwards. It also requires more systematic public calls for new jobs openings. In 2012, 41 % of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012). Five Slovenian organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 2 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

The fundamental recruitment system for researchers in public research and higher education institutions is based on general rules which are mandatory for all public servants in Slovenia. Additionally, the Slovenian Research Agency, which is responsible for funding, evaluation and distribution of national public funds for research activities, provides merit-based, open and transparent rules on funding different research activities (programmes, projects, young

researchers, international cooperation, science meetings etc.) The Agency provides transparent procedures for evaluation and selection by public calls. All criteria and indicators, including the research and bibliometric references for evaluation and selection, are publicly available through its website.

National authorities are co-funding PhD training programmes in various fields, with special emphasis in the field of research-business collaboration and current issues of modern society.

More detailed information can be found in the country profile for Slovenia in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

Gender issues are covered by the Principle of Equal Treatment Act. The RISS strongly advocates for improving career opportunities for researchers and gender equality. It emphasises that the necessity to follow the principle of balanced representation of both genders when appointing working bodies within the competence of MESS, and when preparing legal acts and other strategic documents.

KNOWLEDGE CIRCULATION

Concerning Open access to publications, the RISS indicates that a national repository of scientific information should be established and expanded to all scientific fields. So far, these libraries are not always publicly accessible but opened only to their members. Among services, most of the digital libraries also offer access to journal databases or specific databases, important for scientific research.

Related to knowledge transfer, it is mandatory that results from each project/programme being co-financed by public funds are publicly available.

Concerning the development of e-infrastructures, the Slovenian Research Agency channels the funding for the development of digitalisation and knowledge access for all Slovenian libraries and interested public (COBISS), notably through its infrastructural financing. Because it is funded with public funds, COBISS is available for all internet users, and in some cases, the bibliographic note includes a link to the material, while in other cases, it indicates in which library is located the material. The National Library network ("NUK network"), provide distant access to these databases by using the inscription ID and password provided by the library. Slovenia is candidate to EDUgain through ArnesAAI. ARNES is the Slovenian National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The research, development and innovation system in Spain is supported by national and regional authorities. At national level, the Secretary of State for Research, Development and Innovation of the Ministry of Economy and Competitiveness is responsible for the implementation of Research, development and innovation policy. The Law for Science establishes the legal framework for research and innovation, and it notably specifies the competencies at national and regional level. It also regulates mobility between private and public sector, researchers' contracts, evaluation of researchers, knowledge transfer, and internationalisation of the Spanish system. It also highlights the role of the Spanish strategy for science, technology and innovation and the State plan for scientific and technical research and innovation.

The Government budget appropriations or outlays for research and development (GBAORD) as a share of Gross Domestic Product was 1,3% in 2011. Total R&D appropriations rose until 2009, when they started to decline. Total GBAORD as a % of total general government expenditure was in 2011 less than half of the one in 2007. The considerable increase in public and private research and development (R&D) expenditure over the decade 2000-09 has had a positive impact on science performance but did not boost innovation significantly (Innovation Union Scoreboard).

The Spanish strategy for science, technology and innovation highlights the general objectives for the period 2013-2020. These objectives are aligned with the ones of the new framework programme, Horizon 2020, to promote the active participation of Spanish agents in the Science, Technology and Innovation system in the European space. The State plan for scientific and technical research and innovation presents the type of instruments that will be used to foster R&I.

Two agencies manage funding: the recently created Agency for science and technology and the Centre for industrial technology development. Besides, the Spanish Foundation for Science and Technology (FECYT), a public foundation under the Ministry of Economy and Competitiveness, fosters science, technology and innovation, promoting their closer integration to society, responding to the needs of the Spanish for Science, Technology and Enterprise system (SECTE).

A high proportion of funding is allocated through competitive calls for proposals. Institutional funding represents a low share (19%) of the GBOARD in 2011. In the case of universities, funding for teaching and operational costs is the responsibility of the regions, which offer institutional funding to universities based mainly on the number of students and teachers and other related criteria. The assessment of quality of research-performing organisations and teams and their outputs is not usually the basis for institutional funding decisions, especially in the case of universities. Public funding does not provide sufficient incentives for universities and public research organisations to cooperate with industry and societal stakeholders. The result is a low rate of transformation of R&I into commercial products and services.

Peer review of international standards is being proposed for the selection of projects, human resources activities and development of infrastructures in the new Spanish Strategy for Science, Technology and Innovation (EESTI) and the PECTI include international evaluation of competitive funding as one of its five basic principles.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Spain in total participation is 7.89 % so far, and Spain has received 7.11 % of total EC contributions. FP funding represents 53 Euros per head of population.

The country also participates in Joint Programming. Spain participates in nine initiatives, and coordinates the initiative Water Challenges for a Changing world. The country also participates in four Article 185 initiatives and acts as leader in one of them.

Spain has several bilateral and multilateral agreements with various countries' research funding agencies and organisms (i.e. US, Japan, Canada, Brazil), in different research areas.

The new Plan implementing the Spanish Strategy for Science, Technology and Innovation (PECTI) foresees increasing international peer review through programmes of support to R&D Centres of Excellence.

Spain has a national roadmap for Research infrastructures. Besides, Spain considers ESFRI as an important initiative and the country contributes significantly to a broad range of these facilities. At least three large ESFRI installations will be hosted in the country: the construction in Catalonia of one of the five supercomputers in Europe of the Partnership for Advanced Computing; the solar research infrastructure (EU-SOLARIS) at the Advanced Technological Centre for Renewable Energy in Almeria; and the European Spallation Source (ESS) in the Basque Country, an advanced centre for researching the atomic and molecular arrangement for materials. The budget cuts are causing delays in the payment of Spain's financial contribution to some international research infrastructures.

On e-infrastructure, the Spanish Public Universities and Research Libraries Network (REBIUN) and the FECYT has launched a national joint programme called RECOLECTA to create repositories and their integration with international repositories.

The Law of Science, Technology and Innovation from 2011 includes a provision to remove legal barriers to access research infrastructures, in conformity with EU provisions.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 5.8 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 1.2. The shares of non-national doctoral candidates were 5.7% from another EU-27 Member State and 17.3% from non-EU countries.

The Law of Science, Technology and Innovation introduces measures to improve the mobility of researchers between sectors and to facilitate access to a research career. Within the

National Programme for hiring Human resources, several sub-programmes (Torres Quevedo, Ramón y Cajal, Juan de la Cierva) support private-public mobility. There are also provisions for special visa for foreigner researchers. The current legislation does not consider grant portability. In 2012, 52% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

Concerning the Code and charter for researchers, the council of universities indicated its support in 2008. The Law of Science, Technology and Innovation (LCTI, 2011) requires that all universities applying for public funding accept and comply with the principles mentioned in the Code and Charter for researchers. Notably, the Law sets up the conditions to ensure openness of the recruitment process. However, most of the times only nationals are recruited in public universities. The Statute for Research Interns sets the rights and obligation for young researchers. Spain joined Euraxess in 2004 and the FECYT (Spanish Foundation for Science and Technology) acts as national bridgehead organisation for general inquires. Funding is provided through several subprograms to research stays of foreign lecturers and researchers in Spanish higher educational institutes and research organisations. Twenty-one Spanish organisations are actively engaged in the Commission's Human Resources Strategy for Researchers of which 3 have received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

Spain supports the link between academia and the private sector. The LCTI includes a chapter on the purposes of collaboration, including the training of staff. Notably, the Spanish Strategy for Science, Technology and Innovation (EESTI) (2013-2020) aims to promote "Industrial PhD programmes", through the exposure to industry and other relevant employment sectors during the PhD training period. The Torres Quevedo Programme provides grants for doctors to do research in the private sector. Regarding structured doctoral training programmes, there is an inter-institutional agreement to put in place a new normative framework and the basis are on the PECTI (Plan Estatal de investigación Científica, Técnica y de Innovación).

More detailed information can be found in the country profile for Spain in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

GENDER

The Law of Science, Technology and Innovation (LCTI 2011) and other policy measures from the new Spanish Strategy for Science, Technology and Innovation (EESTI) and the Plan (PECTI) implementing it introduce positive changes regarding gender equality and gender mainstreaming in research. For instance, the LCTI introduces a provision according which public research bodies should adopt within two years 'gender balance plans' that will be yearly monitored. And the evaluation and selection committees of the research system should follow the gender balance principle so that no gender group will account for neither more than 60% nor less than 40%.

KNOWLEDGE CIRCULATION

The Law of Science, Technology and Innovation (LCTI) indicates that publicly funded research publications have to be made publicly available after, at the latest, a period of twelve month embargo. These publications have to be included in an open access repository.

Related to knowledge transfer, the LSTI has a section setting up the conditions in support to scientific and technological research, innovation, knowledge transfer, dissemination and scientific, technological and innovation culture. It lays out the objectives and conditions for implementing collaboration between the private and the public sector at all levels. Several programs, like INNPACTO or INNPLANTA, specifically promote knowledge transfer.

Concerning Open Innovation, Spain has decided to focus on the preparation of an annual plan that will facilitate the knowledge management (more than knowledge transfer).

On e-infrastructures, the national joint programme called RECOLECTA provides a free open access platform and support to Spanish repositories so that they comply with international standards of interoperability and sustainability. Spain is member of EDUgain through SIR. RedIRIS is the Spanish National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.

EFFECTIVENESS

The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.83% in 2011. Total GBAORD as a % of total general government expenditure, as a measure of the effort by national authorities to research in their country, notably in times of crisis, has dropped from 1.63% to 1.54% in 2009, but increased again since to 1.62% in 2011. The share of GBAORD allocated as project based is unknown.

Both the Swedish public and private sector investments in R&D can be said to be long-term secured by structural features of the system. In the case of the public sector, all spending is appropriated in annual governmental budgets. It formally means that R&D appropriations (as any other governmental expenditure) are subject to year-to-year decisions. However, the absolute bulk of these funds are earmarked and determined by structural features such as the collection of governmental agencies and their relative responsibilities. These structures and the broader priorities of the governmental R&D budget are laid down in the quadrennial governmental research bills, which constitute the chief policy instrument for the government and essentially the binding document for governmental research policy and RDI strategy, including R&D investments.

The Swedish public sector R&D system is dominated by the higher education institutions, whose research income from governmental sources is split almost equally between institutional block grants and competitive project funding. The development in the past years has been a steady increase on both accounts but the long-term development based on the recent years is a shift from institutional funding to project based competitive funding. The trigger of this, especially in recent years, is clear governmental policy priorities in favor of competitive funding. However, also the institutional block grants to university research have increased in the past years, as a result of deliberate governmental policy.

The 2008 Research bill made parts of institutional block grants for academic R&D subject to competitive allocation, based on bibliometric indicators, with an especially notable growth in the institutional block grant research funding to the academic sector of almost 17% between 2009 and 2010. A corresponding increase in competitive funding (also resulting from the 2008 research bill) of almost 20% between 2008 and 2009 makes the long-term development of the ratio between institutional block grants and competitive funding largely unchanged in the past five year period (with a slight relative overall increase of the share of competitive funding from 50.9% in 2007 to 52.5% in 2011).

Taking into account the 2012 CSR on research and innovation (to implement measures to improve excellence in research, commercialisation of innovative products and the development of new technologies), the Swedish Government presented in October 2012 a bill on research and innovation. In parallel with the research and innovation bill, the Government adopted an innovation strategy aimed at strengthening the innovative climate. The innovation strategy takes a holistic view with the purpose of enhancing innovative capacity and meeting social challenges.

Among the proposed measures, and relevant for the ERA action on competitive funding, the research and innovation bill increases funds aimed at universities, colleges, research funders and research institutes, as well as new instruments for solving grand challenges. It proposes a changed system for the allocation and reallocation of appropriations to universities and colleges to further reward quality. The bill entails a substantial increase in funding to strengthen Sweden's position as a prominent research nation, which in total amounts to SEK 4 billion for 2016. Effective from 2014, an additional 10 percentage points, or a total of 20 % of the appropriations, will be subject to reallocation based on aspect of quality and performance. The bill also presents several measures to improve utilisation of research results and innovation. The Swedish Research Council will be tasked with setting up a special programme, whereby researchers will be allocated research funding over a period, normally of seven years, enabling high-risk, high-potential research.

With regards to the application of the core principles of international peer review, the allocation of competitive public R&D funding in Sweden (mainly executed within the framework of the research councils) typically follows the procedure of internal peer review assessment boards with predominantly Swedish or Scandinavian members. However, the 2006 and 2008 Linnaeus Grants and the 2009 Strategic Research Areas grants (allocating in total €30 million and €300 million, respectively) involved the use of international peer reviewers. As also announced in the 2012 bill on research and innovation, the Swedish Research Council will develop, in consultation with other research funders, a new resource allocation system that includes international peer assessment of universities and colleges' research quality and performance. This task will incorporate findings from the task Vinnova is leading in setting up a system for assessing university collaboration with the surrounding society and impact of research results. The new system can be introduced in 2018 at the earliest.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of Sweden in total participation is 3.35 % so far, and Sweden has received 3.87 % of total EC contributions. FP funding represents 136 Euros per head of population. The country also participates in Joint Programming. Sweden participates as a member in 7 initiatives, is observer in 1 and coordinates the JPI Antimicrobial resistance - An emerging threat to human health. The country also participates in 6 Article 185 initiative(s) and leads 1 of them.

Swedish governmental research and innovation policy is strongly based on the analysis that the competitiveness of the Swedish national economy and society hinges upon a strengthening of the Swedish national research and innovation system. Swedish research policy measures are designed partly taking into account the policies of other European countries. The almost 30 Strategic Research Areas, identified in the 2008 research bill and endowed with a specific funding program allocating a total of €300 million to 43 research environments in Swedish universities have been identified as highly relevant also in broader European perspective. Further, Vinnova began 2011 launching calls aimed at solutions to grand challenges. The role

of the Swedish research and innovation system in strengthening the long-term common European competitiveness is further strengthened in the latest research and innovation bill with a new coordination function for European partnership programmes. This function is placed at Vinnova and involves all Swedish research funding agencies. An additional 220 million funding per year has been allocated to this function to meet the increased number of European partnership programmes.

Sweden is actively cooperating with other Nordic countries in joint programmes and institutions within the Nordic Council of Ministers. Nordic cooperation involves Denmark, Finland, Iceland, Norway and Sweden as well as the three autonomous areas, the Faroe Islands, Greenland and the Åland Islands. The organisation of Nordic collaboration in research and innovation rests on two main pillars, one for research, NordForsk, and one for innovation, Nordic Innovation (formerly The Nordic Innovation Centre, NICE). In 2008 the Nordic Prime Ministers initiated the Top-level Research Initiative (TRI) and it is to date the largest joint Nordic research and innovation initiative that has a research focus within climate, environment and energy.

The Swedish national policy for research infrastructures and the commitments for the construction and operation of ESFRI infrastructures, has been, and is still, in a phase of intense restructuring. Sweden published a third edition of its national Research Infrastructures Roadmap in 2011. Given its relatively small size and rather peripheral position in Europe, Sweden has been exceptionally strong in science and not least big science in the second half of the 20th century, as seen in its record of contributions and participation in European collaborations in research, e.g. CERN, the European Southern Observatory (ESO), the European Synchrotron Radiation Facility (ESRF), and many others. Sweden had, up until a decade ago, not been actively seeking to become host of any of these collaborations. This changed in 2007, when it was decided to fund an initiative to build and operate two world-leading research infrastructures in materials sciences European Spallation Source (ESS) and MAX IV. The fate of the ESS plans is still not completely determined, as the only binding funding pledges made are those by Sweden and Denmark, covering 42% of the construction costs, and 2013 is supposed to be the year when a number of bilateral agreements are made between Sweden and the other prospective European member countries. MAX IV, on the other hand, is currently being constructed in Lund and its opening is set in 2015. Sweden also supports and actively participates in the European Social Survey, CESSDA and SHARE, and has invested in the Science for Life Laboratory, SciLifeLab, in Stockholm/Uppsala. Several billions euros are related to those infrastructures.

Regarding cross-border access to research infrastructures, the room for assessment of details of access to large research infrastructures in Sweden is dependent on decisions to be made with regard to the organization and legal status of MAX IV, ESS and SciLifeLab. In the case of ESS, it depends on decisions with regard to its realization and the nature of the facility in terms of organizational and legal status (international treaty organization, limited liability company, etc.) and distributions of shares or similar among member countries.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 9.9 per 1,000 and the number of new doctoral graduates per thousand population aged 25-34 was 2.9. The shares of non-national doctoral candidates were 10.0% from another EU-27 Member State and 20.0% from non-EU countries.

With regards to open, transparent and merit based recruitment, Swedish HEIs have been required by the Employment Ordinance since 1994 to announce all job vacancies (both permanent or for a fixed period) for academic staff (including teachers and researchers) and advertise all relevant information on e.g. the EURAXESS portal (Researchers Report 2012). The 2010 universities autonomy reform gave universities however greater autonomy in determining their own organisation and HR policies, including liberties to change the procedures for hiring and promotion of academic staff. This autonomy reform does undoubtedly impact the mobility on almost all levels and in almost all instances: vacancy announcements (including job profile, skills and competences required, and eligibility criteria); the selection process and criteria; time periods for various stages in the recruitment process; possible feedback to applicants; routines for appeals against decisions; and the composition of selection panels as well as rules for the composition and publication of the composition of panels. However, since the reform not explicitly changed the procedures in any direction, it is difficult to assess the effects. The reform also influences open recruitment, as it allows Higher Education institutions to call individuals to specific posts, allowing to compete internationally for talent. The impact of this provision is also not clear yet. In 2012, 64% of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012).

The 2012 research and innovation bill contains new legal provisions and a funding programme to incentivize HEIs to recruit internationally researchers who conduct research of the highest quality. In the bill, the annual governmental grant to the Swedish Research Council is increased with an earmarked amount of 150 million SEK (€ 18 million) in 2013, followed by increases of 50 million SEK (€ 6 million) in 2014 and 2016 to be spent on a program – designed and launched by the Council – “for the international recruitment of researchers who conduct research of the highest quality.” The programme has been launched recently.

The past years have seen no new legislative or policy efforts on national level to alter cross-border access to and portability of national grants. First-stream funding to universities are naturally tied to specific institutions. Third party grants are generally flexible in that they can, once granted and commenced, be transferred across national borders to foreign institutions; however, it is typically the case (as for Swedish Research Council grants) that applicants must, in order to be eligible for a grant, localize the grant to a Swedish institution to which the funding will be disbursed by the funding agency and which will act as employer of the grantee.

Regarding coordinated personalised information and services through EURAXESS, it can be noted that the EURAXESS network is in Sweden not subject to a national coordinated policy effort but rather administered and sustained by research councils and the participating institutions. There is no mentioning of EURAXESS in the two most recent governmental research bills (20098 and 2012) or in other governmental policy documents.

Four Swedish organisations are actively engaged in the Commission's Human Resources Strategy for Researchers.

GENDER

Regarding recruitment, retention and career progression of female researchers, it can be noted that there are few or no legislative barriers to gender equality in the public Swedish R&D system. Swedish government leaves however the work to achieve gender balance in the academic sector largely to the institutions themselves. In spite of the general Swedish strong showing in international rankings and evaluations of gender equality and equal opportunities policy, the recent few years' general policy initiatives on national level aiming have had little involvement of policies aimed at providing equal opportunities in academia and thus end the waste of talent brought by gender inequalities institutionalized in academic culture.

The 2008 research bill mentions gender inequality once, stating that the work to achieve better gender equality in the research system "continues to be a priority" for the government but with no reference to concrete policy measures in the area. The 2012 research bill mentions gender inequality also once, and instructed the universities and higher education institutions to intensify the work to break gender bias in education efforts. It also announced a budget of 32 million SEK per year, to be allocated to Vinnova for practical equality research during 2013-2014. The Vinnmer programme was intended for the underrepresented gender in the scientific field of application and towards researchers who have a PhD and who have completed their Post Doc qualification.

In the Autonomy Reform bill, the liberalization of certain regulations for academic institutions includes the opportunity for universities and higher education institutions to give a candidate from an underrepresented gender priority in recruitments.

In relation to the goal of at least 40% of the under-represented sex in committees, the government gave a general instruction (Regulation) to the Swedish Research Council to establish and sustain equal gender representation in discipline-councils and peer review assessment boards and committees involved in the recruitment of academic staff. This regulation has remained in place also after the implementation of the aforementioned 2010 so-called Autonomy Reform which otherwise deregulated several similar procedures within academic institutions. The panels assessing grant applications at the Swedish Research Council are supposed to have a balanced composition with respect to gender; the government's instruction to the council is that the council shall "promote gender equality within its area of work". The Council has, on basis of this instruction, adopted its own gender equality strategy.

Although this may not be considered as a partnership to foster cultural, and institutional change on gender in the strict sense, the former Delegation for Gender Equality in the Higher Education Sector is an initiative worthwhile mentioned. It was initiated by the government, the Swedish Agency for Higher Education and the academic sector. The Delegation was active between 2009-2010 but a few projects are still running. Their work, while not yet having been directly translated into governmental policy, has become the focus of national debate and raised key issues in connection with gender (in)equality in the public R&D system. The new Swedish Council for Higher Education's will work against discrimination and in other ways encourage equal rights and opportunities regardless of gender, gender transcending identification or expression, ethnic background, religion or other belief system, disability, sexual orientation or age.

More detailed information can be found in the country profile for Sweden in the Researchers' Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

KNOWLEDGE CIRCULATION

With respect to Swedish governmental policy on access to and preservation of scientific information, efforts to enhance or support the flow of information in scientific communities are limited. Governmental policy is limited to the language in the 2008 and 2012 research bills in support of efforts, conducted on agency level, to facilitate open access publishing and publicly available online information databases. However, the strong policy standpoint in favour of open access publishing articulated in the 2012 research bill is directly connected to the EU guidance in the area.

The Swedish government gave an instruction to Swedish Research Council and the National Library of Sweden to develop a national policy for open access to scientific information – research data and publications. This work will be carried out in cooperation with research funding bodies, universities and higher education institutions. The initiatives on EU level to build up research infrastructures for the facilitating of dissemination of data and results (e.g. European Social Survey, CESSDA, SHARE) are supported by the Swedish government who take active part as members in these initiatives.

Two national initiatives to facilitate better access to scientific publications by indexing publications nationwide and promoting open access publishing are worthwhile mentioning. None of them are the result of direct governmental policymaking but they are rather collaborative efforts between public and private national organizations (agencies and foundations). First, the SwePub database, run by the National Library of Sweden and makes it possible to search among articles, conference papers and doctoral dissertations published by researchers at Swedish universities and higher education institutions (all institutions except the Stockholm School of Economics are part of SwePub). Second, the OpenAccess.se project, run and funded by the National Library of Sweden in collaboration with the Association of Swedish Higher Education (an voluntary interest organization for Swedish universities and higher education institutions), The Royal Swedish Academy of Sciences, the Swedish Foundation for Humanities and Social Sciences and the Knowledge Foundation (a public

research foundation). Within this project, the collaborators work with information and counselling, infrastructure and services, and policy development regarding open access publishing.

The 2012 research and innovation bill presented several measures of importance for increased commercialisation and utilisation of research results, including funding and relevant instructions to governmental agencies. The research policy target was broadened for research to contribute to the development of society and industry's competitiveness, resulting in an overarching focus on utilisation. The measures for example include a new instrument focussing on grand challenges and further strengthening of industrial research institutes, as well as new innovation offices at universities. It also includes measures and initiatives to strengthen the universities and colleges' assignment to work together with external society and work for research results to be of benefit, with the aim of bringing the lessons learned from this into the future performance based resource allocation system for 2018 which the science council is tasked to propose.

In parallel with the 2012 Research and Innovation bill, the Government adopted an innovation strategy aimed at strengthening the innovative climate. The innovation strategy takes a holistic view with the purpose of enhancing innovative capacity and meeting social challenges. The strategy emphasises, for example, the importance of all relevant actors being involved, the lowering of thresholds and the creation of incentives to advance different actors' capacity for growth and innovation. The innovation strategy includes several different areas of policy and affects a number of government bills over the period up until 2020.

NORDUnet (www.nordu.net) is a joint collaboration by the 5 Nordic National Research and Education Networks in Denmark (Forskningsnettet), Finland (Funet), Iceland (RHnet), Norway (Uninett) and Sweden (SUNET) and operates a world-class Nordic and International network and eInfrastructure service for the Nordic research and educational community. It is a member of GEANT. SUNET's aim is to provide Swedish universities and colleges with access to well-developed and effective national and international data communication and related services that meet their needs, whatever their geographical location. NUNOC (Nordic University Operations Centre) is the 24/7 operations organisation established by NORDUnet to operate and support SUNET's network and services. Sweden is member of EDUgain through Swedish Academic Identity – SWAMID, operated via SUNET.

EFFECTIVENESS

The Science, Technology and Innovation system in the United Kingdom is evolving towards focusing more on innovation and on areas of basic funding in which only the government can invest. Well aligned with the ERA priority to promote effective national research systems, peer-reviewed competitive funding continues to prevail in the UK.

The Department for Business, Innovation and Skills (BIS) plays the lead executive role in research issues, and is the major provider of research funds for the public sector. It provides funds for the seven Research Councils, each organised on a broad disciplinary basis, which in turn support R&D both in Higher Education Institutes (HEIs) and in their own institutions. Thus, BIS has oversight for the majority of R&D policy formulation, and forms the main author of strategic policies for R&D and innovation, while the Research Councils will develop their specific R&D policies. The UK government provides support also to research and innovation activities in the private sector through a number of mechanisms, including tax credits for R&D investment. The share of Gross Domestic Product (GDP) allocated to Government Budget Appropriations or Outlays for R&D (GBAORD) was 0.59% in 2011. Total GBAORD per capita rose until 2008, when it started to decline. The national public effort on Research and development, measure as the share of total GBAORD in national expenditures in United Kingdom was of 1,22% in 2011. The Government's plans for austerity measures have continued to be applied, although offset by targeted investments aiming at boosting industrial growth and longer term recovery.

The Innovation and Research Strategy for Growth was adopted in 2011. It sets out the Government's approach to boosting business investment in innovation and ensuring UK success in the global economy. It indicates that invest will focus on critical areas that only government can fund. As a consequence, a number of new measures have been introduced and modifications made to existing measures over the period 2011-2012. The recent Autumn Statement by the Chancellor of the Exchequer confirmed support for these measures while the BIS Annual Innovation Report for 2012 charted the progress made with their implementation. At the same time, the Government has continued its practice of assessment, evaluation and review in order to ensure it adheres to its longstanding commitment to evidence based policy-making.

Competitive funding allocation based on excellence prevails. Research Councils provide competitive funding for basic research while the Higher Education Funding Council allocates funding for research using the Research Excellent Framework allocation mechanism.

International peer review principles remain embedded in all UK research funding allocation mechanisms.

TRANSNATIONAL COOPERATION

Co-operation between countries is fostered by the Framework Programme. The share of participation of United Kingdom in total participation is 12.80 % so far, and United Kingdom has received 14,48 % of total EC contributions. United Kingdom coordinates the Food

Security, Agriculture and Climate Change (FACCE) initiative and participates in nine other Joint programming initiatives. The country is leader in one of the five Article 185 initiatives in which it participates. It is also a member in sixteen ERANET + initiatives.

The Economic and Social Research Council is a partner in Open Research Area in Europe for the Social Sciences (ORA), which currently involves 4 European countries (UK, France, Germany and the Netherlands) and is bringing in third countries (India and the United States). Co-ordinated peer review and a single common selection process is conducted by the partner funding agencies. Also, the UK has several bi-lateral science and technology agreements with third countries

Several actions support the development of Research Infrastructures. Funding for large facilities and infrastructure is available from the Research Councils, Government Departments, Regional Development Agencies, Devolved Administrations, charities, the private sector, the European Commission and other international bodies. A particular source of funding is the Large Facilities Capital Fund, administered by central Government. In 2012 the RCUK Strategic Framework for Capital Investment was adopted. It outlines where capital investment is important to ensure sustainability of the research base in the medium to long term. The Framework includes large facilities as previously described in the "Large Facilities Roadmap", but has broadened to include other significant capital priorities. In 2013 £600 million Pounds have been earmarked for funding the development of infrastructures and facilities. The Research Partnerships Investment Fund 2012-2015 supports large-scale projects able to leverage substantial co-investment from private sources to enhance the research facilities of higher education institutions undertaking world-leading research. It will secure £1 billion investment in university research infrastructure.

Access to UK research infrastructures is open to all UK and non-UK nationals who are registered as UK academics; Postdoctoral researchers from UK universities; those applying via EU transnational access arrangements; and overseas organisations that have contractual access agreements with the relevant facilities. In addition, applications from overseas (non-EU or without prior contractual access arrangement) are considered.

OPEN LABOUR MARKET FOR RESEARCHERS

In 2010 the number of researchers (FTE) in relation to the labour force was 8.2 per 1,000, and the number of new doctoral graduates per thousand population aged 25-34 was 2.3. The shares of non-national doctoral candidates were 16.4 % from another EU-27 Member State and 31.4 % from non-EU countries.

The UK National Action Plan on researcher mobility and careers within the European Research Area (2009) points out that the UK research base is already one of the most open in the world both as regards recruitment of researchers and scientific collaborations (over 40% of UK scientific papers now have one or more non-UK co-authors). In 2012, 78 % of university-based researchers were satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution (More2 survey, 2012). Evidence

shows that researchers who returned to the UK after an extended time abroad were significantly more productive in terms of articles published than those who had never left the UK. The UK Government funds a number of dedicated fellowship schemes (Dorothy Hodgkin Fellowships, Newton International Fellowships,) which seek to attract the best early career researchers from around the world to UK institutions.

The UK Government has a well-defined and long term skills agenda for researchers. UK Research Councils have allocated GBP 120 million (some EUR 141.3 million) to this since 2003.

In relation to actions to promote mobility, all UK Research Councils are members of the “money follows researchers” scheme. This scheme allows researchers relocating to a new country to take with them the remainder of a current research grant. The Academic Visitor Visa programme allows overseas academics to travel to the United Kingdom for up to 12 months when taking part in formal exchange agreements with UK counterparts or carrying out research whilst on sabbatical leave from their home institution.

The Concordat between funders and researchers employers set up the expectations and responsibilities in terms of researchers careers. It is aligned to the EU Charter and code and the Human Resources Excellence in Research Award. Four British organisations are actively engaged in the Commission’s Human Resources Strategy for Researchers. Seventy-nine universities have been awarded with the HRS4R Acknowledgement for the implementation of a Human resource strategy for researchers in the organisation, reflecting the enabling framework provided by Vitae. Thirty stakeholder organisations (e.g. Funding Councils, Research Councils, unions, and Universities UK) have developed the “Researcher Development Framework”, a strategic agenda to train and support researchers and further improve their skills. Researchers in the UK have access to private pension arrangements and may transfer their pensions to another pension arrangement abroad, subject to tax requirements.

EURAXESS provides information for UK and overseas researchers. The British Council participates in the Euraxess Services network.

In relation to the implementation of the practices and principles for innovative doctoral training, they are espoused by the Research Councils for the recruitment and training of researchers.

More detailed information can be found in the country profile for United Kingdom in the Researchers’ Report 2013 <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicie>

GENDER

Several actions address women researcher careers. Both the Concordat and the Equality Act provide for equal opportunities. The RCUK Statement of Expectations for Equality and Diversity places expectations on universities receiving Research Council funding to promote and lead cultural change in relation to equalities and diversities, to engage staff at all levels,

ensure researchers are trained and supported to address inequalities and to evidence of this. The Research Excellence Framework (REF) includes equality issues, and the REF equality and diversity panel advises on the implementation of REF.

Cultural and institutional change is promoted by several measures. The Athena Swan Charter fosters cultural changes across organisations. The joint programme of the Royal Society and the Royal Academy of Engineering addresses diversity in Science, Technology, Engineering and Mathematics.

KNOWLEDGE CIRCULATION

Open access to publication is well advanced in the UK, notably in Gold Open Access. The "Gateway to research" initiative provides the infrastructure for preservation and open access.

Knowledge transfer is supported through several activities. The Knowledge Transfer Network is one of the Technology Strategy Board's key tools to facilitate the connection, collaboration and finding out about new opportunities in key research and technology sectors by UK's innovation communities. The Knowledge Transfer Partnerships foster relationship formed between a company and an academic institution ('Knowledge Base' partner) to facilitate the transfer of knowledge, technology and skills to which the company partner currently has no access. The Catapult Centres are physical centres where the very best of the UK's businesses, scientists and engineers work side by side on late-stage research and development - transforming "high potential" ideas into new products and services to generate economic growth. The Cooperative Awards for Science and Engineering are used by the institutions to promote knowledge transfer.

The recently established E-infrastructure Leadership Council (ELC) is taking an holistic view of the entire computational resources (e-infrastructure) ecosystem to enable an integrated approach to investment, and found that on-going sustained investment is essential in all aspects of hardware, software and data storage, along with investment in the associated skills and training to enable these., and is developing the business case for future investments. RCUK is also currently developing its own complementary integrated set of priorities for e-infrastructure for research, and we will work closely with ELC to ensure linkage. Six areas are being tackled: Computer systems, software, data, skills, authentication and security, and networks. United Kingdom is joining EDUgain through UK federation. Janet is the United Kingdom National Research and Education Network (NREN), a specialised internet service provider dedicated to supporting the needs of the research and education communities within the country.