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European Research Area Progress Report 2014

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1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation policies are the responsibility of the Ministry of Education and Culture (MEC) and the Ministry of Employment and the Economy (MEE). The Ministry of Education and Culture (MEC) is responsible for higher education and science policy related matters, whilst MEE is in charge of technological development and innovation policy. These two ministries account for over 80 % of government research and development (R&D) funding (with MEC totalling approximately 45 % of funding and MEE around 36 % in 2011). The Research and Innovation Council, chaired by the Prime Minister, advises the Government and its ministries on research, technology and innovation issues. The Council is responsible for the strategic development and coordination of Finnish science and technology policy as well as of the national innovation system as a whole.

The Academy of Finland, Tekes and the Finnish Funding Agency for Innovation are the key public funders. The Academy of Finland (with a budget of EUR 329 million in 2013) mostly funds basic research through competitive grants. Tekes (with a budget of EUR 542 million in 2013) funds projects carried out by research institutes, universities and businesses. An additional funder, the Strategic Research Council, which will be established in 2014 under the auspices of the Academy of Finland and should be fully operational in 2015 (with a budget of approximately EUR 60 million in 2015), will fund challenge-driven research. At the level of public research 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 that set out, at national level, the policy guidelines on the required measures and funding, and detail the actions required for implementing the government's research and innovation policy. The Research and Innovation Policy Guidelines for 2015-2020, currently under preparation, are due to be published by the end of 2014.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Finland represented EUR 382 per inhabitant in 2012, more than twice the EU-28 average (EUR 179). In 2013, GBAORD per inhabitant was EUR 369. In 2012, total GBAORD corresponded to 1.9 % of total government expenditures and 1.1 % of Gross Domestic Product (GDP) (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the rate of growth of total GBAORD in Finland has been higher than the rate of growth of total EU GBAORD. Finally, GBAORD as a share of GDP has evolved positively in Finland even when it regressed at EU-28 level.

A tax incentive for R&D activity and a double depreciation allowance for industrial investments were made available for businesses in 2013 and 2014.

1.2. Project-based funding applying the core principles of international peer review

Project-based funding is mainly allocated by the Academy of Finland and Tekes.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	91.5 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Finland who responded to the survey and support project-based funding is higher than the EU average.

The core principles of international peer review are systematically used to allocate project-based funding by the Academy of Finland. The Academy uses the following principles: scientific quality and innovativeness of the research plan, competence of the applicant/research team, feasibility of the research plan, cooperation contacts for the research and significance of the research project for advancing professional careers in research and for researcher training. Moreover, the 'independence' and 'international' components of peer review evaluations are strengthened under the Research and Innovation Policy Guidelines for 2011–2015. Evaluation based on the core principles of international peer review is not used by Tekes for its project-based funding, mainly because international peer review is not considered to fit with industry needs and the requirements for short 'time to grant'.

1.3. Institutional funding based on institutional assessment

Institutional funding is always allocated based on institutional assessment. The 2013 and 2014 reforms introduced a new funding model for universities and universities of applied sciences. This new funding model aims at increasing the performance of Higher Education Institutions (HEIs) and at addressing the fragmentation problem. The formula for institutional funding for universities includes a research and international component, which amounts to 34 % of the funding: 1) number of refereed international publications, 2) number of other scientific publications and 3) funds obtained from competitive calls. If universities do not perform well in terms of research, their institutional funding will decrease. Moreover, a reform package aimed at restructuring public research organisations was approved in September 2013 by the Government.

Indicator	Level/cluster	Value	Year	Source

Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

Research funders in Finland who responded to the survey indicated that they do not have measures supporting institutional assessment for the allocation of institutional funding.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

There is no overarching legislation governing Finland's participation in joint initiatives. However, the Research and Innovation Policy Guidelines for 2011-2015 support the principle of opening up of programmes for voluntary joint pilot projects of Member States (MS). 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 will set up the Strategic Research Council under the auspices of the Academy of Finland. The Strategic Research Council, which should be fully operational in 2015, will act as a 'third major funder' and will have a budget of EUR 70 million in 2017.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	6.9 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	5.3 %	2013	ERA survey 2014

Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in Finland allocated to transnationally coordinated R&D is higher than the EU average.

The share of responding funders' research and development budget in Finland dedicated to jointly defined research agendas with other EU organisations is higher than the EU average.

Cooperation between institutions of MS, Associated Countries and third countries is fostered by the Framework Programme (FP). In the Seventh Framework Programme (FP7), the share of Finland's participation is 2.3 % and the country received 2.5 % of total EC contribution. FP funding represents EUR 164 per inhabitant (EU average EUR 72 per capita) for the period 2007-2013 and 2.6 % of the Gross Domestic Expenditures on R&D (GERD) for the period 2007-2011 (last available data) (EU average 3 % of GERD for the same period).

Concerning joint programming initiatives, the country participates in nine of the 10 on-going initiatives, coordinating none of them. These initiatives are Neurodegenerative diseases (Alzheimer), Food Security, Agriculture and Climate Change, Healthy Diet for Healthy Life, The Demographic change (More Years, Better Life), Antimicrobial resistance - An emerging threat to human health, Connecting Climate Knowledge for Europe, Water Challenges for a Changing world, Healthy and Productive Seas and Oceans and Urban Europe - Global Challenges, Local Solutions.

In terms of programmes undertaken jointly by several MS (so called Article 185 initiatives), the country was involved in five programmes. In Horizon 2020, the country is already involved in three of the four existing initiatives.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of 77 ERA-NETs, of which 18 are currently still running. The country has also participated in 12 ERA-NET Plus actions, of which seven are still running, in areas with high European added value and additional EU financial support topping up their joint call for proposals.

Concerning research agreements with EU MS and/or Associated Countries, Finland is well represented in the European research landscape, being a member of all major European research organisations (e.g. European Space Agency).

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, Finland has set up several agreements. Tekes has established cooperation agreements with funding agencies in the United States, Japan, China, Canada, Israel, Singapore and Korea. Tekes is also involved in Finnish Israeli Technology (FIT), a joint programme between Finland and Israel for technology applications in different technology areas. The Academy of Finland also provides funding for international joint projects through various targeted calls, often as part of its research programmes or in the context of bilateral or multilateral agreements with countries such as China, India, Japan, Brazil and Russia. Finland is notably active in the Nordic research co-operation (NordForsk), now expanding to the Baltic States, and Arctic research. Moreover, the Team Finland initiative supports the internationalisation of key Finnish players and joint initiatives between businesses and public organisations.

The implementation of cooperation programmes is monitored by the respective institutions.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	1.6 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0.6 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0.1 %	2013	ERA survey 2014

The share of responding funders' research and development budget in Finland allocated to collaboration programmes carried out with third countries is lower than the EU average.

Within the ERA compliant cluster in Finland, the share of organisations' research and development budget originating from third countries is similar to within the EU ERA compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

With regards 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 voluntary joint pilot projects between MS. Mutual recognition of evaluations that conform to international peer-review standards are routinely performed as part of joint calls. In its international programmes, notably within the framework of Nordforsk programmes, the Academy of Finland allows for the mutual recognition of evaluations. According to the Research and Innovation Policy Guidelines for 2011-2015, the 'independence' of evaluations and their 'international' component are strengthened. The Academy of Finland implements Money follows researchers, a scheme enables researchers moving to a research institution in a different country to transfer on-going grant funding to the new institution and continue research activities according to original terms and objectives. Tekes funding schemes allow researchers to move to a research institution or company abroad, however, the grant cannot be transferred (researchers are considered as seconded employees of the organisation receiving Tekes funding).

Indicator	Level/cluster	Value	Year	Source
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	40.6 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	1 %	2013	ERA survey 2014

Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Finland who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

The share of responding funders' project-based research and development budget in Finland allocated through peer review carried out by institutions outside the country is higher than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Finland participates in the following large international research infrastructures: ESA, CERN, EFDA-JET, EMBL, ESO, FAIR and ESRF. In 2012, the country contributes 0.8% of GBAORD to the activities carried out by CERN, the European Molecular Biology Laboratory (EMBL), the European Southern Observatory (ESO), the European Synchrotron Radiation Facility (ESRF), and the European Commission's Joint Research Centre (JRC) (Eurostat).

In terms of participation in the development of research infrastructures (RIs) included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, Finland participates in the preparatory phase of 19 of them (38 %) and the country coordinates none of them. In terms of financial commitments to developing RIs, Finland is committed to fund 13 of them. They are: CESSDA, CLARIN, EISCAT_3D, European Social Survey (ESS), EURO-ARGO, BBMRI, EATRIS, ELIXIR, INFRAFRONTIER, INSTRUCT, ICOS, FAIR, PRACE (ex HPC).

With regard to participating in the European Research Infrastructure Consortium (ERIC), Finland participates in three of the seven consortiums, which adopted the legal framework designed by the Commission to facilitate the establishment and operation of RIs of European interest involving several European countries. They are EATRIS ERIC, BBMRI-ERIC and EURO-ARGO ERIC.

In terms of support for developing and implementing RIs, there has been increased acknowledgment about the importance of a RI policy at national level. The Finnish Research Infrastructure Committee (FIRI) Committee, set up by the Academy of Finland, is responsible for developing Finland's RI roadmap. FIRI released the update of the Finnish national roadmap in March 2014. Finland's strategy and roadmap for research infrastructures 2014–2020 updates the 2009 roadmap for RIs and includes a list of priority infrastructures. The

roadmap includes references to the participating in the development of RIs mentioned in the ESFRI roadmap. In terms of financial commitments, the Finnish government also plans to spend approximately EUR 20 million per year on developing and upgrading research infrastructures.

3.2. Access to research infrastructures of pan-European interest

Regarding access to RIs, it is reported that cross-border access measures are implemented systematically in Finland. However, there is no overall policy to facilitate cross-border access to RIs.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Finland in the Researcher' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Finland_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 40,003 FTE researchers in Finland in 2011. This represents 14.9 researchers per 1000 labour force compared with 11.4 among the Innovation Union reference group (Innovation Leaders) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 7.2 in Finland compared to 47.6 among the Innovation Union reference group and an EU average of 43.7.

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).

Higher education institutions (HEIs), as they are independent employers, have considerable autonomy in the recruitment policy. Therefore, the situation varies from institution to institution. In general, all Finnish universities post their open vacancies online. Platforms may vary between universities and fields. All open vacancies in the public research institutes are published on a national website. Many institutions have policies to publish job vacancies on relevant Europe-wide online platforms, including EURAXESS.

4.3. Attractive careers

The Charter and Code principles were signed by the Rectors' Council of the Finnish universities and the Academy of Finland in 2009. The principles are being promoted through national higher education and research policy.

By May 2014, 12 Finnish organisations were involved in the Commission's Human Resources Strategy for Researchers of which six had received the 'HR Excellence in Research' logo for their progress in implementing the Charter and Code.

According to the Government programme the funding of higher education was reformed to better support the objectives of education, including higher completion of studies rates, quicker transfer to work, enhanced administration, improvement in the quality of education and research, internationalisation, and the profiling of higher education institutions in their own areas of strength. Universities apply a four-stage career system in research and education (doctoral student, post-doctoral fellow, independent senior researcher and professor) to make careers in research more predictable and transparent. A start has been made on implementing tenure track systems in the recruiting processes. While developing their researcher career processes, universities are collaborating with other organisations to enable flexible mobility between employers to facilitate common interests.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged between 25 and 34 was 2.7 in 2011 compared to 2.7 among the Innovation Union reference group and an EU average of 1.7.

According to the 'National Guidelines for the Development of Doctoral Training' (2011), universities are encouraged to offer students equal opportunities and rights in doctoral programmes regardless of their discipline, promote PhD training by integrating at least one Graduate School into the university structure, enhance the quality of graduate education in all disciplines, introduce four-year full-time structured education in all disciplines (target time frame), provide guidance and promote personal study plans, enhance interdisciplinarity, internalisation and intersectoral mobility, and incorporate systematic PhD training in all doctoral programmes, including transferable skills training, theoretical elements and research. Since 2011, all Finnish universities have adjusted their doctoral training with these guidelines.

4.5. International and inter-sectoral mobility

In Finland in 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 6.4 % compared to 9.1 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 6.8 % in Finland compared to 14.4 % among the Innovation Union reference group and an EU average of 24.2 %.

In line with the Strategy for Internationalisation of HEIs in Finland, HEIs actively participate in EU education and research programmes and in 'Nordplus' mobility programmes of the Nordic and Baltic countries, in creating joint Masters degree programmes in the EU and the Nordic countries, and increasing Nordic research and innovation cooperation. The mobility of

researchers, teachers and other personnel is also being promoted. In addition, the Finish Distinguished Professor Programme (FiDiPro) aims to strengthen scientific knowledge and know-how, add a more international element to the Finnish research system, bring added value into the national innovation system and support the research-driven profiling of universities and research institutes. Through this programme, universities and research institutes can hire foreign or Finnish professor-level researchers who have worked abroad for extended periods to conduct and promote research in Finland for a fixed period.

It is part of the remit of the Academy of Finland to promote international networking and activities of Finnish researchers, as well as support them in their international collaboration at foreign universities and research institutes. The Academy also provides funding for international joint projects through various targeted calls, often as part of its research programmes or in the context of bilateral or multilateral agreements with China, Estonia, Germany, India, Japan and Russia, as well as Brazil and Chile.

The Development plan for Education and Research 2011-2016 aims to increase research cooperation and mobility between business enterprises, higher education institutions and research institutes across sectoral boundaries.

5. GENDER

5.1. Foster cultural and institutional change on gender

Regarding national policies on gender equality, Finland has adopted a regulatory framework and a series of soft measures to promote gender equality in research. The Equality Act specifically supports gender equality by requiring HEIs and RPOs (public research organisations) to draw up and implement gender equality plans.

Gender equality in HEIs is also steered through MEC. The promotion of gender equality in human resources policies is one of the objectives for HEI, which have to report on their actions to the Ministry.

Moreover, the Academy of Finland is active in promoting gender equality through its Equality Plan (2014–2016), which applies to the Academy staff and researchers receiving funding from the Academy. According to the plan, efforts must be taken to establish an open, transparent expert review procedure in which the qualifications of applicants of either gender sex are evaluated equally and fairly. The Government Action Plan for Gender Equality 2012-2015 provides support to gender equality within HEIs. The plan requires the monitoring of gender equality plans and promotes the development of gender-based statistics.

Gender equality in the labour market is also implemented through the amended Finnish Equality Act (2005) that specifies the obligations of authorities and employers. Compliance with the Equality Act is regularly monitored by the Ombudsman for Equality and the Equality Board.

Indicator	Level/cluste	Value	Year	Source

	r			
Share of responding funders supporting gender equality in research	National level	36.7 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	78.9 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	10.4 %	2013	ERA survey 2014

The share of research funders in Finland who responded to the survey and support national policies on gender equality in public research is lower than the EU average.

Within the ERA compliant cluster in Finland, the share of research performing organisations which have adopted Gender Equality Plans is higher than within the EU ERA compliant cluster.

Regarding female researchers' careers, the 'Criteria for research funding decisions' of the Academy of Finland include objectives on women’s promotion as a research owner/manager.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014

Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	66.6 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	8 %	2013	ERA survey 2014

Within the ERA compliant cluster in Finland, the share of research performing organisations implementing recruitment and promotion policies for female researchers is higher than within the EU ERA compliant cluster.

Regarding the gender dimension in research content/programmes, there are no reported measures.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the inclusion of gender dimension in research content	National level	31.1 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	27.3 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in	Limited compliance to ERA	10.4 %	2013	ERA survey 2014

research content	cluster (national level)			

The share of research funders in Finland who responded to the survey and support gender dimension in research content/programmes is lower than the EU average share.

Within the ERA compliant cluster in Finland, the share of research performing organisations which include the gender dimension in research content is lower than within the EU ERA compliant cluster.

5.2. Gender balance in the decision-making process

Concerning gender balance in decision making, Finland has 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).

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	23.8 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	50.5 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding	EU level	35.8 %	2013	ERA survey 2014

research funding organisations				

Within the ERA compliant cluster in Finland, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is lower than within the EU ERA compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Finland is higher than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, several measures have been adopted since 2005 (see below). More recently, the Ministry of Education and Culture launched the Open Science and Research Project 2014–2017 (ATT) to foster open access to scientific information (publications, data and methods). There is however no overall legislative or policy provision supporting open access to scientific publications and data. Several working groups are being established to develop issues (policies, indicators, intellectual property rights, etc.) related to access to scientific information. In addition, a roadmap for 2014-2017 is being established, outlining the national targets with the overall intent of Finland being a world leader in open science and research by 2017.

Related to open access to publications, a working group on open access produced a report containing recommendations, which will be implemented as part of the ATT Project.

Moreover, the Open Data Programme, adopted in 2012 within the framework of the public sector information and communication technology (ICT) strategy, coordinates measures and projects aimed at increasing the opening and use of scientific publications. Whilst both the Academy of Finland and Tekes support open access to publications, the latter does not constitute a mandatory funding criterion within the Academy or Tekes funding programmes.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to publications	National level	46.1 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014

Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	14.1 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	0.3 %	2013	ERA survey 2014

The share of research funders in Finland who responded to the survey and support Open Access to publications is lower than the EU average.

Within the ERA compliant cluster in Finland, the share of publicly funded scientific publications in OA amongst research performing organisations is lower than within the EU ERA compliant cluster.

Concerning open access to data, the Academy of Finland supports open access to research data, however the latter does not constitute a funding criterion within the Academy programmes.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	99.8 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	55.3 %	2013	ERA survey 2014
Share of responding research	Limited	19.7 %	2013	ERA survey

performing organisations making scientific research data available on-line and free of charge	compliance to ERA cluster (national level)			2014

The share of research funders in Finland who responded to the survey and support Open Access to data is higher than the EU average.

Within the ERA compliant cluster in Finland, the share of research performing organisations making available on-line and free of charge publicly funded scientific research data systematically is higher than within the EU ERA compliant cluster.

With respect to repositories, a national policy for the long term storage and reservation of data is not available yet. However, a national infrastructure for the long-term storage and reservation of cultural and research data is available as of 2014. Moreover, several measures such as the Open Data Programme and the ATT Project specifically are aimed at addressing this policy issue. Moreover, the National Digital Library supports digital services/infrastructure for accessing and preserving scientific information. At stakeholder level, the research data repository project on FinnOA gathers professionals interested in promoting open access to scientific information. In addition, most Finnish universities run their own scientific publications repositories, however the repositories are mostly used for storing materials such as students' thesis, courses and other publications by the university. The DSpace User Group, which was set up under a project led by the National Library of Finland, supports the technical development of repositories at universities.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Finland has adopted several measures to support public-private linkages. 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 2013 international evaluation of SHOKs indicates that progress could have been faster and that SHOKs should become more strategic. The objective is to raise the ambition level and to speed up the renewal of industries, for instance by ensuring that Tekes funding is more competitive and targeted to high-quality and cross-disciplinary research carried out via international collaborations.

Through its research funding, Tekes also supports cooperation between the public research sector and businesses. The specific Tekes funding scheme for research institutions allows scientists to take the development of an idea further while preparing for the commercialisation of the idea into new business. Tekes also supports the creation, management and follow-up of spin-offs through the 'Funding for young innovative companies' initiative (YIC). Finland has not developed a knowledge transfer strategy.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	99.8 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	4.3 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.4 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	77.5 %	2013	ERA survey 2014
Share of responding research performing organisations having	ERA compliant	66.3 %	2013	ERA survey 2014

dedicated staff employed in knowledge transfer activities	cluster (EU level)			
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	77.5 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	0.1 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

The share of research funders in Finland who responded to the survey and support knowledge tranfer, open access, TTOs and Private Public interaction is higher than the EU average.

Within the ERA compliant cluster in Finland, the share of research performing organisations having funding originating from the private sector is lower than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Finland, the share of research performing organisations having or using a structure for knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Finland, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Finland, the share of research personnel whose primary occupation is in the private sector (in Full Time Equivalents) is lower than within the EU ERA compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

Finland has adopted several measures in relation to implementing the Digital European Research Area (ERA). Finland has adopted several measures. The 2012 'Growth through expertise: Action plan for research and innovation policy' outlines Finland's strategy towards developing infrastructure for storing and managing digital research and innovation data. The country has implemented a research and education network, essential to making digital services possible. 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 and covering approximately 350,000 users. Finland has not set up a strategy for implementing the Digital ERA.

Concerning digital services, the country provides federated and Premium services. Support to digital services is provided through Finland's overall strategy 'Putting data into use: A roadmap for the use of electronic data in research' adopted in 2011. At stakeholder level, the Owela platform for co-design constitutes an example of action supporting research collaboration platforms. The CSC-IT Centre For Science Ltd also provides a wide selection of digital research services (scientific software, databases) to academia, research institutes and businesses.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	78.9 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	19.2 %	2013	ERA survey 2014

Within the ERA compliant cluster in Finland, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is lower than within the EU ERA compliant cluster.

6.4. Uptake of federated electronic identities

No overarching policy on electronic identity for researchers has been identified, although electronic identity is implemented. HAKA federation, the identity federation for the Finnish research and education sector, was established in 2005, with partial funding by MEC. In 2006, the Ministry introduced the large-scale adoption of the HAKA federation as a key strategic goal to enhance the IT infrastructure and services for research, education and culture. HAKA is a member of the eduGAIN inter-federation service.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	62 %	2013	ERA survey 2014

Within the ERA compliant cluster in Finland, the share of research performing organisations providing federated electronic identities for their researchers is higher than within the EU ERA compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 20 research performing organisations in Finland answered the 2014 ERA survey, which represents 15.7% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Finland shows that 44.4 % of them are in the ‘ERA compliant’ cluster, 38.9 % can be classified in the ‘limited compliance to ERA’ cluster and 16.7 % of organisations in the ‘ERA principles are not applicable’ cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of ‘weighted’ organisations are 77.3 % for the ‘ERA compliant’ cluster, 21.5 % for the ‘ERA

limited compliant' cluster and 1.2 % for those organisations where ERA principles are not applicable.

In terms of funders, it should be noted that one major funder did not reply to the survey. This means that all indicators related to funders should be interpreted with caution. The response rate amongst research performing is relatively good, although two major research organisations did not reply to the survey.

For the indicator 'Share of funders supporting gender equality in research', the figure is an underestimation, as one of the major funders replied that this dimension is not applicable.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
Finland's National Reform Programme - tax incentives	2013	X	X
Research and Innovation Policy Guidelines for 2011–2015	2010		
Growth through expertise, Action plan for research and innovation policy	2012	X	
Evaluation of the Research and Innovation Council	2014	X	X
Project-based funding applying the core principles of international peer review			
Competitive funding by TEKES			
International evaluation of the Academy of Finland	2013	X	X
International evaluation of TEKES	2012	X	
Research and Innovation Policy Guidelines	2010		
Competitive funding by Academy of Finland			
Peer review process by the Academy of Finland			
Institutional funding based on institutional assessment			

Universities Act 558/2009 and related decrees on the reform of university funding model	2010		
Reform of public research institutes (incl. their funding model)	2013	X	X
Implementing joint research agendas			
Research and Innovation Policy Guidelines for 2011–2015	2010		
Joint programmes and bilateral agreements			
Team Finland Strategy	2014	X	X
Interoperability, mutual recognition of evaluation results and other schemes			
The Money Follows Researcher (MFR) agreement signed by the Academy of Finland			
Research and Innovation Policy Guidelines for 2011–2015	2010		
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Finland's strategy and roadmap for research infrastructures 2014–2020	2014	X	X
Growth through expertise, Action plan for research and innovation policy	2012	X	
Research and Innovation Policy Guidelines for 2011–2015	2010		
Attractive careers			
National Guidelines for the Development of Doctoral Training	2011		
Signature of the 'European Charter for Researchers' & the 'Code of Conduct for the Recruitment of Researchers by the Rectors' Council of the Finnish universities and the Academy of Finland	2009		

Strategy for the Internationalisation of Finnish Education, Research and Innovation 2009–2015	2009		
EURAXESS Finland			
Finland Distinguished Professor Programme (FiDiPro)			
Reform of the doctoral training system in line with the principles of innovative doctoral training			
Academy of Finland grants and fellowships			
Academy of Finland grants and fellowships			
Gender balance in the decision-making process			
Steering of HEIs	2012	X	
Academy of Finland Equality Plan			
Academy of Finland 'Criteria for research funding decision'			
The Equality Act			
Government Action Plan for Gender Equality 2012-2015	2012	X	
Finnish Equality Act (2005)	2005		
Open access to publications and data resulting from publicly funded research			
Open Science and Research Project 2014–2017	2014	X	X
Open Data Programme	2013	X	X
Working group on open access to publications and research data as part of the National Research Data Project (TTA)			
National Digital Library			

Open innovation and knowledge transfer between public and private sectors			
Strategic Centres for Science, Technology and Innovation (SHOKs) - International evaluation	2007		
Harmonise policies for public e-infrastructures and associated digital research services			
FUNET, the Finnish National Research and Education Network			
'Putting data into use', Roadmap for the utilisation of electronic data in research	2011		
CSC - IT Centre For Science Ltd			
Growth through expertise: Action plan for research and innovation policy	2012	X	
Uptake of federated electronic identities			
Member of Edugain			

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

In France, under the overall responsibility of the cabinet, the research and innovation (R&I) policy is driven by two government ministries. The Ministry of Education, Higher Education and Research (MENESR) is in charge of both the design and the coordination of research policy. The MENESR and the Ministry for the Economy, Industry and Digital Sector (MEIN) jointly develop the innovation policy. The MENESR designs the policy on research-led innovation (technology and knowledge transfer, support to entrepreneurship among students, doctoral students, researchers, trans-sectorial mobility, etc.), while the MEIN designs the other aspects of the innovation policy (demand-oriented innovation, commercial exploitation, etc.) In addition, the new law of 22 July 2013 on Higher Education and Research established a Strategic Research Council, chaired by the Prime Minister, responsible for proposing the main orientations of the national research strategy. The consultative High Council for Science and Technology was therefore removed.

The country has adopted a national strategy for R&I (SNRl); building on this first exercise launched in 2009, a second agenda focused on research (SNR) is to be published by the end of 2014. It shall convey, in more operational terms, the orientations set by ‘France Europe 2020’, the country’s overarching political Agenda for Research, Transfer and Innovation (decided in May 2013) and subsequently approved by the law on Higher Education and Research (ESR) on 22 July 2013. For the first time, this new strategy is consistent with European research and innovation policies, and therefore ensures coordination between national and European research programmes. The main additional aims are to better conduct the national research system, notably through five thematic 'Alliances', so as to better address societal grand challenges, in close consistency with Horizon 2020.

The main channel for R&I governmental funding is the general budget of the Research and Higher Education Inter-ministerial Mission (MIRES). In 2014, the budget for research under this mission (EUR 7.771 billion) has suffered a decrease in comparison with 2013 (EUR 7.853 billion), i.e. by EUR 83,2 million (-1,06 %).

It is completed by extrabudgetary funding resources, under the 'Investissements d'avenir' programmes. Some ressources are to be disbursed and some will generate interests that will be distributed. It is managed by the Commissariat-General for Investment, placed under the authority of MEIN, and MENESR as far as research and development is concerned. It is expected that 'Investissements d'avenir' programmes will contribute EUR 11.81 billion to R&D over the period 2010-2020. EUR 725.7 million should be distributed in 2014.

French public research is mostly funded through direct institutional funding (around 89 % in 2012, according to ANRT-FutuRIS calculations, roughly confirmed by the MESR "Note d'information" 13.06, July 2013). However, the most important public research performing organisations allocate internally an important part of their institutional budget based on the assessment of performance, i.e. laboratories performance is regularly evaluated in order to define the following year's budget.

In terms of competitive funding (close to 12 % of total public budget in 2013, latest figure available, provided by the ANRT), three main sources could be quoted: national agencies, notably the National Research Agency (ANR), the 'Investissements d'avenir' programme (PIA) and the EU Framework Programmes.

In terms of R&D funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in France represented EUR 232 per inhabitant in 2012, above the EU-28 average (EUR 179). In 2013, GBAORD per inhabitant was EUR 228. In 2012, total GBAORD corresponded to 1.3 % of total government expenditures and 0.7 % of Gross Domestic Product (GDP) (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the rate of growth of total GBAORD in France has been positive, but below the rate of growth of total EU GBAORD. In terms of R&D efforts, the rate of growth of GBAORD in France, measured as a percentage of public government expenditure, evolved more negatively than the negative evolution observed in the EU-27. Finally, GBAORD as a share of GDP has regressed more in France than in EU-28.

However, as it does not include the French R&D tax credit (Crédit Impôt Recherche - CIR), GBAORD does not reflect the total support provided by the French government to R&D. Among the Organisation for Economic Cooperation and Development (OECD) countries, France is characterised by the highest level of indirect government funding of R&D performed by private companies. At global level, French R&D tax credit is probably the most advantageous for companies performing R&D activities (for a budgetary cost of EUR 5,17 billion in 2011 and continuously increasing: EUR 5,5 billion in 2012, EUR 5,75 billion in 2013, and EUR 6 billion estimated for 2014). However, many reports (in particular the ones of the French Court of Auditors) are very critical on the design of this Tax Credit Scheme, in particular because it mainly support multinational companies instead of SMEs, and also because its increase is not manageable properly by the State budget. The 2014 Country Specific Recommandation (CSR) for France also invites to 'Take steps to simplify and improve the efficiency of innovation policy, notably through an evaluation and if necessary an adaptation of the 'crédit d'impôt recherche'.

In addition and in a complementary way, the new Tax Credit for Employment and Competitiveness (CICE) is to be mentioned since innovation expenses are supposed to be the core of the eligible scope; implemented as of January 2013, it is planned to amount to EUR 10 billion in 2013, EUR 15 billion in 2014 and EUR 20 billion in 2015.

1.2. Project-based funding applying the core principles of international peer review

The three different and dominant sources of project-based funding are the National Research Agency's own budget, the "Investissements d'avenir" programmes (PIA) specific resources and the Single Inter-ministerial Fund (FUI). It is mainly awarded through a small number of executive agencies:

• The National Research Agency (ANR), created in 2005, which 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 fully applies an international peer-review process. As a consequence of the current Government's willingness to rebalance the share between institutional recurrent funding and competitive funding at the benefit of the former, the budget of ANR has decreased from EUR 742 million in 2012 to EUR 687 million in 2013, and should be limited to EUR 605 million in 2014. But in addition, since 2010, the ANR is also the main operating agency of the Commissariat-General for Investment, in relation to the actions of the PIA in the field of higher education and research. As a matter of consequence, for 2014, ANR will manage EUR 600 million to be granted to excellent projects, EUR 50 million to be used as refundable advances and EUR 100 million as equity. In accordance with the new National Research Strategy (SNR), still to be adopted, the programming of the ANR should be designed in a coordinated manner with European programmes;

• The Agency for Environment and Energy Management (ADEME) was created in 1991 to support and fund partnership-based environment and energy research activities. Beyond its own intervention budget (EUR 590 million for 2014), ADEME is also designated as implementing agency of several programmes belonging to the PIA, on behalf of the Commissariat-General for Investment;

• Bpifrance, the new public investment bank which replaced OSEO as of 31 December 2012, provides support for R&D and innovation projects to businesses, especially small and medium-sized enterprises (SMEs). This unique national agency benefited from a EUR 21 billion endowment in 2013. It is dedicated to promoting and supporting the industrial development, growth SMEs, through innovation and to promote technology transfer.

In addition, it has to be stressed that the Single Inter-ministerial Fund (FUI) pioneered this trend of competitive collaborative funding, and encourages public-private R&D partnerships. It corresponds to the competitiveness clusters' ('Pôles de compétitivité') funding source. A third phase of this competitiveness cluster policy was launched in 2013, after an evaluation of the former ones. Through 34 industrials plans, typically oriented towards R&D high technology readiness levels projects supporting the development of export-oriented networks and partnerships, the 2013-2020 programme encourages clusters to develop new projects and foster the emergence of new products, processes and services. It should nonetheless be noticed that the 2014 CSR recommends that France should 'Ensure that resources are focused on the most effective competitiveness poles and further promote the economic impact of innovation developed in the poles'.

Launched in 2010, "Investissements d'avenir" programmes (PIA) is a noticeable governmental financial effort relying on competitive funding. It includes EUR 21.9 billion dedicated to higher education and research projects, out of which EUR 17.9 billion are to be allocated on a competitive basis. The fund is meant to support 10-year initiatives. Part of the money is directly allocated to finance actions, while the interests yielding from another part of the fund are also used. From the participant point of view, setting up the necessary co-ordinations

between the project partners was deemed long and painful but was worth it. Profoundly cooperative behaviours were required to match the international juries' expectations, that many of the projects supported are public-private by nature, that they all relate to local specialisation dynamics. They correspond to various ambitions and sizes, and are always aimed at supporting 'excellent' partnerships. While all the planned money of Plan 1 is not yet fully committed, a second 'Investments for the Future Plan' was announced on 9 July 2013, EUR 3.65 billion of which are earmarked to fund higher education and research projects.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	89.2 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and support project-based funding is higher than the EU average.

The core principles of international peer review are widely used in France.

The share of research funders in France who responded to the survey and systematically support the use of core principles of international peer review is higher than the EU average share of research funders supporting the use of core principles of international peer review.

1.3. Institutional funding based on institutional assessment

Institutional funding is partly allocated on the basis of institutional assessments. Created in 2007, the Evaluation Agency for Research and Higher Education (AERES) was strongly criticised by the community of researchers and therefore replaced in 2013 (ESR law of 22 July 2013) by a new independent administrative authority: the French High Council on Evaluation of Research and Higher Education ('Haut Conseil de l'évaluation de la Recherche et de l'Enseignement supérieur'). This new structure, still being designed, aims to guarantee a homogeneous evaluation according to international standards for research organisations and looks after the quality of evaluations.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional	National level	1.6 %	2013	ERA survey 2014

assessment and/or evaluation				
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and supports the institutional assessment for allocating institutional funding is lower than the EU average. However, this result does not consider the allocation modalities imposed by the MENESR when allocating institutional funding. Indeed, the resource allocation model for French universities and higher education organisations performing research takes into account research performance. Institutional funding allocated to research organisations is accompanied by annual and multi-annual objectives set in the 'objective and performance contract' established between the State and a given research organisation. France is currently considering new criteria of research performance for this model.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	7.9 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	5.3 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in France allocated to transnationally coordinated R&D is higher than the EU average.

The share of responding funders' research and development budget in France dedicated to jointly defined research agendas with other EU organisations is higher than the EU average.

Cooperation between institutions of Member States (MS), Associated Countries and Third Countries is fostered by the Framework Programme (FP). In the Seventh Framework Programme (FP7), France's total of participation is 10.59 % and the country received 12.32 % of total EC contribution. FP funding represents EUR 68 per inhabitant (EU average EUR 72 per capita) and 0.21 % of the GERD for the period 2007-2011 (last available data) (EU average 3 % of GERD for the same period).

The new (2014) National Research Strategy should reflect the orientations of 'France Europe 2020', the strategic Agenda for Innovation, Transfer and Research adopted in 2013. It will imply a multiannual programming (revised every five years) under the coordination of the MENESR. Recognizing that, given the nature and magnitude of the challenges ahead of us, no Member State can efficiently develop solutions alone, this strategy is intended to be 'consistent with the one developed in the framework of the European Union'. This is the reason why 'Horizon 2020' and 'France Europe 2020' grand challenges are, by and large, similar.

Concerning joint programming initiatives, the country participates in all ongoing initiatives. These initiatives are Neurodegenerative diseases, in particular Alzheimer's (JPND), Food Security, Agriculture and Climate Change (FACCE), Cultural Heritage and global change: a new challenge for Europe, Healthy Diet for Healthy Life, Antimicrobial resistance - An emerging threat to human health, Connecting Climate Knowledge for Europe, Water Challenges for a Changing world, Healthy and Productive Seas and Oceans, and Urban Europe - Global Challenges, Local Solutions. France became a member of the 10th Joint Programming Intiative (JPI) 'More Years, Better Lives' in 2014. France coordinates two of these initiatives: JPND and FACCE, the three-year anniversary of the latter was held in Paris in October 2013.

To ensure the optimal participation of French research organisations, the Thematic Alliances (thematic research coordination bodies) were requested to represent France in the JPI governing bodies while informing the ANR. Mirror groups have been set up to favour French stakeholder involvement in JPIs and ANR participates in all of them. The MENESR provides support to these mirror groups and coordinates them.

In terms of programmes undertaken jointly by several MS (so called Article 185 initiatives), France was involved in five programmes. In Horizon 2020, the country is already involved in all four existing initiatives.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has

participated in a total of 127 ERA-NETs, of which 38 are currently still running. The country has also participated in 8 ERA-NET Plus actions, of which 4 are still running, in areas with high European added value and additional EU financial support topping up their joint call for proposals.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with Third Countries and regions, France has developed a specific policy within its 2009 national research and innovation strategy. Until 2013, in terms of implementation, it concentrated its cooperation on Brazil, Russia, India and China (BRIC countries), Japan and South Korea, while also cooperating with many other Third Countries (United States, Canada, Mexico, South Africa, Mediterranean countries, Africa). France is now developing a new national strategy (SNR 2014) including an international part (cf. Action 9 of the strategic agenda for research, technology transfer and innovation 'France Europe 2020', which calls for a strengthening of the Euro-Mediterranean cooperation), especially using EU funding in international cooperation. The country monitors the implementation of its strategy with indicators like co-publications and incoming mobility (scientific visa).

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	2.6 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0.1 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst	Limited compliance	0.1 %	2013	ERA survey 2014

responding research performing organisations originating from third countries	to ERA cluster (national level)			

The share of responding funders' research and development budget in France allocated to collaboration programmes carried out with third countries is higher than the EU average.

Within the ERA compliant cluster in France, the share of organisations' research and development budget originating from third countries is lower than within the EU ERA compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

The mutual recognition of evaluations that complies with international peer review standards is more and more widely supported. The ANR, the main funder for international cooperation, now follows the so-called 'lead agency' procedure, which expects funding authorities to accept the results of the international project evaluation done by the ‘lead agency’ and fund the parts of the project that are being performed in their respective countries. This process, initiated with Austria in 2011, was extended to Luxembourg in 2013 and to Germany and Switzerland in 2014 (reciprocal 'lead agency' arrangement with these two latters). An additional partnership with Romania is expected in 2015. The 'lead agency' procedure is also used with counterparts from a third country like Brazil (from 2012 onwards) and could be implemented with Mexico (under discussions).

The common funding principles proposed by the Commission for implementing joint programmes are fully applied by the ANR. In fact, the ANR was also established to improve the influence of the French scientific research community by developing transnational collaborations with European and international partners. Their implementation is supported through competitive and transnational projects, which are supported through two cooperation schemes: bi- or multi-lateral collaborations joint calls and regular national programmes with transnational collaborations. In 2011, 194 transnational projects were funded by the ANR (budget : EUR 57.7 million), which was a 21 % increase compared to 2010, but in 2012, due both to budget cuts and the reduction of the number of submitted projects, only 151 transnational projects (budget: EUR 41.9 million) could be funded.

French funding agencies do not implement Money follows cooperation, a scheme which enables small parts of a project funded by one of the participating research councils to be conducted in a different country. Neither French funding agencies implements Money follows researchers, a scheme that enables researchers moving to a research institution in a different country to transfer ongoing grant funding to the new institution and continue research activities according to original terms and objectives.

Indicator	**Level/cluste**	**Value**	**Year**	**Source**

	r			
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	0.3 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	19.2 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is lower than the EU average.

The share of research funders in France who responded to the survey and support the allocation of project-based funding on peer-reviewed decisions made by non-national institutions is higher than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

France participates in the following large international research infrastructures: the European Space Agency (ESA), Conseil Européen pour la Recherche Nucléaire (CERN), European Fusion Development Agreement (EFDA), European Molecular Biology Laboratory (EMBL), European Southern Observatory (ESO), The European Synchrotron Radiation Facility (ESRF), EU.XFEL and Institut Laue-Langevin (ILL).

In terms of participating in the development of research infrastructures (RIs) included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, France participates in the preparatory phase of 41 of them (83 %). It coordinates seven of them: EURO ARGO, ICOS, ECRIN, ERINHA, MIRRI, ANAEE and SPIRAL2.

In terms of financial commitments to developing these RIs, France is committed to fund 13 of them: EURO ARGO, IFMIF/EVEDA, BBMRI, ECRIN, ESRF UPGRADE, XFEL, ILL 20/20, FAIR, SPIRAL2, ESSurvey, EATRIC, JHR and PRACE (ex HPC).

With regards to participating in the European Research Infrastructure Consortium (ERIC), France is involved in four of the nine consortia which adopted the legal framework designed by the Commission to facilitate the establishment and operation of RIs of European interest involving several European countries. France hosts ECRIN-ERIC, EURO-ARGO ERIC and DARIAH ERIC, is a member of BBMRI-ERIC and is an observer in EATRIS ERIC. France is about to become a member of the forthcoming ESSneutron ERIC.

In terms of supporting the development and implementation of RIs, France published its national strategy for research infrastructures in October 2012 and updated it beginning of 2013. This strategy integrates current and future international commitments, including Europe. France has also participated in the update of the European Strategy on Research Infrastructures (ESRI) in the context of ESFRI and Horizon 2020. At an organisation level, a centralised system of budgetary control on the operation and construction of facilities of national interest has been set up. A new governance system was established, including the presidents of the Thematic Alliances under the guidance of the MENESR. A high-level steering committee for very large RIs ("Très Grandes Infrastructures de Recherche", TGIR) is responsible for multiannual programming and participating in international organisations. It may seek scientific advice from the High Council of very large infrastructures. France started updating its national RIs strategy in July 2014.

With RIs expenditures of roughly EUR 1.2 billion per year, France ranks second in Europe, after Germany. Its financial commitment on ESFRI projects stands at around 127 MEUR/year.

3.2. Access to research infrastructures of pan-European interest

Regarding access to French RIs, there are no more limitations for Member States stakeholders. For partners from outside the ERA, access depends on inter-institutional agreements.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for France in the Researchers Report 2014
[http://ec.europa.eu/euraxess/pdf/research_policies/country_files/France_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 249.086 full time equivalent (FTE) researchers in France in 2011. This represents 8.7 researchers per 1000 labour force compared to 7.6 among the Innovation Union reference group (Innovation Followers) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 39.2 in France compared to 72.3 among the Innovation Union reference group and an EU average of 43.7.

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).

Universities job vacancies are published on a single website and open to all: the Galaxie website: (https://www.galaxie.enseignementsup-recherche.gouv.fr/ensup/candidats.html).

Those interested can register to receive a personalised newsletter that will inform them of the job offers that match their criteria. In addition, all job positions in universities (lecturers, professors, PRAG – high school professors teaching in higher education institutions-, contractual teachers), are published by the MENESR that also ensures their publication on EURAXESS Jobs: http://ec.europa.eu/euraxess/index.cfm/jobs/jvSearch

About 5.000 jobs are published yearly. Beginning in 2014, all ATER job offers (fixed term contracts for teaching and research positions in universities) are posted on EURAXESS Jobs. In public research organisations, competition opening campaigns are published on public research organisations websites (in French and English for some of them) and on the Légifrance website (legal French website).

Job descriptions for fixed-term contracts are available on every public research organisation website. Some public research organisations (PROs) also publish their job offers on EURAXESS jobs: INRA, INRIA.

4.3. Attractive careers

Since 2008, 38 public higher education and research institutions have committed to implement the principles of the Charter and Code. The Charter and Code principles have been promoted since then through the EURAXESS France network, the Marie-Curie actions and more specifically the COFUND, which is supported by the Ministry of Higher Education and Research and implemented by public institutions.

The implementation of the Human Resources Strategy for Researchers (HRS4R) is being promoted by means of information through a dedicated human resource network, the 'GTN RH' network and seminars of higher education institutes (HEIs) human resources directors.

By May 2014, 12 French organisations were involved in the Commission's Human Resources Strategy for Researchers of which one had received the 'Human Resources Excellence in Research' logo for their progress in implementing the Charter and Code.

The ANR 2013 programme planning completes the three-year cycle spanning 2011-2013, in a context of budget restrictions. The programme planning orientations for 2013 were adopted by ANR's Governing board on 14 November 2012. The programme planning framework has been restructured to integrate the general orientations set by the Minister of Higher Education and Research. The 2013 edition thus hinges around three components:

• The non-thematic instruments (Blanc programme, Young Researchers, Post-doctoral Return, Industrial chairs, etc.);

• The construction of the ERA and multilateral collaborations (ERA-NETs and multilateral programs);

• The thematic programme planning (28 programmes).

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged between 25-34 was 1.7 in 2011 compared to 1.6 among the Innovation Union reference group and an EU average of 1.7.

The implementation of the new doctoral contract (2009) has significantly improved the working conditions of young researchers as well as the national R&D targets. It mainly aims to:

- Establish a single contractual framework, providing more protection and applicable to all public employers;
- Integrate for each doctoral trainees a single contract for all activities directly related to the preparation of his/her PhD, but also relevant activities such as training;
- Establish a single remuneration platform;
- Ensure full social security coverage.

This is a three-year term work contract for doctoral trainees in universities and public research institutions. It may be extended for a year for professional or personal reasons, such as maternity leave or sick leave. The doctoral contract guarantees all the statutory social aspects of a 'traditional' employment contract. In September 2010, 5.320 students registered for their first year of doctoral training signed a doctoral contract.

The CIFRE is a partnership between French industry or other employment sectors, a research laboratory and a doctoral candidate. During a three-year contract with the company or other private employer, the doctoral trainee benefits from a high-level of scientific supervision that will help in writing and defending a PhD dissertation while contributing to research activities. The system is managed by the ANRT (Association Nationale de la Recherche Technique). CIFRE fellowships are funded by the French Ministry of Education, Higher Education and Research. In 2012, 1.350 CIFRE agreements were signed. Over the period 2013-2014, the goal is to reach 1.375 agreements annually.

4.5. International and inter-sectoral mobility

In France in 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 8.3 % in France compared to 18.4 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 35.4 % in France compared with 16.9 % among the Innovation Union reference group and an EU average of 24.2 %.

The Chairs of Excellence Programme aims to attract the best researchers, professors, foreign or French, by offering, with the assistance of the host establishments and organisations, substantial resources to build up a team and to start an ambitious project with clear anticipated impact. The programme functions by means of a call for proposals open to all research disciplines. The 2012 programme proposes three types of chairs:

- Long-term Junior;
- Senior Chairs of Excellence;
- Short-term Senior Chairs of Excellence.

The programme 'Industrial Chairs' aims to accompany research projects jointly led by public research institutions and enterprises. It encourages the integration of eminent French (expatriated or not) or foreign professors into higher education and research institutions, or research organisations, and reinforce the best initiatives developed in French higher education and research. The programme implies establishing a strong and lasting partnership between the research institution and enterprises in a high-priority and strategic area for the parties concerned. The aim is to provide more effective support to industrial research in all areas. The industrial chairs' objective is firstly to perform fundamental and applied research, and secondly to ensure training through high-level research. Researchers from all disciplines can submit a project on any topic they choose. Joint research structures (structures communes de recherche), of which there were 214 in early 2014, are partnerships between tertiary research institutions and businesses. The two partners commit to pool their resources for a period that is longer than the standard for research projects or contracts. Generally, it is four to five years and is rolled over once or twice. The advantages lie not just in the integration of the two worlds and the pooling of financial resources, but also of infrastructures and know-how. These structures also facilitate the transfer of technology.

5. GENDER

5.1. Foster cultural and institutional change on gender

Regarding gender equality in public research, significant efforts are being made in France, including through legally binding schemes when deemed necessary. Under the law of 12 March 2012 on 'access to the public positions and the improvement of conditions on employment of contract staff in the public service, the fight against discrimination and containing various provisions related to public service' has provided the legal framework for improving the field of gender equality.

After some debate, parity was finally imposed in voting procedures for elections in all governing bodies of universities and other Higher Education Organisations by the law of 22 July 2013 on Higher Education and Research: 'Each candidate list is alternately composed of one candidate of each sex'. Parity is also required by law within the National Council for Higher Education and Research, in the Board of the new High Council for Evaluation and the new Strategic Research Council. Moreover, a systematic integration of gender equality was introduced in the contractual dialogue between the Ministry of Higher Education and Research, universities and research organisations. Not only does this feature allow institutions to engage in implementing a comprehensive policy on gender equality, but it also enables the monitoring and evaluation of commitments. In addition, the Charter for Equality was signed between the Ministry of Research and the Conference of Rectors and the Head of Schools of Engineers at the beginning of 2013. The Irene Joliot-Curie Prize is set to promote the role of women in research and technology in France.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	National level	2.8 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	88.4 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality	Limited compliance to ERA	3.3 %	2013	ERA survey 2014

Plans	cluster (national level)			

The share of research funders in France who responded to the survey and support national policies on gender equality in public research is lower than the EU average.

Within the ERA compliant cluster in France, the share of research performing organisations that have adopted Gender Equality Plans is higher than within the EU ERA compliant cluster.

Researchers working in the public sector (including universities) in France are civil servants. The University Freedoms and Responsibilities Act (2007) allows universities to provide bonuses and other financial incentives to researchers and researchers with a teaching position. The law ensures rights for paternity leave to civil servants, including their position after a break. Parental leave is considered an effective service in its entirety for a period of 18 months at most.

The "leave for research or thematic conversions" (Congés pour recherches ou conversions thématiques, CRCT) is a 6-month or one-year break during which you can decide to focus on research when you work at the university (where you teach and do research) instead of teaching. In case of maternity leave, women have a priority if they ask for that kind of break so that they can come back and do only research, i.e. catching up with research before starting teaching again. This is therefore in one of the texts regulating human resource policies on breaks and leaves.

The Equality Plan includes a measure that is called 'Better integration of equality in researcher's career'. This measure includes actions such as re-opening the discussions on the flexible working time, improved integration of professional and personal life through e.g. teleworking, and development of comparative tables to analyse promotions. Career advancement and promotion of equality between women and men is an action line of the Equality Plan.

The EADS Corporate Foundation and the French Ministry of Higher Education and Research recognises achievements of women scientists with the Irène Joliot-Curie Award. France participates in the L'Oréal-UNESCO for Women in Science program also with French Fellowships.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014

researchers				
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	56.1 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	1.2 %	2013	ERA survey 2014

Within the ERA compliant cluster in France, the share of research performing organisations implementing recruitment and promotion policies for female researchers is higher than within the EU ERA compliant cluster.

The Strategic Group on Gender launched by the Ministry of Higher Education and Research in 2011 published its conclusive report in January 2013. Through 20 recommendations, the document defines the strategic directions for research on gender issues in France. Based on an impartial evaluation of the current situation, the report went beyond research and its organisation and touched upon many systemic dimensions. The recommendations were structured around seven main themes:

• Organisation of higher education and research;

• Education;

• Training;

• Research funding;

• Publication, distribution and reviews;

• Careers;

• Parity in institutions of higher education and research.

Some of these proposals were taken on board by the law of 22 July 2013 on Higher Education and Research.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**

Share of responding funders supporting the inclusion of gender dimension in research content	National level	5.9 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	50.3 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national level)	0.3 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and support gender dimension in research content/programmes is lower than the EU average.

Within the ERA compliant cluster in France, the share of research performing organisations that include the gender dimension in research content is higher than within the EU ERA compliant cluster.

5.2. Gender balance in the decision-making process

Concerning gender balance in decision making, the decree of 30 April 2012 under section 56 of the Law of 12 March 2012 stipulates that there should be at least 40% of nominations for each gender in senior management functions in 2018. Failure to progressively comply with this obligation is punishable by a financial penalty proportional to the deficit of the appointments observed. These objectives started to be applied by the Ministry of Higher Education and Research to all supervisory jobs, beyond those listed in the decree (jobs universities and public institutions) as of 2013. For instance since 2013, there should have been at least three women in the upper panels of aggregation (procedure of recruitment of professors in legal, political, economic or management disciplines).

Indicator	Level/cluster	Value	Year	Source
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	28.2 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	7.5 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	24.1 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA compliant cluster in France, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is lower than within the EU ERA compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in France is lower than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, a decisive position was stated by the Minister of Research and Higher Education at the fifth ‘Days of Open Access’ (January 2013): 'Scientific information is a public good that should be available for all'. As a consequence, the French Government wishes to develop green and gold access in a balanced and complementary way, while assisting the users that prefer gold access during the negotiation of licences with publishers. An additional, original option is promoted, called 'Platinum Road', which is a

hybrid between green and gold access aimed at developing an open access to publishing that allows authors and readers to access scientific publication without payment.

Related to open access to publications, with hundreds of French open access journals, tens of open disciplinary warehouses and institutional archives, and a handful of platforms, France appears to be rather active. Nonetheless, in 'Open access in France: state of the art' (2010), and the latest (August 2013) ScienceMetrix report entitled 'Proportion of Open Access Peer-Reviewed Papers at the European and World Levels—2004-2011', France is still below 50 % of open access articles, i.e. circa 46 %, including 40 % of green and hybrid. New policy efforts are therefore deemed necessary.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to publications	National level	80.5 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	13.2 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	3.5 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and support open access to publications is higher than the EU average.

Within the ERA compliant cluster in France, the share of publicly-funded scientific publications in open access amongst research performing organisations is lower than within the EU ERA compliant cluster.

Concerning open access to data, in the context of the national action plan supporting open access, the 'OpenData France Association' was launched in October 2013. It aims to represent and support local communities in the process of opening up their public data. France is also a signatory of the G8 Open Data Charter.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to data	National level	12.6 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	71.7 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	2.4 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and support open access to data is lower than the EU average.

Within the ERA compliant cluster in France, the share of research performing organisations making available online and free of charge publicly-funded scientific research data systematically is higher than within the EU ERA compliant cluster.

With respect to repositories, France pursues the optimisation of its HAL open archive platform (Online Hyper Articles Platform), which collects institutional archives. HAL is a national and disciplinary platform, interoperable with local and international thematic archives as PubMed Central or Arxiv. It receives nearly 3.000 documents per month and hosts more than 80 archive collections of scientific institutions. ANR-funded projects have to be integrated in the HAL open archive platform. A partnership via a Memorandum of

Understanding was created between Research Institutions, universities and ‘Grandes Ecoles’ for the joint development and management of HAL.

In addition, the project 'Bibliothèque scientifique numérique' was set up in 2011 for research and higher education staff to access to scientific resources. A Steering Group representing all actors in the field of scientific and technical information was established to ensure coordination and issue recommendations.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to Open innovation and knowledge transfer between public and private sectors, France has been developing a comprehensive knowledge transfer strategy since 1999, intending to foster open circulation of knowledge between companies and research organisations. An important milestone was reached in July 2013, when the new law on Higher Education and Research added the transfer, as along with dissemination and valorisation, in the mission of Higher Education and Research Institutions. That reinforced the transfer plan launched at the end of 2012, comprising of 15 specific measures to enhance transfer, being implemented in 2013-2014. One of the measures is: 'Establishing a new set of indicators for the monitoring of transfer activities'.

The French Knowledge Transfer strategy is mainly implemented through the "Investissements d'avenir" programme, which funds SATT (Sociétés d’Accéleration du Transfert de Technologies, Private Companies for Accelerating Technology Transfer), CVT (Consortiums de Valorisation Thématiques) and IRT/ITE (Instituts de Recherche Technologique, Instituts pour la Transition Energétique). This comprehensive set of organisations is supposed to form a continuum of open innovation infrastructures. On the whole, these projects are designed to develop sustainable public-private partnerships over a 10-year period. This substantial investment of EUR 3 billion is intended to deeply modify the French knowledge transfer landscape.

This is a key operational objective of the National Research Strategy ‘France-Europe 2020’ (May 2013), through 'Action#2” “Enhancing technological research capabilities'. Other complementary actions are five CEA-TECH platforms, Carnot 3.0, and the new National Research Agency’s calls for proposal named 'LabCom'. The latter initiative aims to create 100 small and medium-sized enterprise (SME)-public research joint labs.

Notably through SATTs and other structures, funding organisations support the professionalisation of knowledge transfer activities, a necessary condition to increase the rate of success of the strategy.

Strategic partnerships and/or the definition of joint collaborative research agendas between academia and industry are supported by funding organisations in France. Launched in 2006, the 'Instituts Carnot' particularly aims to increase research partnerships between Research Performing Organisations and companies (network of 34 Institutes, allocated a budget of EUR 120 million in the framework of 'Investissements d'avenir' programme) and thus contribute to developing knowledge transfer.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	19.8 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	1 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.9 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	89.4 %	2013	ERA survey 2014
Share of responding research performing organisations having or	Limited compliance	5.6 %	2013	ERA survey 2014

using a structure for knowledge transfer activities	to ERA cluster (national level)			
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	76.8 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	5.2 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	0.7 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0.2 %	2013	ERA survey 2014

The share of research funders in France who responded to the survey and support KT and OI, TTOs and Private Public interaction is lower than the EU average.

Within the ERA compliant cluster in France, the share of research performing organisations having funding originating from the private sector is lower than within the EU ERA compliant cluster.

Within the ERA compliant cluster in France, the share of research performing organisations having or using a structure for knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in France, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in France, the share of research personnel whose primary occupation is in the private sector (in full time equivalents) is lower than within the EU ERA compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

As regards the implementation of the Digital ERA, France has not set up any strategy. However, 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.

Moreover, in terms of education related to public e-infrastructures, the new law on research and higher education of 22 July 2013 planned to provide, on a comprehensive basis, higher education training services with digital resources and training. As an implementation mode, the Ministry of Higher Education and Research has launched 'France Université Numérique' (FUN), a MOOC (Massive Open Online Courses) platform. Since October 2013, high education institutions who wish to provide their students with training in French and open online educational resources have benefitted from FUN (part of 'France Europe 2020'). By bringing together French universities and schools on this project it will give them international visibility, and enable all public access to various courses and quality worldwide. FUN courses are designed by university professors and their international academic partners. Under the coordination of the Secretary of State for Higher Education and Research, technical inputs come from INRIA for the deployment of the platform, CINES for the design, administration and hosting IT infrastructure, and RENATER for infrastructure networks.

Concerning digital services, France provides federated services and premium services (Consultancy, NREN service implementation support).

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing	ERA compliant	80.8 %	2013	ERA survey

digital research services (i.e. cloud services, research collaboration platform, etc.)	cluster (EU level)			2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	80.5 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	7.4 %	2013	ERA survey 2014

Within the ERA compliant cluster in France, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is similar to the EU ERA compliant cluster.

6.4. Uptake of federated electronic identities

RENATER is the French member of the eduGAIN service intended to enable a trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) Partner federations. It provides national and international connectivity to more than 1 300 sites of educational and research institutions in Metropolitan France and in the overseas territories, amounting to 160 000 researchers and 2.2 million students. It specifically manages, along with other institutions, the identity federation. Although in France, there are 176 institutions collaborating with the identity federation platform, there is no top-down policy initiative at national level related to the action.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national	31.9 %	2013	ERA survey 2014

	level)			
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	2.7 %	2013	ERA survey 2014

Within the ERA compliant cluster in France, the share of research performing organisations providing federated electronic identities for their researchers is lower than within the EU ERA compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 67 research performing organisations in France answered the 2014 ERA survey, which represents 25.8 % of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in France shows that 40.9 % of them are in the 'ERA compliant' cluster, 48.5 % can be classified in the 'limited compliance to ERA' cluster and 10.6 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 91.0 % for the 'ERA compliant' cluster, 8.1 % for the 'ERA limited compliant' cluster and 1.0 % for those organisations where ERA principles are not applicable.

Some large universities and research organisations did not reply to the survey, which decreases the representativeness of the results for research performance organisations.

Regarding the indicator 'Share of total budget allocated as project-based funding' it only reflect the share of project based funding handled by research funding agencies, and not the share of total research funding allocated as project based funding in France. The survey did not "captured" institutional funding, as the latter is mainly provided by the Ministry of National Education, Higher Education and Research (MENESR), which is not a funding agency and thus did not responded to the survey. Moreover, among those research funders which answered the survey, results are strongly influenced by the role played by the ANR as funder of projects at national level. It must be reminded that, according to various concordant estimates, between 11% and 12 % of the total R&D public budget is allocated as project based funding.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Project-based funding applying the core principles of international peer review			
Act on higher education and research	2013	X	X
National Research Agency	2005		
Institutional funding based on institutional assessment			
Law on freedoms and responsibilities of universities (LRU)	2007		
Implementing joint research agendas			
Strategic Agenda "France-Europe 2020" (2013) and new National strategy for research (2014)	2013	X	X
Investment for the Future Plan (PIA)	2009		
PRES clusters for research and innovation	2006		
(Thematic) Alliances	2009		
French-German Agenda 2020	2010		
Interoperability, mutual recognition of evaluation results and other schemes			
National funding agency- ISO 9001 certification for calls programming, selection and funding, monitoring	2008		
ANR Lead Agency Procedure	2011		
Bilateral agreements between ANR and BMF/DFG (DE), ESRC (UK), NWO (NL), MICINN (ES), FWF(AT) and ANCS (RO)	2011		
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Research infrastructure roadmap 2012-2020	2012	X	
Attractive careers			

Recognition of PhD in the public sector (High level public recruitments)	2013	X	X
Support coordinated personalised information and services to researchers through EURAXESS; EURAXESS France portal	2012	X	
Gender balance in the decision-making process			
Charter for gender equality between Ministry of Research and Conference of rectors and head of schools of engineers	2013	X	X
Act on higher education and research. Art 13, 37, 50, 53			
Office for promotion of gender equality and fight against discrimination-Ministry of research			
Action Plan on equality	2012	X	
Law of 12 March 2012 on employment in public sector and fight against discrimination	2012	X	
Open access to publications and data resulting from publicly funded research			
Memorandum of Understanding for a coordinated approach on a national level to open archiving of scientific output	2006		
HAL - Online Hyper Articles Platform	2007		
Action Plan on open access (announced in January 2013)	2012	X	
Open innovation and knowledge transfer between public and private sectors			
New policy on technology transfer (presented in November 2012)	2012	X	
Competitiveness Clusters - Third phase 2013-2018	2013	X	X
Carnot Institutes	2006		

France Brevets	2010		
SATT	2009		
Public Investment Bank (BPI) (Creation by regrouping OSEO, BDPME and other organizations)	2012	X	
Harmonise policies for public e-infrastructures and associated digital research services			
Establishment of new bodies to supervise and coordinate research infrastructures (Directing Committee and High-level Council)	2012	X	
Uptake of federated electronic identities			
eduGAIN (RENATER in France)	1993		

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

The governance of a research and development (R&D) system in Croatia is highly centralised under the authority of the Ministry of Science, Education and Sports (MSES). It is dominated by public funding primarily based on annual budget cycles proposed by the National Science Council, the highest advisory body for the scientific research system. The Agency for Science and Higher Education (ASHE) is responsible for setting up a national network for quality assurance.

The main funding bodies, in addition to the MSES, are the Croatian Science Foundation (CSF) and the Business Innovation Agency of Croatia (BICRO, recently renamed to HAMAG-BICRO following a merge of two agencies). A remaining stakeholder in the research and innovation (R&I) system, the Agency for Mobility and EU Programs (AMPEU) does not provide funding in order to organise programmes for lifelong learning and the EU mobility programmes.

The reorganisation of a more efficient R&D system is the main driver of the amended Act on Science and Higher Education (15 July 2013), which also introduced a new model for financing scientific activities from the State budget via MSES, based on the multi-annual institutional funding for research programmes. It also launched the scientific centres of excellence (SCE) for the first time in Croatia.

The research system in Croatia is dominated by the public R&D sector over a private sector which is technologically weak and underinvested in the domain of research and innovation. Universities play a leading role in both research manpower (80% of total researchers) and performing research activities (54% of R&D in 2012). The sector of the public research organisations (PRO) consists basically of 26 public research institutes and around 50 scientific research units classified as other legal entities.

The new Strategy for Education, Science and Technology was publicly presented on 16 September 2013 and adopted in January 2014 which substitutes the multi annual research, development and innovation (RDI) strategy.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Croatia represented EUR 74 per inhabitant in 2012, less than half the EU28 average (EUR 179). In 2013, GBAORD per inhabitant was similar (EUR 74). In 2012, total GBAORD corresponded to 1.6% of total government expenditures and 0.7% of Gross Domestic Product (GDP) (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the rate of growth of total GBAORD in Croatia was positive, but below the rate of growth of total EU GBAORD. Finally, GBAORD as a share of GDP has evolved positively in Croatia even when it regressed at EU28 level.

The main policy instruments for financing scientific research follows a horizontal approach to assure the balanced development of the six main fields of science. Within the given policy context, the majority of public resources are allocated by the MSES employing four basic instruments:

- Institutional funding (block grant), including salaries for researchers (33%),
- Research grants for operational costs of research projects (competition based program), "Research Projects" program (10%),
- Grants for new employment positions for young researchers through the competition driven "Junior Research Program" (31.4%);
- Research supporting programs such as scientific publishing activity, support for scientific and professional conferences, associations, and research equipment (8.8%).

1.2. Project-based funding applying the core principles of international peer review

With the new Act on Science and Higher Education the allocation of the competition based research project grants has been transferred from MSES to the CSF, and assumes a rigid evaluation process that should end up with a small number of high quality research projects (around 20% of proposals). The total funds allocated to CSF in 2013 for research projects amounts to around EUR 6.8 million that is only about 40% of the previous year budget. However, the government plans to increase these funds to EUR 13.5 in 2014.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Croatia who responded to the survey and support project-based funding is higher than the EU average.

The international peer review processes for allocating research grants have a long tradition in Croatia introduced by MSES at the beginning of 2000s. In 2006, the MSES introduced an international peer-review evaluation system for research-project applications, and new criteria for project funding, in line with EU standards, to stimulate and reward excellence, and to encourage the mainstreaming of resources into larger research programmes.

The principle funding agency for scientific research, the CSF), is practising an international peer-review process. The MSES is also using external expertise for evaluating research projects proposals.

1.3. Institutional funding based on institutional assessment

In Croatia the government finances more than 85% of research at public institutes and 78% of universities, while the business sector finances a small portion of university research (9.8%) and public institutes (3.4%) (ERAWATCH 2013a).

At universities, budget funds make around 70 % of total university revenues while the remainder comes from scholarships and commercial projects. The criteria for funding tertiary institutions are rather formal and include input from a number of employees (ERAWATCH 2013a), which is the estimated amount of work required to implement the approved programs, which correlates with the number of employees, the estimated workload according to the defined standards in the higher education institutes (HEIs), and the assessed quality of the programs. In practice, however, allocations are based on the previous year's allocations and there is no consistent mechanism based on the above-mentioned criteria. A positive new development in the academic year 2012/13 was the introduction of a pilot scheme for three year funding agreements between the State and public HEIs. In addition public HEIs receive tuition fee subsidies for their students according to a recent government decree.

With the new decision on multi-annual institutional financing of research activities 2013-2015, the MSES provide only a lump sum for multi-annual institutional funding, the amount of which depends on the institutional performance indicators. For the first time, these agreements introduced performance indicators, allowing institutions to receive additional funding if they meet specific policy objectives. For example, indicators are related to the social dimension of the HEI through fostering access of under-represented groups and mature students, or related to a reduction. Performance-based funding is very limited and is estimated at around 1 % of overall MSES funding for HEIs.

In the area of institutional assessment Croatia is applying the European standards and guidelines based on the Law on Quality Assurance in Science and Higher Education.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

Research funders in Croatia who responded to the survey indicated that they do not allocate of institutional funding.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

In 2014, the main instruments of the cross-border cooperation in Croatia (the IPA programme) were substituted by the Structural and Cohesion funds after Croatia became the 28th EU member in July 2013.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

Research funders in Croatia who responded to the survey indicated that they do not have measures supporting transnational cooperation nor measures supporting joint research agendas.

Cooperation between institutions of Member States (MS), Associated Countries and third countries is fostered by the Framework Programme (FP). In the Seventh Framework Programme (FP7), the share of Croatia's total participation is 0.3 % and the country received 0.2 % of total EC contribution. FP funding represents EUR 148 per inhabitant (EU average EUR 72 per capita) for the period 2007-2013.

Concerning Joint Programming Initiatives, the country participates in one of the 10 on-going initiatives - the Neurodegenerative diseases (Alzheimer).

The number of calls with predefined priorities with other countries in Croatia is 17, nevertheless not all of them are active; budget is not known. When it comes to calls with predefined priorities with other countries on grand challenges, Croatia is participating in four, namely HERA JRP Cultural Encounters, HERA Joint Research Programme Call for Proposals, HERA Joint Research Programme Cultural Encounters, HERA-2009-01 (NETWATCH 2013).

In Horizon 2020 Croatia is involved in two of the four programmes undertaken by several Member States (Article 185 initiatives).

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of eight ERA-NETs, of which two are currently still running. The country also has participated in two ERA-NET Plus actions - of which one is still running - in areas with high European added value and additional EU financial support topping up their joint call for proposals.

The CSF has one bilateral agreement with the German Deutsche Forschungsgemeinschaft DFG, which includes the popularisation of DFG programmes open for Croatian researchers. Together with the DFG the Croatian Science Foundation is offering mobility Instruments; joint research projects and DFG Forschergruppen (Research Units), Sonderforschungsbereiche (SFBs, Collaborative Research Centers) and DFG Internationale Graduiertenkollegs (IGKs, International Research Training Groups). The Research Units are the most flexible funding instrument (Croatian Science Foundation 2013).

Additionally, the country participates in the EU Strategy for the Danube Region (EUSDR), a multilateral (and macro-regional) strategy that has been developed by the Commission in cooperation with 11 countries in the Danube region (Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia and Ukraine). It comprises science and technology cooperation across the region and by the end of 2013 six scientific clusters have been launched, for example a cluster in energy and sustainable research.

2.2. Openness for international cooperation with third countries and regions

Croatia has rather intensive international research cooperation through bilateral, multilateral and transnational projects and programmes. Within the bilateral research projects Croatian institutions signed more than 200 research agreements while multilateral projects include projects with the institutions like the European Science Foundation (ESF), UNESCO, NATO, UNICEF, the Alps-Adria Working group, Central European initiative, etc.

Indicator	Level/cluste	Value	Year	Source

	r			
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0.7 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

Research funders in Croatia who responded to the survey indicated that they do not have measures supporting international cooperation with third countries.

Within the ERA compliant cluster in Croatia, the share of organisations' research and development budget originating from third countries is similar to that within the EU ERA compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

Croatia participates in the four initiatives aimed at regional cooperation which should contribute to the cross-border interoperability of national programmes and permit joint financing of innovation, R&D and related actions. They include: the South East Europe (SEE) 2020 Strategy adopted on 21 November 2013, the Western Balkans Regional R&D Strategy for Innovation (WISE) for the period 2014- 2020, adopted on 25 October, 2013, the

EU Strategy for the Danube Region (EUSDR) which is a macro-regional strategy adopted by the European Commission in December 2010 and endorsed by the European Council in 2011 and the EU Strategy for the Adriatic and Ionian Region which is in progress.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	100 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	100 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Croatia who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

The share of responding funders' project-based research and development budget in Croatia allocated through peer review carried out by institutions outside the country is higher than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Croatia participates in the following large international research infrastructures (RIs): the European Space Agency (ESA), the European Fusion Development Agreement (EFDA), the

European Molecular Biology Laboratory (EMBL). The country contributes 0.07 % of GBAORD to the activities carried out by Conseil Européen pour la Recherche Nucléaire (CERN), EMBL, the European Southern Observatory (ESO), the European Synchrotron Radiation Facility (ESRF), the Institut Laue-Langevin (ILL) and the European Commission's Joint Research Centre (JRC) (Eurostat).

In terms of participating in the development of RIs included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participates in the preparatory phase of one of them (2 %). So far, Croatia is not committed to developing any of these RIs.

With regard to participation in the European Research Infrastructure Consortium, Croatia is involved in one of the nine consortia which adopted the legal framework designed by the Commission to facilitate the establishment and operation of research infrastructures of European interest involving several European countries, namely DARIAH ERIC.

In terms of support to the development and implementation of Research Infrastructures, the MSES adopted in December 2013 the Draft Development Plan for Scientific Infrastructure to identify priorities for investment in scientific infrastructure at the national and pan-European level and defines the criteria for selecting projects. The Plan has undergone the process of public consolation early 2014.

3.2. Access to research infrastructures of pan-European interest

Croatia has not applied 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.

However, in the last few years a broader approach to research infrastructure has emerged primarily in the information and communication technology (ICT) sector where development applied a top down approach initialized by the government. «e-Hrvatska» the institution responsible for ICT infrastructure development in Croatia, implemented two programs relating to research infrastructure, in addition to Broadband Internet and HitroNet aimed at building centralized network of public services. Moreover, MSES have been constantly improving the CARNET network implementing the program of distant learning. MSES, jointly with CARNET and the Rudjer Bosković Institute launched the «Center for on-line data base» project ensuring a network approach to commercial databases and providing free databases for the science and research communities in Croatia (scientists, assistant and students).

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Croatia in the Researchers' Report 2014.

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 6,847 full time equivalent (FTE) researchers in Croatia in 2011. This represents 4.0 researchers per 1000 labour force compared with 5.3 among the Innovation Union reference group (Moderate Innovators) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 110.4 in Croatia compared with 39.9 among the Innovation Union reference group and an EU average of 43.7

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).

Under the Act on Scientific Activity and Higher Education (Article 40), an appointment to a research position within public scientific research organisations must be based on a public competition, published in the Official Gazette of the Republic of Croatia, on the official Internet website of the scientific research organisation as well as on the official Internet website for ERA job vacancies (i.e. the EURAXESS Jobs portal). Since Croatia's accession to the EU, the deadline for submitting applications is 30 days. Prior to this, the period was eight days and it was at that time, but no longer is, legal to restrict recruitment to Croatian candidates.

4.3. Attractive careers

The implementation of the Charter and Code principles is publicly promoted and supported by the Ministry of Science, Education and Sports and the Agency for Mobility and EU Programmes. The promotion of the Charter and Code principles is also foreseen in the Action Plan for Mobility of Researchers and the Strategy for Education, Science and Technology. To date, all public research institutions (including HEIs), the Croatian Academy of Sciences and Arts, the Croatian Science Foundation and three research organisations from the private sector have endorsed the Charter and Code (37 altogether) and they are working on improving their human resources strategy for researchers in accordance with those principles. The Ministry, together with the Agency for Mobility and EU Programmes, offers support and information about the implementation process.

By May 2014, 18 Croatian organisations were involved in the Commission's Human Resources Strategy for Researchers of which 14 had received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

The Act on Scientific Activity and Higher Education (2013 amendment) includes measures to widen the selection process for post-doctorates, introduce promotion on the basis of merit rather than seniority and compulsory retirement of researchers at the age of 65.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged 25-34 was 1.8 in 2011 compared to 1.2 among the Innovation Union reference group and an EU average of 1.7.

In 2009, the Doctoral Studies Rulebook of the University established a skills agenda for the development of additional skills as one of the core elements of doctoral education and initiated specific programmes for transferable skills development in doctoral education. The Central Office of Doctoral Studies and Programmes is in charge of providing the necessary tools for implementing a skills agenda, and supporting PhD candidates in developing transferable skills. The University of Zagreb initiated a nationwide project in 2013 to provide all Croatian universities with human resources programmes for sustainable skill development. The project is called Modernising Doctoral Education through Implementation of CROQF (Croatian Qualification Framework) and is coordinated by the University of Zagreb in cooperation with six partners; all Croatian public universities and three associated partners (Agency for Mobility and EU Programmes, Croatian Employment Service and Young Scientist Network – MLAZ). The overarching objective of the project is to enhance the implementation of the CROQF in the national doctoral education system as well as develop and modernise doctoral student qualifications during their doctoral studies by enhancing their professional and personal competences using CROQF standards.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 2.5% in Croatia compared to 4.2% among the Innovation Union reference group and an EU average of 7.7%. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 2.4% in Croatia compared with 5.2% among the Innovation Union reference group and an EU average of 24.2%.

The Ministry of Science, Education and Sports has a long-standing policy of attracting prominent Croatian scientists currently working abroad, and assisting them in achieving the conditions for carrying out scientific research careers in Croatia. The new International Fellowship Mobility Programme for Experienced Researchers in Croatia – NEWFELPRO is a fellowship project co-financed through the Marie Curie FP7-PEOPLE-2011-COFUND program. Its total value is EUR 7 million, of which 60% is financed from national sources. Eighty-three fellowships are available as part of the NEWFELPRO project. There are specific schemes for outgoing and incoming fellows, including diaspora Croatians returning to the country. In addition, under the reintegration fellowship scheme within this programme, a total of nine two-year fellowships will be awarded with a view to reversing the “brain drain”.

An Action Plan for the Mobility of Researchers 2014-2016 will be published in 2014.

One of the strategic objectives of the NEWFELPRO programme is to provide an impetus to an effective labour market for researchers in Croatia, connecting industry and universities, public and private research institutions, and industrial laboratories, enhancing knowledge transfer and preparing better employment opportunities for researchers with special attention to innovative processes for small and medium-sized enterprises (SMEs).

5. GENDER

5.1. Foster cultural and institutional change on gender

Croatia has set up a gender equality strategy in research institutions.

Croatia has made 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 has also set an Office for Gender Equality as the main institutional mechanism for gender equality.

Research institutions themselves are responsible for monitoring and assessing policy implementation relating to gender equality.

The main policies that promote the equal treatment for men and women in society and science are formulated in the framework documents – the Act on Scientific Activity and Higher Education (OG 123/03) and the Labour Act (OG 149/09, 61/11). The regulations that specifically treat gender equality include the Gender Equality Act (OG 82/08), the Act on Prohibition of Discrimination (Official Gazette 85/08), and the Act on Maternity and Parental Benefits (85/2008). These acts provide regulations to put men and women in the same position regarding working conditions and career progress. The acts address also the research sector.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	2.3 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample	Limited compliance	1.1 %	2013	ERA survey

which have adopted Gender Equality Plans	to ERA cluster (national level)			2014

The research funders in Croatia who responded to the survey did not reported support to gender equality in public research.

Within the ERA compliant cluster in Croatia, the share of research performing organisations which have adopted Gender Equality Plans is lower than within the EU ERA compliant cluster.

In Croatia, the government has set targets for recruiting women in senior academic positions, i.e. professorial positions. Gender Action plans in Croatia allow for temporary specific measures in order to reach the national target of 25 % women in leading positions in the public research sector.

Since 2007, the Croatian UNESCO Committee, the Ministry of Culture and L'Oréal Adria have handed out yearly awards for Women in Science in an effort to raise the awareness of excellent young female scientists and reward them for their contribution. The award also encourages female students to pursue a career in the life sciences.

In the event of maternity leave, the Croatian Science Foundation allows candidates to postpone or pause research covered by the Foundation's fellowships/postdoctoral grants.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	8.3 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female	Limited compliance to ERA cluster (national	2.7 %	2013	ERA survey 2014

researchers	level)			

Within the ERA compliant cluster in Croatia, the share of research performing organisations implementing recruitment and promotion policies for female researchers is lower than within the EU ERA compliant cluster.

Funding agencies do not put in place criteria inspired to gender equality and increased gender participation in research.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the inclusion of gender dimension in research content	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	13.9 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national level)	1.1 %	2013	ERA survey 2014

Research funders in Croatia who responded to the survey indicated they do not include specific measures to support gender dimension in research content/programmes. Within the ERA compliant cluster in Croatia, the share of research performing organisations which include the gender dimension in research content is lower than within the EU ERA compliant cluster.

5.2. Gender balance in the decision-making process

Concerning gender balance in decision making, the main reference document is the Action plan Science and Society adopted in December 2012 by the Ministry of Science, Education and Sports. It proposes to equalise the gender ratio of researchers in the system, especially in management structures (minimum one third of women in national councils, regional councils, main committees, scientific and political bodies, etc.) and stresses the need for gender equality awareness increase.

Indicator	Level/cluster	Value	Year	Source
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	44.1 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	12.5 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	0 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA compliant cluster in Croatia, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is higher than within the EU ERA compliant cluster.

There seems to be no gender-balanced research evaluation panels amongst responding research funding organisations in Croatia.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, the Croatian Government strongly encourages open accessibility to the results of publicly funded research. The Ministry of Science, Education and Sports supported the the Croatian scientific portal, a project that marked the beginning of open access in Croatia in 2006. The Portal provides several informational services which afford open access to all scientific information resulted from public funding research, as follows: the Croatian scientific bibliography - CROSBI, the Croatian scientific journals portal – HAMSTER and the Who's who in Croatian science.

A 2011 study of Croatian academic libraries (Hebrang-Grgić, 2011) showed that Croatian scientific community and librarians are aware of the importance of launching institutional open access (OA) repositories to enlarge optimal circulation, access to and transfer of scientific knowledge. This is confirmed by the Croatian Declaration of Open Access which was initiated in October 2012 and has been signed by more than 500 researchers in a couple of months.

The Immediate deposit/Optional Access (ID/OA) mandate, as well as the green open access are not regular practice in Croatia.

In Croatia, the majority of journals followed the "golden" open access road in providing digital journals, including freely available peer-reviewed articles, and the HRCAK version of an online journal is the only digital version of the journal. However, some journals have their online version independent from the HRCAK platform, and editors submit articles in HRCAK as additional copies, so this part can be considered as "green", even though it is not submitted by the author.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing	Limited compliance to ERA	2.9 %	2013	ERA survey 2014

organisations	cluster (national level)			

There seems to be no support to OA among funders which answered the survey. Within the ERA compliant cluster in Croatia, the share of publicly funded scientific publications in OA amongst research performing organisations is similar to that within the EU ERA compliant cluster.

With regard to open access related to research data the Faculty of Humanities and Social Sciences participates in the project SERSCIDA – Support for Establishment of National/Regional Social Sciences Data. SERSCIDA is designed as a strategic project for supporting the cooperation and exchange of knowledge between the EU countries associated within the Council of European Social Sciences Data Archives (CESSDA) and the Western Balkan Countries (WBC) in the field of social science data archiving. The project addresses the issues of potentials of usage of information-communication technologies for the benefits of scientific research and exchange of knowledge as laid down in the call for proposals topic. The project aims to produce tangible results and improve the capacities for exchange of knowledge and data collected through research in social sciences between the European countries and WBC involved (OpenAIRE 2013).

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	12.6 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-	Limited compliance to ERA cluster	63.8 %	2013	ERA survey 2014

line and free of charge	(national level)			

Research funders in Croatia who responded to the survey indicated that they do not have measures supporting Open Access to data. Within the ERA compliant cluster in Croatia, the share of research performing organisations making available on-line and free of charge publicly funded scientific research data systematically is lower than within the EU ERA compliant cluster.

Institutional repositories based on open access are established by the four faculties of the University of Zagreb: the Faculty of Mechanical Engineering and Naval Architecture Repository, Faculty of Organisation and Informatics, School of Medicine Repository and the Faculty of Humanities and Social Sciences. However all repositories contain qualifying works like PhD theses awarded by the faculty except the School of Medicine, which also contains published material by members of the Medical School, including peer-reviewed journal articles, published conference papers, books and book chapters. The three additional institutional repositories are in preparation: the Rudjer Boskovic Institute (RBI), the University of Zadar and the University of Osijek.

The most important open data repository is the Croatian Web Archive. Other open repositories are developed mainly through the e-infrastructures like the CLARIN, DARIAH, ESS, and since January 2012, SERSCIDA.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Croatia has not developed a knowledge transfer strategy. However, knowledge transfer 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 are technology transfer offices (TTOS): the University of Split, the University of Zagreb and the 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 Organisation for Economic Cooperation and Development (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 the industry and the academia and securing a strong science and technology base and strengthening the capacities of research institutions for technology transfer. To date, there is no clear legal or regulatory framework covering the field of Intellectual Property Rights (IPRs) and technology commercialisation in universities but efforts are ongoing to create a national policy for IPR creation and management at research institutions.

Policy measures related to the intellectual property protection and patents are reasonably developed in Croatia. These activities are regulated by the Act on Patents, related Acts and

fall under the responsibility of the Croatian State Intellectual Property Office (CSIPO). However, there are still modest capabilities regarding intellectual property rights (IPR) which require a systematic approach to develop the strategy and policy on this matter.

Strategic partnership between academia and industry are supported by main funding organisation in Croatian – CSF, which has since 2014 incorporated the Unity through Knowledge Fund. The latter further encouraged through the annual approval of around a dozen 'Young Researchers and Professionals' projects and the '3C Research in Industry and Academia Grants', the competitiveness of national research at an international level and fosters research that creates new values in the Croatian economy and funds projects that help the development of research infrastructure in Croatia (Deloitte 2012).

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	2.3 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.3 %	2013	ERA survey 2014
Share of responding research	ERA	75 %	2013	ERA survey

performing organisations having or using a structure for knowledge transfer activities	compliant cluster (EU level)			2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	26.9 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	59.2 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	16 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	58.2 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	0.8 %	2013	ERA survey 2014

Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

The share of research funders in Croatia who responded to the survey and support national support to KT and OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA compliant cluster in Croatia, the share of research performing organisations having funding originating from the private sector is lower than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Croatia, the share of research performing organisations having or using a structure for knowledge transfer activities is lower than within the EU ERA compliant cluster. However, the share is quite high in the limited compliance to ERA cluster.

Within the ERA compliant cluster in Croatia, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is lower than within the EU ERA compliant cluster. However, the share is quite high in the limited compliance to ERA cluster.

Within the ERA compliant cluster in Croatia, the share of research personnel whose primary occupation is in the private sector (in Full Time Equivalents) is lower than within the EU ERA compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation with the implementation of Digital ERA, the authentication and authorization infrastructure of the Croatian research and education community is developed within the AAI@EduHr which today covers the complete Croatian research and education community. The implemented research and education network is essential to make digital services possible.

Concerning digital services, the country provides federated services.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014

platform, etc.)				
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	19.2 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	63.6 %	2013	ERA survey 2014

Within the ERA compliant cluster in Croatia, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is lower than within the EU ERA compliant cluster. However, the share is quite high in the limited compliance to ERA cluster.

6.4. Uptake of federated electronic identities

Croatia was a member of an identity federation in 2011. AAI@EduHr is the official member of eduGAIN, a service intended to enable a trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) Partners' federations. AAI@EduHr is also a member of the global roaming service eduroam which secures, world-wide roaming access service developed for the international research and education community.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	12.8 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample	Limited compliance	3 %	2013	ERA survey

providing federated electronic identities for their researchers	to ERA cluster (national level)			2014

Within the ERA compliant cluster in Croatia, the share of research performing organisations providing federated electronic identities for their researchers is lower than within the EU ERA compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 44 research performing organisations in Croatia answered the 2014 ERA survey, which represents 102.2% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Croatia shows that 53.5 % of them are in the 'ERA compliant' cluster, 34.9 % can be classified in the 'limited compliance to ERA' cluster and 11.6 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 32.1 % for the 'ERA compliant' cluster, 66.5 % for the 'ERA limited compliant' cluster and 1.4 % for those organisations where ERA principles are not applicable.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
The Act amending the Act on Science and Higher Education	2013	X	X
Decision on Multi-annual Institutional Financing of Research Activities in Public Research Institutes and Universities 2013-2015	2013	X	X
Project-based funding applying the core principles of international peer review			
Unity through Knowledge Fund programme Cross-border grants	2013	X	X

National Strategy for the Croatian innovation development 2013-2020 (OECD)	2010		
Unit through Knowledge Fund - Guidelines and Procedures Croatian Science Foundation - Evaluation Procedure Manual	2007		
Institutional funding based on institutional assessment			
Second Science and Technology Project	2013	X	X
Strategy for smart, sustainable and inclusive growth (World Bank)	2012	X	
The amendments to the Act on Science and Higher Education	2013	X	X
Law on Amendments and Supplements to the Law on the Croatian Science Foundation	2012	X	
Law on Quality Assurance in Science and Higher Education	2009		
Implementing joint research agendas			
Participation to intergovernmental organisations			
IPA Programme			
Interoperability, mutual recognition of evaluation results and other schemes			
Regional Research and Development Strategy for Innovation for the Western Balkans	2010		
South East Europe (SEE) 2020 Strategy	2013	X	X
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Establishment of the Committee for Scientific Infrastructure and preparation of the National Roadmap for Science	2013	X	X

Infrastructure			
Preparation of project pipeline for infrastructure projects for the European Regional Development Fund 2014-2020	2012	X	
Participation in ESFRI	2010		
Draft Development Plan for Scientific Infrastructure in the republic of Croatia	2014	X	X
Draft Development Plan for Scientific Infrastructures	2013	X	X
Open, transparent and merit-based recruitment of researchers			
EURAXESS portal	2007		
Attractive careers			
Marie Sklodowska Curie COFUND_ NEWFELPRO	2013	X	X
Implementation of the Charter & Code principles in Croatia	2009		
Gender balance in the decision-making process			
National Policy for Gender Equality 2011-2015	2011		
Action plan Science and Society	2012	X	
National scholarship programme "For Women in Science" of the L'Oreal Adria and Croatian Commission for UNESCO	2012	X	
Ordinance on the Office for Gender Equality	2012	X	
The Gender Equality Act	2008		
Open access to publications and data resulting from publicly funded research			
Croatian Declaration of Open Access to Scientific Information	2012	X	
Hamster - Croatian scientific journals portal	2006		

Croatian scientific bibliography - CROSBI	1996		
Open innovation and knowledge transfer between public and private sectors			
Second Science and Technology Project (STP) II	2013	X	X
BICRO's programmes	2013	X	X
Science and Innovation Investment Fund	2009		
Unit through Knowledge Fund programme "Research in industry and academia grant"	2007		
Intellectual property policy for universities and research institutions Biosciences Technology Commercialisation and Incubation Centre – BIOCentre	2012	X	
Second Science and Technology Project	2013	X	X
National Strategy for the Croatian innovation development 2013-2020	2013	X	X
Harmonise policies for public e-infrastructures and associated digital research services			
The Croatian Academic and Research Network - CARNet	1991		
Regulations on the organization of authentication and authorization infrastructure of science and higher education in Croatia- AAI@EduHr	2008		
The Croatian National Grid Infrastructure (CRO NGI)	2007		

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

The key players of the Hungarian science, technology and innovation (STI) policy system are the Parliament, specifically the Education, Science, and Research Committee, the National Development Cabinet, the Ministry of National Development, the Ministry for National Economy, the Ministry of Human Resources, the National Innovation Office (NIH), and the Hungarian Academy of Sciences (MTA).

The Parliament is the highest-level political decision-making body for research and innovation. The National Development Cabinet, established in 2012 and chaired by the Prime Minister, is a high level political body in the fields of science and innovation. Notably, it is responsible for EU cofinanced projects and those with a budget over HUF 1 billion and has the mandate to coordinate governmental STI policy decisions. The National Science and Innovation Policy Board, established in 2013 and also chaired by the Prime Minister, provides support regarding strategic programmes, their long-term financing, and the evaluation of the effectiveness of the research performing institutions. At policy implementation level, the National Innovation Office (NIH) is a governmental body responsible for research, development and technological innovation, including contributions to strategy-making and programme planning as well as for international research, development and innovation (RD&I) collaboration.

The Ministry for National Economy is responsible for research, innovation and competitiveness policies. The Ministry for Human Resources is responsible for the science policy.

The MTA has three main objectives: to support and represent various scientific fields, to distribute scientific results and foster international relations in the field of sciences. Concretely, it is responsible for contributing to science policy-making and its implementation by running the largest network of research institutes in Hungary. The MTA also allocates funds to its own research institutes and research units affiliated with universities.

The National Research, Development and Innovation Strategy (2013-2020), entitled 'Investment into the Future' was approved by the government in 2013. The strategy aims to raise the RD&I investments, and as a result, to mobilise the Hungarian economy and strengthen its competitiveness. The strategy set the target, amongst others, to raise the amount of research and development (R&D) expenditures to 1.8 % of the Gross Domestic Product (GDP) and increase the number of researchers from 37 000 in 2012 to 50 000 by 2020. The strategy focuses on three main fields: knowledge creation, knowledge transfer and knowledge utilisation. The National Research and Development and Innovation Strategy is accompanied by a two year Action Plan to contribute to its implementation.

The draft Science Policy Strategy for 2014-2020 is expected to be approved in the second half of 2014. It will provide the framework for financing the academic sector and will renew the acknowledgement and publication of scientific results. Specifically, the strategy aims to

increase the attractiveness of the research environment, the scientific excellence in all fields, as well as the talent management programmes to reverse the 'brain drain.'

The draft Higher Education Strategy, to be adopted in the second half of 2014, will introduce a performance-based institutional funding model.

According to the Hungarian Partnership Agreement for the 2014-2020 programme period, Hungary will allocate 60 % of the total resources available for economic development purposes and more than EUR 2 billion for developing the knowledge economy (i.e. support of company R&D and research programmes) from Structural Funds available for this time period (about EUR 20.5 billion in total). Funds allocated through the EU Structural Funds' Operational Programmes of the New Hungary Development Plan (2007- 2013) were managed by the National Development Agency (NFU) until the end of 2013. From 1 January 2014, managing authorities in different ministries manage these funds.

In terms of RD&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Hungary represented EUR 34 per inhabitant in 2012 (EUR 179 in EU-28). In 2012, total GBAORD corresponded to 0.7 % of total government expenditures and 0.3 % of GDP (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that, in nominal terms, the rate of growth of total GBAORD in Hungary was higher than the rate of growth of total EU GBAORD. Finally, GBAORD as a share of GDP has regressed more in Hungary than the regression observed in the EU-28.

Tax incentives are foreseen in the National Research, Development and Innovation Strategy (2013-2020). The Government is reforming the tax system, in order to have the most competitive tax system in the region, and create the most business-friendly environment in Central and Eastern Europe. The plan includes reducing the corporate tax rate and introducing personal income tax with a single 16 % flat rate.

1.2. Project-based funding applying the core principles of international peer review

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

According to informal communication from the Hungarian Government, the share of competitive funding is about 40 % and it is expected to increase. The following are examples of new or increased sources of competitive funding:

- An important source for competitive funding are the various operational programmes of the New Hungary Development Plan 2014-2020, co-funded by the EU Structural Funds.

The most important source for R&D funding is the first priority axis of the Economic Development Operational Programme (EDOP), which supported 433 new projects in 2012 with EUR 436.2 million (funding decisions); while the amount of funding actually paid that year was EUR 391.4 million,

- RTIF plays a significant role in the R&D funds and strategy. In 2013, the RTIF published calls for proposals worth EUR 137.4 million, while actual payments amounted to EUR 79.2 million.

- The budget of the Momentum programme of the Hungarian Academy of Sciences, which supports outstanding young researchers, increased by 20 % in 2013 compared to 2011.

- OTKA increased its budget by 30 % in 2012 and 2013. An increased budget has come together with more calls for young researchers to launch research groups. Simultaneously, OTKA plans to raise the overhead costs, currently15 %, to support the host institutions.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	82.4 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Hungary who responded to the survey and support project-based funding is higher than the EU average.

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

New funding schemes use international peer review, like for instance the 'Start-up_13' scheme, launched in June 2013 to support the development of the Hungarian start-up ecosystem and more specifically the development of technology start-up companies. So far, only four companies have participated in this scheme. However, the start-up scheme consists of four phases and the second phase is foreseen to be launched in 2014. The support for building the start-up ecosystem is part of the planned Operational Programme 2014-2020.

1.3. Institutional funding based on institutional assessment

Institutional funding supported RD&I activities in higher education organisations and Public research organisations (PROs). There are two main channels for providing such funding: support for RD&I activities conducted at higher education institutes (HEIs), and support to the largest research performing organisations (RPO), the Hungarian Academy of Sciences.

The share of institutional funding is of about 60 %, according to information provided by the Government.

The institutional public funding for RD&I decreased significantly in the past few years. The allocation of institutional funding to HEIs and RPOs has until now not been based on performance but on student numbers, disciplines taught, number of full time professors and number of professors holding scientific degrees. The draft Higher Education Strategy, to be adopted in 2014, will introduce a performance-based institutional funding model. Approximately one third of institutional funding will be based on scientific excellence ((30 %), even if the criteria are not yet known, whilst the remaining 70 % will still be allocated based on the number of students.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

Research funders in Hungary who responded to the survey indicated that they do not have measures supporting institutional assessment for allocating institutional funding.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives. The role of RD&I in addressing societal challenges, and social innovation are generally perceived as not essential in Hungary. Nevertheless, a horizontal priority of the 'National Research, Development and Innovation Strategy 2013-2020' explicitly addresses the global social challenges and the importance of having excellent research infrastructures (Ris). In addition, the Science Policy Strategy 2014-2020, not yet approved by the Government, foresees measures within the framework of smart specialisation that should address societal challenges and give attention to social innovation.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total	National	0 %	2013	ERA survey

budget allocated to transnationally coordinated R&D	level			2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

Research funders in Hungary who responded to the survey indicated that they do not have measures supporting transnational cooperation nor funding supporting joint research agendas.

Cooperation between institutions of Member States, Associated Countries and third countries is fostered by the Framework Programme (FP). In the Seventh Framework Programme, the share of Hungary's total participation is 1.3 % and the country received 0.7 % of total EC contribution. FP funding represents EUR-27 per inhabitant (EU average EUR 72 per capita) for the period 2007-2013 and 4.9 % of the Gross Domestic Expenditures on R&D (GERD) for the period 2007-2011 (last available data) (EU average 3 % of GERD for the same period).

Concerning joint programming initiatives (JPIs), Hungary participates in two of the 10 ongoing initiatives. These initiatives are Neurodegenerative diseases (Alzheimer) and Water Challenges for a Changing world.

In terms of programmes undertaken jointly by several Member States (so-called Article 185 initiatives), Hungary was involved in three programmes. In Horizon 2020, the country is already involved in three of the four existing initiatives: AAL2, EMPIR and Eurostars2.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of 47 ERA-NETs, of which 11 are currently still running. The country has also participated in ERA-NET Plus actions, of which are still running, in areas with high European added value and additional EU financial support topping up their joint call for proposals.

Concerning research agreements with EU Member States and/or Associated Countries, Hungary has 36 bilateral agreements, notably with EU members, Israel, and Turkey with the

primary objective to promote mobility and international cooperation, and organise science and technomgy (S&T) seminars and workshops. Hungary, represented by its National Innovation Office, also has numerous multilateral agreements, notably with NATO Research and Technology Organisation, COST, ICGEB, or EMB, amongst others.

Additionally, the country participates in the EU Strategy for the Danube Region (EUSDR), a multilateral (and macro-regional) strategy has been developed by the Commission in cooperation with 14 countries in the Danube region (Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia and Ukraine). It comprises science and technology cooperation across the region and by the end of 2013 six scientific clusters were launched, for example a cluster in energy and sustainability research.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, Hungary has not developed a specific policy. In terms of implementation, it concentrates on cooperations with Argentina, Brazil, China, India, Japan, South Korea, Malaysia, Mexico, Russian Federation, South-Africa, Thailand, Ukraine, United States, and Vietnam. Hungary monitors the implementation of cooperation programmes through the S&T attachés in 11 of those countries. The attachés follow the development of RD&I trends in these countries, facilitate the establishment of bilateral agreements, encourage the networking of researchers and offer help to build partnerships.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing	ERA compliant cluster	8.4 %	2013	ERA survey 2014

organisations originating from third countries	(national level)			
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

Research funders in Hungary who responded to the survey indicated that they do not have measures supporting international cooperation with third countries.

Within the ERA-compliant cluster in Hungary, the share of organisations' research and development budget originating from third countries is higher than within the EU ERA-compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

Mutual recognition of evaluations that conform to international peer-review standards is supported by the Hungarian Scientific Research Fund and the Hungarian Economy Development Centre. Two funders apply the so called 'lead agency' procedure, which foresees that funding authorities accept the results of the evaluation of international projects done by the 'lead agency' and fund the parts of the project that are being performed in their respective countries.

In 2014, Hungary signed a Lead Agency Agreement (ARRS-OTKA), Memorandum of Understanding with Slovakia.

The common funding principles proposed by the Commission for implementing joint programmes are not applied by funding agencies in the country.

Nevertheless and even though Hungary has not published a National Interoperability Strategy, the Hungarian e-Public Administration 2010 Strategy gives priority to interoperability. More specifically, the strategy proposes to update service processes, enhance the interoperability of back-office systems, and standardise related data and technology, in order to enable a transition from isolated services, based on outdated systems, to a system of shared services that build on sectoral subsystems, which covers the entire public administration domain.

Additionally, it foresees an 'Interoperability Comprehensive Programme', targeting the establishment of public administration services that are organised around the needs of citizens and enterprises, the implementation the of the 'State as service provider' model, as well as the improvement of efficiency by simplifying administration processes and taking advantage of the possibilities afforded by interoperability.

Funding agencies do not implement Money follows cooperation, a scheme which allows small parts of a project funded by one of the participating research councils to be conducted in a different country.

Funding agencies do not implement Money follows researchers, a scheme that enables researchers moving to a research institution in a different country to transfer ongoing grant funding to the new institution and continue research activities according to original terms and objectives.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	77.1 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Hungary who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

The share of responding funders' project-based research and development budget in Hungary allocated through peer review carried out by institutions outside the country is higher than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Hungary participates in the following large international RIs: the European Space Agency (ESA), Conseil Européen pour la Recherche Nucléaire (CERN), the European Fusion Development Agreement (EFDA), the European Synchrotron Radiation Facility (ESRF), EU.XFEL and the Institut Laue-Langevin (ILL). In 2012, the country contributed 1.7 % of GBAORD to the activities carried out by CERN, ESRF, ILL and the European Commission's Joint Research Centre (JRC) (Eurostat).

In terms of participation to developing RIs included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, Hungary participated in the preparatory phase of 12 of them (24 %).

In terms of financial commitments to the development of these RIs, Hungary is committed to fund two of them: XFEL, ELI.

With regards to participating in the European Research Infrastructure Consortium (ERIC), Hungary is not involved in any of the seven consortia that adopted the legal framework designed by the Commission to facilitate the establishment and operation of RIs of European interest involving several European countries.

The national roadmap on RIs is under preparation.

Despite the existence of a National Research Infrastructure Survey and Roadmap (NEKIFUT) and the decision to participate in two ESFRI infrastructures (XFEL, ELI), there is not much funding currently dedicated to RIs. Further support is foreseen for developing the national strategic research infrastructures and for Hungary's participation in ESFRI. Hungary plans to provide more funding and to participate in at least one more ESFRI project. A proposal, that includes a prioritisation of the Ris considering the Hungarian and European strategic relevance in connection to the smart specialisation strategy, will be submitted for governmental approval in 2014.

The S3 White Book, published in November 2013, foresees measures to strengthen the national RIs, although no specific RIs are mentioned in the document.

3.2. Access to research infrastructures of pan-European interest

The Hungarian Academy of Sciences (MTA) has in place a 'visiting scholars programme' in place, through which prominent foreign scientists are invited to join the activities of the research institutes of the MTA.

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 RIs.

Among the RIs coordinated by Hungary, access to six of them was funded by the European Commission.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Hungary in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Hungary Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 23 019 full time equivalent (FTE) researchers in Hungary in 2011. This represents 5.4 researchers per 1 000 labour force compared to 5.3 among the Innovation Union reference group (Moderate Innovators) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 2.0 in Hungary compared to 39.9 among the Innovation Union reference group and an EU average of 43.7.

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).

In Hungary, publicly-funded research jobs are published online on the institutions' websites and private job sites. Since 1 January 2008, open recruitment of civil servants has been required by law and institutions are obliged to publish all public research jobs on a central governmental recruitment site. Most vacancies are still advertised internally as well.

4.3. Attractive careers

The Hungarian Government actively promotes the implementation of the Charter and Code principles. Thirteen Hungarian institutions have signed the Charter and Code. Promotion of the Charter and Code as well as the R&D human resources strategy is an ongoing process, which involves both the Hungarian authorities and the Hungarian EURAXESS Office.

By May 2014, two Hungarian organisations were involved in the Commission's Human Resources Strategy for Researchers of which none had received the Human Resources Excellence in Research' logo for their progress in implementing the Charter and Code.

Hungarian higher educational institutions (HEIs) include career development provisions for post-doctoral students with the aim of supporting and encouraging them throughout their

profession. For example, the Budapest University of Technology and Economics and the University of Miskolc offer post-doctoral programmes with detailed career prospects.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged between 25-34 was 0.8 in 2011 compared to 1.2 among the Innovation Union reference group and an EU average of 1.7.

An increase in the quality of doctoral training was ensured by several programmes under the Development Plan (2007-2011) and the New Széchenyi Plan (2011-2014). These included the Research University Programme and the Hungarian Talent Programme. In addition, the Act on Higher Education (2005) further supported the strategic ambition of increasing the quality of doctoral training in Hungarian institutions. On 1 January 2012, a new Act on Higher Education came into force. The new Act on Higher Education further supports the strategic ambition of increasing the quality of doctoral training in Hungarian institutions by introducing a ranking and classification of HEIs.

The new national RDI strategy, 'Investing in the Future – National Research and Development, Innovation Strategy 2020' includes initiatives related to improving researchers' employment skills and competencies. The Government Regulation on National Excellence in Higher Education foresees a set of measures to enhance the skills and competencies of researchers, to train them to adapt to the needs and demands of the changing labour market, and to ensure the next generation of adequate, well-trained R&D human resources.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 6.3 % in Hungary compared to 4.2 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 2.7 % in Hungary compared with 5.2 % among the Innovation Union reference group and an EU average of 24.2 %.

Retaining talented researchers is a major concern and several programmes provide funding to that aim. The Momentum and Transmob-HU Programmes are the main programmes supporting researchers' inward mobility. For instance, thanks to the Momentum programme, in 2013, 14 young scholars from among the 104 candidates were able to set up an independent research team using the total sum of HUF 633.7 million provided for the first years by the Academy. Consequently, together with the scholars who have previously received awards, 79 research teams have since the summer of 2013 been able to conduct research into promising internationally significant achievements of a total funding of nearly HUF 3 billion.

The higher education development priority of the Social Renewal Operational Programme for the period 2007-2013 (with the measures continuing into 2014) implemented measures that contribute to improving cooperation between industry and HEIs. In particular, the measure SROP 4.1.1C aimed at improving sectoral and regional cooperation at HEIs and SROP 4.2.2

A aimed at supporting high quality research in dominant fields of research in Hungary. Both measures promoted the importance of inter-sectoral cooperation.

5. GENDER

5.1. Foster cultural and institutional change on gender

Hungary has not set up specific gender provisions or actions in the field of public research. However, the National Strategy for the Promotion of Gender Equality – Guidelines and Objectives 2010-2021 aims to increase the proportion of women in leading positions in both the public and private sectors by one third by the end of the period.

At institutional level, some scientific institutions have put in place programmes to increase women's participation in science. For example, the Chemical Research Centre in the Hungarian Academy of Sciences has a project to increase the visibility of science careers for women.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	25.9 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	10.4 %	2013	ERA survey 2014

The research funders in Hungary who responded to the survey did not indicate support to gender equality in public research.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations that have adopted Gender Equality Plans is lower than within the EU ERA-compliant cluster.

The country has measures supporting return after parental leave.

The Hungarian Academy of Sciences (MTA) introduced in 2012 a framework programme for equal opportunities that allows female researchers with children under 10 years old to apply for grants over a two-year age limit compared to male researchers. The Economic Development Operational Programme aims to create 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 Economic Development Operational Programme aims to create 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.

In the 2012 Labour Code the position of women on maternity leave is safeguarded and the restoration of the same position after maternity leave is guaranteed.

Since January 2013, a new scheme is in force to foster the employment of highly-educated, PhD-graduated researchers. It consists of a tax incentive for the employer. The Hungarian Government also introduced the so-called 'GYEDextra' which allows female employees to receive child care (GYED) in addition to the salary when returning to the labour market.

It has set up awards, fellowships and/or other similar mechanisms to specifically support female researchers.

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 EUR 11 000 per year. The MTA has a special prize for female researchers, which is awarded annually at the 'Week of Hungarian Science.' In addition, several universities give prizes to female researchers.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	14.4 %	2013	ERA survey 2014

Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	61.5 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Hungary, the share of research performing organisations implementing recruitment and promotion policies for female researchers is lower than within the EU ERA-compliant cluster.

Hungary has not integrated the gender dimension in research programmes and has not dedicated budgets or programmes to women/gender studies.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the inclusion of gender dimension in research content	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	9.2 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national level)	2 %	2013	ERA survey 2014

The research funders in Hungary who responded to the survey did not indicate support to the inclusion of gender dimension in research content/programmes.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations that include the gender dimension in research content is lower than within the EU ERA-compliant cluster.

5.2. Gender balance in the decision-making process

Concerning gender balance in decision making, Hungary has not set up quotas for the participation of the under-represented gender in decision making bodies of RPOs.

Balanced gender representation within recruitment committees and gender quotas have been discussed in order to reduce the gap between the representation of men and women in various professions and bodies, but explicit measures were not identified.

In 2010, the share of the under-represented gender participating in (a) committees establishing research priorities and policies and in (b) boards designing / defining national research priorities and policies was 18 %.

Most Hungarian universities have developed general and non-exhaustive equality plans. Some universities have more developed plans, such as the Budapest University of Technology and Economics. For instance, this university organises information sessions on engineering and informatics science for high school girls with the aim of increasing the numbers of female students in the departments where there are more men than women.

The National Strategy for the Promotion of Gender Equality – Guidelines and Objectives 2010-2021 aims to increase the proportion of women in leading positions in both the public and private sectors by one third by the end of the period.

Indicator	Level/cluster	Value	Year	Source
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	4.3 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research	Limited compliance to ERA cluster	8.7 %	2013	ERA survey 2014

performing organisations	(national level)			
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	81.1 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Hungary, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is lower than within the EU ERA-compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Hungary is higher than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

There are no specific Hungarian policy measures aimed at enhancing open access (OA) to publications or data. But some institutions, like the Hungarian Academy of Sciences, apply OA measures.

OA is receiving growing attention in Hungary. However, three obstacles remain for the implementation of OA: the inexistence of a national OA strategy, the general lack of awareness about copyright and digital issues and the resistance by researchers to allocate time and effort to the depositing process.

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.

In 2008 the Hungarian Scientific Research Fund (OTKA) signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, and scientific publications resulting from an OTKA grant have to be made freely available.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to publications	National level	77.1 %	2013	ERA survey 2014
Share of responding funders	EU level	51 %	2013	ERA survey

supporting open access to publications				2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	29.3 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	0.5 %	2013	ERA survey 2014

The share of research funders in Hungary who responded to the survey and support OA to publications is higher than the EU average.

Within the ERA-compliant cluster in Hungary, the share of publicly-funded scientific publications in OA amongst research performing organisations is higher than within the EU ERA-compliant cluster.

There are no policies or measures in place to support OA to data in Hungary.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	77.1 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-	ERA compliant cluster	25.9 %	2013	ERA survey 2014

line and free of charge	(national level)			
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	62.6 %	2013	ERA survey 2014

The share of research funders in Hungary who responded to the survey and support OA to data is higher than the EU average.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations making available online and free of charge publicly-funded scientific research data systematically is lower than within the EU ERA-compliant cluster.

With respect to repositories, the HUNOR (Hungarian Open Repositories) consortium was established by the libraries of the Hungarian HEIs and the Library of the Hungarian Academy of Sciences to advance national open access practices.

The Corvinus University, the Hungarian Academy of Sciences and University of Debrecen are members of the 'Confederation of Open Access Repositories' (COAR) that promote OA to publications.

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 to give free access to publications, journals and information about Hungarian researchers.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Hungary has not developed a knowledge transfer strategy, but the National Research and Development and Innovation Strategy 2020 (RD&I Strategy) specifically supports efficient knowledge and technology transfer collaborations.

Between 2006 and 2012, 15 technology transfer offices (TTOs) were established in major universities and colleges to support researchers with their patent applications, licencing and exploitation of research results, as well as with fundraising activities. The TTOs were set up with EU funds and do not yet have the capacity to mediate efficiently between academia and business.

In 2013, there were discussions between the National Innovation Office and key stakeholders in order to formulate a national policy to promote knowledge transfer. The main outcome of

the discussions is a plan to redesign the scheme used by TTOs at major universities, but not much funding is available for these offices.

Only 6 % of Hungarian researchers at HEIs have previously been employed in both the private and the public sector, which is roughly one third of the EU-27 average, according to the MORE Report. No specific incentives are provided to increase this number.

A 2012 regulation introduced mechanisms for the protecting and managing of intellectual property rights (IPR) 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) emphasised the need 'to provide targeted incentives to support innovative enterprises.' In response to it, Hungary is developing a second set of administrative burden reduction measures for enterprises, as a follow up of the 2011 'Cutting Red Tape Programme'. In addition, the Act on Public Procurement was amended in 2013 on several points to boost market competition and ensure greater transparency.

Funding organisations do not have specific funding lines dedicated to implementing knowledge transfer.

The National Information Infrastructure Development (NIIF) provides the framework for developing and operating the research network in Hungary. In concrete terms, it provides an integrated computer networking infrastructure and, on the basis of that, a wide range of communication, information, and cooperation services, leading-edge environment for networking applications, as well as advanced framework for generating and providing content. 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.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	22.9 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014

Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	3 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	1 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	9.4 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	58.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national	7.6 %	2013	ERA survey 2014

	level)			
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	56.7 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	5.3 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	3.2 %	2013	ERA survey 2014

The share of research funders in Hungary who responded to the survey and support national support to knowledge transfer and open innovation, TTOs and Private Public interaction is lower than the EU average.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations having funding originating from the private sector is lower than within the EU ERA-compliant cluster.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations having or using a structure for knowledge transfer activities is lower than within the EU ERA-compliant cluster. However, the share is quite high in the limited compliance to ERA cluster.

Within the ERA-compliant cluster in Hungary, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is lower than within the EU ERA-compliant cluster. However, the share is quite high in the limited compliance to ERA cluster.

Within the ERA-compliant cluster in Hungary, the share of research personnel whose primary occupation is in the private sector (in full time equivalents) is higher than within the EU ERA-compliant cluster. The share is also quite high in the limited compliance to ERA cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation to implemeting the Digital ERA, Hungary has prepared a National Strategy and an Action Plan. Hungary has implemented a research and education network, essential to make digital services possible. 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.

The National Information Infrastructure Development (NIIF) provides the framework for the development and operation of the research network in Hungary. In concrete terms, it provides an integrated computer networking infrastructure and, on the basis of that, a wide range of communication, information, and cooperation services, leading-edge environment for networking applications, as well as an advanced framework for content generation and provision.

Concerning digital services, the country provides federated services, cloud services, premium services.

Concerning digital services, the Commission could not identify support to their provision.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	18.5 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	63.5 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Hungary, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is lower than within the EU ERA-compliant cluster.

6.4. Uptake of federated electronic identities

Hungary was not a member of an identity federation in 2013. Hungary is member of EDUgain through eduId.hu, a service intended to enable the trustworthy exchange of information related to identity, authentication and autorisation between the GÉANT (GN3plus) partner federations.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	2.3 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	5.1 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Hungary, the share of research performing organisations providing federated electronic identities for their researchers is lower than within the EU ERA-compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 23 research performing organisations in Hungary answered the 2014 ERA survey, which represents 14.4 % of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Hungary shows that 22.7 % of them are in the 'ERA-compliant' cluster, 59.1 % can be classified in the 'limited compliance to ERA' cluster and 18.2 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 54.0 % for the 'ERA-compliant' cluster, 40.3 % for the 'ERA limited compliant' cluster and 5.6 % for those organisations where ERA principles are not applicable.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
Hungarian smart specialization strategy			
Project-based funding applying the core principles of international peer review			
Action Plan of the Innovation Strategy			
Competitive funding : Hungarian Scientific Research Fund (OTKA) Research and Technological Innovation Fund (KTIA)	1990		
Research and development and innovation support scheme			
Start-up 2013 scheme to provide Accredited Technological Incubator titles	2013	X	X
Institutional funding based on institutional assessment			
Support to RTDI umbrella projects	2012	X	
Support to innovation and technology parks	2007		
EEA Financial Mechanism 2009-2014, Norway Grants	2009		
"National Research and Development and Innovation Strategy 2020"	2013	X	X

Science Policy Strategy	2014	X	X
Draft Higher Education Strategy	2014	X	X
Implementing joint research agendas			
Support for fundamental and applied research projects to be implemented in international collaboration	2007		
Draft Science Policy Strategy	2014	X	X
Interoperability, mutual recognition of evaluation results and other schemes			
Visiting scholars programme			
Hungarian Academy of Sciences joined the initiative of Teaming for Excellence	2013	X	X
"Invitation 13" competition	2013	X	X
S3 White Book	2013	X	X
Draft Interoperability Comprehensive Programme	2014	X	X
The Hungarian e-Public Administration Strategy gives priority to interoperability	2010		
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Participation in ELI (Extreme Light Infrastructure) laser research centre	2013	X	X
National Research Infrastructure Survey and Roadmap	2008		
Access to research infrastructures of pan-European interest			
National Research Infrastructure register	2012	X	
Stipendium Hungaricum	2013	X	X
Open, transparent and merit-based recruitment of researchers			
Momentum programme	2009		
"Bolyai Janos" Research Scholarship	1997		

"National Excellence Programme - establishment and operation of a domestic system providing support to students and researchers"	2012	X	
Attractive careers			
EURAXESS Hungary - Hungarian Mobility Centre	2008		
Hungarian Rectors Conference			
Foster cultural and institutional change on gender			
L'ORÉAL-UNESCO Hungarian Grant for Women and Science	2003		
Prize from the Hungarian Academy of Sciences (MTA) for female researchers			
Scheme to foster the employment of PhD-graduated researchers, consisting of tax incentives for the employer	2013	X	X
Child care support 'GYEDextra'	2013	X	X
Gender balance in the decision-making process			
New Labour Code	2012	X	
Framework programme for equal opportunities from the Hungarian Academy of Sciences (MTA)	2012	X	
Economic Development Operational Programme	2013	X	X
National Strategy for the Promotion of Gender Equality – Guidelines and Objectives 2010-2021	2010		
Open access to publications and data resulting from publicly funded research			
Hungarian National Scientific Bibliography	2010		
National Programme for Electronic Information Provision			

REAL - Repository of the Hungarian Academy of Science's Library			
Hungarian Open Access Journals			
Videotorium is a a video/audio sharing portal	2010		
Confederation of Open Access Repositories (COAR) in Hungary			
Hungarian Open Repositories consortium (HUNOR) established by libraries			
Open innovation and knowledge transfer between public and private sectors			
University technology transfer offices	2013	X	X
Regulation on protecting and managing intellectual property	2012	X	
Discussions with key stakeholders in order to formulate a national policy to promote knowledge transfer	2013	X	X
Harmonise policies for public e-infrastructures and associated digital research services			
National Information Infrastructure Development (NIIF)	1990		
Uptake of federated electronic identities			
eduGAIN			
Digital ERA - National Strategy and an Action Plan	2013	X	X

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation (R&I) (policy is coordinated by the Department of Jobs, Enterprise and Innovation.The Department of Education and Skills is responsible for, inter alia, core funding and overarching policy development, including research policy, for the higher education sector. Forfás, an agency of the Department of Jobs, Enterprise and Innovation, acts as policy advisory board for enterprise, trade, science, technology and innovation.

Key implementing bodies include Science Foundation Ireland (SFI), Enterprise Ireland and IDA Ireland, under the aegis of the Department of Jobs, Enterprise and Innovation; as well as the Higher Education Authority (HEA) and the Irish Research Council (IRC) under the aegis of the Department of Education and Skills. The SFI is the national foundation for investment in scientific and engineering research. The legislation to extend its mandate to allow it to fund applied as well as oriented basic research in institutions in strategic areas of opportunity entered into force in November 2013. The IRC focuses on the cultivation of skills and research expertise to address broad societal needs. It provides funds across all disciplines and focuses on early stage career researchers.

Since March 2012 the National Research Prioritisation Exercise is being implemented on a cross-Government basis. It prioritises competitive exchequer funding in 14 priority areas and six underpinning platform technologies. The Action Plan for Jobs, updated annually presents a set of measures to drive job creation, among which there is a section specifying several actions in the area of R&I.

The National Strategy for Higher Education to 2030, also adopted in 2012, establishes a new performance framework for Irish higher education institutions (HEIs). This is monitored and advanced by way of the Strategic Dialogue process now in place between the HEA and the HEIs. This is the central means through which the institutions will develop their future performance in accordance with national economic and societal objectives. The imperative to maximise Ireland's return on investment in research is explicitly emphasised in the Higher Education System Performance Framework 2014-16 under System Level Objective 4: To maintain an open and excellent public research system focused on the Government's priority areas and the achievement of other societal objectives and to maximise research collaborations and knowledge exchange between and among public and private sector research actors.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Ireland represented EUR 165 per inhabitant in 2012, slightly below the EU-28 (EUR 179). In 2012, total GBAORD corresponded to 1 % of total government expenditures and 0.5 % of Gross Domestic Product (GDP)(Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the rate of growth of total GBAORD in Ireland was higher than the rate of growth of total EU GBAORD. However, in terms of R&D efforts, the rate of

growth of GBOARD in Ireland, measured as a percentage of public government expenditure, evolved more negatively than the negative evolution observed in the EU-27. Finally, GBAORD as a share of GDP has regressed more in Ireland than in EU-28.

1.2. Project-based funding applying the core principles of international peer review

The Research Prioritisation: A Framework for Monitoring Public Investment in Science, Technology and Innovation adopted in 2013 sets out a framework of metrics and targets for monitoring the impact of public investment in Science, Technology and Innovation in the context of the research prioritisation strategy. The framework identifies deliverables and targets for individual research funding agencies such as SFI, Enterprise Ireland and the Health Research Board. It specifies that funding agencies should apply where appropriate, standardised principles for assessing research proposals (stage-gate, international peer review).

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	78.8 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support project-based funding is higher than the EU average.

The core principles of international peer review are extensively used by major R&D funding agencies such as Science Foundation Ireland and the Higher Education Authority since 2000.

1.3. Institutional funding based on institutional assessment

Institutional funding is partly allocated by HEA based on institutional assessment of universities, institutes of technology and other designated colleges using different methods, which depend on the use of the funding. A proportion of institutional funding (i.e. that part of an academic's work that involves research) is attributed by the universities to research. The allocation of the core grant is determined on a formula basis. A further weighting is given for research students. Five per cent of the core allocation is top-sliced and allocated on the basis of research criteria (degrees awarded and contract research income per academic staff).

The 'National Strategy for Higher Education to 2030', has introduced a new performance framework within which publicly-funded higher education institutions are being held accountable to the Government for their performance against defined national priorities,

including specifically System Level Objective 4 regarding the development of the Irish public research system.

Funding for public research performing organisations (RPOs) is provided annually on the basis of negotiations by individual public research organisations with their parent department (ministry).

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	1.6 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support institutional assessment for allocating institutional funding is lower than the EU average. This result may not reflect the situation in Ireland, as the amount of institutional funding allocated by survey respondents appears to be quite low.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives. The national research prioritisation strategy is aligned with the grand challenges identified at European level to be addressed through optimal transnational co-operation and competition. The Science Foundation Ireland Agenda 2020 highlights the ambitions of Ireland in terms of transnational and international cooperation.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	0.3 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014

Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	0.3 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in Ireland allocated to transnationally coordinated R&D is lower than the EU average.

The share of responding funders' research and development budget in Ireland dedicated to jointly defined research agendas with other EU organisations is lower than the EU average.

Cooperation between institutions of Member States (MS), Associated Countries and third countries is fostered by the Framework Programme (FP). In the Seventh Framework Programme (FP7), Ireland's total share of participation was 1.7 % and the country received 1.5 % of total EC contribution. FP funding represents EUR 115 per inhabitant (EU average EUR 72 per capita) for the period 2007-2013 and 4 % of the Gross Domestic Expenditures on R&D (GERD) for the period 2007-2011 (last available data) (EU average 3 % of GERD for the same period). In December 2013, the Government published the EU Framework Programme for Research and Innovation (2014-2020): Ireland's Strategy and Target for Participation, which sets out the Government's commitment to ensure strong participation by Irish researchers and companies in Horizon 2020, with a target of winning EUR 1.25 billion over the programme period.

Concerning joint programming initiatives (JPIs), the country participates in nine of the ten ongoing initiatives. These initiatives are Neurodegenerative diseases (Alzheimer), Food Security, Agriculture and Climate Change, Cultural Heritage and global change: a new challenge for Europe, Healthy Diet for Healthy Life, The Demographic change (More Years, Better Life), Connecting Climate Knowledge for Europe, Water Challenges for a Changing world, Healthy and Productive Seas and Oceans, Urban Europe - Global Challenges, Local Solutions.

In terms of programmes undertaken jointly by several MS (so called Article 185 initiatives), the country was involved in four programmes. In Horizon 2020, the country is involved in all initiatives.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of 47 ERA-NETs, of which 11 are currently still running. The country also has participated in four ERA-NET Plus actions, - of which two are still running, in areas

with high European added value and additional EU financial support topping up their joint call for proposals.

Concerning research agreements with EU MS and/or Associated Countries, the Irish Research Council forms part of a network of Research Councils across Europe that allows countries to relate to each other and collaborate on research agendas, and it does so particularly in the domains of the humanities and social sciences where it has a particular national mandate. The amended legislation governing Science Foundation Ireland, enacted in 2013, provides the legal basis for funding research activities in priority strategic areas, notably with Northern Ireland.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, the Irish Research Council is committed through its membership of Science Europe and the European Science Foundation to integrating Irish research in European and international networks of expertise. Besides, the International Strategic Cooperation Award (ISCA) programme of Science Foundation Ireland supports research-based collaborations between Ireland's HEIs and partner organisations in designated countries, currently Brazil, China, India, and Japan. The United States-Ireland R&D Partnership Programme, involving collaboration between the United States (National Science Foundation), Ireland (Science Foundation Ireland) and Northern Ireland (Invest Northern Ireland and Department for Employment and Learning), partners scientists and engineers across academia and industry to address crucial research questions; to foster new and existing industrial research activity that could make an important contribution to the respective economies; and to expand educational and research career opportunities in science and engineering.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014

Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	3.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0.2 %	2013	ERA survey 2014

Research funders in Ireland who responded to the survey indicated that they do not have measures supporting international cooperation with third countries.

Within the ERA compliant cluster in Ireland, the share of organisations' research and development budget originating from third countries is higher than within the EU ERA compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

Actions to support the interoperability of Irish programmes with other agencies are mostly linked with specific bilateral or multilateral activities.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	39 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the	National level	0.5 %	2013	ERA survey 2014

country				
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

The share of responding funders' project-based research and development budget in Ireland allocated through peer review carried out by institutions outside the country is lower than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Ireland participates in the following large international research infrastructures (RIs): The European Space Agency (ESA), the European Fusion Development Agreement (EFDA) and the European Molecular Biology Laboratory (EMBL). In 2012, the country contributed 0.2 % of GBAORD to the activities carried out by the EMBL and the European Commission's Joint Research Centre (JRC) (Eurostat).

In terms of participating in the development of RIs included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participated in the preparatory phase of eight (16 %) of them. In terms of financial commitments developing these RIs, Ireland is committed to fund five of them. They are CLARIN-ERIC, DARIAH, ESSurvey, EURO ARGO and PRACE (ex HPC).

With regards to participating in the European Research Infrastructure Consortiums (ERIC), Ireland has participated since May 2013 in the ESS ERIC, one of the seven consortiums that adopted the legal framework designed by the Commission to facilitate the establishment and operation of Ris of European interest involving several European countries.

In terms of support to developing and implementing RIs, their development has been a key element of national STI strategies. The national roadmap was published in 2007. The Programme for Research in Third Level Institutions (PRTLI) has been a major funding vehicle to facilitate HEIs to invest in new facilities. The fifth and current cycle of the programme covering the period 2010-2015 will involve an estimated investment of EUR 348 million in the higher education sector dealing with a range of projects including infrastructure. Science Foundation Ireland launched the last of its most recent funding call for research

infrastructures in 2012. It was influenced by the ESFRI roadmap, as was the PRTLI before it. In 2013, Science Foundation Ireland's developed Ris as part of its SFI Research Centres Programme 2013 that provides for funding of associated Ris.

3.2. Access to research infrastructures of pan-European interest

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 relevant to enterprise goals. The Higher Education Authority published guidelines in 2013 on access to RIs within publicly-funded institutions together with a searchable database of infrastructures (LIRE - Large Items of Research Infrastructure), which will be accessible to public and private sector entities.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Ireland in the Researchers' Report 2014
[http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Ireland_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 15,172 FTE researchers in Ireland in 2011. This represents 7.0 researchers per 1000 labour force compared with 7.6 among the Innovation Union reference group (Innovation Followers) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 105 in Ireland compared to 72 among the Innovation Union reference group and an EU average of 43.7.

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).

Across the seven universities, positions for research profiles R2-R4, and many at R1, are advertised internationally and recruitment is based on the quality of the candidates. In 2011, the ratio of international academic staff ranged from 26% to 42% across the universities. In the last quarter of 2014, the seven universities collaborated in developing a new e-recruitment system www.universityvacancies.com to provide greater global visibility for university jobs. Depending on the success of the portal, the system may be rolled out to other HEIs.

4.3. Attractive careers

All seven Irish universities and some Institutes of Technology (IoTs) have voluntarily signed up to the EU Charter and Code and thus operate a policy of open recruitment. Science Foundation Ireland (SFI) also applies criteria for research grant funding based on the Charter and Code.

By May 2014, 16 Irish organisations were involved in the Commission's Human Resources Strategy for Researchers of which five had received the Human Resources Excellence in Research logo for their progress in implementing the Charter and Code.

The majority of universities in Ireland have introduced their own research career structure (e.g. in some cases, the post-doctorate phase is limited to four to five years in order to ensure the researcher's progress). Progression to a more senior role depends on the ability of individuals to compete for work and win research grants. Permanent academic positions are filled through open international recruitment. In 2013, the EURAXESS Ireland website developed a specific landing page for those interested in studying for a PhD in Ireland.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged between 25 and 34 was 1.9 in 2011 compared to 1.6 among the Innovation Union reference group and an EU average of 1.7.

To achieve the objective of developing PhD graduates with the skills necessary to develop and manage their careers across a broad range of employment sectors, including academia, universities are providing more structured support for students, incorporating research and generic skills development opportunities. The seven Irish universities, the Institutes of Technology and the Royal College of Surgeons in Ireland are committed to strengthening their graduate research capacity with a concomitant increase in graduate students. The majority of Irish HEIs have introduced structured PhD frameworks. The key principle underpinning the Irish structured PhD is a series of measures to ensure high-quality supervision, support and an ongoing assessment of the progress of the candidate, with a particular emphasis on providing training and coursework, at disciplinary level and with a view to developing generic and transferable skills.

The National Strategy for Higher Education to 2030 recommends that a consistent quality framework be developed for Irish PhD education, based on critical mass. The HEA and Irish Research Council completed the framework in 2014 and will work with HEIs to ensure greater consolidation and collaboration among HEIs and funders. The HEA has a particular focus on supporting and enhancing human capital development, mostly at graduate level through policy drive and support for a doctoral education system characterised by a structured PhD model.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 MS was 16.9 % in Ireland compared to 18.4 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 20.5 % in Ireland compared with 16.9% among the Innovation Union reference group and an EU average of 24.2 %.

There are no nationalities restrictions associated with applying for either research funding or research positions in Ireland. As an example, the post-doctoral fellowships offered by the Irish Research Council are open to researchers of all nationalities, including those who are resident outside Ireland at the time of application.

To facilitate the inward migration of Third Country researchers, Ireland has implemented the Hosting Agreement (the Scientific Visa) scheme. By availing itself of a hosting agreement, researcher entry visas are fast-tracked and researchers can work in Ireland without recourse to the usual work permit or Green Card. This scheme also allows the researcher's immediate family to live in Ireland for the duration of the contract, and entitles the spouse and dependents to apply for a work permit allowing greater ease of access to employment in Ireland. This has most certainly helped in attracting non-EU researchers to both the public and private sectors. Between the commencement of the scheme in October 2007 and December 2013, the EURAXESS office processed nearly 2 200 Hosting Agreements with a total of 42 accredited organisations.

The Irish Government places a strong emphasis on industry-academia collaboration. The national funding agencies for R&I to promote collaboration between academia and industry. The Research Prioritisation Exercise (ongoing, having commenced in 2012) involves a significantly enhanced focus on collaborative research with enterprise and on commercialisation of research by growing the number of researchers in enterprises and enhancing the flow of researchers between academia and enterprise. The Irish Research Council (IRC) has secured Commission co-funding to develop the ELEVATE scheme (2013-2018). This scheme will allow experienced researchers to spend two years at an enterprise/industry host laboratory outside Ireland, followed by a return year at an Irish HEI.

5. GENDER

5.1. Foster cultural and institutional change on gender

Ireland has extensive and wide-ranging comprehensive employment equality legislation, i.e. Employment Equality Act, 1998 and Equal Status Act, 2000. Ireland is involved in European initiatives targeting institutional transformation in gender equality and a significant momentum on this front can be observed nationally with the establishment of a National Network for Gender Equality in Academic and Research Careers. In November 2012 the 'Recommendations for Actions towards Gender Equality in Academic and Research Careers in the Higher Education Sector' were published. They formalise a system of national collaboration to drive forward structural change.

Other actions address gender equality in research. 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, 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, notably 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.

Ireland has also set up awards, fellowships and/or other similar mechanisms to specifically support female researchers.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting gender equality in research	National level	45.3 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	27.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	1.2 %	2013	ERA survey 2014

However, the share of research funders in Ireland who responded to the survey and support national policies on gender equality in public research is lower than the EU average.

Within the ERA compliant cluster in Ireland, the share of research performing organisations that have adopted Gender Equality Plans is lower than within the EU ERA compliant cluster.

The funding agencies have launched initiatives to address gender inequality in the research sector, particularly in terms of the low numbers of female researchers in science, engineering and technology and the low percentage of female Principal Investigators. In 2013, Science Foundation Ireland published a set of new Key Performance Indicators (KPIs) one of which is to increase the representation of women in science, engineering and technology (SET). Two targets have been identified in relation to this KPI: Increased employment of women in Irish based SET industries — 10 % increase from 2013 baseline; and 2.25 % of SFI award holders by 2020.

In 2013, SFI announced the launch of its Advance Fellowship Award. The aim of this scheme is to improve the representation and career progression of women in science, engineering and technology in Ireland.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	45.7 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	3.2 %	2013	ERA survey 2014

Within the ERA compliant cluster in Ireland, the share of research performing organisations implementing recruitment and promotion policies for female researchers is lower than within the EU ERA compliant cluster.

In terms of inclusion of the gender dimension in research content and/or programmes, the Irish Research Council published in 2013 its Gender Strategy and Action Plan in 2013-2020, which, inter alia, requires researchers to consider whether a sex and/or gender dimension is

potentially relevant to their research content and fully integrate sex/gender analysis where relevant, thereby ensuring maximum impact, societal benefit and optimising innovation in Irish research.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the inclusion of gender dimension in research content	National level	7.3 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	45.7 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support gender dimension in research content/programmes is lower than the EU average.

However, within the ERA compliant cluster in Ireland, the share of research performing organisations that include the gender dimension in research content is higher than within the EU ERA compliant cluster.

5.2. Gender balance in the decision-making process

Concerning gender balance in decision making, in 1995 the Irish Government introduced a requirement for a minimum of 40 % of women and men appointed to all State boards. However, government targets in relation to the gender composition in State boards do not apply to universities which are non-governmental organisations. The Irish Research Council with its Gender Strategy & Action Plan 2013-2020 aims for balance (at least 40 % of each gender to be represented) in the membership of all assessment, advisory and management boards, committees, workshops, focus groups, etc.

Indicator	Level/cluster	Value	Year	Source

Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	31.5 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	7.6 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	56.4 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA compliant cluster in Ireland, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is lower than that within the EU ERA compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Ireland is higher than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, the statement presenting the National principles for open access policy provides the overall framework in support of open access to scientific publications. The National Steering Committee on open access focuses on its operationalisation. It seeks to encourage all publication repository holders to adhere to the open access principles outlined in the statement and plans to issue regular statements on its progress in achieving its goals. The national portal for open access to Irish published research (RIAN) provides a single point of access to national research publications, and contains

content harvested from the institutional repositories of the seven universities and Dublin Institute of Technology.

Related to open access to publications, Ireland has decided to pursue the green open access route.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to publications	National level	59.9 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	6.2 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	1.1 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support open access to publications is higher than the EU average.

Within the ERA compliant cluster in Ireland, the share of publicly-funded scientific publications in open access amongst research performing organisations is lower than within the EU ERA compliant cluster.

Concerning open access to data, the national principles for open access policy also address research data.

Indicator	Level/cluster	Value	Year	Source

Share of responding funders supporting open access to data	National level	21.9 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	79.7 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	3.9 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support open access to data is lower than the EU average.

Within the ERA compliant cluster in Ireland, the share of research performing organisations making available on-line and free of charge publicly-funded scientific research data systematically is higher than within the EU ERA compliant cluster.

With respect to repositories, a number of digital repositories have been developed with public funding including the Digital Repository of Ireland and the Digital Humanities Observatory. Digital Humanities is central to one of Ireland's 14 national research priority areas: Digital Platforms, Content & Applications.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, several actions support transferring research outcomes to the market. Ireland is well advanced in implementing the Commission Recommendation on knowledge transfer (COM (2008) 1329 final). A joint Enterprise Ireland – IDA Ireland Technology Centres programme supports 14 industry-led research centres (Technology Centres), which are undertaking research in specific areas. Generally, the centres are based in a university with support from partner universities to deliver on the research needs of enterprise. Through Enterprise Ireland,

the Government organisation responsible for the development and growth of Irish enterprises in world markets, support is provided for the commercialisation of academic research and collaboration with industry and there are a number of other supports to directly assist companies with R&I activities that will lead to job creation and increased exports.

With a view to further driving the commercialisation of publicly-funded research, a new national Intellectual Property (IP) Protocol is helping to provide industry with easier access to IP arising from publicly-funded research. A key initiative linked to the IP Protocol is the new central Technology Transfer Office (cTTO) located in Enterprise Ireland, which is providing a crucial interface between industry and the research community and is helping to drive a world class technology transfer system in Ireland, ensuring it is responsive to the needs of both academia and enterprise. The cTTO plays a key role in the Irish innovation system by providing a responsive interface between companies and the wealth of technology, skills and 'know how' available in the higher education system. One of the many functions of the new office is providing a central hub that will enable companies to explore, through a web interface, the research resources available to them throughout Ireland.

The Industrial Development Agency (IDA) Ireland has a key role in seeking to win high-value R&D investments for Ireland, by promoting collaboration between industry, academia, government agencies and regulatory authorities. It also funds in-company R&D. Ireland's strengthened national research ecosystem has enhanced IDA's capacity to attract increased levels of high-value R&D projects, which qualitatively transform and deepen the roots of key multinationals. In addition, Science Foundation Ireland launched the SFI Research Centres Programme 2013. The programme seeks to consolidate research activities across higher education institutions to create a critical mass of internationally-leading researchers in strategic areas, which become a key attraction to industry and lay the foundation for effective and productive academic and industrial partnerships.

Finally, the Higher Education System Performance Framework 2014-16 explicitly monitors and strategically highlights knowledge transfer under System Level Objective 4. The HEA's recent publication of institutional profiles also explicitly draws attention to institutions' performance in knowledge transfer. These profiles will be updated and published on an annual basis.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	84.1 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its	EU level	82.9 %	2013	ERA survey 2014

institutional and/or project-based funding				
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	10 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.4 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	92.4 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	2.7 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having	ERA compliant	92.4 %	2013	ERA survey 2014

dedicated staff employed in knowledge transfer activities	cluster (national level)			
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	2.7 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	1.2 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

The share of research funders in Ireland who responded to the survey and support KT and OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA compliant cluster in Ireland, the share of research performing organisations having funding originating from the private sector is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Ireland, the share of research performing organisations having or using a structure for knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Ireland, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Ireland, the share of research personnel whose primary occupation is in the private sector (in full time equivalents) is lower than within the EU ERA compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation to implementing the Digital ERA, Ireland has set up HEANnet, established in 1983 by the Irish universities with the support of the Higher Education authority, provides a research and education network, essential to make digital services possible. HEAnet e-infrastructure services underpin academic research and education activity in Ireland with approximately 200 000 HEI staff and students relying on the its IT network. Ireland is committed to providing e-infrastructures particularly for the arts, social sciences and humanities.

Concerning digital services, the country provides federated services, cloud services, premium services such as security audits.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	92.4 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	4.3 %	2013	ERA survey 2014

Within the ERA compliant cluster in Ireland, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is higher than within the EU ERA compliant cluster.

6.4. Uptake of federated electronic identities

Ireland was a member of an identity federation in 2011. The country is member of eduGAIN, a service intended to enable a trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) partner federations. HEAnet is the main promoter of the Identity Federation across the Irish education and research sector. As part of its Strategic Plan 2014-2017, it is seeking to expand the Edugate service to all its client institutions.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	68.1 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	0.7 %	2013	ERA survey 2014

Within the ERA compliant cluster in Ireland, the share of research performing organisations providing federated electronic identities for their researchers is higher than within the EU ERA compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 13 research performing organisations in Ireland answered the 2014 ERA survey, which represents 8.5% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Ireland shows that 42.9 % of them are in the 'ERA compliant' cluster, 42.9 % can be classified in the 'limited compliance to ERA' cluster and 14.3 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares

of ‘weighted’ organisations are 92.5 % for the ‘ERA compliant’ cluster, 6.4 % for the ‘ERA limited compliant’ cluster and 1.2 % for those organisations where ERA principles are not applicable.

The results for the indicator "share of institutional funding allocated based on institutional assessment and(or evaluation" (section 1.3) may not reflect the accurate situation in Ireland, as the amount of institutional funding allocated by survey respondents appears to be quite low.

Also, it should be mentioned that several organisations did not provided information for an accurate estimation of the indicator "Share of research personnel whose primary occupation is in the private sector (in Full Time Equivalents)".

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
Strategy for Science,Technology and Innovation 2006 - 2013	2006		
Project-based funding applying the core principles of international peer review			
Research Prioritisation: A Framework for Monitoring Public Investment in Science, Technology and Innovation	2013	X	X
National research and innovation programmes			
Industrial Development (Science Foundation Ireland) Act	2003		
National Research Prioritisation Strategy - Actions Plans for 14 priority areas	2013	X	X
Institutional funding based on institutional assessment			
National Strategy for Higher Education to 2030	2012	X	
New Landscape for Higher Education	2013	X	X
Implementing joint research agendas			
EU Framework Programme for Research and Innovation (2014-2020): Ireland's	2013	X	X

Strategy and Target for Participation			
Industrial Development (Science Foundation Ireland) (Amendment) Act 2013	2013	X	X
Openness for international cooperation with third countries and regions			
Science Foundation Ireland: Agenda 2020 - 2013 Review	2013	X	X
SFI International Strategic Cooperation Award	2013	X	X
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
SFI Research Centres Programme 2013	2013	X	X
National research infrastructure roadmap	2007		
Programme for Research in Third Level Institutions (fifth cycle)	2010		
Access to research infrastructures of pan-European interest			
National Guidelines For Access By Researchers To Research Infrastructure Hosted By Higher Education Institutions Or Other Research Bodies In Ireland	2013	X	X
Draft Consultation Paper on Access by Researchers to Large-Scale Research Infrastructures and Facilities in Ireland	2012	X	
Attractive careers			
Irish EURAXESS Office	2004		
Researcher hosting agreement scheme	2007		
Supporting structured innovative doctoral training programmes			
Irish Research Council Employment Based Postgraduate Programme (Industrial PhDs and Masters)	2013	X	X
Gender balance in the decision-making process			

Irish Research Council's Gender Strategy and Action Plan in 2013	2013	X	X
SFI Advanced Fellowship Programme	2013	X	X
Science Foundation Ireland: Agenda 2020 - 2013 Review	2013	X	X
Employment equality legislative framework			
SFI principal investigator career advancement (PICA) SFI Investigator career advancement (ICA)	2005		
Institute Planning Grant Institute Development Award			
Government decision S21590E	1995		
Open access to publications and data resulting from publicly funded research			
National Principles for Open Access Policy Statement	2012	X	
Open innovation and knowledge transfer between public and private sectors			
SFI Research Centres Programme 2013	2013	X	X
Intellectual Property Protocol	2012	X	
Irish Research Council Starter Grants	2013	X	X
Harmonise policies for public e-infrastructures and associated digital research services			
DARIAH consortium			
Programme for Research in Third Level Institutions (PRTLI)	2006		
Uptake of federated electronic identities			
HEAnet Strategic Plan 2014-2017	2013	X	X
Eduroam	2009		
eduGAIN			

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation policies are the responsibility of the Ministry for Education, Universities and Research (MIUR), which coordinates scientific activities, supervises the academic system, funds universities and research agencies, and supports public and private research and technological development. MIUR is also in charge of preparing the National Research Programme (PNR). The overall coordination of science and technology (S&T) policy falls under the remit of the Inter-ministry Committee for Economic Planning (CIPE). MIUR and the Ministry for Economic Development (MISE) – through its Department of Development and Social Cohesion (DPS) – jointly coordinate Italy's participation in Horizon 2020 and coordinate the smart specialisation strategy. Other ministries (Health, Agriculture, Defence, etc) manage research funds in their specific fields, whilst regions are also involved in research and innovation (R&I). Universities and public research organisations (PROs) are the core performers of the public research sector. The Council of National Research (CNR) is the largest research performing organisation (RPO) operating under the supervision of the MIUR.

Horizon Italia 2020 (HIT2020), published by MIUR in March 2013, is the key document outlining Italy's research and innovation strategy between 2014 and 2020. It aims at increasing the effectiveness and efficiency of R&I investments and presents a multiannual research and innovation strategy aligned with the Europe2020 Strategy and Horizon 2020. HIT2020 will be implemented through the National Research Programme 2014-2020, which was published in February 2014.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Italy represented EUR 148 per inhabitant in 2012. In 2012, total GBAORD corresponded to 1.1 % of total government expenditures and 0.6 % of Gross Domestic Product (GDP) (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the growth rate of the total GBAORD in Italy has been higher than the growth rate of the total EU's GBAORD. Finally, GBAORD as a share of GDP has regressed more in Italy than in the EU-28.

According to the 2014 National Reform Programme, tax incentives for SMEs offering long-term contracts to researchers and vouchers covering up to 60 % of costs related to R&D activities will be provided through the National Operational Programme (PON) Research and Innovation and the PON Enterprise and Competitiveness. Tax credits on 50 % of R&D expenditure are also available between 2014 and 2016 for businesses investing in R&D.

1.2. Project-based funding applying the core principles of international peer review

Concerning project-based funding, it is allocated by MIUR through the PRIN (National Interest Research Programme) and FIRB (Basic Research Investment Fund) programmes.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	51.4 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and support project-based funding is lower than the EU average.

The core principles of international peer review are increasingly used. International peer review were introduced by Law No134/2012 and further reinforced by HIT2020, according to which peer review shall be used for all project-based funding. Peer review with the involvement of foreign experts has been implemented for the main calls managed by the MUIR (e.g. FIRB, PRIN, Smart Cities and CLUSTER). According to the 2014 measure by MIUR, peer review will be adopted for the entire research system.

1.3. Institutional funding based on institutional assessment

Institutional funding is now increasingly allocated based on institutional assessment. The 2009 and 2010 laws have reformed the formula for institutional funding for universities and public research organisations (the ordinary fund for university funding, FFO, and the ordinary fund for the funding of research organisations funding, FOE). Approximately 16 % of institutional funding allocated in 2014 is determined based on institutional assessment (quota premiale) and linked to the results of the 2013 quality assessment review carried out by the National Evaluation Agency for the University and Research Sector (ANVUR). Several of the indicators used for the evaluation by ANVUR are research-related (i.e. scientific publications, international collaborations and funds obtained from competitive calls). This share is forecast to increase to 18 % and 20 % in 2015 and 2016 respectively. This new funding formula is expected to reward well-performing universities, whilst cuts to the least performing universities will be gradual. This reform is in line with the 2014 Country Specific Recommendation which highlighted the need to ensure that public funding better rewards the quality of higher education and research.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional	National level	35.7 %	2013	ERA survey 2014

assessment and/or evaluation				
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and support institutional assessment for the allocation of institutional funding is higher than the EU average.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

Several measures have been adopted to promote Italy's participation in joint research. HIT 2020 and the National Research Programme (2014-2020) emphasise the need to focus R&D efforts on societal challenges, in line with Italy's smart specialisation strategy and Horizon 2020. The strategic document by MIUR 'Atto di indirizzo concernente l'individuazione delle priorità politiche del MIUR per l'anno 2014' (2014) identifies as a priority the support to the internationalisation of the research system, including the promotion of ERA and joint programming with EU MS. The implementation of joint research will be supported through the programme 'Support to joint programming', as announced in the 2014 National Reform Programme.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	2.3 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	1.9 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with	EU level	1.7 %	2013	ERA survey 2014

non-national EU organisations				

The share of responding funders' total budget in Italy allocated to transnationally coordinated R&D is lower than the EU average.

The share of responding funders' research and development budget in Italy dedicated to jointly defined research agendas with other EU organisations is higher than the EU average.

Cooperation between institutions of Member States, Associated Countries and Third Countries is fostered by the Framework Programme. In the Seventh Framework Programme (FP7), the share of Italy's participation in the total participation is 10.1 % and the country received 9.4 % of the total European Commission contribution. FP7 funding represents EUR 57 per inhabitant (EU average EUR 72 per capita) for the period 2007-2013 and 3.5 % of the Gross Domestic Expenditures on R&D (GERD) for the period 2007-2011 (last available data) (the EU average is 3 % of GERD for the same period).

Concerning joint programming initiatives, the country participates in all of the ten ongoing initiatives, and is coordinating one of them. These initiatives are Neurodegenerative diseases (Alzheimer), Food Security, Agriculture and Climate Change, Cultural Heritage and global change: a new challenge for Europe, Healthy Diet for Healthy Life, The Demographic change (More Years, Better Life), Antimicrobial resistance - An emerging threat to human health, Connecting Climate Knowledge for Europe, Water Challenges for a Changing world, Healthy and Productive Seas and Oceans, Urban Europe - Global Challenges, Local Solutions.

In terms of programmes undertaken jointly by several Member States (so called Article 185 initiatives), the country was involved in five programmes. In Horizon 2020, the country is already involved in three of the four existing initiatives.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of 86 ERA-NETs, of which 29 are currently still running. The country also has participated in five ERA-NET Plus actions– of which two are still running – in areas with high European added value and additional EU financial support topping up their joint call for proposals.

2.2. Openness for international cooperation with third countries and regions

The share of responding funders' research and development budget in Italy allocated to collaboration programmes carried out with third countries is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of organisations' research and development budget originating from third countries is lower than within the EU ERA compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

Mutual recognition of evaluations that conform to international peer review standards will be increasingly used in Italy. Law 4/2012 and 134/2012 provide 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.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	71.1 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	1.4 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

The share of responding funders' project-based research and development budget in Italy allocated through peer review carried out by institutions outside the country is higher than the EU average.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

IT participates in the following large international research infrastructures: ESA, CERN, EFDA, EMBL, ESO, ESRF, EU.XFEL and ILL.

In terms of participation to the development of research infrastructures included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participates in the preparatory phase of 30 of them (61%). The country coordinates four of them: EMSO, EMBRC, EUROFEL (ex IRUVX-FEL), KM3NeT.

In terms of financial commitments to the development of these research infrastructures, Italy is committed to funding 16 of them. They are: SHARE-ERIC, EMSO, EURO ARGO, LIFEWATCH, IFMIF/EVEDA, ECRIN, INFRAFRONTIER, INSTRUCT, ESRF UPGRADE, EUROFEL (ex IRUVX-FEL), ESSneutron, XFEL, ILL 20/20, KM3NeT, SKA, and PRACE (ex HPC).

With regard to participation in the European Research Infrastructure Consortium, Italy hosts CERIC ERIC and participates in five (SHARE ERIC, EATRIS ERIC, BBMRI ERIC, ECRIN ERIC and EURO-ARGO ERIC) of the seven consortiums which adopted the legal framework designed by the Commission to facilitate the establishment and operation of research infrastructures of European interest involving several European countries.

In terms of support to the development and implementation of Research Infrastructures, the 2014 National Reform Programme reiterates the need to strengthen and consolidate major infrastructures, notably with regard to ERICs (European Research Infrastructure Consortia). An update of the national roadmap of research infrastructures of pan-European interest took place in 2010. The roadmap includes references to Italy's participation in the development of the research infrastructures mentioned in the ESFRI roadmap. 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). In terms of funding, the ordinary fund for research institutes (FOE) constitutes the main source for financing research infrastructures on the Italian territory. According to the National Research Programme 2014-2020, some EUR 185 million per year will be earmarked as part of the Programme 'Research Infrastructures' for the construction and upgrade of infrastructures. In 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. Italy contributes to the construction of new pan-European RIs with EUR 90 million each year budgeted in FOE. However, the actual FOE allocations to ESFRI in the last three years have been lower (approximately Euro 44 million in 2011, Euro 56 million in 2012 and Euro 69 million in 2013).

3.2. Access to research infrastructures of pan-European interest

Several measures supporting researchers' access to research infrastructures are foreseen as part of the National Research Programme 2014-2020 and HIT 2020. According to the National Research Programme 2014-2020 and the 2014 National Reform Programme, the programme 'Research Infrastructures' will facilitate researchers' access to 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 higher education institutions (HEIs) and RPOs participating in 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.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Italy in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Italy _Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 103,424 FTE researchers in Italy in 2011. This represents 4.1 researchers per 1000 labour force compared with 5.3 among the Innovation Union reference group (Moderate Innovators) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS jobs portal per thousand researchers in the public sector was 23.2 in Italy compared with 22.7 among the Innovation Union reference group and an EU average of 43.7

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).

Law 240/2010 promotes an open and transparent recruitment system. Although the level of openness and transparency is not yet fully in line with the principles of the 'Charter &Code', the process is under way and this has been proved by the constantly growing number of research institutions interested in joining the Human Resources Strategy for Researchers process. In addition, universities and public research organisations are requested to publish their research grant offers on the EURAXESS jobs portal. In 2013 this obligation was also extended to doctoral (PhD) fellowships.

4.3. Attractive careers

The Charter & Code principles are referred to in several Articles of Law 240/2010. However, they are merely promoted based on an 'encouragement to comply' rather than a mandatory obligation.

By May 2014, 19 Italian organisations were involved in the Commission's Human Resources Strategy for Researchers, of which seven had received the "HR Excellence in Research" logo for their progress in implementing the Charter & Code.

The ratio of R&D investment to GDP is lower than the average in other countries. The Italian government has introduced fiscal incentives for the private sector to invest in R&D development. A private company is only able to fund doctoral study on the basis of an agreement with a university. Law 240/2010 foresees a two-step process for researcher careers: a three-year fixed-term contract (type A contract) – with the possibility of a two-year extension, awarded via an open selection process; the researcher can participate in calls for a type B contract (three-year fixed-term, not renewable), under a public competitive process. During this triennium, the researcher can participate in a national evaluation aimed at obtaining the abilitazione (accreditation – the highest academic qualification). If the researcher is successful, the university has to enrol him/her in a permanent position.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged 25-34 was 1.6 in 2011 compared with 1.4 among the Innovation Union reference group and an EU average of 1.7.

The new Act on Doctoral Training (2013) includes measures aimed at increasing the quality of doctoral training, and encourages academia-industry collaboration, but it does not fully cover the Principles for Innovative Doctoral Training. Doctoral Programmes are assessed and evaluated at national level by the Ministry of Education, University and Research, on the basis of an evaluation and accreditation process against a set of criteria set up by ANVUR. The Italian Government has not adopted a Skills' Agenda to improve researchers' employment skills and competencies. However, higher education institutions are increasingly providing a variety of training and several skills portfolios on an autonomous basis.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 3.1 % in Italy compared with 4.9 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 6.2 % in Italy compared with 5.3 % among the Innovation Union reference group and an EU average of 24.2 %.

Although Italy has transposed the Scientific Visa Directive 71/2005, Universities and RPOs still face difficulties when recruiting third-country researchers. Some problems have been partly overcome thanks to a fruitful cooperation established in 2013 by MIUR, the universities, the research organisations, the Italian Rectors' Conference and the Ministry of

Foreign Affairs. The ministry introduced amendments to the procedures on immigration in December 2013, thus setting the conditions to facilitate the entry of third-country researchers to Italy. The Rita Levi Montalcini Programme is a national fellowship programme managed by the Ministry of Education, University and Research. It promotes the internationalisation of Italian universities by enabling early-stage researchers working abroad to carry out research projects at an Italian university of their choice. Its purpose is to recruit outstanding post-doctorate researchers working abroad and give them the opportunity to submit a proposal for a temporary position in conjunction with a proposal for a research grant. However, the Italian government has not put in place concrete measures to encourage young researchers to spend some time as a researcher in another country. A few universities have adopted, on a voluntary basis, an internal regulation which requires doctoral students to spend at least six months outside Italy before they sit their final PhD exam. In general, the outbound/inward mobility ratio is extremely high, to an extent that it has become a worry for the research authorities.

Law 240/2010 establishes a legal framework for regulating partnerships between academia and industry. A vast majority of universities and doctoral schools offer doctoral programmes between academia and industry on the basis of a memorandum of understanding. Thanks to their autonomy, Italian universities are free to establish bilateral relations with the business sector. Moreover, doctoral students are free to sign a high-level apprenticeship contract with an enterprise. Enterprises and other (private) employers can recruit a PhD student (under the age of 29) under a fixed-term contract subsidised by the local (regional) governments. Decree 297/1999 allocates financial contributions to SMEs where a researcher from a university or a public research centre is employed by the company for a maximum period of four years, renewable only once (eight years in total). However, this possibility has rarely been taken up.

5. GENDER

5.1. Foster cultural and institutional change on 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 legislative measures addressing gender equality in research have been adopted. However, an agreement on gender equality between MIUR and the Dipartimento per le Pari Opportunità was signed in January 2013. Within the framework of this agreement, a consultation panel analyses and coordinates activities related to gender equality in all scientific fields.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	National level	94 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research	ERA	64 %	2013	ERA survey

performing organisations in the sample which have adopted Gender Equality Plans	compliant cluster (EU level)			2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	43.9 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	3.4 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and support national policies on gender equality in public research is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of research performing organisations which have adopted Gender Equality Plans is lower than within the EU ERA compliant cluster.

Regarding careers for female researchers, the 2011 Government Act provides a specific budget of Euro 3.5 million for guaranteeing the salary of post-doctoral female researchers who interrupt their contract during maternity leave.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	23.7 %	2013	ERA survey 2014
Share of responding research performing organisations	Limited compliance	0.6 %	2013	ERA survey

implementing recruitment and promotion policies for female researchers	to ERA cluster (national level)			2014

Within the ERA compliant cluster in Italy, the share of research performing organisations implementing recruitment and promotion policies for female researchers is lower than within the EU ERA compliant cluster.

Regarding the gender dimension on research content and programmes, the National Research Programme 2014-2020 includes a specific programme on gender streamlining with an annual budget of EUR 1 million. Moreover, the provision of medicine, based on scientific evidence and integrating the gender dimension was included in a bill in 2013. Several universities have also set up gender oriented academic courses. Four universities have set up doctorates and courses on gender studies (the Universities of Bologna, Roma3, Roma La Sapienza and Napoli Federico II), whilst the University of Bologna is involved in the international masters course GEMMA on Women's and Gender Studies.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the inclusion of gender dimension in research content	National level	94 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	21 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national	3.4 %	2013	ERA survey 2014

	level)			

The share of research funders in Italy who responded to the survey and support gender dimension in research content/programmes is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of research performing organisations which include the gender dimension in research content is lower than within the EU ERA compliant cluster.

5.2. Gender balance in the decision-making process

Regarding gender balance in public research decision making, Law 240/2010 calls for gender balance on the 'Board of trustees' of research institutions; however the law does not specify targets. The need to ensure that peer review selection panels are gender balanced was recognised by MIUR in HIT2020.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	19.5 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	5.6 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	6.7 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA compliant cluster in Italy, the share of gender-balanced recruitment committees for leading researchers in research performing organisations is lower than within the EU ERA compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Italy is lower than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, Italy has recently adopted several legislative and policy measures to speed up the up-take and implementation of open access. Law 112/2013 introduces gold and green open access. The law makes it compulsory for research results resulting from projects funded by 50% or more of public funding to be in open access. The green road is based on an embargo period of between 18 and 24 months. Secondary legislation at the level of the MIUR and HEIs should be adopted in order to ensure the implementation of this regulation. Several measures have supported the voluntary adoption of open access by universities and research organisations. The CRUI (conference of deans) set up a Working Group on Open Access (CRUI Gruppo di lavoro Open Access) in 2006 aimed at disseminating open access in universities. The CRUI Working Group released guidelines on open access and promoted the inclusion of open access policies into university statutory regulations. It is reported that 38 universities (out of a total of 97) have introduced open access policies into their internal regulations. Italy participates in several EU initiatives such as OpenAIRE, MedOANet, PEER, NECOBELAC and Recode.

Related to open access to publications, HIT2020 supports the implementation of open access through Law 112/2013 with a view to achieving the target of 60 % of publications from public-funded programmes in open access.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to publications	National level	69.5 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing	ERA compliant cluster	7.1 %	2013	ERA survey 2014

organisations	(national level)			
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	1 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and support Open Access to publications is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of publicly funded scientific publications in OA amongst research performing organisations is lower than within the EU ERA compliant cluster.

Concerning open access to data, funding is provided to universities and research organisations 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 also a signatory of the G8 Open Data Charter.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	94 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	54.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-	Limited compliance to ERA	8.5 %	2013	ERA survey 2014

line and free of charge	cluster (national level)			

The share of research funders in Italy who responded to the survey and support Open Access to data is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of research performing organisations making available on-line and free of charge publicly funded scientific research data systematically is similar to within the EU ERA compliant cluster.

Regarding repositories, the Cohesion Action Plan launched in 2013 supports the setting up of infrastructures and open access systems for the dissemination of scientific publications and research data in the convergence regions. Moreover, MIUR launched a call in 2013 for strengthening research infrastructures in the convergence regions. This call earmarked EUR 10 million to develop systems based on open access for the long-term preservation of research results. At stakeholder level, the CRUI guidelines also provide recommendations on the preservation of information and on the promotion of open source software for the management of open access systems. The platform PLEIADI (Portal for Italian Electronic Scholarly Literature in Institutional Archives) provides access to the more than 505.000 documents deposited in Italian academic and research institutional repositories and open access journals. Regarding research data repositories, the two Italian supercomputing consortia CASPUR (Consorzia interuniversitario per le Applicazioni di Supercalcolo Per Università e Ricerca) and CILEA (Consorzio interuniversitario Lombardo per L'Elaborazione Automatica) implemented an Italian national platform in 2004 to provide central access to the digital content deposited in the Italian open archives.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Italy has adopted several legislative measures such as the Stability Law 2013, which is part of the development package, Pacchetto Sviluppo, D.L. 83/2012, D.L. 145/2013 and L. 9/2014. The National Technology Clusters programme, which was approved in October 2013, funds projects in line with Italy's and Horizon 2020's priorities and involving partnerships between businesses, universities and public research organisations. According to the 2014 National Reform Programme, a tax credit scheme will be set up for businesses for the full-time employment of PhD students or university graduates with a view to enhancing the innovative potential of businesses. The promotion of knowledge transfer has also been supported through the start-up law and the reform of doctoral schools. Italy has not yet developed a knowledge transfer strategy.

Regarding strategic partnership and the definition of joint collaborative research agendas between academia and industry, the 2014 National Reform Programme announces a reinforcement of existing initiatives such as the Contamination Labs, the programmes for

innovative start-ups and university spinoffs. Through the 2014 Stability Law, a fund endowed with EUR 5 million for 2014 and 2015 was established to support companies partnering with public research institutions and universities. Prior to 2014, Italy had adopted a series of measures, such as Decree 297/1999, Law 240/2010 on the General Reform of University Education and the MIUR 2012 guidelines. Decree 297/1999 supports the implementation of bilateral agreements between academia and the private sector, by providing support to SMEs employing researchers from universities or public research organisations. Law 240/2010 on the General Reform of University Education established a legal framework for regulating partnerships between academia and industry on the basis of a memorandum of understanding. Based on their autonomous status, Italian universities are free to establish bilateral relations with the business sector, such as placement programmes (e.g. internships) for researchers. MIUR also introduced in November 2012 the guidelines for managing partnerships between research performing organisations and HEIs to promote the mobility of research units. Moreover, the agreement between the Centro Nazionale delle Ricerche (CNR) and Confindustria, which was signed in early 2013, aims at promoting researchers' mobility between the CNR and firms, as well as the development of technology clusters and excellent/top research activities.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	9.5 %	2013	ERA survey 2014
Share of responding research performing organisations' research and	Limited compliance	1.1 %	2013	ERA survey

development budget financed by the private sector	to ERA cluster (national level)			2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	81.7 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	6.6 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	67.6 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	6.3 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014

Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	6 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0.7 %	2013	ERA survey 2014

The share of research funders in Italy who responded to the survey and support KT, OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA compliant cluster in Italy, the share of research performing organisations having funding originating from the private sector is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Italy, the share of research performing organisations having or using a structure for knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Italy, the share of research performing organisations having dedicated staff employed in knowledge transfer activities is higher than within the EU ERA compliant cluster.

Within the ERA compliant cluster in Italy, the share of research personnel whose primary occupation is in the private sector (in Full Time Equivalents) is higher than within the EU ERA compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

With regards to the implementation of Digital ERA, Italy has adopted several measures to support public e-infrastructures. Regarding repositories, the Cohesion Action Plan launched in 2013 supports the setting up of infrastructures and open access systems for the dissemination of scientific publications and research data in the convergence regions. The country has implemented a research and education network, which is essential to make digital services possible. 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. GARR links universities and research institutions that provide networking and computing services. Italy has not set up a strategy for the implementation of Digital ERA.

Concerning digital services, the country provides federated services, cloud services and premium services. Policies for cloud computing and scientific software targeted for the research community are not yet available. However, the 2012 Digital Agenda (Agenda Digitale) initiative is expected to develop a common platform for software, content and communication in the education community.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	83.7 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	9.3 %	2013	ERA survey 2014

Within the ERA compliant cluster in Italy, the share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.) is higher than within the EU ERA compliant cluster.

6.4. Uptake of federated electronic identities

Italy was not a member of an identity federation in 2011 or 2013. Italy is member of EDUgain through IDEM, i.e. EDUgain is a service intended to enable the trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) partners' federations. The IDEM federation was set up in 2009 and is a service of the GARR network. The IDEM federation includes the majority of universities and research institutions in Italy and provides access to some digital research services, such as scientific data, scientific journals and cloud computing resources.

Indicator	Level/cluster	Value	Year	Source

Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	54.7 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	1.1 %	2013	ERA survey 2014

Within the ERA compliant cluster in Italy, the share of research performing organisations providing federated electronic identities for their researchers is higher than within the EU ERA compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 83 research performing organisations in Italy answered the 2014 ERA survey, which represents 22.6% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Italy shows that 46.2 % of them are in the 'ERA compliant' cluster, 39.7 % can be classified in the 'limited compliance to ERA' cluster and 14.1 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 84.9 % for the 'ERA compliant' cluster, 14.5 % for the 'ERA limited compliant' cluster and 0.6 % for those organisations where ERA principles are not applicable.

In terms of funders, it should be noted that one major funder, which is responsible for a significant share of R&D funding, did not reply to the survey. This means that all indicators related to funders do not fully reflect the behaviour of Italian funders and should be interpreted with caution. In terms of research performers, it should be noted that several organisations which account for an important share of R&D personnel in the country did not reply to the survey.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
National Research Programme (2014-2020) - draft	2014	X	X
Horizon 2020 Italy HIT2020 Research & Innovation	2013	X	X
National Research Programme 2014-2020 - draft	2014	X	X
National Operational Programme (PON) Research and Innovation & PON Enterprise and Competitiveness			
Project-based funding applying the core principles of international peer review			
Ministry of Education, University and Research competitive calls (FIRB, PRIN, CLUSTER, SMART CITIES)	2012	X	
Law on urgent measures for growth of the country (Law 7 August 2012 No 134) - Art. 63 peer review	2012	X	
Horizon 2020 Italy HIT2020 Research & Innovation	2013	X	X
Atto di indirizzo concernente l'individuazione delle priorità politiche del MIUR per l'anno 2014	2014	X	X
Institutional funding based on institutional assessment			
Law on the organisation of the university, on the academic personnel and on recruitment. Government delegation to promote quality and efficiency of the university system (Law 240/2010 and enacting Legislative decree 19/2012)	2010		
Legislative decree 31 December 2009,	2010		

no. 213, Reorganisation of public research organisations			
Quality Evaluation for Research (ANVUR)	2013	X	X
Implementing joint research agendas			
Joint programmes and bilateral agreements			
National Research Programme (2014-2020) - draft	2014	X	X
'Support to joint programming' Programme	2014	X	X
Atto di indirizzo concernente l'individuazione delle priorità politiche del MIUR per l'anno 2014	2014	X	X
Interoperability, mutual recognition of evaluation results and other schemes			
Operational procedures for evaluation and financing of projects selected in international programmes and initiatives Prot. 556 28/03/2013	2013	X	X
Law on urgent measures for growth of the country (Law 7 August 2012 n. 134)	2012	X	
Law on urgent measures for simplification and growth (Law 4 April 2012 n. 35)	2012	X	
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
National Research Programme 2014-2020 - draft	2014	X	X
Italian roadmap of Research Infrastructures of Pan European interest	2010		
Horizon 2020 Italy HIT2020 Research & Innovation	2013	X	X
Measures to strengthen research infrastructures in the convergence	2013	X	X

regions - Cohesion Action Plan			
Access to research infrastructures of pan-European interest			
National Research Programme 2014-2020 - draft	2014	X	X
Programme 'Research Infrastructures'	2014	X	X
Attractive careers			
Government Decree D.lgs 2013/2009	2009		
Law 1/2009	2009		
Regulation on modalities of acknowledgment of doctoral schools and criteria for the establishment of courses by acknowledged schools D.M. 8 February 2013 n.94	2013	X	X
Euraxess Italy website	2004		
Regional Programmes – envelope dedicated to human resources			
Programme' Rita Levi Montalcini'			
Law on the organisation of the university, on the academic personnel and on recruitment. Government delegation to incentivate quality and efficiency of the university system (Law 240/2010)			
Law on the organisation of the university, on the academic personnel and on recruitment. Government delegation to incentivise quality and efficiency of the university system (Law 240/2010)	2010		
Law on urgent measures for simplification and growth (Law 4 April 2012 n. 35) - Doctoral courses Gran Sasso Science Institute	2012	X	
Law on the organization of the	2010		

university, on the academic personnel and on recruitment. Government delegation to incentivise quality and efficiency of the university system (Law 240/2010)			
Gender balance in the decision-making process			
Partnership MIUR and Labour Ministry-Department equal opportunities	2013	X	X
National Research Programme 2014-2020 - specific programme on gender streamlining	2014	X	X
Law 240/2010	2010		
2011 Government Act	2011		
Horizon 2020 Italy HIT2020 Research & Innovation Law 215/2012	2013	X	X
Open access to publications and data resulting from publicly funded research			
Law 112/2013	2013	X	X
Horizon Italia 2020 (HIT2020)	2013	X	X
MIUR 10 million Euros call to develop systems based on open access in the convergence regions	2013	X	X
CRUI WG Open Access	2006		
Measures to strengthen research infrastructures in the convergence regions - Cohesion Action Plan	2013	X	X
Open innovation and knowledge transfer between public and private sectors			
Decree Law 69/2013 on urgent measures to relaunch the economy	2013	X	X
Agreement between Centro Nazionale delle Ricerche (CNR) e Confindustria	2013	X	X

Stability Law 2013 part of the Development package D.L. 83/2012	2013	X	X
Decree 297/1999	1999		
Law 240/2010 on the General Reform of University Education	2010		
D.L. 145/2013	2013	X	X
L. 9/2014	2014	X	X
Programme 'One thousand and more innovative PhDs'	2014	X	X
Funding programme for start-ups in the convergence regions	2013	X	X
Project 'Messengers'			
Measures to support public-private cooperation as part of the Stability Law 2013	2013	X	X
Ministerial decree for the exchange of professors and researchers between universities and public research organisations			
National Research Programme 2014-2020 - draft	2014	X	X
Stability Law	2014	X	X
National Technology Clusters	2013	X	X
Harmonise policies for public e-infrastructures and associated digital research services			
Funding programme for start-ups in the convergence regions, 'Big Data'	2013	X	X
Measures to strengthen research infrastructures in the convergence regions - Cohesion Action Plan	2013	X	X
Uptake of federated electronic identities			
Member of eduGAIN			

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

In May 2013, the Lithuanian Prime Minister set up the national Research, Development and Innovation Strategic Council. This new structure brings together government, various ministries, academic and research institutions, the business sector, academia and independent experts. It is an advisory body aiming at coordinating science, technology and innovation development.

The other two principal governing bodies shaping research and innovation policy in Lithuania are the Ministry of Education and Science (ŠMM), responsible for higher education and science policy, and the Ministry of Economy (ŪM), which is responsible for innovation policy. The implementation of research and innovation policy is then mainly performed by a few number of funding agencies: the Central Project Management Agency (CPVA), the Agency for Science, the Agency for Science Innovation and Technology (MITA), the Lithuanian Business Support Agency (LVPA) and the European Social Fund Agency (ESFA). In addition, the Research Council of Lithuania (LMT) both advises the Parliament (Seimas) and acts as a funding structure.

The country has recently adopted some strategic documents that have relevance for research and innovation. In 2012, 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) and the State Studies and R&D Programme for 2013-2020 were published. In 2013, the process of preparation for the 2014-2020 programming period accelerated, with the focus on smart specialisation. Broad research and development (R&D) and innovation priority areas were approved on October 2013 by a governmental resolution 'Concerning approval of the priority areas of research and development and innovation' (smart specialisation). The programme on the implementation of these priority areas was finally approved on April 2014 by the Government of the Republic of Lithuania.

In December 2013, the Lithuanian Government also approved the Lithuanian Innovation Development Programme 2014-2020 that replaced the previous Lithuanian Innovation Strategy 2010-2020. The LMT is also preparing the competitive R&D funding strategy, which is expected to be finalised in 2014. However, the EU Structural and Investment Funds (ESIF) will remain the key funding source for research and innovation (R&I) policy.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Lithuania represented EUR 40 per inhabitant in 2012 (EUR 179 in the EU-28). In 2012, the total GBAORD corresponded to 1 % of total government expenditure and 0.36 % of gross domestic product (GDP) (Eurostat).

The analysis of the evolution of the GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the growth rate of the total GBAORD in Lithuania was higher than the growth rate of the total EU GBAORD. Finally, GBAORD as a share of GDP regressed more in Lithuania than in the EU-28.

1.2. Project-based funding applying the core principles of international peer review

Lithuania has witnessed an increasing share of government budgetary funding for research allocated to competitive peer-review-based procedures. The proportion increased from 12.1 % in 2006 to approximately 50 % in 2012. The major policy shift occurred in 2009, when the Research Council of Lithuania (LMT) acquired the functions of a funding agency. All executive agencies usually grant funding to projects through competitive calls for proposals based on administrative, quality/benefits and financial assessments of projects. The evaluation follows a process laid down in proposal guidelines, which are publicly available and prepared by each agency separately. These guidelines must include information on evaluation procedures, the peer-review process, the proposed evaluation supervision, decision-making on funding and others. There were no policy changes in this area in 2012-2013.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	47.1 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and support project-based funding is lower than the EU average.

International peer-review standards are applied in the evaluation on the research proposals and institutions. The implementation of a peer review is detailed and is described in the application guides and in the information packages to the applicants and the strategy documents. All the core principles for a peer review are applied systematically. However, the LMT attempts, where possible, to use international peer reviewers on a systemic basis, while other funding agencies mostly use local peer reviewers and projects evaluators.

The peer-review process is organised and managed the LMT and based on a methodology approved in 2010. It is based on research excellence criteria, which are set in guidelines for evaluating agency projects. The procedures are clear and transparent with some degree of flexibility, for instance for small calls. Evaluation criteria are systematically applied. Responsibilities are divided according to competences: experts evaluate the quality of projects, while managing authorities take the final decisions on funding. There is no publicly available data on the extent to which the peer review involves international scholars. In principle, the participation of international peer reviewers is not limited. However, in practice, the majority of grant proposals are submitted in Lithuanian (with a short summary in English), which could act as a linguistic barrier to the participation of international peer reviewers. There were no policy changes in this area in 2012-2013.

1.3. Institutional funding based on institutional assessment

Lithuania has witnessed an increasing share of the public budget for research allocated on a competitive basis. The Government Decision (adopted in 2009 and subsequently amended in 2010 and 2012) on the method for the allocation of budgetary appropriations for R&D to public higher education and research institutions stipulated that a higher share of basic funding should be linked to research performance. The Decision established that 40 % in 2010 and 50 % in 2011 and subsequent years of basic funding would be allocated to public higher education institutions (HEIs) and research institutions on the basis of their assessed results from R&D activities. The remaining 50 % from 2011 is allocated on the basis of 'normative number of staff", which is approved for each institution by the decree from the Minister of Education and Science. In total, in 2013, the competitive funding constituted 33 % of total budgetary appropriation for research activities (EUR 57 million, sourced only from the national budget, excluding the EU Structural Funds), which is similar to 2012, when EUR 20 million, or 34 % of total funding was allocated to competitive R&D funding.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	25.2 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and supports an institutional assessment for the allocation of institutional funding is lower than the EU average.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

Overall, since 2010, Lithuania has stepped up efforts to implement joint research agendas through joint programming initiatives, international programmes and bilateral programmes. Nevertheless, financial commitments to joint research agendas are rather limited and national research programmes are only implicitly aligned with research priorities pursued at the ERA level.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	0.6 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	0.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' research and development budget in Lithuania dedicated to transnational cooperation is lower than the EU average.

The share of responding funders' research and development budget in Lithuania dedicated to jointly defined research agendas with other EU organisations is lower than the EU average.

Cooperation between institutions of the Member States, the Associated Countries and the third countries is fostered by the Framework Programme. In the Seventh Framework Programme (FP7), the share of Lithuania's total participation was 0.32 % and the country received 0.13 % of the total European Commission contribution. FP7 funding represents EUR 18.7 per inhabitant (the EU average is EUR 72 per capita) and 3.7 % of the gross domestic expenditures on R&D (GERD) for the period 2007-2012 (the EU average was 2.6 % of GERD for the programming period until 21 February 2014).

Concerning joint programming initiatives, the country participates in two of the ten ongoing initiatives: Cultural heritage and global change and Healthy and productive seas and oceans.

In terms of programmes undertaken jointly by several Member States (so called Article 185 initiatives), the country has been involved in two programmes (Eurostars and Bonus). In Horizon 2020, the country is already involved in one of the four existing initiatives (Eurostars2).

ERA-NETs facilitate the coordination of national and regional research programmes. The country participates in six ERA-NETs, which help coordinate the participating countries' activities. The country also participates in two ERA-NET plus actions, which have high

European added value and additional EU financial support to facilitate the joint calls for proposals between national and/or regional programmes.

Four bilateral cooperation programmes (with Belarus, France, Ukraine and Belgium - Wallonia) are running, while one trilateral cooperation programme (with Latvia and Taiwan) ran for nine years under the LMT. In 2012, the LMT granted financing to 51 research projects implemented under the cooperation programmes that totalled EUR 0.3 million. The objectives of these programmes are not explicitly aligned with broader grand challenges and the funded projects covered a wide range of research areas. The Lithuanian-Swiss 'Research and Development' programme is dedicated to implementing joint research or institutional partnership projects in the field of Environmental Science and Technology, Health/Life Sciences, and Natural Sciences (EURO 7.3 million for 12 projects between 2011 and 2016). The Cooperation programme with Slovakia is under development to start in 2014 or 2015.

In addition, the Lithuanian Ministry of Economy actively seeks participation in the international innovation programmes which support international innovation networks, especially in the Baltic Sea Region. For instance, it has been acting as an administrating institution of the Green Industry Innovation Programme since 2012, conducted in cooperation with Norway.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, the country has not developed a specific policy. Lithuania has formal bilateral research cooperation agreements with China, Belarus, Ukraine Moldova and Kazakhstan. An agreement with Switzerland in the framework of their support for 'new' EU Member States provides funding for scholarships and joint projects. An agreement with the United States of America (USA) is quite active and successful: Lithuanian researchers can receive funding for collaborations with American partners. The USA is considering expanding this to include specific calls for funding for the American partners participating in this cooperation. For more than ten years, Lithuania has been involved in a trilateral cooperation with Latvia and Taiwan, which involves calls for joint research. A cooperation agreement is in the process of being signed with India. According to a bilateral governmental agreement signed in 2012, there is also a joint Lithuanian-Israeli initiative for funding research and innovation projects that are initiated by business subjects. The calls are implemented according to the Eureka programme rules and are orientated to both countries' applicants.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0.5 %	2013	ERA survey 2014

Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0.5 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

The share of responding funders' research and development budget in Lithuania dedicated to international cooperation with Third Countries is lower than the EU average.

Within the ERA-compliant cluster in Lithuania, the share of the organisations' R&D budget originating from third countries is lower than that within the EU's ERA-compliant cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

The funding agencies do not implement 'Money follows cooperation', which is a scheme that allows small parts of a project funded by one of the participating research councils to be conducted in a different country. Neither of the funding agencies implements 'Money follows researchers', which is a scheme that enables researchers to move to a research institution in a different country and transfer ongoing grant funding to the new institution, thus continuing research activities according to the original terms and objectives.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders which can base their project-based research and development funding decisions on peer	National level	44.1 %	2013	ERA survey 2014

reviews carried out by non-national institutions				
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	0 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and supports the allocation of project-based funding on peer-reviewed decisions made by non-national institutions is higher than the EU average.

Among funders who answered the survey, no project-based research funding is allocated on the basis of peer-reviewed decisions made by non-national institutions.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Lithuania participates in the following large international research infrastructures: CERN, ITER, ESA and EFDA.

In terms of participation to the development of research infrastructures included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participates in the preparatory phase of six of them (12 %). The country coordinates none of them.

In terms of financial commitments to the development of these Research Infrastructures (RIs), Lithuania is committed to fund one of them: European Social Survey (ESS). The preparation for financial commitments in CLARIN and CESSDA is also under way.

With regard to participation in European Research Infrastructure Consortia (ERICs), Lithuania is involved in one of the nine consortia that adopted the legal framework designed by the Commission to facilitate the establishment and operation of research infrastructures of European interest involving several European countries: ESS ERIC.

In terms of support to the development and implementation of RIs, Lithuania adopted a national roadmap in 2011; 15 mature or promising projects were identified. The roadmap also presented the selected list of the European RIs that are considered to be attractive for some national RIs. However, no financial commitments for construction and operation of the global, national or regional RIs have been made in Lithuania so far. Currently, the funds are being allocated to the five 'Integrated science, studies and business valleys', with most of the money being invested into macro-regional research infrastructures. Furthermore, the national roadmap is under review (2014) and is expected to include six additional projects. The operational programmes that will define the investment priorities and respective budgets for 2014-2020 will be finalised in 2014. There are plans to use the 2014-2020 structural and investment funding for a wider integration into the European RIs, especially through the ESFRI roadmap.

3.2. Access to research infrastructures of pan-European interest

The Guidelines approved by the Minister of Education and Science in 2012 and those adopted by the LMT, stipulate the procedures regulating the Lithuanian research institutions' involvement in international RIs. Once completed, the five 'Integrated science, studies and business Valleys' should be operating as open access centres. This implies that, in principle, the access to research infrastructure should be granted to national and non-national academic and business establishments. Lithuania is not coordinating any research infrastructures that have been funded by the European Commission through the Seventh Framework Programme for Research.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Lithuania in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Lithuania_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 8.390 full-time equivalent (FTE) researchers in Lithuania in 2011. This represents 5.7 researchers per 1 000 labour force compared with 5.3 among the Innovation Union reference group (Moderate Innovators) and the EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 1.3 in Lithuania compared with 39.9 among the Innovation Union reference group and an EU average of 43.7.

The Law on Higher Education and Research (adopted in 2009) establishes the necessary conditions for an open, transparent, merit-based recruitment of researchers. Public HEIs and research institutes are legally obliged to: publish information on vacancies, establish a selection panel, publish selection criteria, provide an adequate time period for publishing the vacancy (three months), offer the right of appeal, etc. Job vacancies are published on dedicated websites (Research Council of Lithuania) and in newspapers, as well as on the EURAXESS jobs portal.

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).

4.3. Attractive careers

The implementation of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers is not actively promoted as a government programme. However, both the Rectors' Conference and the Conference of Directors of Research Institutes have signed the Charter & Code.

The Researchers' Career Programme aims to raise young people's interest in pursuing a researchers' career by offering attractive working conditions and clear career prospects. The programme supports scientists and researchers in their scientific activities and, moreover, it promotes the mobility of top-performing international researchers.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per 1 000 of population aged between 25 and 34 was 0.9 in 2011 compared with 1.2 among the Innovation Union reference group and an EU average of 1.7.

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 infrastructures. Coordination between universities and research institutes increases the quality of doctoral training, and fosters openness and transparency in the research system. The Research Council of Lithuania carries out quality and efficiency assessments of the doctoral training at least once every three years.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates holding citizenship of another EU-27 Member State was 0.2 % in Lithuania, compared with 4.2 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 0.0 % in Lithuania compared with 5.2 % among the Innovation Union reference group and an EU average of 24.2 %.

In principle researchers from EU and non-EU countries can apply for grants in Lithuania. However, the number of participating foreign researchers remains limited. Applications for funding schemes need to be submitted in Lithuanian, posing a language and administrative barrier for third-country nationals applying for funding schemes. There are several programmes (e.g. Global Grant) which aim at attracting and retaining EU and third-country national researchers, where the project proposals have to be submitted in both English and Lithuanian.

In order to encourage companies to employ (more) scientists, the Ministry of Higher Education and Science in 2010 allocated EUR 17.4 million in support of 'State aid for highly qualified persons' employment in enterprises for the period 2010-2013'. Funds were allocated for no more than three years to one company and per employed person. The financial support covered salaries, participants' travel expenses and participation in events. However, the interest from enterprises was insufficient as of the end of 2011. The Ministry of Education and Science made EUR 939 348 available for projects implemented in 2012. This activity was managed by the European Social Fund Agency.

5. GENDER

5.1. Foster cultural and institutional change on gender

Gender equality in public research in Lithuania was formally endorsed by the Lithuanian Strategy Ensuring Equal Opportunities for men and women in sciences, and approved by the Lithuanian Minister of Science and Education in 2008 and valid until the end of 2013. It provided legal foundations for the introduction of 'Gender equity and gender mainstreaming' as a horizontal principle in other strategies and programmes (for example, the Researchers Career Programme). The main purpose of the strategy was to increase the number of female researchers in physics and technology, and in high-level positions. In addition, the strategy called for a review and possible amendments to the law with the aim of introducing additional finance tools for female scientists.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	National level	44.1 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014

Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	16.8 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and support national policies on gender equality in public research is lower than the EU average.

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations that have adopted the Gender Equality Plans is lower than that within the EU's ERA-compliant cluster.

Female researchers in Lithuania enjoy a number of rights enabling them to interrupt or to extend their contract in the framework of maternity leave. Researchers employed under an employment contract have the right to go on maternity leave for up to three years (social benefits are not paid during the third year of leave, but the workplace is secured). If the researcher is unemployed, he/she is eligible for the social allowances and benefits that are available to officially unemployed persons.

In 2012, in response to a Letter from the Office of Equal Opportunities Ombudsperson in Lithuania, the LMT provided explanations concerning the requirements necessary for candidates to attain positions of professors and researchers, and the establishment of qualification requirements for research staff members. In the LMT's opinion, the currently effective general legal acts do not presuppose any infringement of the equal opportunities requirement. Research and study institutions do not normally include a period of child care leave into a researcher's term of office. This provision should be foreseen in employment contracts and the internal regulations of institutions. The LMT is considering the possibility of reviewing the minimum qualification requirements by explicitly excluding the period of child care leave when evaluating the results attained by researchers in a five-year period. In addition, as LMT grants are associated with specific short-duration programmes, the period of child care is not included in the funding. In case of three-party agreements (researcher - managing scientific institution - LMT), if a researcher/project manager takes maternity leave, she either steps down for good or a specific time period. In the case of the Global grants programme (two-party agreement), if a researcher takes maternity leave, a project is cancelled. However, under the 2011-2013 national project 'Promotion of gender equality in sciences', the LMT provided grants to researchers after maternity (paternity) leave. Currently, the LMT is not planning a similar project for the 2014-2020 period.

As a general rule, funding agencies do not include gender criteria in assessing proposals for funding. When assigning grants, the Lithuanian Academy of Sciences (LMT) does not give any priority regarding a researchers' gender. In general, the LMT has not received any complaints about violating gender equality in funding research activities.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	19.8 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations implementing recruitment and promotional policies for female researchers is lower than within the EU's ERA-compliant cluster.

Gender dimension does not seem to be an issue in research programmes. Nevertheless, the Lithuanian Academy of Sciences and its partners, including the LMT, implemented the national project 'Promotion of gender equality in sciences' (LYMOS, budget EUR 0.6 million) between 2011 and 2013. It issued several analytical reports and provided recommendations for updating the Strategy on Equal Opportunities.

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

Indicator	Level/cluster	Value	Year	Source

Share of responding funders supporting the inclusion of gender dimension in research content	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	58.7 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national level)	0.3 %	2013	ERA survey 2014

The research funders in Lithuania who responded to the survey did not indicate any support to the inclusion of the gender dimension in research content/programmes.

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations that include the gender dimension in research content is higher than that within the EU's ERA-compliant cluster.

5.2. Gender balance in the decision-making process

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

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of gender-balanced recruitment committees for leading researchers amongst responding research	ERA compliant cluster (EU	33.6 %	2013	ERA survey 2014

performing organisations	level)			
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	42.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	137.9 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	34.3 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Lithuania, the share of gender-balanced recruitment committees for leading researchers in research-performing organisations is higher than that within the EU's ERA-compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Lithuania is similar to the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, the Law on Higher Education and Research stipulates that all results obtained from research activities carried out in state higher educational and research institutions or in education research institutions using state budget funds must be publicly announced, and that the results of research conducted in non-state higher education and research institutions using funds from the state budget shall be publicly announced (on the Internet or any other way).

However, the implementation of open access to scientific information remains problematic. Firstly, institutions and researchers do not have sufficient incentive to ensure open access to research results. Secondly, public financial support for the development of open access databases has been fragmented over a number of relatively uncoordinated projects. Currently, there are at least four public databases: database on students' theses and dissertations, the

academic electronic database, the 'Lituanistika' database on Lithuanian research in humanities and social sciences, the social science data service LiDA, containing social survey data, historical statistics and data on the Lithuanian political system. None of them has reached critical mass to become a dominant source of information on research production in the Lithuanian research system; they only include a fraction of the research outputs (publications and data) and do not always provide access to full-text sources contained elsewhere.

At the agency level, the LMT has been supporting the publication of research results supports since 2012. The support is targeted at the Lithuanian researchers to enable them to publish their scientific articles in high-level scientific journals, as well as independent scientific books. The Agency for Science, Innovation and Technology (MITA) has been managing the Science and Research Open Access (MITAP) project (EUR 0.7 million for 2012-2014), which addresses three main challenges: the public access to the R&D activities results; the centralised promotion of open access centres' activity; the technology transfer organisation and implementation through open access centres. In 2013, the Ministry of Education and Science nevertheless appointed the LMT to be responsible for open access development in Lithuania.

Related to open access to publications, the LMT makes all project summaries and reports (green access initiative) publicly available. Since 2009, the LMT has been developing the international scientific database 'Lituanistika' by accumulating and disseminating verified information on the most current Lithuanian studies. No other initiatives are planned for the near future.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to publications	National level	99 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	65 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst	Limited compliance	1.2 %	2013	ERA survey 2014

responding research performing organisations	to ERA cluster (national level)			

The share of research funders in Lithuania who responded to the survey and support OA to publications is higher than the EU average.

Within the ERA-compliant cluster in Lithuania, the share of publicly funded scientific publications in open access amongst research-performing organisations is higher than that within the EU's ERA-compliant cluster.

Concerning open access to data, the LMT has applied a rule ensuring that since a research project is finalised in a three-year time period, data on empirical projects should be provided to a managing research institution and scientific society.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	80.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	13 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and support OA to data is higher than the EU average.

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations making scientific research data systematically available online and free of charge publicly funded is higher than that within the EU's ERA-compliant cluster.

As regards repositories, in 2011, EUR 4.3 million was allocated to Vilnius University to implement the project 'National open access archive of research information (MIDAS)'. It seeks to provide infrastructure for the preservation of and open access to research data. It is planned to integrate it with other databases. In order to address this issue, the Programme for the Development of Lithuanian Research and Studies Informational Infrastructure for 2013-2016 (total budget EUR 18 million) was approved. Its target is that 40 % of publications and at least 10 % of the collected data should be publicly available, free of charge, by 2016.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, on the basis of the Law on Higher Education and Research adopted on 30 May 2009, Lithuania has developed a knowledge transfer strategy. It fosters open circulation of knowledge between companies and research organisations. It is implemented through the updated Concept of the Establishment and Development of Integrated Science, Studies and Business Centres (Valleys) (adopted in October 2012 and updated in April 2014). The Concept provides the basis for the continuation of investments into five science ‘valleys’ and establishes the policy mix for fostering research collaboration and the bridges between academia and industry.

The strategic partnership and/or the definition of joint collaborative research agendas between academia and industry are supported by funding organisations in Lithuania. However, despite a large number of strategic documents and different measures, there is a lack of consensus on the overall logic of intervention for fostering open innovation and knowledge transfer. Instead, different strategies (and their institutional 'owners') focus on separate elements, which imply a risk of fragmentation. Evidence on the success of implemented measures is lacking and the results of available evaluation reports point to the remaining systemic barriers in the field of open innovation and knowledge transfer.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of	EU level	82.9 %	2013	ERA survey 2014

knowledge transfer as part of its institutional and/or project-based funding				
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	7.4 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.7 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	74.3 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	12.1 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research	ERA	67.6 %	2013	ERA survey

performing organisations having dedicated staff employed in knowledge transfer activities	compliant cluster (national level)			2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	0.6 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	0.1 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	0.2 %	2013	ERA survey 2014

The share of research funders in Lithuania who responded to the survey and support KT and OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA-compliant cluster in Lithuania, the share of research performing organisations having funding originating from the private sector is higher than that within the EU's ERA-compliant cluster.

Within the ERAcompliant cluster in Lithuania, the share of research-performing organisations having or using a structure for knowledge transfer activities is similar to that within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations having dedicated staff employed in knowledge transfer activities is higher than that within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Lithuania, the share of research personnel whose primary occupation is in the private sector (in full time equivalents) is lower than that within the EU's ERA-compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

As regards the implementation of the Digital ERA, Lithuania has not set up any strategy. However, as a general rule, publicly funded e-infrastructures are accessible to researchers from both public and private sectors without major restrictions. In addition, the 'Lithuanian virtual university programme 2007-2012' has been running since 2007. It provides Lithuanian higher education and research institutions with access to academic e-library and distance-learning platforms. A new programme for 2013-2016 was approved in 2012, under the name of the '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 research and education communities within the country.

With regards to digital services, the country provides federated services and premium services (consultancy, security audits, NREN service implementation support).

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	87 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	13 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations providing digital research services (i.e. cloud services, a research collaboration platform, etc.) is higher than that within the EU's ERA-compliant cluster.

6.4. Uptake of federated electronic identities

Lithuania is not a member of eduGAIN.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	48.9 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	11.8 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Lithuania, the share of research-performing organisations providing federated electronic identities for their researchers is higher than that within the EU's ERA-compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 14 research performing organisations in Lithuania answered the 2014 ERA survey, which represents 44.4% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Lithuania shows that 53.8 % of them are in the ‘ERA compliant’ cluster, 46.2 % can be classified in the ‘limited compliance to ERA’ cluster and n.a. % of organisations in the ‘ERA principles are not applicable’ cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares

of ‘weighted’ organisations are 87.0 % for the ‘ERA compliant’ cluster, 13.0 % for the ‘ERA limited compliant’ cluster and n.a. % for those organisations where ERA principles are not applicable.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Project-based funding applying the core principles of international peer review			
Promotion of High-Level International Scientific Research	2012	X	
Decision of the Research Council of Lithuania on methods and procedures governing competitive funding of research.	2011		
Support for Research Activities of Scientists and Other Researchers (Global Grant)	2009		
Institutional funding based on institutional assessment			
Government decision on the method for allocation of budgetary appropriations for R&D and artistic activities in public research and higher education institutions	2012	X	
Law on higher education and research	2012	X	
Strategies relevant for research and innovation	2012	X	
Implementing joint research agendas			
Lituathian contributions to the implementation of joint research agendas	2010		
Bilateral and trilateral programmes for research cooperation	2011		
EU strategy for Baltic Sea Region / BONUS			
Interoperability, mutual recognition of evaluation results and other schemes			

Evaluations in the context of European (joint) programmes			
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Decree of the Minister of Education and Science on participation in international research infrastructures	2012	X	
Roadmap for Research Infrastructures of Lithuania	2011		
Access to research infrastructures of pan-European interest			
Regulation on "Management of Open Access Centres"	2011		
Decision of the Research Council of Lithuania on procedures for initiation of participation in international RIS	2012	X	
Attractive careers			
Decree of the Minister of Education and Science on procedures for establishing the right to offer phd studies	2011		
Lithuanian national EURAXESS centres			
Foster cultural and institutional change on gender			
Lithuanian Strategy Ensuring Equal Opportunities for male and female in sciences	2008		
Gender balance in the decision-making process			
LYMOS project			
Promotion of gender equality in sciences	2011		
Open access to publications and data resulting from publicly funded research			
National open access archive of research information (MIDAS)	2011		
Law on Higher Education and Research	2009		

Open innovation and knowledge transfer between public and private sectors			
Measure for promoting the commercialization process of certain innovative products, technologies or services as well as its entry into the market.	2012	X	
Concept of the Establishment and Development of Integrated Science, Studies and Business Centers (Valleys)	2012	X	
National Progress Programme for Lithuania for the period 2014-2020 and other strategic documents	2012	X	
State Studies and R&D Programme for 2013-2020	2012	X	
Promotion of High-Level International Scientific Research	2012	X	
Intellect LT - Joint science and business projects aimed at commercialization of research results	2013	X	X
"Science and Technology for Innovative Businesses"	2012	X	
Direct support measures for public-private cooperation	2007		
Programme for Development of Lithuanian Research and Studies Informational Infrastructure 2013-2016	2012	X	
Harmonise policies for public e-infrastructures and associated digital research services			
Access to publicly funded e-infrastructures			
Implementation of the project "Creation of Open Access Centres of Information Technologies",	2012	X	
Implementation of the Lithuanian Virtual University Programme for 2007–2012	2012	X	

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation policies are the responsibility of the Ministry of Higher Education and Research (MESR) (research)and the Ministry of the Economy (MECO) (innovation).

The MESR provides block funding and is in charge of research performers such as the University of Luxembourg, the public research institutions Gabriel Lippmann, Henri Tudor, Santé and CEPS/INSTEAD. The MESR also oversees 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-doctoral studies (Aid for Research Training,AFR).

The MECO 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) advises the MESR and MECO in order to contribute to greater consistency and coherence in the research policy mix.

The country has adopted a national multiannual strategy for research and innovation. This is demonstrated by such measures as the performance contracts between the Ministry of Higher Education and Research (MESR) and the public research organisations (PROs), which currently run from 2014-2017 (the preceding ones covered 2008-2010 and 2011-2013) and the National Research Fund (NRF) programmes such as CORE, which is also funded from 2014-2017 (and previously from 2008-2010 and 2011-2013).

Two draft laws on research ("Fonds Nationale de la Recherche: Loi Modicative" and " Loi Centres de Recherches Public") have been sent to Parliament are foreseen to be ratified in 2014. New budgets and the terms of the new performance contracts 2014-2017, based, among others, on how well the objectives of the contracts for 2011-2013 were met, were finalised in May 2014. Luxembourg has a Country Specific Recommendation: Pursue the diversification of the structure of the economy, including by fostering private investment in research and further developing cooperation between public research and firms.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Luxembourg represented EUR 538 per inhabitant in 2012 (EUR 179 in the EU28). In 2013, GBAORD per inhabitant was EUR 544. In 2012, total GBAORD corresponded to 1.5 % of total government expenditures and 0.7 % of gross domestic product (GDP) (Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the rate of growth of total GBAORD in Luxembourg has been higher than the rate of growth of total EU GBAORD. GBAORD as a share of GDP has evolved positively in Luxembourg even when it regressed at EU28 level.

As mentioned earlier, two draft laws are currently in the legislative process and foreseen to be ratified in 2014 aimed at further consolidating and harmonising the Luxembourg research system. In April 2012, a first draft of the NRF was submitted. Its principle modifications occur on four different levels, :

1. updating of NRF tasks,

2. re-determination of the framework of organisations eligible to receive NRF intervention,

3. improvement of governance

4. the introduction of collective subsidies for training research.

Subsequent to the first complementary opinion of the State Council, certain governmental amendments were introduced in October 2013. The second draft law for the organisation of research centres was submitted in January 2013. There were four modifications recommended to the 1987 law: Public Research Centre (CRP) status, CRP missions, administrative and governance bodies of CRP and CRP personnel. In addition to the principal elements stated above, the current draft law comprises two major complementary elements, the merger of CRP-Gabriel Lippmann and CRP-Henri Tudor and the incorporation of the Integrated BioBank of Luxembourg into the CRP–Santé.

1.2. Project-based funding applying the core principles of international peer review

The performance contracts 2014-2017 also include funding commitments and targets for external funding, in particular for competitive funding.

Evaluations of PROs by international experts are also mandated in performance contracts. The results of the evaluations of the public research centres are published on the MESR website and, for the university, on its website. It should be noted that the entire national research system was evaluated by the Organisation for Economic Cooperation and Development (OECD) in 2006 and the NRF undertook a Foresight Study in 2006-2007. The government ordered a new study by the OECD in 2013 on the national research and innovation system with the objective of analysing the level and degree of quality of the implementation of recommendations issued during the 2006 evaluation. The objective of this study is to draw up an independent and comparative report on the strengths and weaknesses of the national research and innovation system at present, and to formulate specific recommendations to improve and optimise the national research and innovation policy and the tools to be used in the area, based on good practices identified in other OECD nations. It was also to identify good practices in the Luxembourg context that could serve as a reference to other OECD countries.

The MESR considers its performance contracts with Luxembourg's PROs as integral policy documents. Performance contracts mandate increasing amounts of competitive, project-based funding to be obtained by Luxembourg's PROs as prerequisites for government funding. Regular evaluations of the public research centres are required; the university is also evaluated on a regular basis by the law of 12 August 2003. In addition, performance contracts

include 'research performance' targets such as the number of publications, patents, spin-offs and doctoral students trained, as well as purely financial benchmarks. Evaluations of how well PROs have met the criteria established in their performance contracts are done annually and at the end of each period and form the basis of performance contract targets for the forthcoming period.

All programmes funded through the NRF operate with a system of calls. The ATTRACT, CORE, INTER and OPEN programmes have annual calls, while calls for the PEARL programme are open all year. The new National Centre of Excellence (NCER) also issues calls. Calls are published on the NRF website and are also broadcast via the eNewsletter of the Luxembourg Portal for Innovation and Research.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders' total budget allocated as project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Luxembourg who responded to the survey and support project-based funding is higher than the EU average.

The core principles of international peer review are an inherent part of the proposal evaluation process of proposals for the NRF CORE programme. All of these factors form the basis of an effective base policy mix of Luxembourg's national research system (NRS).

Funding programmes of the NRF require proposals be subject to review by independent, international experts and adhere to the core principles of international peer review. The ATTRACT programme is a typical example. Each proposal is initially evaluated by three independent, international expert reviewers. Based on these evaluations, up to five candidates are invited to present their proposal to a panel, which also includes one of the independent international experts. The final decision is made by the NRF's Board of Administration and Scientific Council, members of the latter of which are also members of respected international organisations.

Private sector research funding essentially falls under the purview of the MECO under the law of 5 June 2009. Funding proposals under this scheme are not subject to international peer review and are confidential.

In terms of the evaluation of research actors receiving public sector funding, mandatory evaluations are required by performance contracts and the university under the law of 12

August 2003. The results of the evaluations will be published. The NRF requirement that proposals be submitted in English is not considered to be an impediment for either resident or foreign-based researchers. The private sector research funding under the law of 5 June 2009 is altogether less transparent.

1.3. Institutional funding based on institutional assessment

Institutional funding is allocated based on institutional assessment.

Performance contracts provide the institutions with quite large autonomy in defining and implementing a four 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 regular evaluations of the public research centres (or their 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.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in Luxembourg who responded to the survey do not allocate institutional funding.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

Indicator	Level/cluster	Value	Year	Source

Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	10 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	10 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in Luxembourg allocated to transnationally coordinated R&D is higher than the EU average.

The share of responding funders' research and development budget in Luxembourg dedicated to jointly defined research agendas with other EU organisations is higher than the EU average.

Cooperation between institutions of Member States, Associated Countries and Third Countries is fostered by the Framework Programme. In the seventh Framework Programme (FP7), the share of participation of Luxembourg in total participation is 0.2 % and the country received 0.1 % of total European Commission (EC) contribution. FP7 funding represents EUR 74 per inhabitant (the EU average EUR 72 per capita) for the period 2007-2013 and 1.3 % of the gross domestic expenditures (GERD) on R&D for the period 2007-2011 (last available data) (the EU average is 3 % of GERD for the same period).

Concerning joint programming initiatives, the country participates in one of the ten ongoing initiatives. This initiative is Neurodegenerative diseases (Alzheimer).

In terms of programmes undertaken jointly by several Member States (so called Article 185 initiatives), the country was involved in three programmes. In Horizon 2020, the country is already involved in three of the existing four initiatives: EDCTP, AAL and Eurostars.

ERA-NETs facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of 15 ERA-NETs, of which five are currently still running. The country has also participated in three ERA-NET Plus actions, of which one is still running, in areas

with high European added value and additional EU financial support topping up their joint call for proposals.

Concerning research agreements with research organisations in EU Member States and/or Associated Countries, the NRF has nine bilateral agreements notably with the Belgian Science Policy Service (BELSPO), the Research Foundation Flanders (FWO) the German Research Foundation (DFG), the National Centre for Scientific Research in France (CNRS), the French National Research Agency (ANR), the Swiss National Science Foundation (SNF) the National Centre for Research and Development of Poland (NCBIR), the Research Councils of the United Kingdom (RCUK) and the Austrian Fonds zur Förderung der wissenschaftlichen Forschung (FWF).

Luxemburg also participates in:

EUROCORES Scheme of the European Science Foundation (ESF)

European Collaborative Research Projects ERCP (ESF)

Materials World Network (MWN) NSF MATERIALS

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, the country has not developed a specific policy. However, the NRF's 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, to take a better approach to the resolution of certain transnational issues, and to increase the visibility and competitiveness of research in Luxembourg. It should be noted that project funding is for Luxembourg researchers working in Luxembourg to go abroad or for researchers from elsewhere to come to Luxembourg

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing	ERA compliant cluster (EU	0.8 %	2013	ERA survey 2014

organisations originating from third countries	level)			
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

Research funders in Luxembourg who responded to the survey indicated that they do not have measures supporting international cooperation with third countries.

Within the ERA-compliant cluster in Luxembourg, the organisations did not receive funding from third countries.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

Luxembourg is one of the few countries implementing the Lead Agency system, which allows a full mutual recognition of the evaluation process between research funding organisations.

As Luxembourg does not possess a critical mass of researchers, it actively encourages research collaboration between researchers in Luxembourg and abroad. Grants are fully open to non-residents in Luxembourg. The selection process is neither related to the country of residence of the researcher nor to the researcher's nationality.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	0 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national	EU level	38.5 %	2013	ERA survey 2014

institutions				
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	0 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

Research funders in Luxembourg who responded to the survey indicated that they do not have measures to support the allocation of project-based funding on peer-reviewed decisions made by non-national institutions.

Research funders in Luxembourg who responded to the survey indicated that they do not allocate project-based funding based on peer-reviewed decisions made by non-national institutions.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Luxembourg participates in the following large international research infrastructures: ESA and EMBL.

Luxembourg participates in two infrastructures, DARIAH and SHARE, which were selected by the European Strategy Forum on Research Infrastructures (ESFRI). Although the process on national ESFI roadmap is not formalised, the country has launched a national consultation process. The government is currently analysing opportunities for strategic participation in other infrastructures on the ESFRI roadmap in conjunction with research institutions and users of research, especially in the bio-medical domain.

With regard to participation in the European Research Infrastructure Consortium, Luxembourg is not involved.

3.2. Access to research infrastructures of pan-European interest

Not applicable

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Luxembourg in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Luxembourg_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 2 636 FTE researchers in Luxembourg in 2011. This represents 11.2 researchers per 1000 labour force compared with 7.6 among the Innovation Union reference group (Innovation Followers) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS jobs portal per thousand researchers in the public sector was 120.3 in Luxembourg compared with 72.3 among the Innovation Union reference group and an EU average of 43.7.

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).

The University of Luxembourg and the public research centres are in the process of developing a human resources policy, including recruitment measures, under the provisions of the 'Charter & Code'. The EURAXESS portal is regularly used by the University of Luxembourg, public research institutions and by an increasing number of private institutions for job announcements. English is the preferred language for non-administrative posts. Finally, there are no legal, institutional or cultural barriers (at national/regional/local level) to the openness and transparency of the national recruitment system.

The proposal for a new Law on Public Research Institutions calls on the Boards of the Centres to define clear recruitment procedures in the internal regulations.

4.3. Attractive careers

The University of Luxembourg, four public sector research institutions and the National Research Fund (FNR) have endorsed the 'Charter & Code' and are involved in the Commission's Human Resources Strategy for Researchers. The AFR Grant Schemes are also in line with the principles advocated in the Charter & Code. Under the future new law on public research institutions, the implementation of the 'Charter & Code' will become mandatory. By May 2014, two organisations had received the HR Excellence in Research logo for their progress in implementing the Charter & Code.

All new positions at the University of Luxembourg are open to external researchers. Luxembourg institutions do not actively promote career development provisions with the exception of the AFR grant selection criteria at post-doctoral level which include career

prospects. Neither the University of Luxembourg nor the public sector research centres provide tenure track possibilities. The only exception is the ATTRACT scheme of the FNR: in order to attract excellent researchers to Luxembourg, the FNR has made it mandatory for applicants to receive a guarantee from their institutions based on an objective performance review. This paves the way to them receiving an unlimited contract at the end of their grant with the prospect of advancing to the corresponding level of seniority, with the same rights and obligations as the other permanent researchers in the institution.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged 25-34 was 0.8 in 2011 compared with 1.6 among the Innovation Union reference group and an EU average of 1.7.

The currently proposed reform of the FNR (Fonds National de la Recherche) law foresees the implementation of a new funding instrument to allocate collective AFR (Aides à la Formation-Recherche) PhD-grants to Luxembourg public research units, based on criteria such as scientific excellence, and the quality of doctoral training and supervision. The FNR is developing in parallel a quality framework for doctoral training, which defines a basic set of requirements for the management, quality and academic standards of the training of FNR-funded PhDs across all Luxembourg institutions. The implementation of this quality framework will be part of the assessment exercise for the new AFR collective grant scheme (foreseen in 2015).

The University of Luxembourg together with the public sector research centres have, when appropriate, set up doctoral schools for PhD candidates in order to improve researchers' employment skills and competencies. The proposed new AFR collective grant scheme will support high-quality doctoral training programmes offering scientific and non-scientific skills. The FNR offers training in project management to starting AFR beneficiaries and career orientation training, 'From Learning to Earning' to AFR candidates in the end phase of their PhD or post-doctoral. Moreover, the University of Luxembourg has a set of training courses to promote researchers' transferable skills, including communication, writing, intellectual property rights (IPR) and entrepreneurship, etc.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 67.9 % in Luxembourg compared with 18.4 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 20.3 % in Luxembourg compared with 16.9 % among the Innovation Union reference group and an EU average of 24.2 %.

The FNR's Inter Mobility Scheme supports the mobility of researchers based in Luxembourg to move abroad as well as the mobility of foreign researchers moving to Luxembourg (up to one year), thus establishing collaborative links between Luxembourg and foreign research institutions. Luxembourg has also implemented the Hosting Agreement ('Scientific Visa')

scheme, which facilitates the inward migration of third-country researchers. This has helped attract non-EU researchers to both the public and private sectors.

The AFR scheme supports researchers in carrying out their PhD and/or post-doctoral training in collaboration with a private company in Luxembourg. The research project is developed jointly by the AFR candidate, the private company and the public partner, and it needs to be innovative and create 'new knowledge'. The AFR scheme provides for i) researchers to be trained in companies and to carry out their research training projects in collaboration with the company and ii) companies to contribute to the training of the researchers and benefit from their expertise. In 2013, 12 new AFR-public private partnerships (PPP) received funding, amounting to a total of 38 AFR-PPPs running at the end of 2013.

5. GENDER

5.1. Foster cultural and institutional change on gender

For all its achievements in realising the aims of the other ERA priorities, when it comes to gender equality and gender mainstreaming in research, Luxembourg policies have moderate impact.

It is only recently that concrete links between institutional gender equality performance and research funding have been established.

There are no legal barriers to the recruitment or career progression of women and, in fact, all Luxembourg public research institutions have signed the Code of Conduct for the Recruitment of Researchers that supports gender equality. In practice, however, the policy environment has not much impact. This is despite Luxembourg's open market for researchers and active support of researcher mobility, described in the section covering ERA Priority 3.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	4 %	2013	ERA survey 2014

Responding funders did not indicate any support to gender equality in research. Within the ERA compliant cluster in Luxembourg, the share of research-performing organisations that have adopted Gender Equality Plans is lower than within the EU ERA compliant cluster.

Researchers working at the University of Luxembourg and in public research centres are considered as 'private employees', similar to researchers in the private sector. Social benefits, such as maternity leave and the right to return to a position following maternity leave, for researchers at all levels, including PhDs and post doctoral studies are those set in the legal framework of the general labour market. On a national level, while there are laws prohibiting discrimination based on gender, there are no policies that explicitly promote more equal gender representation for researchers. An exception is the NRF, which encourages Luxembourg PROs to support female candidates for ATTRACT and PEARL grants. Despite this, of the eight ATTRACT fellows, only two are women and of the four PEARL grant recipients, there are none. The Aides à la Formation-Recherche (AFR) PhD and post-doctoral grant programme is also supportive of female candidates, and has a good track record in this area, although selection is made on the basis of the quality of the research proposed. Still, the proportion of women in the AFR programme, which is more than 40%, exceeds those in academia or on boards.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	4 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations implementing recruitment and promotion policies for female researchers is lower than that within the EU's ERA-compliant cluster.

There seems to be no national policies fostering gender as criteria in research programmes.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**

Share of responding funders supporting the inclusion of gender dimension in research content	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	51 %	2013	ERA survey 2014

The research funders in Luxembourg who responded to the survey did not indicate support for the inclusion of the gender dimension in research content/programmes.

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations which include the gender dimension in research content is higher than within the EU's ERA-compliant cluster.

5.2. Gender balance in the decision-making process

As regards gender balance in decision-making in Luxembourg new draft laws on the NRF and CRP state that the proportion of members of Administration Boards and Scientific Councils is not to fall under 40 % for either gender.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	100 %	2013	ERA survey 2014

Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	25.9 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Luxembourg, the share of gender-balanced recruitment committees for leading researchers in research-performing organisations is higher than within the EU's ERA-compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Luxembourg is lower than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access (OA), highlighting the need for establishing common guidelines, the Government programme invites all relevant stakeholders to allow open access to their scientific publications.

Formal initiatives addressing OA are a recent development in Luxembourg, which are being led by the National Library and the University of Luxembourg. It should be noted that the library has a history of being involved in the Creative Commons initiative as well as being active in 'Digital Humanities'. The NRF also signed Science Europe's Position Statement on Principles for the Transition to Open Access to Research Publications in April 2013.

Related to open access to publications, the University of Luxembourg has chosen to support the Open Access 'Green Road' which views the author as being at the heart of the publishing process, including the distribution and promotion of his or her work. In cooperation with the University of Liege, the university is implementing the ORBil system to provide the means by which authors can publish their research and make it publically available. In addition to tools such as ORBi, a responsive help-desk and targeted training that provide support for the entire publishing process are key elements in the success of the university's OA policy.

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 Opener project. OpenAIRE8 provides a platform by which authors can meet the OA publishing requirements of the European Commission's FP7 and, in the future, Horizon 2020 (H2020). The role of the NOAD is to provide a nationally accessible help-desk which will advise all authors financed by FP7 and H2020, be they at the university or not.

Although all PROs, including the university, offer listings of their publications, there is no use of metadata, either to denote funding source or even provide keywords. PRO CEPS/Instead

publishes the papers that are not issued "commercially" on its site. The NRF provides the final reports of the projects it funds.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to publications	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	10.2 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	4.5 %	2013	ERA survey 2014

The share of research funders in Luxembourg who responded to the survey and support Open Access to publications is higher than the EU average.

Within the ERA-compliant cluster in Luxembourg, the share of publicly funded scientific publications in OA amongst research-performing organisations is lower than within the EU ERA-compliant cluster.

Concerning open access to data, there seems to be limited support.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to data	National level	100 %	2013	ERA survey 2014

Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national level)	51 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	5.2 %	2013	ERA survey 2014

The share of research funders in Luxembourg who responded to the survey and support Open Access to data is higher than the EU average.

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations making scientific research data systematically available online and free of charge publicly funded is lower than within the EU's ERA-compliant cluster.

With respect to repositories, an OA national repository strategy that goes beyond the university is not yet in place, although the NRF is a signatory to Science Europe's Principles for a transition to open access.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Luxembourg has developed a knowledge transfer strategy. It fosters an open circulation of knowledge between companies and research organisations. The funding organisation has a specific funding line dedicated to the implementation of knowledge transfer. All of the performance contracts between the MESR and Luxembourg's PROs and university foresee PPP's as a key component. The Cité des Sciences being built in Esch-Belval will provide facilities for PPP's and a business incubator as well as housing the university and other PROs. Performance contracts also include targets for filing patents and spin-offs.

Funding organisations support the professionalisation of knowledge transfer activities, a necessary condition to increase the rate of success of the programme. A new initative is a

linkage 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 such a potential is identified for a given project, the researchers are invited to collaborate with Luxinnovation in order to explore its possible valorisation.

Strategic partnerships and/or the definition of joint collaborative research agendas between academia and industry are supported by funding organisations in Luxemburg.

For the private sector, the law of 5 June 2009 both foresees the secondment of researchers to SMEs to carry out research and provides project support.

In 2013, the Technoport business incubator moved into purpose-built facilities in the City of Sciences. It was awarded the European 'EC-BIC' quality label by the European Commission in recognition of its services and infrastructure quality.

Finally, Luxinnovation organises 'Business Meets Research' days as well as running a cluster programme. Cluster membership represents all the knowledge triangle parties. Current clusters include eco innovation, healthcare and biotechnologies, information and communication technologies, material technologies and space technologies. In 2013, an Automotive Components cluster was formed. There are also groups for logistics and maritime activities.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the	ERA compliant cluster (national	9.5 %	2013	ERA survey 2014

private sector	level)			
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	0.3 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	94.8 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	94.8 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	0 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster	0 %	2013	ERA survey 2014

	(national level)			

The share of research funders in Luxembourg who responded to the survey and support KT and OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA-compliant cluster in Luxembourg, the share of research performing organisations having funding originating from the private sector is higher than within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations having or using a structure for knowledge transfer activities is higher than within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations having dedicated staff employed in knowledge transfer activities is higher than within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Luxembourg, there seems to be no research personnel whose primary occupation is in the private sector.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation to the implementation of Digital ERA, Luxembourg is currently setting up a strategy for its implementation. The country has implemented a research and education network, which is essential to make digital services possible.

An example of Luxembourg's e-infrastructure that relates to research is the CVCE (Centre Virtuel de la Connaissance sur l'Europe), which is a research and documentation centre for European studies. The Centre creates digital publications that are particularly geared towards researchers and lecturers, while remaining open to a wider public. Like the National Library, it is also a major actor in 'Digital Humanities.'

RESTENA is the very high-speed network for the education and research community of Luxembourg. The connection provides access to the pan-European research network GÉANT2, as well as to the Internet.

Concerning digital services, the country provides both federated and premium services.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud	ERA compliant cluster (EU	80.8 %	2013	ERA survey 2014

services, research collaboration platform, etc.)	level)			
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	51 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	4 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Luxembourg, the share of research-performing organisations providing digital research services (i.e. cloud services, a research collaboration platform, etc.) is lower than that within the EU's ERA-compliant cluster.

6.4. Uptake of federated electronic identities

Luxembourg was a member of an identity federation in 2013.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014

No research-performing organisations indicated whether they provide federated electronic identities for their researchers.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 4 research performing organisations in Luxembourg answered the 2014 ERA survey, which represents % of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Luxembourg shows that 50.0 % of them are in the ‘ERA compliant’ cluster, 50.0 % can be

classified in the 'limited compliance to ERA' cluster and n.a. % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 94.8 % for the 'ERA compliant' cluster, 5.2 % for the 'ERA limited compliant' cluster and n.a. % for those organisations where ERA principles are not applicable.

The results for the RPOs should be interpreted with caution since two major RPOs did not reply to the survey, whilst two respondent RPOs tend to have a rather marginal role in the R&D landscape.

For the indicator ' Share of research performing organisations which have adopted Gender Equality Plan, the figure should be '0%' amongst the ERA compliant cluster, as all organisations in this cluster reported not having adopted Gender Equality Plans.

For the indicators 'Share of publicly funded scientific publications in OA amongst research performing organisations' and 'Share of research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)', the figures are most likely underestimated. This is due to the fact that some RPOs did not answer this question.

More in general in a small country like Luxembourg some ERA actions are organised in a more informal way.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
Law on NRF	2014	X	X
Law on research centres	2014	X	X
Project-based funding applying the core principles of international peer review			
Revision of the Law of 9 March 1987 on the organisation of the public research centres and on the establishment of the public research centres LIST, Santé and CEPS (to be adopted).			
Strategy Luxembourg 2020	2011		
NCER Programme	2014	X	X
Institutional funding based on institutional assessment			

PEARL Programme	2008		
Performance contracts 2014-2017 between the Ministry of Higher Education and Research and Public Research Organisations Santé, Gabriel Lippmann, Henri Tudor, CEPS, FNR and Luxinnovation Agency. Third contract 2014-2017 between the Ministry of Higher Education and Research	2014	X	X
Implementation of the pilot-Programme OPEN	2013	X	X
Interoperability, mutual recognition of evaluation results and other schemes			
Bi-lateral agreements (NRF)	2012	X	
Open, transparent and merit-based recruitment of researchers			
EURAXESS Portal			
Attractive careers			
AFR Programme of PhDs and post-docs	2008		
Human resources policies for researchers of the Ministry of Higher Education and Research			
Gender balance in the decision-making process			
NRF			
draft Law on gender in NRF and CRP	2014	X	X
Open access to publications and data resulting from publicly funded research			
Open Access intitiative at the University of Luxembourg	2013	X	X
Creation of the National Open Acess Desk (NOAD)	2013	X	X
NRF signatory to Science Europe Open Access principles	2013	X	X

Open innovation and knowledge transfer between public and private sectors			
Performance Contracts	2014	X	X
« Luxembourg cluster initiative »	2012	X	
Creation of the new incubator Technoport S.A.	2012	X	
Law of 5 June 2009 relating to the promotion of research, development and innovation	2009		
Linkage between NRF and Luxinnovation	2012	X	
Harmonise policies for public e-infrastructures and associated digital research services			
National Library digital resources access			

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation policies are under the common responsibility of the Ministry of Education and Science (research and development) and the Ministry of Economics (innovation), which share the governance of the national research and innovation system. At the political level, a new national authority, namely the Prime Minister's Cross-sector Coordination Centre, started coordinating and monitoring national development planning in 2012. The Latvian Council of Science henceforth acts as a funding agency for the Ministry of Education and Science, assessing applications for research funding and allocating money for fundamental and applied research projects. Its policymaking function has gradually been taken over by the Ministry, leaving the Council primarily operating as a research funding council, mostly orientated to the academic research community. The role of Latvia's Academy of Sciences as a science policy adviser has been gradually reduced during the past few years.

A major reorganisation of the Ministry of Education and Science took place in 2012. The objective was to achieve a smaller, efficient, motivated and result-orientated state administration in the domains under its political responsibility (education, science, youth, sports and language). Nevertheless, this may have caused some delays in preparing the 2014-2020 planning period, as well as in implementing several important plans, including the ERA dimension.

The country has adopted several documents relating to national strategy for research and innovation. The most relevant document is the National Development Plan for 2014-2020 (adopted on 20 December 2012), which foresees to investing on average 1.5 % of GDP in research and development (R&D) by 2020. It integrates expenditures from national sources and financing from abroad. The other is the National Reform Programme of Latvia (NRP) for the Implementation of the Europe 2020 strategy. The latter demonstrates a certain attempt to reconsider the priorities of the research, development and innovation (RDI) strategy in the light of the economic situation. In 2013, a task force was mobilised to elaborate the 'Guidelines for Development of Science Technologies and Innovation [ST&I] for 2014-2020' and efforts were made in order to design the Regional Smart Specialisation Strategy.' Guidelines for the Development of Science, Technologies and Innovation for 2014-2020', approved by the government in December 2013, include a component of the smart specialisation strategy that has identified a few specialisation fields: knowledge-based bio-economics, bio-medicine, medical technologies, bio-pharmacy and biotechnologies, advanced materials, technologies and engineering, smart energy and information and communication technologies (ICT).

The National Reform Programme of Latvia sets the following priorities with regard to the R&D domain: advancement of the potential of scientific activity; development of a long-term cooperation platform for enterprises and scientists; and support for developing innovative enterprises. The named priorities have mainly been selected on the basis of the low share of

R&D in gross domestic product (GDP), which is explained by the small amount of state budget funding, and an insufficient contribution of the private sector to research.

It should also be noted that the 2014 Country Specific Recommendation (CSR) for Latvia invites to 'Take steps for a more integrated and comprehensive research system also by concentrating financing towards internationally competitive research institutions'.

In terms of research and innovation (R&I) funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Latvia represented EUR 16 per inhabitant in 2012, less than 10 % of the EU-28 average (EUR 179). In 2012, total GBAORD corresponded to 0.4 % of total government expenditure and 0.2 % of GDP (Eurostat).

The share of European Structural Funds in RTD funding has grown over time and in 2013, it has already amounted to twice as much as the national budget.

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the growth rate of total GBAORD in Latvia has been higher than the growth rate of the total EU GBAORD. GBAORD as a share of GDP has regressed more in Latvia than in the EU-28.

1.2. Project-based funding applying the core principles of international peer review

In 2012-2013, the state budget funding was split in roughly equal shares between institutional funding (50.5 %) and competitive project-based funding, but when financing from abroad is discounted, the research community in Latvia is receiving only 10 % of national funding in the form of institutional funding directly without competition, while 90 % is awarded on a competitive basis. The allocation principles of the state budget resources were supposed to be changed, thus promoting a concentration of excellence and human resources, fostering cooperation with industry and strengthening national identity. But no change of that kind seems to have happened in 2013.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	81.4 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support project-based funding is higher than the EU average.

International peer review standards are applied in the evaluation of the research proposals and institutions by the Latvian Council of Science (starting from 2011) and partly by a few other bodies responsible for allocating research funds. New rules for the evaluation of proposals are currently under development under the responsibility of the Latvian Council of Science.

1.3. Institutional funding based on institutional assessment

In the past, institutional funding has not been allocated based on transparent institutional assessment. This is the reason why the 2013 country specific recommendation advised to 'take further steps to modernise research institutions based on the ongoing independent assessment'. This assessment is currently taking place, and its outcome should be known during the summer of 2014. In parallel, a research institution development strategy should be developed until 1 July of 2014.

The outcome of the evaluation of scientific institutions will influence the allocation of institutional funding, but this will only be an indirect one. Latvian authorities are indeed planning to establish the link between the allocation of institutional funding, including the funding of the State National Research Centres, and the granting of the EU Structural Funds.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	18.5 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support institutional assessment for the allocation of institutional funding is lower than the EU average.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It strongly supports also bilateral and multilateral initiatives.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total	National	1.8 %	2013	ERA survey

budget allocated to transnationally coordinated R&D	level			2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	0.9 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in Latvia allocated to transnationally coordinated R&D is lower than the EU average.

The share of responding funders' research and development budget in Latvia dedicated to jointly defined research agendas with other EU organisations is lower than the EU average.

So far, there has not been any strategy aiming at either designing national joint or open research programmes in general or concerning the grand challenges, in particular outside the Seventh Framework Programme (FP7) and Horizon 2020 in Latvia. FP7 fosters the cooperation between the Member States' institutions, the Associated Countries and the third countries. In FP7, Latvia's share of contribution in total participation is 0.3 % and the country received 0.1 % of the total European Commission contribution. FP funding represents EUR 20 per inhabitant (the EU average is EUR 72 per capita) for the period 2007-2013 and 6.8 % of the gross domestic expenditures on R&D (GERD) for the period 2007-2011 (last available data) (the EU average is 3 % of GERD for the same period).

Concerning joint programming initiatives, Latvia is associated as an observer to two of the ten ongoing initiatives: Water Challenges for a Changing world, and A healthy diet for a healthy life.

In terms of programmes undertaken jointly by several Member States (so called Article 185 initiatives), Latvia is involved in Eurostars (FP7), Joint Baltic Sea Research and Development Programme (BONUS) (FP7/Horizon 2020) and Eurostars2 (Horizon 2020). In the context of FP7, Latvia was also active in two joint technological initiatives: ARTEMIS and IMI.

The funding of supported activities under article 185 (BONUS and Eurostars programmes) amounted to approximately 0.16 % of total public RTD funding in 2013.

ERA-Nets facilitate the coordination of national and regional research programmes. The country participates in teh ERA-Nets projects, which help to coordinate the activities of participating countries. The country also participates in three ERA-Net Plus actions, which have high European added value and additional EU financial support to facilitate joint calls for proposals between national and/or regional programmes.

Latvia has no other joint research agenda within ERA.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with the third countries and regions, the country has not developed a specific policy. A small-scale joint research cooperation programme is running with Belarus, where the selection of bilateral cooperation projects is based on the evaluation of the proposals at national level with a subsequent joint decision by both parties. A trilateral cooperation between Latvia, Lithuania and Taiwan has also been active for 13 years. The small mobility programme 'Osmoze' between Latvia and France has been available for researchers since 2002.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0.9 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (national level)	0 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third	Limited compliance to ERA cluster	0.9 %	2013	ERA survey 2014

countries	(national level)			

The share of responding funders' research and development budget in Latvia allocated to collaboration programmes carried out with third countries is lower than the EU average.

Within the ERA-compliant cluster in Latvia, the share of organisations' research and development budget originating from third countries is equal to 0. However, it is positive in the limited compliance to ERA cluster.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

The mutual recognition of evaluations that complies with international peer review standards is not supported. No attempts have been made to accept the mutual recognition of evaluations that complies with international peer-review standards as a basis for national funding decisions.

The common funding principles proposed by the Commission for the implementation of joint programmes are only applied by Latvian funding ministries in particular cases where such need is necessary, like Article 185 BONUS and EUROSTARS, Article 187 ARTEMIS, ERA-NETs and ERA-NETs Plus, or within the EUREKA Framework.

Funding ministries do not implement 'Money follows cooperation', which is a scheme that enables small parts of a project funded by one of the participating research councils to be conducted in a different country. Neither of the funding ministries implement 'Money follows researchers', which is a scheme that enables researchers to move to a research institution in a different country to transfer ongoing grant funding to the new institution and continue research activities according to the original terms and objectives.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	100 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-	National	0 %	2013	ERA survey

based research and development budget allocated through peer review carried out by institutions outside the country	level			2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions is higher than the EU average.

Research funders in Latvia who responded to the survey indicated that they do not allocate project-based funding based on peer-reviewed decisions made by non-national institutions.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

For the time being, Latvia is not a member of any international or European scientific organisation. However, in terms of participation in the development of research infrastructures included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participates in the preparatory phase of four of them. Latvia also plans to be involved in the following ESFRI research infrastructure projects: BBMRI, CLARIN, ESS Survey, ESSneutron and EU-OPENSCREEN.

In terms of participation in the development of research infrastructures included in the ESFRI Roadmap, the country participates in the preparatory phase of four of them.

With regard to participation in the European Research Infrastructure Consortium (ERIC), Latvia is currently not involved in any of the consortia that adopt the legal framework designed by the European Commission to facilitate the establishment and operation of research infrastructures of European interest involving several European countries.

In terms of support to the development and implementation of research infrastructures, Latvia does not yet have any national roadmap for national and regional research infrastructures of pan-European interest. The Latvian Academy of Sciences is responsible for the development of such a document, which is still under process in 2014. In such a situation, no financial commitments to European and international research infrastructures have yet been allocated.

3.2. Access to research infrastructures of pan-European interest

Policies facilitating cross-border access to research infrastructures are not present in Latvia and, accordingly, no direct financial support is available from the national budget. Benefit from the transnational access to research infrastructures is, however, possible through the relevant FP7 projects that offer competitive fellowships, as well as through nationally funded research projects.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Latvia in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Latvia Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and the recent progress made in several key areas.

Stock of researchers

There were 3.947 full-time equivalent (FTE) researchers in Latvia in 2011. This represents 3.8 researchers per 1 000 labour force compared with 3.0 among the Innovation Union reference group (Modest Innovators) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

In 2013, the number of researcher posts advertised through the EURAXESS jobs portal per thousand researchers in the public sector was 1.8 in Latvia, compared with 9.0 among the Innovation Union reference group and an EU average of 43.7

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).

Vacancies for academic positions and top-level positions in publicly funded scientific institutions and publicly funded higher education institutions (HEIs)are advertised in the official newspaper Latvijas Vestnesis (Latvian Herald) (online newspaper since 1 January 2013). The EURAXESS jobs portal provides a link to the official newspaper. Institutions may take additional measures in order to advertise job vacancies.

4.3. Attractive careers

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.

By May 2014, one Latvian organisation was involved in the Commission's Human Resources Strategy for Researchers.

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-sectoral cooperation and mobility.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged 25-34 was 1.0 in 2011 compared with 1.1 among the Innovation Union reference group and an EU average of 1.7.

In 2009/2010, the University of Latvia and the Riga Technical University set up doctoral schools. The European Social Fund (ESF)-supported activities also aim to increase the quality of doctoral training. The ESF co-funded activity 'Support for the implementation of doctoral study programmes (2007-2013)' offered doctoral studies free of charge on a competitive basis. There is no formal bar on foreign students applying for state-funded PhDs in Latvia; in practice, language barriers are a disincentive.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 0.4 % in Latvia compared with 1.7 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 0.2 % in Latvia compared with 2.0 % among the Innovation Union reference group and an EU average of 24.2 %.

The ESF co-funded activities promote the return of Latvian researchers and the involvement of foreign researchers. For example, the involvement of mobile researchers 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.

One of the strategic objectives of the 'Commercialisation of science and transfer of technologies' (European Regional Development Fund, ERDF 2010-2015) is to boost the exploitation of science and the transfer of technologies by promoting cooperation between research and industry in the implementation of industrial research projects (applied research), and the development of new products and technologies.

5. GENDER

5.1. Foster cultural and institutional change on gender

Gender equality in public research in Latvia falls under the Labour Act, which provides formal equal opportunities for men and women, and restricts discrimination against women in employment. The law notably stipulates that a woman who makes use of maternity leave shall have her previous job ensured or, if this is not possible, a similar or equivalent position with no less favourable conditions and employment provisions.

Due to austerity measures that have had to be taken since 2009, there is a very limited institutional funding of research in Latvia. In such a situation, the female research community is much more vulnerable: practically, due to very high level of project-based competitive

funding, it appears to be difficult for managers to solve the issues of maternity leave and the return problems in a decent and appropriate way.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	National level	7.1 %	2013	ERA survey 2014
Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (national level)	1.8 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	0.7 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support national policies on gender equality in public research is lower than the EU average.

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations that have adopted Gender Equality Plans is lower than that within the EU's ERA-compliant cluster.

According to Latvian laws, on the one hand, there are no legal barriers that hinder the recruitment, career retention and progression of female researchers, which is why, on the other hand, there is no legal framework for female careers specifically in research in Latvia, or any specific measure that targets female researchers. In terms of maternity leave, the current situation is controversial: the law theoretically guarantees the restoration of the same position, but managers usually have no resources to satisfy this legal duty. When working in the framework of a fixed-term contract, it is, for the same reason, difficult to receive an extension of the contract due to maternity leave.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (national level)	56.6 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	6.7 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations implementing recruitment and promotion policies for female researchers is higher than that within the EU's ERA-compliant cluster.

Regarding the measures supporting the gender dimension in research programmes and projects in Latvia, European Structural and Investment Funds co-fund activities aiming at promoting gender equality in the field of research. The promotion of gender equality is one of the criteria for the evaluation of grant proposals.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the inclusion of gender dimension in research content	National level	92.4 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in	ERA compliant cluster (EU	44 %	2013	ERA survey 2014

research content	level)			
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (national level)	52.4 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	Limited compliance to ERA cluster (national level)	17.5 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support gender dimension in research content/programmes is higher than the EU average.

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations that include the gender dimension in research content is higher than that within the EU's ERA-compliant cluster.

5.2. Gender balance in the decision-making process

There are no examples of policy actions or regulation acts that are specific to the research sector promoting equal gender representation in academic and research committees, boards and governing bodies, etc. in Latvia. There are, however, some rare cases where funders set specific conditions in their calls for proposals.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (national level)	24 %	2013	ERA survey 2014
Share of gender-balanced recruitment committees for leading researchers	Limited compliance	0 %	2013	ERA survey 2014

amongst responding research performing organisations	to ERA cluster (national level)			
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	60 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Latvia, the share of gender-balanced recruitment committees for leading researchers in research-performing organisations is lower than within the EU's ERA-compliant cluster.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in Latvia is lower than the EU average.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, there is no national initiative. This means that the Latvian research funders have no specific policies on open access, but in order to gain more visibility for their work and more impact on international research, scientific institutions and researchers publish in open access journals and repositories. The University of Latvia is a partner in the OpenAIRE project. In fact, measures supporting open access to research publications and data (online and free access) have mostly been implemented as a result of FP7 projects.

Related to open access to publications, the free access granted to scientific research for specific sectors (e.g. the academic sector) and for the results of publicly funded research is only the result of the implementation of FP6 and FP7 projects.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to publications	National level	99.5 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific	ERA	18 %	2013	ERA survey

publications in OA amongst responding research performing organisations	compliant cluster (EU level)			2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (national level)	41.4 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	3.5 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support Open Access to publications is higher than the EU average.

Within the ERA-compliant cluster in Latvia, the share of publicly funded scientific publications in open access amongst research-performing organisations is higher than that within the EU's ERA-compliant cluster.

Concerning open access to data, there is no policy or support in Latvia, except in relation to FP7 projects.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting open access to data	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (national	6 %	2013	ERA survey 2014

	level)			
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	19.5 %	2013	ERA survey 2014

Research funders in Latvia who responded to the survey indicated that they do not have measures to support open access to data.

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations making scientific research data systematically available online and free of charge publicly funded is lower than that within the EU's ERA-compliant cluster.

With respect to repositories, there is no specific national infrastructure in Latvia than the one developed in the frame of the Open AIRE project.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to open innovation and knowledge transfer between public and private sectors, Latvia has developed a knowledge transfer strategy, which aims at fostering an open circulation of knowledge between companies and research organisations. During the period 2007-2013, the strategy was funded with structural funds under the framework of the EU regional policy. It was implemented, monitored and controlled by the Ministry of Economics, who was also in charge of providing information to the public on the implementation of this programme. The Latvian Investment and Development Agency was a cooperation organisation responsible for the operational tasks: establishing the evaluation committee, launching calls for proposals, signing contracts, etc. The call for proposals was launched in 2008 for the period of 2008-2013.

The programme operated via competitive multiannual grants allocated to higher education institutions and research institutes for the establishment and operation of technology transfer offices. Eight technology transfer units were embedded in HEIs (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 the major universities of Latvia, together with 50 innovative entrepreneurs, teamed up in order to establish a technology transfer centre for innovative products.

In applying the EU structural funds rules, the Ministry of Economics has supported the professionalisation of knowledge transfer activities, a necessary condition to increase the rate of success of the programme.

Funding organisations do not support strategic partnerships and/or the definition of joint collaborative research agendas between academia and industry in Latvia.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	92.4 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (national level)	2.3 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	Limited compliance to ERA cluster (national level)	9.1 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (national level)	54.8 %	2013	ERA survey 2014

Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national level)	24.1 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (national level)	54.8 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	13 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (national level)	5.8 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	Limited compliance to ERA cluster (national level)	1.8 %	2013	ERA survey 2014

The share of research funders in Latvia who responded to the survey and support KT and OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA-compliant cluster in Latvia, the share of research performing organisations having funding originating from the private sector is lower than that within the EU's ERA-compliant cluster. However, it is quite high in the cluster limited compliance to ERA.

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations having or using a structure for knowledge transfer activities is lower than that within the EU's ERA-compliant cluster. It is also quite high in the cluster limited compliance to ERA.

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations having dedicated staff employed in knowledge transfer activities is lower than that within the EU's ERA-compliant cluster. It is also quite high in the cluster limited compliance to ERA.

Within the ERA-compliant cluster in Latvia, the share of research personnel whose primary occupation is in the private sector (in full-time equivalents) is higher than that within the EU's ERA-compliant cluster.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation to the implementation of Digital ERA, Latvia has not set up any strategy. However, through the Latvian Academic Identity Federation (LAIFE), Latvia is a member of eduGAIN, a service intended to enable the trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) Partners' federations. 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.

Concerning digital services, the country provides cloud services (NREN service implementation support).

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (national level)	56.6 %	2013	ERA survey 2014

Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	30.6 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Latvia, the share of research performing organisations providing digital research services (i.e. cloud services, a research collaboration platform, etc.) is lower than that within the EU's ERA-compliant cluster.

6.4. Uptake of federated electronic identities

Latvia is not a member of an identity federation.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (national level)	54.8 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	Limited compliance to ERA cluster (national level)	22.3 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Latvia, the share of research-performing organisations providing federated electronic identities for their researchers is higher than that within the EU's ERA-compliant cluster.

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 14 research performing organisations in Latvia answered the 2014 ERA survey, which represents 29.4 % of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Latvia shows that 21.4 % of them are in the 'ERA-compliant' cluster, 64.3 % can be classified in the 'limited compliance to ERA' cluster and 14.3 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are 56.6 % for the 'ERA-compliant' cluster, 37.8 % for the 'ERA limited compliant' cluster and 5.6 % for those organisations where ERA principles are not applicable.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Project-based funding applying the core principles of international peer review			
Procedures for evaluation, financing and management of fundamental and applied research projects			
Regulation on support for science and research	2009		
Rules of the Latvian Council of Science Competitive research grants	2006		
Guidelines on Research, Technology Development and Innovation for 2014-2020	2013	X	X
Establishment of national research centres	2012	X	
Institutional funding based on institutional assessment			
Law on Research Activity Procedures for the allocation of Institutional funding to State Scientific Institutions, State Institutions of HE and the Scientific Institutes of State Institutions of HE	2005		

Methodology and criteria for international assessment of public and private scientific institutions	2013	X	X
Implementing joint research agendas			
Procedures for the Provision of State aid for participation in international collaborative programmes in research and technology	2008		
Bilateral cooperation programmes with Belarus, Ukraine and France Trilateral cooperation programmes with Lithuania and Taiwan	2009		
Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest			
Regulations on development of the research infrastructure	2010		
Science in Latvia	2010		
Attractive careers			
Law on immigration and research activity regulating contracts with foreign researchers.	2008		
Attraction of Human Resources to Science (ERDF 2009-2015)	2008		
Regulation on support to the implementation of doctoral programmes and postdoctoral research	2009		
Support for implementation of PhD studies (scholarship programme funded by ERDF)	2008		
Euraxess Latvia	2009		
Development of Human Resources in Scieujknce (ERDF support for development of new research groups).	2008		

Gender balance in the decision-making process			
Labour Law	2001		
Concept paper on Gender Equality implementation Plan for Gender Equality implementation in 2012-2014	2012	X	
Open access to publications and data resulting from publicly funded research			
Competitive VEGA grants	2012	X	
Open innovation and knowledge transfer between public and private sectors			
Programme for Technology transfer contact points	2009		
Uptake of federated electronic identities			
eduGAIN (Membership through LAIFE)			

1. MORE EFFECTIVE NATIONAL SYSTEMS

1.1. Research and innovation system

Research and innovation policies are the responsibility of the Ministry for Education and Employment. Within the framework of the Ministry, the Malta Council for Science and Technology (MCST) is the body responsible for developing, implementing and managing research and innovation policy and the national funding programme. Malta Enterprise, which answers to the Ministry of Economy, Investment and Small Business, is the national development agency responsible for supporting the private sector and operates a number of research and development (R&D) schemes. 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, and one public research organisation, the Malta Aquaculture Research Centre. There are four public funding organisations in Malta: the Ministry for Finance,which allocates institutional funding to the University of Malta and government departments; the Planning and Priorities Coordination Division within the Ministry for European Affairs, which manages the allocation of EU structural funds, the MCST, which manages the national research and innovation programme and the Commercialisation Programme and Malta Enterprise, which manages a combination of national funds and EU structural funds.

The National Research and Innovation (R&I) Strategy 2020, which was adopted in February 2014, outlines Malta's R&D priorities between 2014 and 2020. It identifies eight areas for smart specialisation and aims at promoting the ERA objectives. The National R&I Strategy will be complemented by an R&I Action Plan, which will identify specific measures and timelines up to 2020 for achieving the objectives outlined in the National R&I Strategy. The National R&I Strategy will also be implemented through the Technology Development Programme (formerly known as the National R&I Programme), which provides R&D grants.

In terms of R&I funding, the Government Budget Appropriations or Outlays for Research and Development (GBAORD) in Malta represented EUR49 per inhabitant in 2012 (EUR179 in EU-28). In 2013, GBAORD per inhabitant was EUR46. In 2012, total GBAORD corresponded to 0.7 % of total government expenditures and 0.3 % of Gross Domestic Product (GDP)(Eurostat).

The analysis of the evolution of GBAORD in the period during the economic crisis (2007-2012) shows that in nominal terms, the growth rate of total GBAORD in Malta has been higher than the growth rate of the total EU GBAORD. GBAORD as a share of GDP has evolved positively in Malta even when it declined from the EU-28 level.

1.2. Project-based funding applying the core principles of international peer review

Project-based funding is allocated a competitive basis through the Technology Development Programme (formerly known as the National R&I Programme). The Technology Development Programme provides R&D grants for projects jointly undertaken by industry

and academia. The annual budget for Malta's national research and innovation programme amounted to approx. Euro 1.4 million in 2013.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as project-based funding	EU level	66.2 %	2013	ERA survey 2014

The share of research funders in Malta who responded to the survey and support project-based funding is higher than the EU average.

The core principles of international peer review are implemented within the framework of the Technology Development Programme, although it is not clear whether international peers are systematically used. All proposals are submitted in English.

1.3. Institutional funding based on institutional assessment

Institutional funding is never allocated based on institutional assessment. There are no institutional assessments of the University of Malta or the public research centre and the allocation of institutional funding is therefore not based on performance.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	National level	0 %	2013	ERA survey 2014
Share of responding funders' total budget allocated as institutional funding based on institutional assessment and/or evaluation	EU level	24 %	2013	ERA survey 2014

Research funders in Malta who responded to the survey indicated that they do not have measures supporting institutional assessment for the allocation of institutional funding.

2. TRANSNATIONAL COOPERATION

2.1. Implementing joint research agendas

The country is involved in transnational cooperation. It supports also bilateral and multilateral initiatives.

Malta faces the issues of a small country with limited R&D capacity and funding to engage in cross-border cooperation. The National Research and Innovation Strategy 2020 emphasises the need to focus cross-border cooperation in the eight areas identified for smart specialisation. However, the strategy does not provide specific policies or actions supporting joint research activities.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' total budget allocated to transnationally coordinated R&D	National level	28.5 %	2013	ERA survey 2014
Share of responding funders' total budget allocated to transnationally coordinated R&D	EU level	4.1 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	National level	28.5 %	2013	ERA survey 2014
Share of responding funders' research and development budget dedicated to jointly defined research agendas with non-national EU organisations	EU level	1.7 %	2013	ERA survey 2014

The share of responding funders' total budget in Malta allocated to transnationally coordinated R&D is higher than the EU average.

The share of responding funders' research and development budget in Malta dedicated to jointly defined research agendas with other EU organisations is higher than the EU average.

Cooperation between institutions of Member States, Associated Countries and Third Countries is fostered by the Framework Programme. In the Seventh Framework Programme (FP7), the share of participation by Malta of the total participation is 0.2 % and the country received 0.05 % of total European Commission contribution. FP7 funding represents EUR42 per inhabitant (the EU average EUR72 per capita) for the period 2007-2013 and 9.6 % of the Gross Domestic Expenditures on R&D (GERD) for the period 2007-2011 (last available data) (the EU average is 3 % of GERD for the same period). Given the relative short history of R&D policy in Malta, the majority of efforts have been directed towards Malta's participation

in the EU's Framework Programme. The National Research and Innovation Strategy 2020 further supports Malta's participation to the EU Framework Programme.

Concerning joint programming initiatives, the country participates in two of the ten ongoing initiatives, coordinating none of them. These initiatives are Antimicrobial resistance - An emerging threat to human health, and Urban Europe - Global Challenges, Local Solutions.

In terms of programmes undertaken jointly by several Member States (so called Article 185 initiatives), the country was involved in one programme. In Horizon 2020, the country is already involved in one of the four existing initiatives.

ERA-Nets facilitate the coordination and collaboration of national and regional research programmes, in particular the preparation and implementation of joint calls for transnational research proposals between national and/or regional programmes. The country has participated in a total of eight ERA-Nets, of which four are currently still running. The country also has participated in ERA-Net Plus actions in areas with high European added value and additional EU financial support topping up their joint call for proposals.

Concerning research agreements with EU Member States and/or Associated Countries, Malta has a cooperation agreement with CERN and also signed a cooperation agreement in 2012 with the European Space Agency. Discussions are currently taking place with the European Biology Molecular Laboratory (EMBL) with a view to eventually signing a bilateral agreement.

2.2. Openness for international cooperation with third countries and regions

In terms of international cooperation with third countries and regions, no measures are reported.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	National level	0 %	2013	ERA survey 2014
Share of responding funders' research and development budget allocated to collaboration programmes carried out with third countries	EU level	2.4 %	2013	ERA survey 2014
Share of organisations' research and development budget amongst responding research performing organisations originating from third countries	ERA compliant cluster (EU level)	0.8 %	2013	ERA survey 2014

Research funders in Malta who responded to the survey indicated that they do not have measures supporting international cooperation with third countries. RPOs responding to the survey did not receive any funding from third countries.

2.3. Interoperability, mutual recognition of evaluation results and other schemes

In terms of mutual recognition of evaluations, no measures are reported.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	National level	0 %	2013	ERA survey 2014
Share of responding funders which can base their project-based research and development funding decisions on peer reviews carried out by non-national institutions	EU level	38.5 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	National level	0 %	2013	ERA survey 2014
Share of responding funders' project-based research and development budget allocated through peer review carried out by institutions outside the country	EU level	0.8 %	2013	ERA survey 2014

Research funders in Malta who responded to the survey indicated that they do not have measures supporting the allocation of project-based funding on peer reviewed decisions made by non-national institutions.

The share of responding funders' project-based research and development budget in Malta allocated through peer review carried out by institutions outside the country is equal to 0.

3. RESEARCH INFRASTRUCTURES

3.1. Financial commitments for the construction and operation of ESFRI, national and regional research infrastructures of pan-European interest

Malta participates in the following large international research infrastructures: ESA and EFDA.

In terms of participation in the development of research infrastructures included in the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, the country participates in the preparatory phase of two of them (4 %). Malta is a member of DARIAH and BBMRI. The country coordinates none of them.

In terms of financial commitments to the development of these research infrastructures, Malta has contributed EUR4 500 for DARIAH and EUR 20 657 for BBMRI in 2014.

With regard to participation in the European Research Infrastructure Consortium (ERIC), Malta participates in BBMRI ERIC, one of the seven consortiums that adopted the legal framework designed by the Commission to facilitate the establishment and operation of research infrastructures of European interest involving several European countries.

In terms of support to the development and implementation of research infrastructures, Malta does not have a national roadmap for infrastructures. The National Research and Innovation Strategy 2020 supports investment in research infrastructures linked to Malta's thematic specialisations. The strategy also indicates Malta's intention to participate in the development of pan-European research infrastructures by linking it with identified priority themes and investments in national research infrastructures. However, no funding is ring-fenced for the construction and operation of ESFRI, global, national and regional RIs of pan-European interest. The construction of the Life Sciences Centre may be considered a first step towards the development of a national research infrastructure.

3.2. Access to research infrastructures of pan-European interest

The National Research and Innovation Strategy 2020 includes a recommendation supporting Maltese researchers' access to research infrastructures of interest outside Malta.

4. OPEN LABOUR MARKET FOR RESEARCHERS

4.1. Introduction to open labour market for researchers

A detailed report can be found in the country profile for Malta in the Researchers' Report 2014 [http://ec.europa.eu/euraxess/pdf/research_policies/country_files/Malta_Country_Profile_RR2014_FINAL.pdf].

The following text provides an overview of the current situation and recent progress made in several key areas.

Stock of researchers

There were 759 full-time equivalent (FTE) researchers in Malta in 2011. This represents 4.2 researchers per 1 000 labour force, compared with 5.3 among the Innovation Union reference group (Moderate Innovators) and an EU average of 6.7.

4.2. Open, transparent and merit-based recruitment of researchers

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).

Public service and public sector research vacancies are not published on Europe-wide platforms and there are no plans at present to publish public service and public sector jobs on EURAXESS. However, the University of Malta advertises its vacancies online on its own website and its job vacancies are available through EURAXESS.

4.3. Attractive careers

The Maltese government has not yet actively promoted the implementation of the 'Charter & Code' by research institutions and funders. It is in the process of identifying measures to promote its adoption. However, the institutions are implementing many of the provisions of the 'Charter & Code'. The new National R&I Strategy 2020 refers explicitly to the 'Charter & Code', and recommends their adoption by public employers and research funders.

The Malta Council for Science and Technology provides support to researchers to participate in Seventh Framework Programme for Research (FP7) projects and the Horizon 2020 Framework Programme. The University of Malta has developed a career stream for researchers. In addition, academic members of staff have a clear career progression from assistant lecturer all the way through to the level of professor, and they are contractually bound to undertake research activities for one third of their time.

4.4. Supporting structured innovative doctoral training programmes

The number of new doctoral graduates per thousand population aged 25-34 was 0.3 in 2011 compared with 1.2 among the Innovation Union reference group and an EU average of 1.7.

The Maltese government has not put in place any measures to increase the quality of doctoral training and has not developed a specific Skills' Agenda. However, the University of Malta is participating in a European Social Fund (ESF) project that will result in offering a masters' course in entrepreneurship, as well as establishing a Business Incubation Centre at the University of Malta. The Centre for Entrepreneurship and Business Incubation (CEBI) was set up in May 2013 as a centre of excellence in entrepreneurship at the University of Malta (UoM), complementing the existing endeavours in the area. As an academic centre, CEBI trains students and staff in the science and art of entrepreneurship using a participant-centred, hands-on approach by leveraging entrepreneurship expertise at the University of Malta, as well as with experienced local and foreign entrepreneurs. In July 2013, CEBI launched an intensive training programme in entrepreneurship, in collaboration with Isis Innovation. The

development of this programme has been supported through the ESF project. A total of around 50 students are following the Programme.

The new National R&I Strategy 2020 focuses mainly on the importance of nurturing a researcher pool with awareness, expertise and experience in both the academic and business camps, which benefits both the individual's career path as well as further industry development. In addition, the strategy also emphasises the importance of coupling the drive towards increasing the number of doctoral and post-doctoral graduates with a drive to attract research initiatives to Malta to provide career opportunities for new researchers.

4.5. International and inter-sectoral mobility

In 2011, the percentage of doctoral candidates with citizenship of another EU-27 Member State was 4.1 % in Malta compared with 4.2 % among the Innovation Union reference group and an EU average of 7.7 %. The percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 1.4 % in Malta compared with 5.2 % among the Innovation Union reference group and an EU average of 24.2 %.

The Maltese government has not put in place any measures to attract and retain leading national, EU and third-country researchers. The STEPS programme provided funding for doctoral candidates to pursue studies either in Malta or overseas. The same rationale applies for the Master It! programme. The Malta Government Scholarship Scheme (MGSS) also allows awardees to pursue their studies abroad, in addition to supporting those students who opt to conduct part of their assignment at world-renowned research institutes.

The Malta Council for Science and Technology provides state financing in the form of grants for research, development and innovation in science and technology through the National R&I Programme, which was set up in 2004. One of the eligibility conditions of the National Research and Innovation Programme is that proposals may only be submitted by consortia that involve both an academic and an industry partner, thus leading to better links between these two sectors.

5. GENDER

5.1. Foster cultural and institutional change on gender

The Gender Equality Action Plan 2009-2010 included a number of measures aiming at achieving gender equality; however, no follow-up measures were proposed after it expired in 2010. No measures addressing gender equality in research are reported besides general legislation and/or soft measures.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting gender equality in research	National level	95 %	2013	ERA survey 2014

Share of responding funders supporting gender equality in research	EU level	82.2 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	ERA compliant cluster (EU level)	64 %	2013	ERA survey 2014
Share of responding research performing organisations in the sample which have adopted Gender Equality Plans	Limited compliance to ERA cluster (national level)	99.3 %	2013	ERA survey 2014

The share of research funders in Malta who responded to the survey and support national policies on gender equality in public research is higher than the EU average. Within the ERA-compliant cluster, the share of research performing organisations having adopted Gender Equality Plans is higher than that within the EU's ERA-compliant cluster.

Regarding careers and working conditions in public research for female researchers, there are no reported measures.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	ERA compliant cluster (EU level)	53.5 %	2013	ERA survey 2014
Share of responding research performing organisations implementing recruitment and promotion policies for female researchers	Limited compliance to ERA cluster (national level)	99.3 %	2013	ERA survey 2014

Within the ERA-compliant cluster, the share of research performing organisations implementing recruitment and promotion policies for female researchers is higher than that within the EU's ERA-compliant cluster.

As regards gender dimension in research content/programmes, there are no reported measures.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting the inclusion of gender dimension in research content	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting the inclusion of gender dimension in research content	EU level	48.5 %	2013	ERA survey 2014
Share of responding research performing organisations which include the gender dimension in research content	ERA compliant cluster (EU level)	44 %	2013	ERA survey 2014

The share of research funders in Malta who responded to the survey and support gender dimension in research content/programmes is lower than the EU average. Also, RPOs did not include the gender dimension in research contents.

5.2. Gender balance in the decision-making process

As regards gender balance in decision-making, there are no reported measures.

Indicator	Level/cluster	Value	Year	Source
Share of gender-balanced recruitment committees for leading researchers amongst responding research performing organisations	ERA compliant cluster (EU level)	33.6 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	National level	0 %	2013	ERA survey 2014
Share of gender-balanced research evaluation panels amongst responding research funding organisations	EU level	35.8 %	2013	ERA survey 2014

There seems to be no gender balanced recruitment committees for leading researchers among responding research performing organisations nor gender-balanced research evaluation panels amongst responding research funding organisations.

6. KNOWLEDGE CIRCULATION

6.1. Open access to publications and data resulting from publicly funded research

In terms of support to open access, the National Research and Innovation Strategy 2020 highlights the need to support open access to publications resulting from publicly-funded research. However, there is currently no overall legislative or policy framework supporting open access. Malta is a participant in the OpenAIRE Plus project.

Related to open access to publications, the National Research and Innovation Strategy 2020 promotes the use of open access to publications resulting from publicly-funded research. Publications arising from projects funded under the National R&I Programme have to be deposited in an open access repository at the moment of publication. The electronic copy shall become freely available to all within six months of publication. However, it is not clear to what extent this requirement in the National R&I Programme is monitored and enforced. Open access-related costs are not included in the list of eligible costs in the programme.

Indicator	Level/cluster	Value	Year	Source
Share of responding funders supporting open access to publications	National level	95 %	2013	ERA survey 2014
Share of responding funders supporting open access to publications	EU level	51 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	ERA compliant cluster (EU level)	18 %	2013	ERA survey 2014
Share of publicly funded scientific publications in OA amongst responding research performing organisations	Limited compliance to ERA cluster (national level)	0 %	2013	ERA survey 2014

The share of research funders in Malta who responded to the survey and support Open Access to publications is higher than the EU average. No RPO who answered the survey indicated that they have publications in OA.

Concerning open access to data, the National Research and Innovation Strategy 2020 supports open access to scientific data, however the strategy does not make any specific recommendations.

Indicator	Level/cluste	Value	Year	Source

	r			
Share of responding funders supporting open access to data	National level	0 %	2013	ERA survey 2014
Share of responding funders supporting open access to data	EU level	33.5 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	ERA compliant cluster (EU level)	54.2 %	2013	ERA survey 2014
Share of responding research performing organisations making scientific research data available on-line and free of charge	Limited compliance to ERA cluster (national level)	99.3 %	2013	ERA survey 2014

Research funders in Malta who responded to the survey indicated that they do not have measures to supporting Open Access to data.

Within the ERA-compliant cluster, the share of research performing organisations making scientific research data available on-line and free of charge is higher than that within the EU's ERA-compliant cluster.

As regards to repositories, there are no reported measures.

6.2. Open innovation and knowledge transfer between public and private sectors

In relation to Open Innovation and Knowledge Transfer between public and private sectors, knowledge transfer has been acknowledged as a priority in both the National Research and Innovation Strategy 2020 and Malta's 2014 National Reform Programme. Knowledge transfer has been at the core of Malta's National R&I Programme, which funds projects that are jointly undertaken by industry and academia. One of the eligibility criteria is that the project consortia should include both academia and industry partners. Projects financed by the National R&I Programme also need to demonstrate a strong commercialisation potential. 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. Malta has not developed a knowledge transfer strategy.

Regarding support to technology transfer offices (TTOs), the professionalisation of the KT office at the University of Malta Technology has been supported by the Entrepreneurship Training Programme. This programme, which runs between 2011 and 2014 and is funded

under the ESF, aims at increasing awareness and providing training related to knowledge transfer and intelIectual property rights (IPR).

The knowledge transfer office at the University of Malta - which was set up in 2010 - and the development of Malta's Life Sciences Centre - which is a state-of-the-art industrial park dedicated to the life sciences sector - constitute important steps towards the development of strong public-private linkages. The Malta Life Sciences Centre will include the BioMalta campus, which will be a bio-medical cluster between the University of Malta, Mater Dei Hospital and the life sciences industry. Moreover, the Centre for Entrepreneurship and Business Incubation (CEBI), set up in May 2013 at the University of Malta, will act as both a business incubator to support spin-offs and a catalyst for seed and venture capital funds. The University of Malta has also published guidelines to regulate the joint ownership of intellectual property resulting from academic research. Given that these measures are fairly recent, it is still too early to assess their effectiveness.

Indicator	**Level/cluster**	**Value**	**Year**	**Source**
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	National level	100 %	2013	ERA survey 2014
Share of responding funders supporting the implementation of knowledge transfer as part of its institutional and/or project-based funding	EU level	82.9 %	2013	ERA survey 2014
Share of responding research performing organisations' research and development budget financed by the private sector	ERA compliant cluster (EU level)	6.8 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	ERA compliant cluster (EU level)	75 %	2013	ERA survey 2014
Share of responding research performing organisations having or using a structure for knowledge transfer activities	Limited compliance to ERA cluster (national	99.3 %	2013	ERA survey 2014

	level)			
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	ERA compliant cluster (EU level)	66.3 %	2013	ERA survey 2014
Share of responding research performing organisations having dedicated staff employed in knowledge transfer activities	Limited compliance to ERA cluster (national level)	99.3 %	2013	ERA survey 2014
Share of research personnel whose primary occupation is in the private sector (in headcount)	ERA compliant cluster (EU level)	2.9 %	2013	ERA survey 2014

The share of research funders in Malta who responded to the survey and support KT, OI, TTOs and Private Public interaction is higher than the EU average.

Within the ERA-compliant cluster in Malta, the share of research performing organisations having funding originating from the private sector is higher than that within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Malta, the share of research-performing organisations having or using a structure for knowledge transfer activities is higher than that within the EU's ERA-compliant cluster..

Within the ERA-compliant cluster in Malta, the share of research-performing organisations having dedicated staff employed in knowledge transfer activities is lower than that within the EU's ERA-compliant cluster.

Within the ERA-compliant cluster in Latvia, there seems to be no research personnel whose primary occupation is in the private sector.

6.3. Harmonise policies for public e-infrastructures and associated digital research services

In relation to the implementation of Digital ERA, the draft National R&I Strategy 2011-2020 highlights the need to include e-infrastructures in the development of a national roadmap for research infrastructures. The University of Malta is a partner of the EU-funded project GÉANT serving Europe’s research and education community. The country has implemented a research and education network, which is essential to make digital services possible. UoM-CSC is the Maltese National Research and Education Network, a specialised Internet service

provider dedicated to supporting the needs of the research and education communities within the country. Malta has not set up a strategy for the implementation of Digital ERA.

As regards digital services, no measures are reported.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	ERA compliant cluster (EU level)	80.8 %	2013	ERA survey 2014
Share of responding research performing organisations providing digital research services (i.e. cloud services, research collaboration platform, etc.)	Limited compliance to ERA cluster (national level)	99.3 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Malta, the share of research performing organisations providing digital research services (i.e. cloud services, a research collaboration platform, etc.) is hihgher than that within the EU's ERA-compliant cluster.

6.4. Uptake of federated electronic identities

Malta was not a member of an identity federation in either 2011 or 2013. The country is not member of eduGAIN, a service intended to enable the trustworthy exchange of information related to identity, authentication and authorisation between the GÉANT (GN3plus) partners' federations.

Indicator	Level/cluster	Value	Year	Source
Share of responding research performing organisations in the sample providing federated electronic identities for their researchers	ERA compliant cluster (EU level)	38.5 %	2013	ERA survey 2014

Within the ERA-compliant cluster in Latvia, there seems to be no provision of digital research services (i.e. cloud services, a research collaboration platform, etc.).

7. NOTES ON THE 2014 ERA SURVEY RESULTS

7.1. Comments

A total of 3 research performing organisations in Malta answered the 2014 ERA survey, which represents 79.9% of the total number of researchers in the country (total number of researchers in the country as of 2011).

The principal component and clustering analysis of research performing organisations in Malta shows that n.a. % of them are in the 'ERA compliant' cluster, 33.3 % can be classified in the 'limited compliance to ERA' cluster and 66.7 % of organisations in the 'ERA principles are not applicable' cluster. However, when the organisations are weighted by the number of researchers in each organisation, the results significantly vary. Indeed, the shares of 'weighted' organisations are n.a. % for the 'ERA compliant' cluster, 99.3 % for the 'ERA limited compliant' cluster and 0.7 % for those organisations where ERA principles are not applicable.

In particular, one RPO concentrates the overwhelming majority of R&D personnel, which explains the particularly high or low percentages for some of the indicators.

For the indicator 'Share of funders which can base their project based research and development funding decisions on peer reviews carried out by non-national institutions', it should be noted that the mutual recognition of peer reviews is outside the scope of Malta's national R&D programme/policy and hence it is not implemented by funders.

For the indicator 'Share of publicly funded scientific publications in OA amongst research performing organisations', the main RPO did not provide an answer to this question.

Policy measures in support of ERA implementation

Initiative	Adopted in	Adopted since 2012	New measure since 2013
Research and innovation system			
National Research and Innovation Strategy 2020	2014	X	X
R&I Action Plan	2014	X	X
Technology Development Programme	2014	X	X
Project-based funding applying the core principles of international peer review			
National Research and Innovation (R&I) Programme (renamed the "Technology Development Programme" in 2014)	2004		

Attractive careers			
Euraxess Malta	2004		
The Malta Government Scholarship Scheme (MGSS)	2006		
Endorsement of the Charter by the Office of the Prime Minister	2005		
Setting up of a post-doctoral scheme and community at the University of Malta (part of Malta's 2011-2015 NRP)			
STEPS scheme	2009		
Open access to publications and data resulting from publicly funded research			
National Research and Innovation Strategy 2020	2014	X	X
Rules for participation in the National Research and Innovation Programme	2012	X	
Open innovation and knowledge transfer between public and private sectors			
University of Malta knowledge transfer office - Entrepreneurship Training Programme	2011		
Life Sciences Centre/BioMalta Campus			
Centre for Entrepreneurship and Business Incubation (CEBI)	2013	X	X
National Research and Innovation Strategy 2020	2014	X	X
Malta Enterprise R&D incentives schemes (e.g. Loan for Highly Qualified Personnel, Industrial Property Rights Costs for SMEs Scheme, Industrial Research and Experimental Development Scheme)	2007		
Technology Transfer Office at the University of Malta and University Trust Fund	2009		

National Research and Innovation (R&I) Programme (renamed the "Technology Development Programme" in 2014)	2012	X	