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Country Note Spain

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General Information on EFFORTI

EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) seeks to analyse and model the influence of measures to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems. For this purpose, EFFORTI will

- develop an evaluation framework which enables evaluators, science managers, policy-makers and programme owners to conduct a sound analysis of the research and innovation outputs, outcomes and impacts of gender equality measures across Europe, with a focus on the national level;
- design a differentiated concept to analyse a variety of policy measures and assess their performance, taking into account the diversity in the national policies as well as organizational contexts;
- derive general lessons for evidence-based and thus "good" policy-making in the field of gender equality within RTDI systems. This means that not only has progress towards more gender equality in RTDI been achieved, but also that RTDI has been able to benefit from this progress through enhanced scientific and innovation outputs and productivity, as well as through a higher responsiveness to societal needs and challenges.

Terms of use

This document was developed within the EFFORTI project, funded by the European Commission within Horizon 2020, by a consortium consisting of six partners, the Fraunhofer Society represendet by the Fraunhofer ISI in Karlsruhe and the CeRRI in Berlin (coordinator, Germany), the UOC – OPEN UNIVERSITY OF CATALONIA (Spain), JOANNEUM Research (Austria), AU - AARHUS UNIVERSITY (Denmark), NaTE - THE ASSOCIATION OF HUNGARIAN WOMEN IN SCIENCE (Hungary), INTRASOFT International (Luxembourg).

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0 Introduction

This Spanish Country Note is one of seven country notes that were written as part of the H2020 project EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I, No 710470) to analyse the context in which gender equality measures in RTDI take place. EFFORTI seeks to analyse and model the influence of measures to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems.

The main objective of this report is to understand the influence of wider contextual framework conditions in Spain on structuring the situation of women in RTDI, their career opportunities and, subsequently, on the effects of gender equality measures in RTDI. Based on the objectives of the EFFORTI project we have considered following contextual framework conditions as relevant:

- the structure and performance of the research and innovation system,
- gender equality policies in the labour market and welfare policies related to reproductive work and child-care,
- the governance and existing policies of gender equality in RTDI and
- the evaluation culture and policy especially in the field of gender equality in RTDI.

In a concluding chapter the findings of each country note are summarized. This provides a better understanding of how gender equality policies in RTDI are related to the innovation system on the one hand and to broader policies of gender equality and welfare regimes on the other.

With this report we acknowledge the need to analyse the structure and governance of innovation systems and the societal environments in terms of the opportunities and constraints offered by various gender, welfare and innovation regimes for women's employment. This task is particularly important as programs and initiatives to promote gender equality in RTDI are located at the interface of different policy environments of the innovation system and gender equality as well as welfare policies. For each EFFORTI country (Austria, Denmark, France, Germany, Hungary, Spain, Sweden) such a report was compiled because the selected programs and initiatives that will be analysed as case studies, are embedded in different contexts and interact differently with their environment. The national country notes will provide a better understanding of these contexts.

Subsequently, the seven national country notes will be compared with each other in a comparative report. The comparative report will focus on the interfaces between the three domains innovation system, welfare and gender equality policy initiatives as well as of evaluation cultures and how they are reflected in gender equality programs in RTDI. A special emphasis will be put on how gender equality policies are embedded in and aligned with national innovation policies.

Methodology

Most of the research carried out in preparation of the national country notes is desk-based (secondary data collection and analysis of international and national literature). Additional local and sector-level information have been obtained through expert interviews with key informants and through national workshops with stakeholders and evaluators in cases where the information was not available in the collected data or literature.

1 Innovation System

1.1 Structure of the research and innovation system

1.1.1 Ranking in the European Innovation Scoreboard (Rank and Class)

Table 1: Summary Innovation Index of EIS for 2008 to 2015

	Summary Innovation Index							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
EU	0,495	0,502	0,511	0,514	0,519	0,521	0,523	0,521
Spain	0,381	0,386	0,389	0,386	0,388	0,394	0,387	0,361

Source: EIS 2016 database[1]

Table 2: Ranking in the EIS between 2008 and 2015

	EIS Ranking							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
EU	15	15	15	15	15	15	15	15
Spain	23	23	23	23	23	23	24	25

Source: EIS 2016 database

In the European Innovation Scoreboard Ranking Spain is classified as a 'Moderate Innovator' alongside Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary Italy, Latvia, Lithuania, Malta, Poland, Portugal and Slovakia – where innovation performance is quantified at between 50% and 90% of the EU average (EIS, 2016, 12).

In 2008 Spain occupied 23rd place in the EIS ranking this fell to 25th place in 2014 and 25th place in 2015. A comparison of performance in 2015 and 2008 shows that it has significantly declined over time increasing the gap with the EU (EIS 2016, 55).

The financial crisis that hit Spain in 2008 has had a great impact on Spain's innovation performance; in 2008, its relative performance was at its highest (77%), but decreased to 69% in 2015 (EIS 2016, 55). Spain (-0.8%) has experienced negative growth of its innovation index along with Greece (-0.2%), Cyprus (-0.6%), and Croatia (-0.9%) – whilst its performance relative to the EU has declined (EIS 2016, 14)

Spain underperforms in all components of the innovation index – except for two of the human resource indicators: new doctoral graduates- on a par with the EU level and the population with completed tertiary level and the intellectual assets - community trademarks. The 2015 ranking is consistent with the 2014 ERAC report which identifies that underperformance is most evident in firm activities: firms' investments in R&I and entrepreneurship and linkages and innovators (ERAC, 2014, 15). The relatively strong performance of international scientific publications – 645 to the EU of 459 – means that the classification of performance in open, excellence-oriented and attractive research systems – is close to the average performance of the EU (EIS, 2016, 55). License and patent revenues from abroad is highlighted as the weakest indicator- albeit the indicator that has improved the most (ibid).

[1] http://ec.europa.eu/DocsRoom/documents/17823/attachments/1/translations/en/renditions/native

1.1.2 Development of the R&D sector and its subsectors

1.1.2.1 Development of GERD (share of gross domestic expenditure on R&D) between 2009 and 2015

The economic and financial crisis that started in 2008 has hit Spain particularly hard – resulting in a decline in gross expenditure on research and development (GERD). Between 2002 and 2008, GERD had doubled in absolute terms and experienced a significant increase in relative terms. GERD as a percentage of GDP – R&D intensity reached 1.35% in 2009 – decreased to 1.2% in 2014 (RIO Country Report, 2015, 6). In 2014, Spanish R&D intensity was 273.6 euros per capita in 2014, which is less than half of the European average (EUR 558.4) (RIO Country Report, 2016, 31).

Table 3: Development of GERD (gross domestic expenditure on R&D) as a percentage of GDP for 2005, 2009 and 2014

	2005	2009	2014
EU-28	1,76	1,94	2,03
Spain	1,1	1,35	1,23

Source: Eurostat, tsc00031

Current R&D funding indicators suggest a decreasing trend with government budget appropriations or outlays on R&D (GBOARD) substantially lower in 2014 (€5 776 million) than in 2006 (€6 737.4 million) (RIO Country Report, 2016, 6).

Since the start of the crisis, direct government expenditure on R&D (GERD) has declined. Public budgets for R&D from the State have plummeted from €9 673 million in 2009 to €6 406.5 million in 2015 – a decline from 2.52% to 1.46% of the total central budget – being relatively less than what was allocated to R&D in 2001 (1.49%) (RIO Country Report, 2016, 6). In comparison to the EU-28 average Spain relies more heavily on public funds for R&I activities – thereby a reduction in public spending justified by the financial crisis has had a detrimental effect on the amount of government funds allocated to R&I: There was a reduction in total government funding by 1.9% from 2013 to 2014 and GBOARD decreased by 14.7% in 2012, by 8.4% in 2013 and by 5.7% in 2014 (Rio Country Report, 2015, 15). This huge public disinvestment in R&I threatens the sustainability of the Spanish R&I system (ibid).

The main sources of R&D funding in 2014 were the business enterprise sector (BES) and government sector (GOV) – which provided 46.4% and 45.5 % of total funding respectively – followed by small amounts from other sectors: 7.4% from abroad and 0.7% from the private non-profit sector (ICONO: INE-2015; Rio Country Report, Eurostat). Within the business enterprise sector – the main contributor to GERD are the 9370 SMEs which contribute 24.5% of GERD. Within the higher education sector 48 public universities are the largest contributor to GERD providing 28% and within the government sector – the 8 public research bodies contribute 7.8% of GERD (INE, 2015).

The following table shows how from 2009 to 2014 GERD as a percentage of GDP has declined across all sectors of performance in Spain – this is in contrast to the general trend in the EU 28 which apart

from a slight dip from 2009 to 2010 in the business enterprise sector and government sector – the general trend is one of growth.

Table 4: Development of GERD (gross domestic expenditure on R&D) as a percentage of GDP between 2005 and 2014 by sector of performance

GEO	SECTPERF/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28	All sectors	1,76	1,78	1,78	1,85	1,94	1,93	1,97	2,01	2,03	2,03
	BES	1,1	1,13	1,13	1,17	1,2	1,19	1,25	1,28	1,29	1,3
	GOV	0,24	0,23	0,23	0,24	0,26	0,25	0,25	0,25	0,25	0,25
	HES	0,4	0,4	0,4	0,42	0,46	0,47	0,46	0,47	0,48	0,47
	PNP	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
Spain	All sectors	1,1	1,17	1,23	1,32	1,35	1,35	1,33	1,28	1,26	1,23
	BES	0,59	0,65	0,69	0,72	0,7	0,69	0,69	0,68	0,67	0,65
	GOV	0,19	0,2	0,22	0,24	0,27	0,27	0,26	0,25	0,24	0,23
	HES	0,32	0,32	0,33	0,35	0,38	0,38	0,37	0,36	0,35	0,35
	PNP	0	0	0	0	0	0	0	0	0	0

Source: EUROSTAT: Total intramural R&D expenditure (GERD) by sectors of performance [rd_e_gerdtot][2]

As already mentioned the Spanish GERD distribution suggests that the R&I system relies more on public funds (GOV and HES) than the EU-28 average (RIO Country report, 2015:Spain, 15-16). At the EU-28 level from 2005 to 2014 the BES sector has grown slightly but consistently from 1.1 to 1.3 – (with a slight dip of 0.01 from 2009 to 2010.) In Spain from 2005 to 2008 it grew from 0.59 to 0.72 in 2008. At the beginning of the economic crisis in 2008 this began to decline steadily –reaching 0.65 in 2014.

1.1.2.2 Development of number of researchers between 2009 and 2015 in the whole R&D sector and its subsectors

Table 5: Number of researchers in all R&D sectors by years (in full time equivalents)

TIME	EU28	Spain
2005	1.374.760	109.720
2006	1.422.499	115.798
2007	1.458.115	122.624
2008	1.523.245	130.986
2009	1.555.606	133.803
2010	1.602.765	134.653
2011	1.626.802	130.235
2012	1.680.987	126.778
2013	1.731.241	123.225

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc][3]

[2] http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[3] http://appsso.eurostat.ec.europa.eu/nui/show.do

According to Eurostat in 2013, 123.225 people (in full time equivalent) were researchers in Spain – a drop of 11.428 in comparison to 2010 and just slightly above 2007 levels – just before the economic crisis began in 2008.

Table 6: Number of researchers by sectors and years (in full time equivalents)

		BES	HES		GOV		PNP	
TIME	EU28	Spain	EU28	Spain	EU28	Spain	EU28	Spain
2005	626.081	35.034	551.459	54.028	181.758	20.446	15.462	213
2006	654.004	39.936	566.464	55.443	185.036	20.063	16.995	357
2007	667.464	42.101	585.624	58.813	188.306	21.412	16.721	299
2008	695.179	46.375	618.351	61.736	192.370	22.578	17.345	298
2009	695.602	46.153	642.780	63.175	199.210	24.165	18.014	311
2010	719.935	45.377	663.331	64.590	201.547	24.377	17.952	309
2011	747.215	44.915	656.965	62.185	203.821	22.893	18.802	242
2012	792.692	44.920	661.902	59.775	207.428	21.850	18.965	232
2013	830.713	44.714	675.973	57.641	210.635	20.673	13.920	197

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In the EU 28 in the business enterprise sector between 2005 and 2013 there has been a constant growth in the number of researchers from 626, 081 in 2005 to 830, 713 in 2013. In Spain – from 2005 (35,034) until 2008 (46,375) growth in the number of researchers in the business enterprise sector can also be seen. But this trend is reversed – from 2008. In 2009 this number fell to 46,153 researchers falling to 44,714 in 2013.[4] In the higher education sector in the EU 28 countries growth occurs from 551,459 in 2009 to 663,331 in 2010. From 2010 to 2011 this however falls slightly (656,965) only overtaking 2010 levels in 2013 (675,973). In Spain growth is also recorded in the number of researchers in the higher education sector from 2005 (54,028) until 2010 (64,590). In line with the trend at the EU 28 level – in Spain from 2010- 2011 (59,775) these numbers also decline – but the difference with the EU 28 level is that this downward trend continues until 2013 (57,641). At the EU 28 level there is a constant growth in the number of researchers in the governmental sector from 2005 (181, 758) to 2013 (210, 635) this picture is very different in Spain. Whilst an overall view of the number of researchers in the governmental sector in 2005 (20,446) and in 2013 (20,673) – would suggest a very minimal growth of just 227 researchers – fluctuations exist. From 2005-2006 the number of researchers slightly fell (by 383)- then we see an increase from 2007 (21,412) until 2010 (24,377) and then a general downward trend until 2013 (20,673).

[4] Despite the general downward trend, there was a slight growth of just five researchers between 2011 and 2012 in Spain in the business enterprise sector.

1.2 Knowledge intensity of economies

1.2.1 Share of ISCED 6 STEM graduates in the whole population

Table 7: Share of ISCED 6 STEM graduates in the whole population

2005	0,000059
2006	0,000062
2007	0,000063
2008	0,000062
2009	0,000069
2010	0,000079
2011	0,000093
2012	0,000091
2013	0,000102

Source: Innovationsindikator 2015[5]

The share of ISCED 6 STEM graduates in the whole population has almost doubled (170%) from 2005 to 2013 in Spain.

1.2.2 Proportion of scientists and engineers in total labour force

Table 8: Proportion of scientists and engineers in the active population between 15 and 74 years, by year

GEO	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	:	:	:	4,9	4,9	5,0	6,4	6,5	6,6	6,6	6,8
Spain	4,5	4,4	4,5	4,6	4,5	4,6	5,3	5,2	5,4	5,5	5,6

Source: Eurostat, HRST by category, sex and age [hrst_st_ncat]

The proportion of scientists and engineers in the total labour force in Spain oscillated between 4.4, 4.5 and 4.6 between 2005 and 2010 and then it shot up to 5.3 in 2011 – dipping to 5.2 in 2012 and rising steadily to 5.6 in 2015. This staggered rise and fall is in contrast to the average for the EU28 which rose slightly from 2009 to 2010 then shot up by 1.4 and then rose steadily 0.1 for 2012 and 2013 and no growth in 2014 followed by a 0.2 growth in 2015. In both Spain and the EU28 biggest growth of the proportion of scientists and engineers in the active population occurred between 2010 and 2011.

Employment in knowledge intensive activities (KIA)

Table 9: Annual data on employment in knowledge-intensive activities as a percentage of total employment at the national level (from 2008 onwards, NACE Rev. 2)

GEO	2008	2009	2010	2011	2012	2013	2014	2015
EU28	34,2	35,0	35,4	35,6	35,7	35,8	35,9	36,0
Spain	28,6	30,7	31,7	32,3	32,9	32,8	32,8	32,7

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

[5] http://www.innovationsindikator.de/2015/home/#!/Innovation-messbar-machen English version: http://www.innovationsindikator.de/fileadmin/2015/PDF/Innovationsindikator_2015_Web_en.pdf

In the EU 28 there was a steady growth from 34.2% in 2008 to 36% in 2015 of employment in knowledge-intensive activities as a percentage of total employment. In Spain there was also a steady growth from 2008 until 2012, followed by a slight drop in 2013 to 0.1% - which is maintained in 2014 followed by a further 0.1% drop in 2015.

1.2.3 Employment in knowledge intensive activities – business activities (KIABI)

Table 10: Employment in knowledge intensive activities – business activities (KIABI)

GEO	2008	2009	2010	2011	2012	2013	2014	2015
EU28	13,2	13,4	13,5	13,7	13,8	13,8	13,9	14,0
Spain	11,5	11,7	11,8	11,8	12,2	12,4	12,3	12,4

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

Between 2008 and 2015, employment in knowledge intensive activities, specifically business activities, increased in the EU28 by 0.8%. In Spain over the same period it rose by 0.9% although starting from a lower base – in 2008 it was 11.5% as oppose to 13.2% in the EU28. In Spain this grew steadily until 2013, in 2014 it experienced a 0.1% drop rising back to 2013 levels (12.4%) in 2015.

1.2.4 Number of scientific papers in relation to the population size

Table 11: Number of scientific papers in relation to the population size

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Spain	713,58	764,55	807,71	856,09	911,18	959,51	1026,56	1100,10	1146,31	1163,22

Source: Innovationsindikator 2015

According to Innovationsindikator (2015) the number of scientific papers in relation to the population size has increased from 713, 58 in 2005 to 1163,22 in 2014. Growth has been more or less constant throughout this period. Regarding number of scientific papers in relation to the population size – Switzerland has led the rankings with 5,031 papers per million inhabitants followed by various Nordic countries. Spain occupies the 15th place – between the US and France.

The annual number of publications in which one of the authors is linked to an institution based in Spain has doubled since 2004 (COTEC, 2016, 74). Scientific papers in in all areas (including humanities and the social sciences) indexed in scopus have passed from 41 000 in 2004 to more than 85 000 in 2014 (ibid). No information has been found to explain why the number of scientific papers has continued to grow despite the economic crisis.

Another way of measuring output is the percentage of papers from the total in which an institution from that country is present. This relative indicator presence also shows sustained growth in Spain Spanish institutions were present in 2.8% of scopus papers (global sample) and reached 3.5% in 2012, with a slight decrease to 3.3% in 2014. The same indicator applied in relation to the scientific production of the 28 countries of the European Union reveals a greater Spanish presence during this period rising from 7.2% to 8.5% (COTEC, 2016, 74).

Whilst there are different ways to measure the number of publications – there is a general consensus that the number of publications has sizably grown between 2005 and 2014. This is despite the economic crisis and reductions in GERD.

1.2.5 Number of patents developed by publicly financed research per inhabitant/citizen

Table 12: Number of patents developed by publicly financed research per inhabitant/citizen

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Spain	4,8	4,9	6,4	8,5	9,9	10,4	10,2	9,7	7,9

Source: Innovationsindikator 2015

The number of patents developed by publicly financed research per inhabitant/ citizen grew steadily from 2005 until 2010. From 2010 we see a decline from 10.4 to 7.9 in 2013.

1.2.6 Share of tertiary educated population among the group of 25 to 34 years old

Table 13: Share of tertiary educated population among the group of 25 to 34 years old*

GEO	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	28,3	29,2	29,9	30,9	32,3	33,3	34,4	35,5	36,5	37,2	37,9
Spain	40,7	40,3	40,0	40,0	39,5	40,3	40,3	40,4	41,1	41,5	41,0

* Introduction of the ISCED 2011 classification: data up to 2013 are based on ISCED 1997, as from 2014 ISCED 2011 is applied. Online tables present data for three aggregates (see 3.2 above), and at this level of aggregation data are directly comparable for all available countries **except Austria**. The level shift break in Austria is due to the reclassification of a programme spanning levels: the qualification acquired upon successful completion of higher technical and vocational colleges is allocated in ISCED 2011 to ISCED level 5; under ISCED 1997 the same qualification was reported on ISCED level 4, but earmarked as equivalent to tertiary education.

Source: Eurostat, Population by educational attainment level, sex and age (%)[edat_lfse_03]

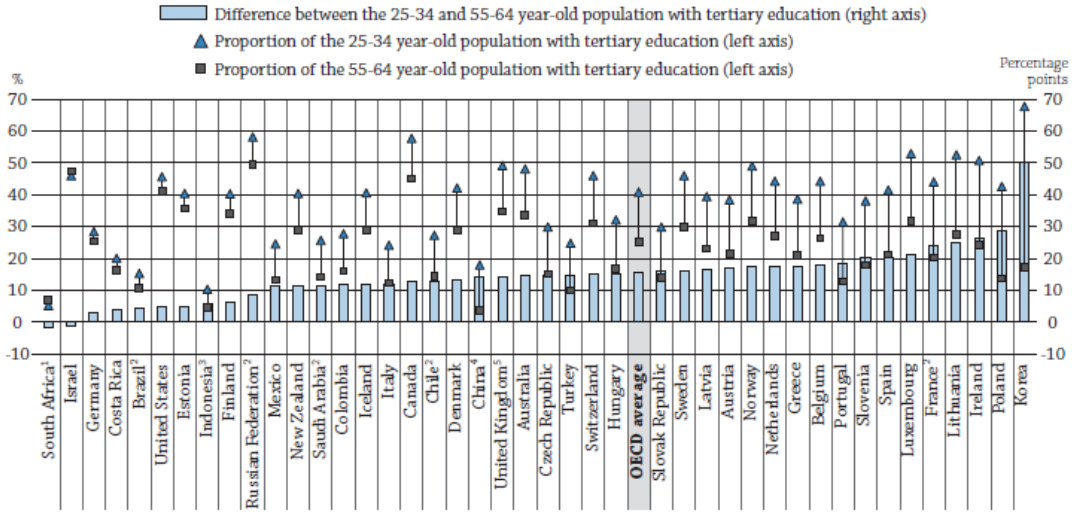
In Spain the share of tertiary educated population among the group of 25 to 34 year olds has remained pretty constant from 2005 until 2015 at around 41%. This stands in contrast to the EU 28 average which has grown by 9.6 % during the same period - from 28.3% to 37.9 %. In 2005 Spain had 12.4% greater share of the tertiary educated population among the group of 25- 34 years old than the EU28 average.

In 2014, most of the first-time tertiary graduates were awarded a bachelor's degree. In fact, on average across OECD countries, 72% of first-time tertiary graduates earned a bachelor's degree, 12% earned a master's degree and 16% earned a short-cycle tertiary diploma (Table¬A3.2). In Spain however the shares of first-time graduates are similar across three levels of tertiary education: short-cycle, bachelor's or equivalent, and master's or equivalent.

Figure 1: Percentage of younger and older tertiary-educated adults (2014)

Chart A1.2. Percentage of younger and older tertiary-educated adults (2014)

25-34 and 55-64 year-olds, and percentage-point difference between these two groups



1. South Africa: Year of reference 2012.
2. Brazil, Chile, France, Korea, the Russian Federation, Saudi Arabia: Year of reference 2013.
3. Indonesia: Year of reference 2011.
4. China: Year of reference 2010.
5. The United Kingdom: Data for upper secondary attainment includes completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of the adults are under this group).

Countries are ranked in ascending order of the percentage-point difference between the 25-34 and 55-64 year-old population with tertiary education.

Source: OECD. Table A1.4a. See Annex 3 for notes (www.oecd.org/education/education-at-a-glance-19991487.htm).

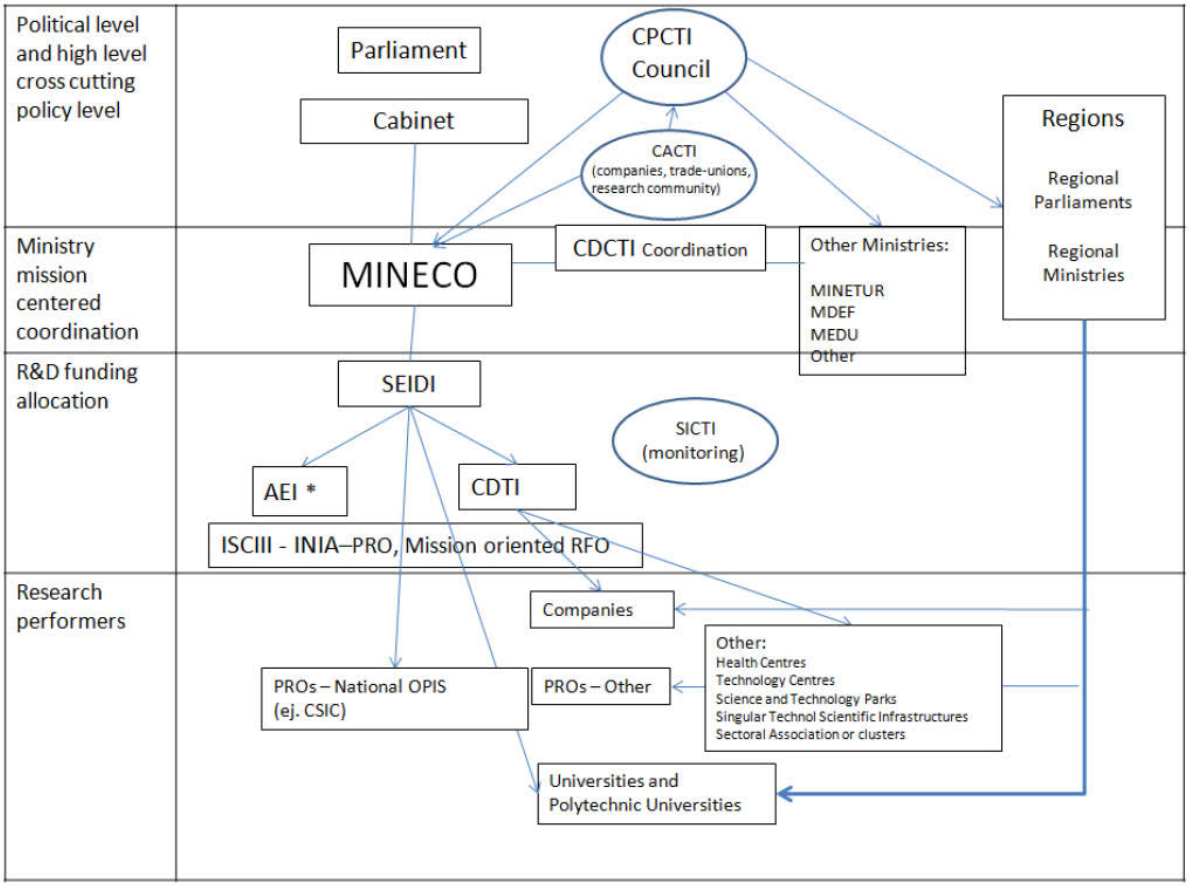
StatLink http://dx.doi.org/10.1787/888933283393

1.3 Governance

1.3.1 Main actors in research and innovation governance

1.3.1.1 Ministries responsible for R&I

Figure 2: Main Actors in Research and Innovation Governance



Rio Country Report 2015: Spain, p20.

The R&I policy making process of the Spanish R&I system include three types of bodies:

1. Responsible for policy-making
2. Responsible for implementation
3. Responsible for the provision of science policy advice and support

In Spain the Ministry of Economics and Competitiveness (MINECO) is the main body responsible for R&I policy design and operational management (Rio Country Report, 2015: Spain, 17). In 2015 MINECO allocated the largest single share (71%) of the Spanish State Budget for R&I activities (ICONO-MINHAP, 2015). Other ministries that are also involved in managing R&I are the Ministry of Industry, Energy and Tourism (MINETUR) which allocated 24% of the 2015 budget, the Ministry of Defence (MDEF), which managed 2.5% and the Ministry of Education Culture and Sports (MEDU) which managed 1.5 % (ICONO-MINHAP, 2015).

An inter-ministerial body- the Executive Committee for Science, Technology and Innovation Policy (CDCTI) is responsible for the planning of, evaluation and coordination of the main instruments for R&D and innovation in Spain (RIO Country Report, 2015: Spain, 18).

The State Secretary for Research and Development and Innovation (SEIDI) responsible to MINECO develops and manages the main R&I instruments i.e. strategies and actions plans. The current strategy in place is the EECTI (2013-2020) which defines the rationale, objectives and indicators of the Spanish R&I policies. The PECTI (2013-2016) operationalises the EECTI by establishing its priorities, programmes, coordination mechanisms, costs and sources of funding (RIO Country Report, 2015: Spain, 18).

There are two main consultative bodies, the Council of Science, Technology and Innovation (CPCTI) and the Advisory Committee of Science, Technology and Innovation (CACTI). The former is responsible for defining the national strategy as well as coordinating the multi-layered R&I system with diverse stakeholders at different governance levels (regional and local authorities, industry, parliament and citizens) (RIO Country Report, 2015: Spain, 16). The Advisory Committee of Science, Technology and Innovation (CACTI) complements the former and has the mission to involve representatives of the research community, private companies and trade unions in the design of national research and innovation policies.[6] The 2015 RIO Report states that "the substantial effects of the financial crisis on the Spanish R&I system indicate that the current R&I structure and does not guarantee the provision of a stable policy and budgetary framework" (RIO, Country Report, 2015: Spain, 16).

1.3.1.2 Major Funding Agencies (national & regional)

	Major Funding Agencies
Spain	Spanish Research Agency Centre for Industrial Technological Development (CDTI)

The main funding bodies involved in the implementation of R&I policies are the Spanish Research Agency (AEI) and the Centre for Industrial Technological Development (CDTI). The AEI was created at the end of 2015 as an autonomous entity charged with evaluating and allocating resources to R&D projects on scientific merit and assessing the impact of research.

The CDTI promotes innovation and technological development for companies as a public corporate entity.

As part of SEIDI's role in the design and implementation of the central government policies on R&I SEIDI shares responsibilities for funding and implementing PECTI with CDTI, the Carlos III Health Institute (ISCIII), the National Institute for Agricultural and Food Research and Technology (INIA), the State Secretary of Technology and Information Society and the State Secretary of Education, Professional Education and Universities (MEDU) and FECYT. In 2015, SEIDI (for MINECO) managed about 50 % of the central government budget, CDTI managed about 30 %, while other bodies managed less than 10 % of this budget. SEIDI also supervises the OPIs – public research

[6] https://rio.jrc.ec.europa.eu/en/country-analysis/Spain/organisations

organisations) and coordinates with other regional R&I bodies; and is the international representation of the Spanish government on R&I issues (RIO Country Report 2015: Spain, 17).

1.3.2 Relevance of national and regional levels in R&I policy and financing

The RTDI system in Spain is decentralised. The 17 autonomous communities have political and administrative responsibilities for R&I. Also, university funding is managed separately. The communities play an important role in the RTDI landscape in Spain as the regional budgets account for 60% of total GBOARD (ERAC, 2014). Due to the distribution of competencies of different levels of governance, national and regional –innovation policies also tend to fall into the scope of regional authorities. Effective mechanisms for coordination have been identified as a major governance challenge for Spain's decentralised R&I system (OECD, 2006; ERAC, 2014).

There are vast regional differences in R&D expenditure. Madrid (25.8 %), Catalonia (22.9%), Andalusia (11.4 %) and the Basque Country (10.2 %) accounted for 70.4% of all R&D expenditure. In relative terms, the leading regions are the Basque Country, Navarre, Madrid and Catalonia, with a GERD per GDP of 2.0 %, 1.8 %, 1.6 % and 1.5 %, respectively (ICONO-INE: 2015). (RIO Country report 2015: Spain, 15). Only the first two (Basque Country and Navarre) are above the EU average and are therefore classified by the Innovation Union Scoreboard as 'innovation followers' as oppose to 'moderate innovators' – which is the category that the other 15 regions fall into – as R&D intensity fall below the EU average.

1.4 General assessment: main challenges of the R & I system

The main challenges of the R&I system are linked to financial crisis and the decline in gross expenditure on research and development. Spain's innovation performance declined between 2008 and 2015. In 2008 its relative performance was at it's highest (77%) decreasing by 8 percentage points (69%) in 2015 (EIS, 2016, 55). This coincides with a decrease in gross expenditure on research and development as a percentage of GDP which reached 1.35% in 2009 and fell to 1,2% in 2014 (Rio Country Report: Spain, 2015, 6). Spain's R&I system is particularly vulnerable to government cuts – as it relies more heavily on public funds (HES and GOV) than the EU-28 average. Spain underperforms in all components of the innovation index – except two areas: new doctoral graduates (perhaps linked to lack of employment opportunities) and its relatively strong performance of international scientific publications. We have found no explanations for the latter.

The identified challenges for Spain's R&I system consist of:

- improving the public labour market for researchers;
- improving funding and governance of the public research system;
- promoting a culture for innovation and stimulating performance in business R&D and innovation;
- stimulating regional R&I potential and performance;
- promoting effective policy evaluation mechanisms (RIO Country report 2015: Spain, 6/7).

[7] https://rio.jrc.ec.europa.eu/en/country-analysis/Spain

2 Gender Equality Policies

2.1 Employment and labour market policies

2.1.1 Description of equal opportunity/ anti-discrimination legislation

The Spanish Central government has overall responsibility for anti-discrimination legislation whilst the Autonomous Communities have certain legislative autonomy.

The Law 3/2007 of 22nd March 2007, on Effective Equality between women and men is the specific law on gender equality which established and clarified the content of the right to non-discrimination on the ground of sex; it also defined specific strategies to achieve effective equality. The law is applicable in all contexts, targeting specifically the political, civil, labour, socio-economic and cultural arenas (Pastor Ballester, 2016, 7). The equality law of 2007 can be seen as a legislative landmark in Spain – it was the first time that some basic concepts of gender equality like 'indirect discrimination' or 'affirmative action' were explicitly written into legislation – it also brought legislation concerning gender equality into one place – previously gender equality legislation was dispersed throughout various texts (ibid). Spanish equal treatment legislation also covers discrimination on the basis of racial or ethnic origin, religion or belief, disability, age or sexual orientation.[8]

Article 5 of the Law on Effective Equality states that equal opportunities have to be guaranteed regarding conditions for access to employment, self-employment, vocational training, employment and working conditions (including payment and dismissals), membership of an organisation of workers or employers or any organisation whose members undertake a particular profession (Pastor Ballester, 2016, 15).

Regarding equal pay – Article 28 of the Workers' Statute states: "The employer is obliged to pay for a work of equal value the same remuneration, paid directly or indirectly, and whatever the nature of the work including the remuneration that is not considered salary by Spanish legislation, without discrimination on the basis of sex in any of its items or conditions" (Pastor Ballester, 2016, 11). Both the Spanish Constitutional Court and the Supreme Court have ruled on equal pay – the former indicating that systems of professional classification and promotion must be 'neutral' and not result in 'indirect discrimination' - whilst the latter has stated that workers doing different jobs at the same company – should receive equal pay when the difference can be explained by the 'undervaluing' of women's work. Spanish legislation does not address wage transparency in any way (Pastor Ballester, 2016, 14).

The Spanish Constitution in Article 9.2 explicitly recognises positive action measures as legitimate – and obliges public authorities to remove the obstacles to achieve real equality. Positive action measures can be implemented in both the public and private sectors and can take the form of preferential hiring of women in those professions in which they are under-represented – although it can only be applied if candidates are equally suitable (Pastor Ballester, 2016, 10).[9]

Positive action measures have also been introduced to improve the gender balance in various areas linked to political and economic decision-making. The Law on Effective Equality recommends a gender balance of at least 40% women (and no more than 60% of each gender) on political candidate

[8] Part 2 of Law62/2003 of December 2003, (Pastor Ballester, 2016, p7).
[9] As stated in Article 17(4) of the Workers´ Statute

lists, decision-making boards[10]; members of the governing bodies of the General Administration of the State and of public entities linked to or dependent on it[11], and tribunals and selection bodies – in the public sector.[12] It also states that 40% of the training places for promotion in public administration must be reserved for women[13] (Pastor Ballester, 2016, 11). In the private sector the Law on Effective Equality aims to improve the gender balance on company boards.[14] It states that in companies with more than 250 employees, boards need to recruit more women (or more men) to comply with the gender balance principle, companies had until March 2015 (8 years after law came into force) to comply (Pastor Ballester, 2016, 10).

Gender mainstreaming in Spain started with the 1997 Plan for Equal Opportunities between Men and Women and was consolidated by the Law 3/2007 on the Effective Equality on Men and Women- which defines gender mainstreaming as a basic principle of action for all public administrations and states that a gender perspective must be included in all norms, budgets and actions.[15] Other gender mainstreaming actions stipulated by the law included: creation of gender units in each ministry and an Interdepartmental Commission for Equality and a Women's Participation Council, and the regulation of key gender-mainstreaming methods (e.g. gender impact assessment, gender monitoring, and gender training).

2.1.2 Description of Structures for Gender Equality

National level: The Women's Institute (WI), created in 1983, is an 'autonomous' body currently affiliated to the Directorate General of Equal Opportunities, it is in charge of both promoting gender equality and protecting women's rights and since 2014 it has been renamed the 'Women's and Equal Opportunities Institute'- as it has gained a wider remit of equal opportunities beyond gender equality (Lombardo, 2016, 8). Despite its 'autonomous' status – staffing and bylaws that regulate a Spanish government body apply and its Director General is appointed by the Council of Ministers and reports to the Minister (Pastor Ballester, 2016, 43). It is therefore not an independent body. Its establishment was the beginning of the institutionalization of gender equality in Spain which was consolidated by the creation of the Equality Policies General Secretariat in 2004 and culminated in the establishment of the Ministry of Equality in 2008 (Lombardo, 2016, 7).

In 2004 the Equality Policies General Secretariat was created within the Ministry of Employment and Social Affairs –(at a higher rank than the WI) and in 2008 the Ministry of Equality was created – this was arguably the high point of the institutionalization of gender equality into Spanish state machinery. Austerity policies adopted by Spain in response to the 2008 economic crisis however have impacted negatively on the institutionalization of gender equality– through budget cuts and institutional restructuring (Lombardo, 2016). In 2010, the Ministry of Equality was dismantled and converted into a State Secretariat for Equality- to become the State Secretariat for Social Services and Equality within the Ministry of Health with a specific mandate on equality issues with competence to prevent and eliminate discrimination on the grounds of sex, ethnicity, religion, belief,

[10] Article 14 of the 2007 law of Effective Equality.
[11] Article 52 of the 2007 law of Effective Equality.
[12] Article 53 of the 2007 law of Effective Equality.
[13] Article 60 of the 2007 law of Effective Equality.
[14] Article 75 of the 2007 law of Effective Equality.
[15] Article 15 of the 2007 law of Effective Equality.

sexual orientation, age and disability. Lombardo (2016, 8) notes how “the extension of scope, budget reduction, and lack of intersectionality rationale [indicate that] these institutional changes represent a counter-trend in the Spanish path to consolidation of gender equality policy institutions”.

The State Secretariat for Social Services and Equality runs two agencies: the Office of Gender-Based Violence, which is in charge of developing public policies on gender based violence that aim to uphold the rights of female victims of gender based violence, and the Directorate General of Equal Opportunities, which enhances equal treatment and opportunities between women and men, and the social and political participation of women.

As part of these changes the WI was relegated to forming part of the new Ministry of Health, Social Services, and Equality – and went from depending on a State Secretariat to a lower ranking Directorate General (ibid). It currently houses two observatories: the Observatory for Equal Opportunities between Men and Women, which examines and assesses gender gaps in socioeconomic life and proposes policies to improve women’s situation, and the Observatory of Women’s Image, created in 1994 to promote a sound, non-stereotyped image of women. Since 2011, its budget has been drastically reduced – whilst it acquired responsibility for other equal opportunity areas beyond gender equality in 2014.

The implementation of gender mainstreaming is also the responsibility of the Interdepartmental Commission for Equality (which includes representatives from all ministries), and gender units attached to each ministry, which develop key methods such as gender impact assessment and gender statistics linked to their specific areas.

Autonomous Community level: In Spain, since the 1980s all 17 autonomous communities have established at least one central structure responsible for gender policies. Two types of structures have been set up: autonomous agencies and departments. Ten communities have autonomous agencies analogous to the Women’s Institute at the national level. These are institutionalised by law and have their own budget and staff, and similar goals and tasks. Seven regions have established specific departments in charge of gender-equality policies.

Local Level: Article 28 of law 7/1985 granted local government competence to carry out activities to promote women – this has been eliminated with the law 27/2013 for the ‘rationalization and sustainability of local administration’. Local governments can only carry out activities to promote gender equality if they obtain delegate task and funding from the Autonomous Communities (San José, 2015, cited in Lombardo, 2016, 8). This U-turn has been criticised by gender experts and competent gender equality institutions – as not only does it withhold from local government the possibility of promoting gender equality as well as overwriting local government’s obligation – as defined in other Spanish legislation including Law 3/2007 – to promote gender equality and combat violence against women (Lombardo, 2016, 8/9). There have however been counter-trends at the local level, for example in Barcelona gender equality policies have been institutionalised in intersection with other inequalities creating the *Department of Feminisms and LGTBI*.

2.1.3 Description of relevant policy initiatives to foster equality

Policy plans have also defined gender equality policy in Spain and until the 2000s these were the main policy instruments for implementing gender equality policies (Lombardo, 2016:10). Policy plans –as soft instruments to mainstream gender into different policy areas are regulated by law 3/2007, adopted by the cabinet, and include measures and goals for different governmental departments or civil society organisations – within a specific timeframe (Bustelo, 2016; 2004). At the central governmental level two Strategic Plans for Equal Opportunities (2008-2011) and (2014-2016) have been approved. The former is based on the principles of equality and non-discrimination and includes measures in 12 priority areas such as socio-political and economic participation, co-responsibility in family and work tasks, education, knowledge, health, attention to diversity and social inclusion, violence, development, media, and protection of the right to equality (Lombardo, 2016, 10). This is in contrast to the latter which allocates most of its budget to promoting women's employment and work/family balance measures. The three main strategic objectives of the plan are: 1) promoting female employment and combatting wage discrimination; 2) supporting work/family balance measures and 3) eradicating violence against women (Ballester, 2014a, cited in Lombardo, 2016, 10). Plans are adopted at the central government level but are also used as a key tool for gender equality policies in regional governments (Lombardo, 2016, 10).

2.1.4 General assessment of the effectiveness of existing equal opportunity / anti-discrimination legislation / measures

Table 14: relevant policy legislation and initiatives to foster equality between women and men

Equal economic independence	• Labour market participation • Work-life-balance • Childcare facilities	X
Equal pay for equal work and work of equal value	• Wage transparency • Awareness raising for consequences of part-time-work and fixed term contracts • Equal pay • Vocational orientation for non-traditional occupations	X
Equality in decision-making	• initiatives to improve the gender balance in decision making • Monitoring the 25% target for women in top level decision-making positions in research • 40% of members of one sex in committees and expert groups • Support greater participation by women in European Parliament elections including as candidates	X X
Horizontal issues	• Promoting non-discriminatory gender roles in all areas of life such as education, career choices, employment and sport • Equality bodies who monitor, enforce, evaluate and update the legal framework • Annual Report on progress on gender equality	
Additional activities	• Gender budgeting in legislation	

General Assessment

Spain finds itself in an odd policy situation regarding gender equality – whilst having one of the most developed gender equality legislation in Europe – the economic crisis has seen key gender equality institutions downgraded, the allocated budget for gender equality decimated and the effective implementation of gender equality legislation and policies challenged.

Regarding equal pay for equal work of equal value the 3/2007 Equality Law is the main legal reference –combatting the gender pay gap in practice however, needs certain implementing measures that to date have not been adopted (Lombardo, 206, 13).[16]

In terms of equality in decision-making whilst quotas have been adopted in public administrations and on corporate boards – these tend to be weakly regulated and sanctions are not imposed. There is scarce available data in the public sector – and what is available points to little transparency on their implementation, e.g. mechanisms for monitoring parity in appointments at the central-political administrative level could only be found in two ministries.[17] (Lombardo, 2016, 13). Whilst they claimed that selection committees respected the 40/60 gender balance – women's representation as board members – occupying positions such as president or deputy-president decreased to 36%.[18]

The transposition of EU gender equality legislation in Spain has been described as 'satisfactory' and 'adequate' but it has been highlighted how much of the Spanish legislation merely reproduces various European Directives (Pastor Ballester, 2016, 45). For example, concepts such as direct discrimination, indirect discrimination, gender harassment and sexual harassment in Spanish law have been directly taken from Article 2 of the Recast Directive (ibid). It has been argued that this demonstrates a general 'lack of interest of the Spanish institutions in effectively removing obstacles for real equality between men and women by adapting the European Union's instructions to the particularities of the Spanish society" (ibid). In rulings on gender equality the Spanish Courts of Justice has a particularly close relationship with the Court of Justice of the European Union (CJEU). For example, Spanish Courts reference the CJEU as well as Spanish judges requesting preliminary rulings at the CJEU. The Constitutional Court however is a different matter – this political body – that in the past vigorously defended gender equality, has more recently ruled to the detriment of gender equality.[19]

[16] „In the 2015 electoral debate the issue of gender pay gap became part of electoral programs. In 2016 the PSOE presented in Parliament a non-legislative proposal on la law to eliminate the gender pay gap, which was passed in November"(Congreso de los Diputados, Diario de sesiones 15/11/2016, exp. N. 161/000146.) (Lombardo, 2016:13).

[17] The Spanish Ministry of Finance and Public Administrations and the Ministry of Employment publish an annual report on the implementation of gender equality policies in their respective administration, which claimed that committees for the selection of public administration have respected the 40-60 principle of gender balanced presence.

[18] Ministry of Finance and Public Administration, 2011.

[19] „Two examples of this new attitude are the following: 1) The Judgment of the Constitutional Court 154/2014 of 25 September 2014 ruled that the male applicant in a case of indirect discrimination against women did not have the right to request nullification of a certain discriminatory social security provision. The judgment ignored that a provision that is discriminatory (directly or indirectly) is null and void for everyone, i.e. both women and men. 2) The Judgment of the Constitutional Court 173/2013 of 10 October 2013 ruled that the dismissal of a pregnant woman during the probationary period is not automatically considered null and void if the employer argues that he/she did not have knowledge of the pregnancy." Pastor Ballester, 2016, p45.

Spain is often identified as being at the forefront of Europe in terms of its extensive gender equality legal framework. There are various examples of good practices:

1. Article 75 of the Law of Effective Equality – companies that submit a non-abbreviated profit and loss account will have to include in their company board at least 40% of the under-represented gender. Whilst the objective was not reached (deadline March 2015).
2. Article 14 of the Law of Effective Equality – balanced presence of women and men (no less than 40%-and no more than 60%) political candidate lists and decision-making bodies.
3. Article 16 of the Law of Effective Equality - balanced presence of women and men (no less than 40%-and no more than 60%) of members of governing bodies of the General Administration of the State and of public entities linked to or dependent on it.
4. Article 53 of the Law of Effective Equality - balanced presence of women and men (no less than 40%-and no more than 60%) on tribunals and selection bodies for staff of General Administration of the State and public entities linked to or dependent on it.
5. Article 60 of the Law of Effective Equality – 40% of training places for promotion in public administration will be reserved for women.
6. Article 55(5) of the Workers' Statute states that if a dismissal occurs during parental leave it is null and void- unless the cause is justified. Dismissal up to nine months after the birth of a child is also qualified as null and void.

It has been identified that the main problem of Spanish legislation on gender discrimination is its 'lack of efficiency' (Pastor Ballester, 2016, 46). Whilst the legal framework is well developed - in practice the established mechanisms for intervention by both interest groups and legal entities are rarely used and most cases of gender discrimination submitted to the courts are filed by individuals (Pastor Ballester, 2016, 46).

We would also add that the economic crisis in Spain has not only had a detrimental effect on the gender equality policies and measures- i.e. substantial budget cuts, but legal reforms in other areas have substantially increased gender inequalities. There have been significant budgetary cuts for gender equality with a major reduction from 2009 to 2013 which corresponds to the years of the crisis. This is in comparison to the years directly preceding the crisis - between 2002 and 2008 the budget for gender equality was increased substantially.[20] Examples of legislation with a negative impact on gender equality can be seen in:

- Extending paternity leave for two to four weeks which should have come into force in 2011 – proposed by Zapatero in the Act 9/2009 which has not moved forward – this has been linked to the economic crisis (Salazar, 2016, 28).
- Employment rights have worsened and the Act on the Promotion of Personal Autonomy and Care for Dependent People – has had a disproportionate negative affect on women (ibid).

[20] "if we analyze the total variations in the state budget and in the budgets of the Autonomous Regions in the two periods before and during the crisis, we can see in the period 2002_ 2008 that, in every analyzed case, the budget for gender policies increased significantly reaching 57.2% statewide, whereas in the period 2009–2013 the budget decreased at all levels of the government (getting to _ 34.1% for the Central Government), with the exception of Andalusia where the budget for gender policies was increased by 15.5%" ([2], p. 28). Salazar, 2016 Lombardo, Emanuela, and Margarita León. "Políticas de igualdad de género y sociales en España: Origen, desarrollo y desmantelamiento en un contexto de crisis económica." Investigaciones Feministas 5 (2014): 13–55.

- The Act3/2012 of July the 6th on the Labour Reform – has also negatively impacted on the right to combine work/life balance (ibid).

Regarding equal economic independence some deficiencies have been identified in transposing certain European Directives, ie. Directive 2010/18 regarding parental leave. The following deficiencies have been identified:

1. No guarantee that employers consider and respond to requests of parents when they return to work after parental leave
2. Time off from work due to force majeure not guaranteed
3. Interests of worker not considered in considering the length of notice period for parental leave (Pastor Ballester, 2016, 45).

The lack of autonomy of the Women's Institute has also been identified as a structural weakness hindering the effective transposition of the Directive whilst the Recommendation of the European Commission of strengthening equal pay through transparency has not been transposed into Spanish legislation (ibid). The European Directive (79/7) in the realm of social security has not been transposed either – as it was not seen as a gendered issue. Indirect discrimination in Spain was however identified by the CJEU regarding requirements for contributory pensions for part-time workers and Spanish legislation has been subsequently changed.

Whilst Spanish legislation regarding gender-balance in decision-making has been highlighted as 'good practice' - in both the economic and political spheres – differences in application in these fields have strongly affected outcomes. For example, Lombardo (2016, 20) notes how only strong measures were applied in the electoral sphere, for example if party lists for elections do not comply – they can be withdrawn. This explains why the outcomes for electoral gender quotas are far greater than for either public administration boards or corporate bodies (Lombardo, 2016, 20). On corporate boards in 2015 women only represented 17% of corporate boards of publically listed companies- which is 4% lower than the EU average. No sanctions have been applied to companies that do not fulfil this requirement (Lombardo, 2016, 21).

Regional level equality institutions have been downgraded or eliminated in Galicia, Murcia and Madrid (Paleo and Alonso, 2015). Whilst in some autonomous communities, gender equality policies have in fact deepened, for example the Basque Country (2005-2014) –gender mainstreaming and gender impact assessment have been implemented (Silvestre, et al, 2016) whilst in Andalusia budgets for gender equality policies 2009-2014 have been maintained (Paleo and Alonso, 2015).

2.2 Welfare and Gender Regimes

2.2.1 Fiscal policies

Table 15: Fiscal incentive for secondary workers, 2011 – (sorted by AETR)

	secondary earner (AETR) Primary earner at 100% of AW and 2 children	Single (Net Personal Average Tax)	Ratio (Secondary earner/Single)
Austria	30	27,3	1,1
Denmark	48,5	36,8	1,3
France	29,3	26,1	1,1
Germany	46,2	34,9	1,3
Hungary	29,6	29,5	1
Spain	23,4	17,7	1,3
Sweden	22,1	22,1	1
Unweighted Average	31,3	23,7	1,4
Unweighted Average without joint taxation countries	30	23,1	1,3
Unweighted Average for joint taxation countries (FR, DE, IE, LU, PT)	37,3	26,9	1,4

Source: European Commission (2013); OECD (2013), and OECD (2011) (Plantenga 2014, p41)

It has been identified that in Spain secondary earners women may face substantial disincentives to increasing work intensity. For Spain despite being at a disadvantage relative to individuals in balanced couples, secondary earners still face one of the lowest Marginal Effective Tax Rate (METR) in the EU27 (Rastrigina & Verashchagina, 2015, 61).

2.2.2 Parental Leave policies

2.2.2.1 Possible duration of maternity leave

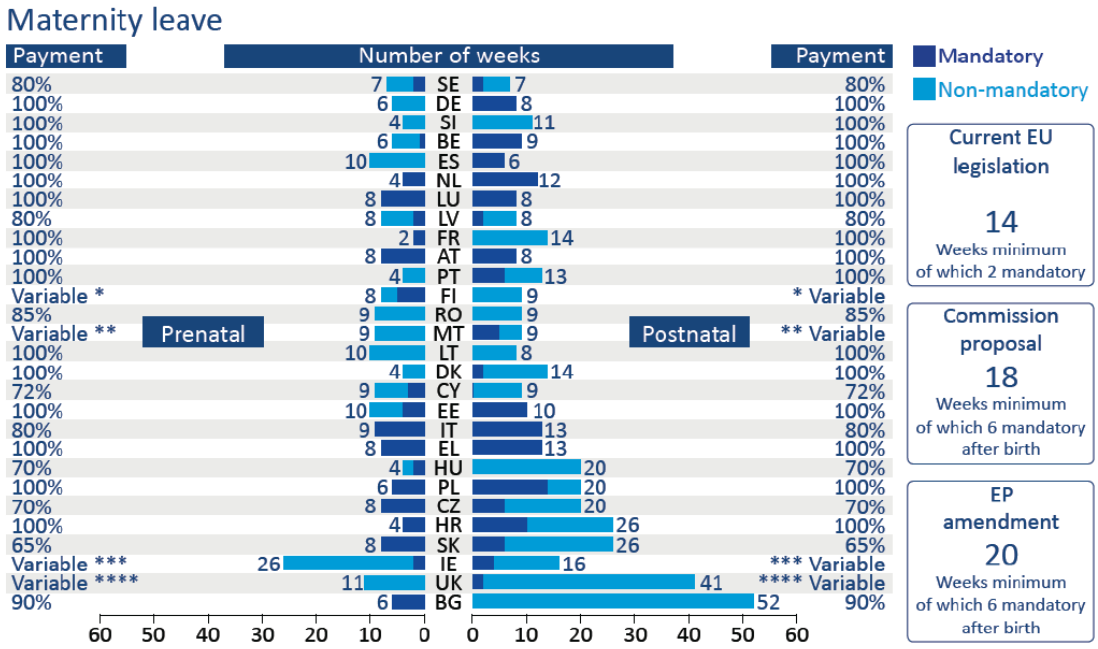
In principle under Spanish law, basic maternity leave is 16 continuous weeks, and there is also maternity leave benefit for all employed women.

Article 26 of the Prevention of Labour-Related Accidents Law regulates protection during pregnancy, after a recent birth and during breastfeeding periods – the concept is that working conditions or job function should adapt when there is a health or safety risk. Article 48(4) of the Workers' Statute defines the duration of maternity leave: 16 continuous weeks, where 6 of the 16 weeks must be taken by the mother immediately following the birth; in the event of multiple births or if the child has a disability, the duration of the maternity leave will be increased by 2 weeks (Pastor Ballester, 2016, 17, 18).

In practice, duration of maternity leave is also influenced by the financial support mothers receive. Maternity leave benefit extends to all employed women. There are two types of benefit: earnings-

related maternity leave; and a flat-rate payment for 42 days after birth for those women that are not eligible for the earnings-related benefit. In order to qualify for earnings-related maternity leave, the mother should have been making social security contributions at the beginning of the leave; or be in receipt of unemployment contributory benefit; or be in the first year of the Parental leave, and have contributed to social security at least 180 days in the previous seven years (or 360 days during their working life). The criteria vary and are more flexible for certain categories of mothers: young women; women working part-time; and self-employed women (Escobedo 2016, Pastor Ballester, 2016, 2).[21]

Figure 3: Comparison between EU-countries



Source: FEMM Committee 2015, p.114[22]

2.2.2.2 Possibility of paternity Leave

Paid paternity leave and birth leave exist for both male and female partners of mothers – the basic duration being two days birth leave and 13 continuous days paternity leave. Paternity leave in Spain was first introduced by the Law on Effective Equality, which initially intended that paternity leave would be extended to four weeks; however that promised extension has been repeatedly postponed. There are both paternity leave benefits (paid by the state) and birth leave benefits (paid by the employer) (Escobedo 2016; FEMM Committee 2015, 60; Pastor Ballester, 2016, 3). Workers who take paternity leave have the same protection against dismissal as those who take maternity leave (Pastor Ballester, 2016, 27).

Paternity leave (permiso de paternidad) and birth leave (permiso por nacimiento) are 13 continuous days and two days long respectively with some variations. Paternity leave is extended by two more

[21] http://www.leavenetwork.org/fileadmin/Leavenetwork/Country_notes/2016/Spain.pdf
[22] http://www.europarl.europa.eu/RegData/etudes/STUD/2015/509999/IPOL_STU(2015)509999_EN.pdf

days for each child from the second child in the case of multiple births, adoptions or fostering. Partners, who travel for their work, also receive two extra days birth leave, although this does not apply in the public sector. Birth leave must be taken at birth, and although the 13-day paternity leave can be taken during or immediately after the end of maternity leave, public sector employees receive 15 days paternity leave which in principle must be taken at birth time. The 13-day paternity leave is also flexible in that it can be taken part-time if established by collective agreement or if the employer accepts it. However, in principle public sector employees must take the 15 days paternity leave full-time, unless the specific regional government or institution regulates differently.

The right to birth leave extends to all employees; the self-employed are excluded since employers fund birth leave. In the case of paternity leave, eligibility depends on contributory requirements which can be fulfilled by both employees and the self-employed. The contributory requirements are at least 180 days during the previous seven years or 360 days during the working life as a whole. Paternity leave benefit is 100% of earnings, with the same ceiling as for maternity leave (Escobedo, 2016; Pastor Ballester, 2016, 3).

2.2.2.3 Possible duration of parental leave

In addition to the paid paternity leave and birth leave outlined above, there are various complementary rights that allow parents to adjust the schedule of their leave, supplement the duration of the leave and request reduced working hours. Overall, parental leave duration in Spain is among the longer parental leaves in the Member States (FEMM Committee 2015, 66).

There is some flexibility in the way leave can be scheduled, although there may be implications for the parent's work position. Each parent is entitled to take leave until three years after childbirth; during the first year, a return to the same job position is protected, and after the first year, job protection is limited to a job of the same category (Escobedo, 2016; Spain country note, 4).

Furthermore, there are four types of parental leave in Spain, which were not revised when Directive 2010/18 entered into force (Pastor Ballester, 2016, 22):

- First, there is a right to a paid leave of an hour a day for workers with children younger than nine months (including adopting and fostering parents). Civil servants have this same right until their children are twelve months old. In the case of multiple births or adoptions, there will be a one-hour permission per child. This permission is called 'breastfeeding permission' (permiso de lactancia), but its objective is not only to breastfeed but also, more generally, to take care of the child;

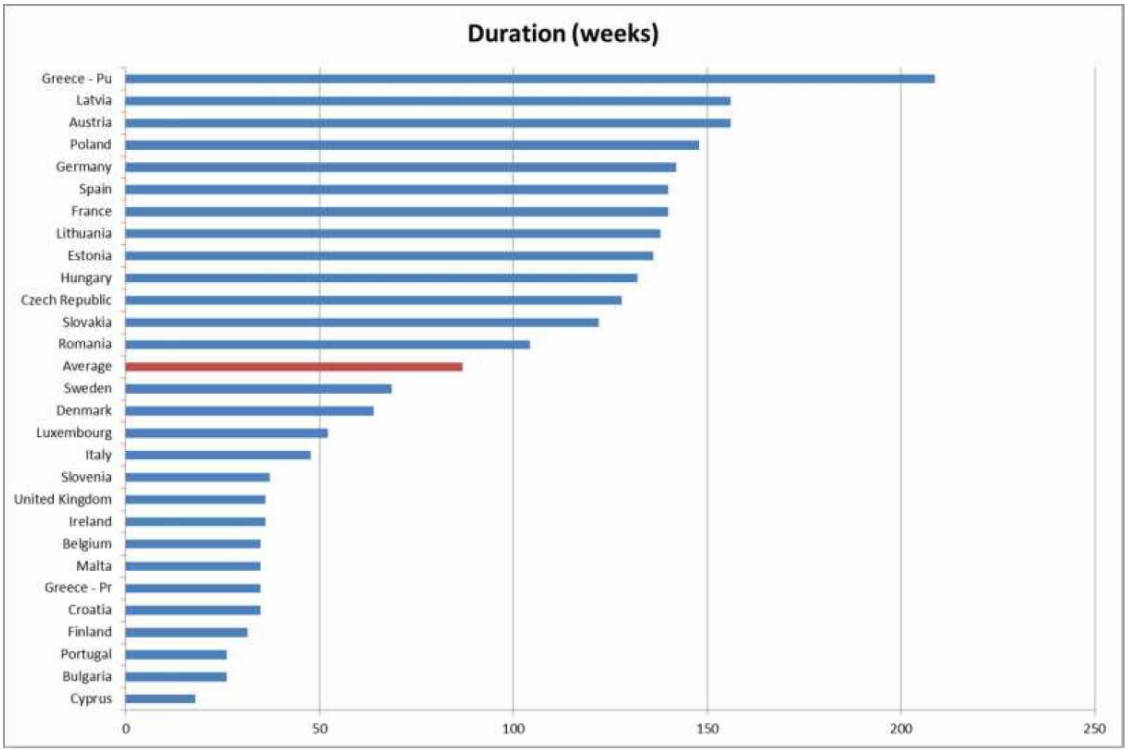
- Second, both civil servants and other workers have the right to an unpaid leave (excedencia) that can last until three years after the child´s birth or after the adoption and fostering decision;

- Third, both civil servants and other workers with children younger than twelve (including adopted and fostered children) can ask for a reduction in working time, in which case their salary is reduced proportionally;

- Fourth, where both parents work, both civil servants and other workers can ask for a reduction in working time in order to take care of a child that is seriously ill. In this instance, the social security

system guarantees the worker 100% of his/her previous full time contribution base (effectively the full time previous salary).

Figure 4: Duration of parental leaves in weeks



Source: FEMM Committee 2015, p.68

2.2.2.4 Who is entitled to take parental leave?

Each parent is entitled to take parental leave, and all Spanish parental leaves are granted individually. Breastfeeding permission was officially recognised as a parental leave – and therefore extended to both working parents – when Article 37(4) of the Workers' Statute was modified by Law 3/2012 (6 July 2012) according to the *Roca Alvarez* Case. Civil servants´ breastfeeding permission is still preferential to mothers in Spanish Law (see Article 30(1)(f) of Law 30/1984). However, since the Spanish Courts have interpreted it in accordance with the *Roca Alvarez* Case, fathers are granted access to breastfeeding permission under the same conditions as mothers (Pastor Ballester, 2016, 22).

2.2.2.5 Flexibility of Parental Leave arrangements

Parental leave arrangements have a range of different flexibilities and limitations. Overall, the Country Report for Spain assesses that the Spanish legislation exceeds the minimum requirements of the Directive 2010/18 (Pastor Ballester, 2016, 27).

The breastfeeding permission is flexible and can be applied in a number of ways. First, the worker may be absent from work during each working day for an hour (or in two periods of half an hour each). Second, the worker can arrive half an hour later at work each day or, alternatively, leave half

an hour early. Third, until the child is nine months old, the breastfeeding permission hours can be added up and taken in complete days if the worker requests and it is established by collective agreement or accepted by the employer. The same applies for civil servants.

The unpaid leave (excedencia) is less flexible in that it has to be taken full time according to Article 46(3) of the Workers Statute. This applies to all workers including civil servants. However, it is flexible in that it can be taken freely when and in the period that the worker decides. This unpaid leave is a right and exists until the child reaches the age of three; the worker can apply for it on several occasions, returning to work in between.

Workers can request reduced working times with some limitations, although civil servants have more flexibility. Article 37(5) of the Workers' Statute states that the reduction of working time has to be taken daily. However, the duration can be determined by the worker within some limits: from a minimum of one eighth and a maximum of one half of his/her working day. No lower or upper limits apply to civil servants. According to the same Article, a reduction in working time can also be requested for the purpose of taking care of a child that is seriously ill – the number of hours to be determined by the worker, although in this case the reduction has to be at least half of the ordinary working day. The same applies to civil servants.

In terms of how the interests of the worker and the employer interact, a law reform in 2012 has shaped this area. Breastfeeding permissions or the corresponding reduction of working time is up to the worker, whose preferences take priority over the organisational needs of the employer. The employer could only alter this right in extreme cases of disproportionate harm to the company. However, the scope of this employees' right has been decreased by the 2012 law reform which restricted the unremunerated reduction of working time for parental reasons to a daily basis, which meant that longer periods of reduction of working time cannot be applied for. This same reform also introduced, for the first time, the possibility for collective agreements to establish concrete criteria for working time reduction. Before the 2012 reform, employees had a wide and almost absolute right to establish the time in which they wanted to take the reduction. However, the new legislation means that negotiators decide the timing of the work time reduction (Pastor Ballester, 2016, 23).

The Country Report for Spain assesses that the Spanish legislation exceeds the minimum requirements of the Directive 2010/18 in two respects. First, that parental leaves in general can be taken fully by the mother and the father (even accumulatively), the only exception being that breastfeeding permission has to be shared if both parents want to have access to it. Along these lines, the option for one parent to transfer part of the parental leave to the other parent does not exist in Spain. Second, during unpaid leave there is effective contribution to the social security system, and during reduced working hours the contribution to the system is considered as if the worker is full time (Pastor Ballester, 2016, 27).

2.2.2.6 policies in place for supporting paternity leave or usage of entitlements by fathers

As far as we are aware there are no such policies.

2.2.2.7 regulations and initiatives supporting parents returning to work

Workers who have benefited from paternity leave in Spain have the right to return to the same job or, if that proves impossible to a similar job which is consistent with their employment contract. Legislation regarding returning to work after unpaid leave is however more ambiguous. If a worker returns to work within one year – the right to return to the same job is retained- however if a worker returns after one year – the employee has a right to return to a similar job (as long as the employee does not have to change residence) although in practice this distinction has not been upheld (Pastor Ballester, 2016, 25).[23]

Spanish legislation also regulates for more specific cases, i.e. pregnant women, breastfeeding mothers and those returning from maternity leave. For example Article 26 of the Prevention of Labour-Related Accidents Law states that the employer must find an equivalent position for a pregnant or breastfeeding woman if she is transferred due to hazardous nature of former post and will retain the right to the former post. The workers' rights linked to the employment contract will also be maintained during maternity leave.[24] The Supreme Court ruled that women on maternity leave cannot be subject to a decrease of their annual salary –due to their absence whilst the Constitutional Court has ruled that pregnancy and motherhood should not be prejudicial to a woman's career including position of seniority and initial date of contract must be upheld in the case of pregnancy (Pastor Ballester, 2016, 18).

There have also been cases of legislation passed which instead of providing support for parents returning to work – have made it more difficult. For example, the 2012 labour reform limits workers' rights to ask for a 'shorter working day' in order to care for children or dependent relatives, it also limits breastfeeding rights and abolishes the financial incentives that companies were entitled to when women on childcare leave were then reincorporated (Lombardo, 2016, 14). Pastor Ballester, (2012, 29) concludes, "the reduction of parental rights that has taken place with the 2012 Spanish legal reform could have the effect of expelling people from the labour market that cannot make their various responsibilities compatible with each other" particularly affecting working mothers (Lombardo, 2016, 14).

2.2.2.8 Compensation rate for wages[25] for maternity leave

In Spain there are two kinds of maternity leave, contributory maternity leave and non-contributory maternity leave. The former is a social security benefit paid by the state and employees are entitled to remuneration equivalent to 100% of the previous month social security contribution base – which means in effect they receive approximately the same amount as their salary. This hits a ceiling of €3,606.00 a month in 2015 rising to €3,642.00 in 2016. Non-contributory maternity leave is also a social security benefit and means that those who have not worked long enough to qualify for the former are entitled to a unique payment calculated at 42 days of social security contribution base with a ceiling of 42 times the daily minimum salary. For 2015 this was €745.50 (Pastor Ballester, 2016, 20).

[23] For example the Supreme Court has ruled that those returing to work after one year also have the right to the same or similar job on return, (Pastor Ballester, 2016, p25).
[24] Article 48(4) of the Workers Statute
[25] *% of wages covered by leave benefits during leave period*

2.2.2.9 Compensation rate for wages[26] for parental leave

According to the FEMM Committee 2015, Spain offers no allowance for parental leave (FEMM Committee, 2015, 69). Pastor Ballester, (2016, 26) however identifies that employers actually compensate employees through the breastfeeding permission.

2.2.2.10 Additional paid leave for working parents?

Employers also cover two days leave (extended to four days if travel is required) per worker to look after a seriously ill child or other family members, i.e. in the event of serious illness or the hospitalisation or death of a close relative. For civil servants this is extended to three days and five days if travel is required.

Parents are also entitled to take full or part time leave (minimum reduction of 50% of working time) to care for a seriously ill child who is in hospital or needs continual care at home. 100 % of earnings are covered and the ceiling is the same for maternity pay and the minimum contributory requirements must be met. It also applies to part-time workers (minimum reduction of 25% of full time hours). Whilst the leave is individual – both parents cannot use it at the same time.

Employees are also entitled to up to two years of leave or reduce working hours by between 12.5% and 50% to care for a dependent relative in the case of severe illness, disability, accident or old age. The carer, if co-resident whilst caring for someone with chronic dependency may receive payment – but this depends on level of dependency, household income, region of residence. Whilst payment is claimed by dependent relative – the carer will be credited with social security contributions. For civil servants this is extended to three years and the whole period is credited with social security contributions. They are also entitled to working part-time for a month without loss of earnings in the case of a very serious illness of their child, partner, parent, or parent-in-law. They are also entitled to flexible working-time (Escobedo, 2016; Pastor Ballester, 2016, 6).

2.2.2.11 legal right to reduce working time on request

Both workers and civil servants who are parents (including adoptive and foster parents) and those who take direct care of a child younger than 12 (or whom care for a dependent first/ second degree relative) can request a reduction of working time (between an eighth and half) with a corresponding reduction in salary. Those caring for a dependent relative have up to two years of reduced working time (unless otherwise stipulated in a collective agreement) (Pastor Ballester, 2016, 28). Workers and civil servants that take this leave are credited with full-time social security contributions (Escobedo, 2016). The Spanish Constitutional Court has declared that reconciling work and family life is a fundamental right.[27] Despite this declaration the Constitutional Court states that the right to request adjustment of working time is dependent on either collective bargaining or it being allowed by the employer.[28] The Supreme Court has ruled that when a worker requests 'adjustment' to his/her

[26] *% of wages covered by leave benefits during leave period*
[27] Judgment of the Constitutional Court 26/2011 of 14 March 2011, available at http://www.boe.es/boe/dias/2011/04/11/pdfs/BOE-A-2011-6541.pdf.
[28] Judgment of the Constitutional Court 26/2011 of 14 March 2011, available at http://www.boe.es/boe/dias/2011/04/11/pdfs/BOE-A-2011-6539.pdf.

working time patterns – the employees right to choose the concrete time for working time reduction and/ or breastfeeding permission is not applicable. 'Adjustment' – is much broader than the right to the reduction of working time or breastfeeding permission – and may be preferable for workers as they are still entitled to 100% salary and has less impact on professional career development (Pastor Ballester, 2016, 29).

2.2.2.12 Protection against dismissal

Dismissal whilst on maternity leave or leave due to risk during pregnancy or breastfeeding as well as dismissal of pregnant women (from start of pregnancy to start of maternity leave) is considered null and void unless due to a serious fault on the part of the worker or due to economic or technical reasons – unrelated to the pregnancy or maternity.[29] If there is no just cause for dismissal – it is automatically deemed null and void – this occurs even if the employer does not have knowledge of the pregnancy.[30] Dismissal however is upheld if the pregnant woman is on a probationary period – and the employer claims to not have knowledge of the pregnancy.[31] This is problematic – as employees could claim lack of knowledge when there has been no formal communication from the pregnant worker about being pregnant and undermines protection against contractual termination of pregnant women on their probationary period going against the principles stated in Directives 92/85 and 2006/54 (Pastor Ballester, 2016, 17). Regarding redundancy – the Supreme Court demands that the employer must provide a specific reason of why the pregnant woman is to be made redundant – if this is not provided – the dismissal must be declared null and void.[32] Social security payment is guaranteed until the end of the maternity leave period – in cases of dismissal due to redundancy or any other reason. If the worker is also covered by unemployment benefit – this is suspended until the maternity leave social security payment finishes and duration of entitlement is not affected (Pastor Ballester, 2016, 18). Pastor Ballester, (2016, 25) points out that whilst there are four main provisions in Spanish legislation that aim to protect workers that take parental leaves from dismissal – particular cases that have been judged in the European Court of Human Rights – show how reparation of damages have not been adequately dealt with.[33] The same protection is provided to those workers that take parental leave as those that are entitled to maternity leave (Pastor Ballester, 2016, 25).

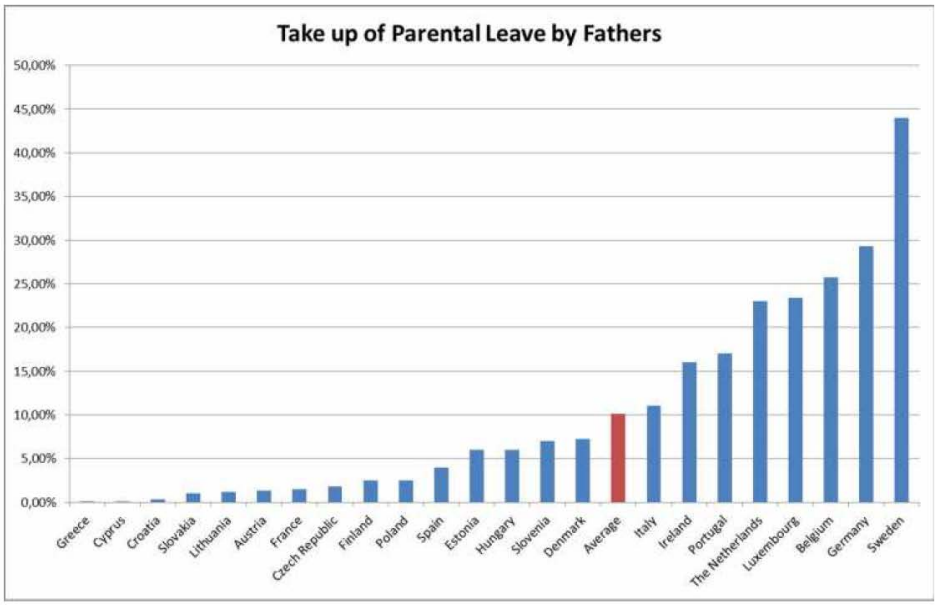
[29] Article 55(5) of the Worker's Statute.
[30] Judgment of the Constitutional Court 92/2008 of 21 of July 2008.
[31] Judgment of the Constitutional <court 173/2013 of 10 October 2013, http://hj.tribunalconstitucional.es/Resolucion/Show/23619.
[32] Judgment of the Supreme Court of 14 January 2015, appeal number 104/2014, http://www.poderjudicial.es/search/doAction?action=contentpdf&databasematch=TS&reference=7324092&links=&optimize=20150313&publicinterface=true
[33] Garcia Mateos v. Spain – judgment of the European Court of Human rights – Spain had to pay compensation damages of €16, 000 to a worker who was unable to benefit from parental leave – that had been recognised by a Spainish court – as the child was now too old to allow the working time reduction. Judgement of the European Court of Human Rights of 19 February 2013, application number 38285/09.

2.2.3 Empirical Evidence for Gender Regime

2.2.3.1 Usage of parental leave

Parental leave was taken by 31,435 people in 2014 – this was an increase of 10.8% in comparison to the previous year but 10.7% less than in 2010 (Escobedo et al 2016, 333). This corresponds to only 7.4% of births that year and accounts for only 2,3% of children under three years old (ibid). in 2014, 6% of those that took parental leave were fathers – an increase of 0.5% from 2013 (ibid). Analysis of the 'Social Use of Leave in Spain, 2012' survey shows how only 0.5% of men aged 25-59 who were working at the time of becoming a father used entitled parental leave in contrast to 10.4% of women (ibid). In the majority of cases leave was taken for the first child (69%) and women mainly took it straight after maternity leave (64%) for a maximum of one year (85%)- but most commonly for six months or less (46%) (ibid). All men returned to a full time job after the leave but only 55% of women returned to work full time and 35% of women returned to part-time work/ leave whilst 7% gave up paid work and 3% lost their jobs (ibid). Data from the FEMM Committee (2015) shows how Spain is lagging behind the average of the 23 Member States in terms of the take up of parental leave by fathers – at less than 5% when the average for the 23 Member States was 10%.

Figure 5: Take-up of parental leave by fathers in 23 Member States in percentages of available leave



[88] Because of incomparable statistics, United Kingdom could not be included. Additionally, in the case of three countries, the statistics were not specific, which resulted in calculating the average for those three countries. The take up for Austria is between 0.6% and 2%, for France between 1% and 2%, and for Finland between 2% and

Source: (FEMM Committee 2015, p.73)

2.2.3.2 Average duration of parental leave periods by sex (measured in days)

Analysis of the 'Social Use of Leave in Spain, 2012' survey shows how women mainly took parental leave straight after maternity leave (64%) for a maximum of one year (85%)- but most commonly for six months or less (46%) (ibid). For men however, it is even shorter – half take it for 1 month and 83% for a maximum of 1 year (Rogero-Garcia, et al, 2015).

2.2.3.3 What are the main barriers for increasing the participation of men in parental leave? (Qualitative assessment)

Rogero Garcia et al (2015) in their research examining 'Fathers on Leave Alone in Spain' note how the Spanish legal framework does not encourage fathers to take the parental leave alone. They also note how it is extremely rare for fathers to take a parental leave by themselves and that it is only employed by those fathers who want to establish a strategy of caring. They highlight that in the Spanish context it would be important to provide incentives – to counteract a more gendered traditional approach. They argue that when specific bonuses are established (for example 4 weeks of breastfeeding break for civil servant men instead of 2 weeks for employee mothers) – ideological barriers can be broken.

2.2.3.4 Fertility rate

Table 16: Fertility rate, total (births per woman)

	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28	1,53	1,56	1,61	1,60	1,61	1,58	1,58	1,54	1,54
Spain	1,36	1,38	1,45	1,38	1,37	1,34	1,32	1,27	1,27

Source: Worldbank: http://data.worldbank.org/indicator/SP.DYN.TFRT.IN?end=2014&locations=AT&start=2005

In 2014 in Spain (1,27) fertility rates are substantially lower than than the EU28 average (1,54). From 2008 until 2014 in Spain we see a downward trend from 1.45 to 1.27. At the EU 28 level we can also see a slight downward trend from 2010 (1.61) to 2014 (1.54).

2.2.3.5 Mean age of women at birth of first child

Table 17: Mean Age of Women at Birth of FirstChild by Country and Year

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	27,3	27,5	27,7	27,8	28	28,2	28,5		
Denmark	28,9	29,1	29,2	29	29,1	29,1	29,2	29,1	
France	28,5	28,6	27,9			28,1			
Germany	29,6	29,7	29,8	30	28,8	28,9	29,1	29,2	
Hungary	27	27,3	27,6	27,7	27,9	28,2	28,3	28,3	28,2
Spain	29,3	29,3	29,4	29,3	29,6	29,8			
Sweden	28,6					28,9			

Source: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__02-Families_households/04_en_GEFHAge1stChild_r.px/?rxid=d666e163-3739-46fb-b1c0-badf85132762

In Spain according to UNECE the mean age of women at birth of first child was 29.3 years in 2005 and increased to 29.8 years in 2010 (latest available data).

Eurostat data for 2013 shows how the average age for a woman to give birth in the EU 28 was 28.7 years old when they became mothers for the first time.[34] Spain (30.4 years) averaged the second oldest (after Italy 30.6 years).

2.2.3.6 One parent families and children by sex of parent

Table 18: One parent families and children by sex of parent, Measurement, Country and Year (Number of families)

	2011
Female Parent	
Spain	1.756.765
Male Parent	
Spain	463.955

Source: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__02-Families_households/07_en_GEFHOneParFam_r.px/?rxid=d666e163-3739-46fb-b1c0-badf85132762

We can see how in 2011 in Spain there were 1.756.765 female headed one-parent families- almost four times the number of male headed one-parent families (463.955). As data is only available for 2011 we cannot provide an assessment over time.

2.2.3.7 Enrolment rate of children aged under 3 years in childcare facilities

Table 19: Child Care by Indicator, Country and Year

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Spain	47	49	50	47	47			

Source: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__98-GE_LifeBalance/0104_en_GELB_Child_CARE_r.px/?rxid=c435b0ec-2113-4c07-8b14-9960f8e370b4

Between 2005/6 and 2007/8 we can see how the enrolment rate of children under three in childcare facilities slightly rose but it fell back to 2005/6 levels in 2009/10.

[34] http://ec.europa.eu/eurostat/documents/2995521/6829228/3-13052015-CP-EN.pdf/7e9007fb-3ca9-445f-96eb-fd75d6792965

2.2.3.8 *Women not working or working part time because of inadequacy of childcare services*

Table 20: Impact of the inadequacy of childcare services as a reason for women (aged 15-64 and with children up to the mandatory school age) not working or working part time

	Children younger than 3		Children between 3 and the MSA	
	Absolute value: adequate chilcare services are not available or affordable	Relative value: % of mothers who do not work or work part time	Absolute value: adequate childcare services are not available or affordable	Relative value: % of mothers who do not work or work part time
EU27	1.982.543	23	1.441.445	18
Spain	281.582	30	241.872	27

Source: EC: Barcelona Objectives: http://ec.europa.eu/justice/gender-equality/files/documents/130531_barcelona_en.pdf (page 34)

The percentage of mothers who do not work or work part time with children younger than 3 who cite the inadequacy of childcare services as a reason for not working or working part-time is 7 percentage points higher in Spain than the EU27 average. This rises to 9 percentage points higher in Spain than the EU27 average of mothers of children between 3 and the mandatory school age.

Table 21: Main reasons for women (aged 15-64 and with children up to mandatory school age) not working or working part time by perceived shortcomings of childcare

	Not available	too expensive	insufficient quality
EU 27	25	53	4
Spain	18	60	

Source: EC: Barcelona Objectives: http://ec.europa.eu/justice/gender-equality/files/documents/130531_barcelona_en.pdf (page 35)

In Spain the main reason for women not working or working part-time due to perceived shortcomings of childcare tended not to be due to the lack of availability (7% points less than the EU 27 average) but childcare was also seen as too expensive 60% (7% points more than the EU 27 average).

2.2.3.9 Percentage of children in formal child care, 2012

Table 22: Percentage of children in formal child care, 2012

	below age 3			between age 3 and compulsory schooling age		
	1-29 hours	30 hours +	total	1-29 hours	30 hours +	total
EU28	15	15	30	37	46	83
Spain	20	19	39	45	41	86

Source: Eurostat: EU-SILC; wwwforeurope
http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no059_MS206.pdf

In Spain the percentage of children in formal childcare is relatively high in comparison to the EU 28 average. In 2012, 20% of children younger than three were enrolled between 1 and 29 hours a week in comparison to 15 hours at the EU 28 average. 19% of children younger than three in Spain were enrolled in formal childcare more than 30 hours a week in comparison to 15% in the EU28. Of children between three years of age and compulsory schooling age 45 % of children are enrolled in formal child care up to 29 hours in comparison to the EU 28 average of 37%. For more than 30 hours these figures were 41% and 46% respectively with Spain 5 percentage points less than the EU 28 average.

2.2.3.10 Time spent on unpaid work

Table 23: Time spent in unpaid, paid and total work, by sex.

	paid work		unpaid work		
	Women	Men	Women	Men	
OECD Average	215,3	328,5	271,7	137,6	
Spain	245,8	333,8	258,1	153,9	2009-10

Source: http://www.oecd.org/gender/data/time-spent-in-unpaid-paid-and-total-work-by-sex.htm

In Spain both women and men spend more time on paid work than the OECD average – women in Spain however spend considerably more time in paid work than the OECD average – whereas men spend marginally more time in paid work than the OECD average. Women however spend less time in unpaid work in Spain than the OECD average whereas men in Spain spend more time in unpaid work than the OECD average. Spain does however reflect the OECD average where men spend more time in paid work and women in unpaid work.

2.2.4 General assessment of the Gender Regime

Over the last 10 years Spain has developed significant work-family arrangements both in terms of parental leave and early education childcare services promoting gender equality in the employment sphere (Escobedo & Wall, 2015, 218). Whilst these are regulated by quite an extensive legislative framework – we can see how gains made might be seen as under threat due to either legislative

reforms that have been enacted or the lack of an effective implementation of earlier legislation. For example Salazar (2016) highlights how employments rights have worsened (Act on the Promotion of Personal Autonomy and Care for Dependent People), which has had a negative effect, on women whilst the labour reform of the Act3/2012 of 6th of July has negatively impacted on the right to combine work/life balance. Not only has legislation been passed that has a had a negative effect on the gender regime but legislation that had previously been earmarked to come into force in 2011 (extension of paternity leave from two to four weeks) has been shelved and justified on the basis of responding to the economic crisis.

2.3 Gender equality policies in RTDI (Current developments)

2.3.1 Description of overall strategic gender equality policies in RTDI in place

There are three main strategies that cover gender equality in RTDI. The Strategic Plan for Equal Opportunities, 2014-2016, The Action Plan for Equal Opportunities in the Information Society, 2014-2017, and The Spanish Strategy of Science, Technology and Innovation, 2013-2020 (ESTI).

Gender equality provisions are included in national laws, and universities and research institutions are obliged by the law to prepare and put in practice relevant action plans.

The Strategic Plan for Equal Opportunities 2014-2016[35] – has a section on research. The plan's objectives for research are grouped in the following way:

- Strengthen studies and research with a gender perspective, especially in the State Plan of I + D + I (Research and Innovation)
- Reinforce the mainstreaming of equal opportunities at the university level (Education)
- Increase the participation of women in science, technology and research field (Science labour market)
- Having the necessary statistical information disaggregated by sex
- Develop gendered dissemination tools

It also includes specific measures addressing research performing organisations (RPOs) and research policy (ERA, Facts and Figures 2014, 591).

The Action Plan for Equal Opportunities in the Information Society 2014-2017 – reinforces the idea that gender is mainstreamed in scientific research[36]. It details the following objectives:

- Increase the overall participation of women in ICT
- Increase the number of professional and business women with ICT skills and their role in the sector
- Increase the digital content of interest to women
- Increase the use of digital public services by women
- Increase the confidence and security of women in ICT

[35] http://www.idi.mineco.gob.es/stfls/MICINN/Ministerio/FICHEROS/UMYC/PEIO2014-2016.pdf
[36] http://www.idi.mineco.gob.es/stfls/MICINN/Ministerio/FICHEROS/BorradorPlanAccionSocInf.pdf

The Law of Science, Technology and Innovation (LCTI, 2011), the Spanish Strategy of Science, Technology and Innovation 2013-2020 (EECTI)[37] passed in February 2013 and the plan (PECTI) for its implementation – support positive changes regarding gender equality and mainstreaming in research. The strategy establishes the rationale, objectives and indicators of the Spanish R&I policy for the period 2013–2020. Regarding gender equality the LCTI introduced a provision in which public research bodies should adopt 'gender balance' plans within two years – and subject to annual monitoring (ERA Facts and Figures, 2014, 591). Gender balance in selection committees in the realm of RTDI is also regulated by the 14/2011 law on Science, Technology and Innovation –which states that gender balance must be reached in the composition of selection committees in university appointments for permanent professor positions (Lombardo, 2016, 13).

The LCTI states that both the EECTI and PECTI should:

"Include the gender dimension in research programmes in all the process, including definition of priorities in research, research problems, theoretical frameworks, methods, collection and interpretation of data, conclusions, technological development and future research. They should also encourage studies with a gender perspective and the analysis of the situation of women and promote and increase the recognition of female researchers in research groups".[38]

The Spanish Strategy of Science, Technology and Innovation 2013-2020 has five basic principles:

- Coordination of R+D+I Public Policies in line with the EU
- Defining a planning framework
- Applying quality, relevance and social impact criteria
- Efficiency and accountability
- Incorporating the gender perspective in R+D+I public policy

Objectives are the following:

- Recognising and promoting talent in R+D+I employability
- Strengthening scientific and technical excellent research
- Encourage business leadership in R+D+I
- Strengthen R+D+I activities oriented to societal global challenges

[37] http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Estrategia_espanola_ciencia_tecnologia_Innovacion.pdf

[38] Stated in the the second point of the 13th additional provision, (RIO Country Report, 2015:70).

2.3.2 Main challenges concerning GE in RTDI

The main challenges concerning gender equality in RTDI in Spain come from the disjuncture between a quite well developed legislative framework yet lacking effective implementation mechanisms. The economic crisis has had a negative impact on both gender equality policies, budgets and the institutional framework whilst public spending on RTDI has severely declined. One example of the lack of effective implementation mechanisms is for example in the National Plan for Science, Technology and Innovation (PECTI) –the list of indicators to measure progress does not include any indicator to measure gender balance. PECTI could be seen as 'vague' in its application of 'gender equality' and the 'gender dimension in research'. The calls included in PECTI are also quite vague with regard to implementing these measures. For example, the 'R&D call for societal challenges for research' only establishes that, as well as 'Human and Social Sciences Research', research with a gender dimension perspective will have a transversal character and could be applied in all research proposal and research challenges". (RIO Country Report, 2015: Spain, 70).

2.3.3 Policy measures promoting gender equality in RTDI

2.3.3.1 Measures addressing GE in scientific careers

The LCTI and other R&I policy measures (e.g. EECTI and PECTI) have included some important positive changes regarding gender equality and gender mainstreaming in research (RIO Country Report 2015: Spain, 69). Focusing specifically on gender equality in scientific careers the LCTI has improved research careers in various ways. For example the new four year employment contract for PhD students which replaces the 2 + 2 system (two years scholarship followed by a two year contract) – means that certain entitlements such as unemployment benefits and maternity leave have been extended (RIO Country Report 2015: Spain, 69). There are however still gaps that are pertinent to this sector. For example, fixed-term contracts – often linked to research projects and the fact that some researchers have to be self-employed to work at certain universities means that female researchers often lose out on entitlements. Fixed-term contracts linked to project based research are often not extended to cover the four months taken for maternity leave (Villaroya et al, 2007; RIO, 2015, 69). This is in contrast to specific calls linked to promoting human resources for research e.g. Ramón y Cajal, training and the Torres Quevado programme.[39]

Spain has 50 public universities, as well as 32 private universities[40] and 89[41] other higher education institutions, such as colleges. Law 4/2007 on Universities (LOMLOU) regulated gender equality specifically in universities, stating that "within their organisational structures, universities will feature equality units specifically for the promotion and implementation of tasks related to the principle of

[39] See Article 54 (Ramón y Cajal); Art. 68 (formación); and Art. 83 (Torres Quevado) available online: http://boe.es/diario_boe/txt.php?id=BOE-A-2013-13832

[40] See http://www.mecd.gob.es/dms/mecd/educacion-mecd/areas-educacion/universidades/estadisticas-informes/datos-cifras/DATOS_CIFRAS_13_14.pdf.

[41] See http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/es/country?section=ResearchPerformers&subsection=HigherEducationInstitutions (visited January 21, 2015).

equality between women and men".[42] The most important specific measures introduced by the act as mandatory for all universities are:

1) The creation of Equality Units in all universities
2) The production of periodic reports on the applications of the principle of gender equality (Gender Equality Plans)
3) The balanced representation of women and men (60%/ 40%) on all boards for elections, promotion and peer evaluation.

The Science, Technology and Innovation Law of 2011 extended the adoption of gender equality plans beyond universities to also include Public Research Organisations. The 6th point of the 13th additional provision establishes that 'Public Research Bodies' should adopt within two years "gender balanced plans" that will be yearly monitored. These plans should include measures to award institutions that improve their gender balance indicators' (RIO Country Report, 2015: Spain, 69). Formal objectives of these institutional gender equality plans are defined within the Spanish Strategy of Science, Technology and Innovation (2013-2020), which provides the overall framework and includes:

- strengthening gender studies and research through gendered perspectives
- diminishing the underrepresentation of women in the science labour market,
- making sex-disaggregated statistics available
- developing gender sensitive tools for dissemination/communication.

The Spanish Ministry of Economics and Competitiveness (MINECO) and its Women and Science Unit formally controls the implementation of equality plans through periodic reports. 88 % of Public Research Performing Organisations had a gender equality plan in force in 2015. [43]

2.3.3.2 Measures addressing Gender balance in decision making

Gender imbalances in the decision-making process are also addressed by the LCTI. For example, Action MS39 supports a balanced gender representation within committees involved in:

- recruitment and career progression
- programme and/or project evaluation.

The first point of the 13th additional provision states that,

'all the institutions and committees regulated by the law, as well as, all the evaluation and selection committees of the Spanish R&D and Innovation system should follow the gender balance principle established by the Law 3/2007, 22 March.'

Either gender should not be over represented, i.e. over 60 % nor under-represented i.e. less than 40 % of the total. Policy actions and regulation promote gender representation in academic research

[42] State Law: Organic Law to Modify the Organic Law on Universities (LOMLOU 4/2007) https://www.boe.es/boe/dias/2007/04/13/pdfs/A16241-16260.pdf

[43]http://www.idi.mineco.gob.es/portal/site/MICINN/menuitem.edc7f2029a2be27d7010721001432ea0/?vgnextoid=752ee3cc5581a510VgnVCM1000001d04140aRCRD

committees, boards and governing bodies of the Spanish R&I system (namely the LCTI, EECTI and PECTI). The LCTI affects all public and private bodies 'in charge of financing, executing and coordinating, as well as, all actions that taken to promote research, development and innovation policies regardless of the economic and social sectors' (Art 3.1). This applies to both research funders and universities (RIO Country report 2015: Spain, 70).

The monitoring of gender balance at an organisational level is also covered by the LCTI. It specifies two concrete requirements:

1) that the Information System of Science, Technology and Innovation (SICTI) should collect, process and disseminate sex disaggregated data – including indicators on the share of women and productivity
2) Public Research Bodies need to adopt gender balance plans within two years – which will be monitored annually. (ERA facts and figures 2014, 593).

Gender balanced representation in committees is also regulated through the Law for Equality (2007), the Law of Universities (2007) and the Equality Plan in the Public Administration (2011). The 2014 ERA Facts and Figures reports that the "share of gender-balanced recruitment committees for leading researchers in research-performing organisations is higher than within the EU ERA-compliant cluster" (ERA facts and figures 2014, 593). Regarding research funders "–the share of gender-balanced research evaluation panels amongst responding research funding organisations in Spain is higher than the EU average." (ERA facts and figures 2014, 593).

Regarding the implementation in the PECTI the list of indicators developed to measure progress does not include any indicator to measure gender balance.

2.3.3.3 Measures addressing the integration of gender dimension in research

The gender dimension in research programmes is supported by the LCTI - the second point of the 13th additional provision establishes that EECTI and PECTI should: "include the gender dimension in research programmes in all the process, including definition of priorities in research, research problems, theoretical frameworks, methods, collection and interpretation of data, conclusions, technological development and future research. They should also encourage studies with a gender perspective and the analysis of the situation of women and promote and increase recognition of female researchers in research groups" (RIO Country report 2015: Spain, 70).

The EECTI includes the 'gender dimension in research' as part of one of its five basic principles (principle 5). Despite the fact that the PECTI mentions these issues (see p. 28) as a horizontal measure, a specific programme to promote the integration of the gender dimension in research content has not been developed. The calls included in the PECTI tend to be vague - the 'R&D call for societal challenges for research' states that, as well as 'Human and Social Sciences research', research with a gender dimension will be cross-cutting and could be applied in all research proposal and research challenges (RIO Country report 2015: Spain, 70).

The Women in Science Unit however has developed an informative note that presents concepts and key issues accompanied by a ´checklist´ and other resources – in order to facilitate the evaluation of the adequacy of integrating the gender dimension in research for those who evaluate presented proposals to calls for the National Plan of RD+I in the four main areas:

- Humanities and Social Sciences

- Life Sciences
- Environment
- Production and Communication Technologies[44]

The ERA Facts and Figures 2014 reports that those Spanish research funders that responded to the survey are less likely to support the gender dimension in research content/ programmes than the EU average. A comparison of the share of ERA- compliant cluster in Spain with the EU- ERA compliant cluster of research performing organisations that include the gender dimension in research content also demonstrates that it is on average lower in Spain than at the EU level (ERA facts and figures 2014, 592).

2.3.3.4 Other measures

We have no knowledge of other measures.

2.3.4 Actors responsible for GE in RTDI

There are various actors who are responsible for gender equality in RTDI. At the national level there is the Women's Institute founded in the early 1980s currently attached to the Ministry of Health, Social Services and Equality. It aims to promote equality of both sexes, facilitating the conditions for the effective participation of women in political, cultural, economic and social life, as well as to promote active policies for the employment and self-employment of women and to promote and develop the cross-cutting application of the principle of equal treatment and non-discrimination.[45]

Spain has a Women and Science Unit based in the Ministry of Economy and Competitiveness. This is the body responsible for implementing the principle of gender mainstreaming or mainstreaming, in the scientific, technological and innovation spheres.[46] The Women and Science Unit aims to promote gender aspects in science, technology and innovation by:

- Promoting the presence of women in all spheres of science, technology and innovation, based on their merits and skills, establishing mechanisms for eliminating bias, barriers and disincentives;
- Promoting the inclusion of gender as a cross-cutting category in scientific research, as well as specific research in the field of gender and women's studies;
- Promoting the inclusion of gender as a cross-cutting category in technological developments and innovation.

The UMyC was launched in order to comply with ORDER PRE / 525/2005, of 7 March, on the adoption of 54 measures to promote equality between women and men. Specifically, measure 4.1

[44] http://www.idi.mineco.gob.es/portal/site/MICINN/menuitem.8ce192e94ba842bea3bc811001432ea0/?vgnextoid=09084e69155b5510VgnVCM1000001d04140aRCRD

[45] http://www.inmujer.gob.es/home.htm

[46] http://www.idi.mineco.gob.es/portal/site/MICINN/menuitem.7eeac5cd345b4f34f09dfd1001432ea0/?vgnextoid=e218c5aa16493210VgnVCM1000001d04140aRCRD

stated that "It is agreed to create a specific unit of" Women and Science "to address the situation of women in research institutions and improve their presence in them".

The Women in Science Unit also produces the series 'Scientists in numbers' [Cientificas en Cifras] first published in 2007, and then subsequently in 2011, 2013, and 2015 - which is the current and fourth edition of the series.[47] It analyses the relative presence of women in distinct levels and ambits of science in Spain paying special attention to the careers of researcher in universities and public research organisations, the composition of decision-making bodies and participation in RTDI funding calls.

2.3.5 Assessment of Gender Equality Policies in RTDI

The main challenges concerning gender equality in RTDI in Spain come from the disjuncture between a quite well developed legislative framework yet lacking effective implementation mechanisms. The economic crisis has had a negative impact on both gender equality policies, budgets and the institutional framework whilst public spending on RTDI has severely declined.

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http://www.idi.mineco.gob.es/stfls/MICINN/Ministerio/FICHEROS/Informe_Cientificas_en_Cifras_2015_con_Anexo.pdf

3 Gender equality in RTDI

3.1 Gender Equality in RTDI on organizational level

3.1.1 Proportion of RPOs that have adopted gender equality plans

Table 24: Proportion of RPOs that have adopted gender equality plans, 2013

	2013
EU 28	36
Spain	34

SHE Figures 2015, p.116 (data only for 2013) (based on ERA Survey 2014)[48]

The ERA Facts and Figures (2014) report states that 34% of RPOs have adopted gender equality plans – this compares with 36% of RPOs at the EU 28 level.

National data however suggests that in 2015 73% of public universities and 33% of private universities (61% in total) had a valid equality plan, while in 18 % of public and 38% of private universities (24% in total) the new plan was in preparation. Only 8% of public and 29% of private universities (14% in total) were at that time without a current plan nor had started the process of elaborating a (new) plan.[49] The inclusion of this indicator in 'Cientificas en Cifras' 2015 is due to its inclusion in the ERA Roadmap in Spain 2016-2020 (Hoja de Ruta del ERA en España 2016-2020).

The plans vary greatly in terms of content. The more comprehensive ones cover topics like: communication, image and language; the representation of women and men; employment procedures, access, selection, promotion and development; remuneration; harassment, sexist attitudes and perception of discrimination; working conditions and personal, academic, work and family balance measures.[50] Some also include the gender dimension in research content and gender balance in decision-making.[51]

3.1.2 Proportion of R&D personnel working in RPOs that have adopted gender equality plans

Table 25: Proportion of research & development personnel working in RPOs who adopted gender equality plans, 2013

	2013
EU 28	70
Spain	61

SHE Figures 2015, p.117 (data only for 2013) (based on ERA Survey 2014)

[48] https://ec.europa.eu/research/swafs/pdf/pub_gender_equality/she_figures_2015-final.pdf
[49] Latest available data refers to the date December 31, 2015, Cientificas en Cifras, 2015:21, available at: http://www.idi.mineco.gob.es/stfls/MICINN/Ministerio/FICHEROS/Cientificas_en_cifras_2015_sin_anexo.pdf
[50] See the gender equality plan from La Laguna http://www.igualdad.ull.es/archivos/novedades/I%20Plan%20Igualdad%20de%20Género%20de%20la%20ULL%202014-2017%20v%2020-12-13%20def%20aprob%20ConsGob.pdf
[51] See for example the Autonomous University of Barcelona, http://www.uab.cat/doc/igualt

The ERA Facts and Figures (2014) report claims that 61% of research and development personnel work in RPOs that adopted a gender equality plan in 2013.

3.2 Participation of women in tertiary education

3.2.1 Share of tertiary educated population among the group of 25 to 34 years old by sex

Table 26: Share of tertiary educated population among the group of 25 to 34 years old by sex*

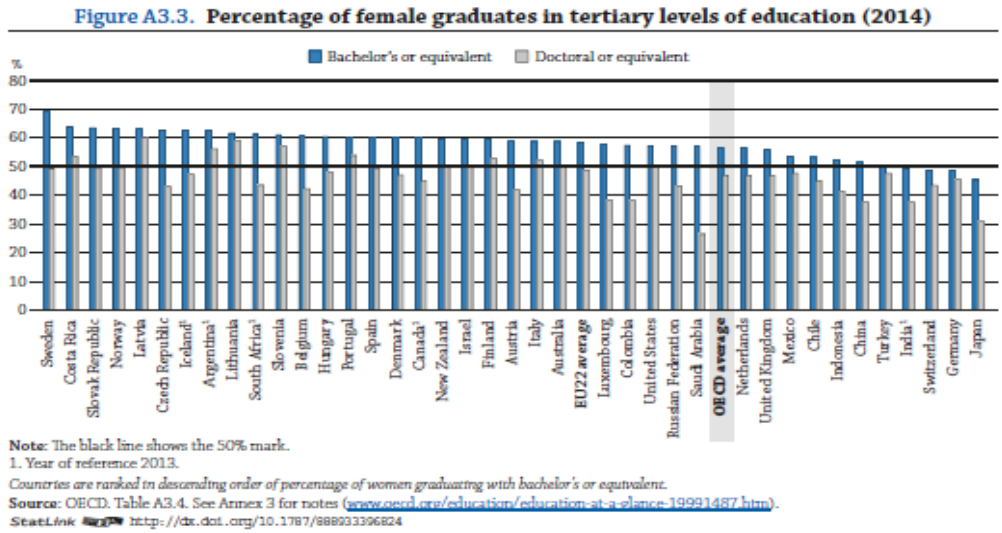
GEO	SEX/YEAR	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	28,3	29,2	29,9	30,9	32,3	33,3	34,4	35,5	36,5	37,2	37,9
	Males	25,4	25,9	26,4	27,2	28,2	29,1	30,0	30,8	31,7	32,5	32,9
	Females	31,1	32,5	33,6	34,8	36,4	37,6	38,8	40,2	41,3	42,0	42,9
Spain	Total	40,7	40,3	40,0	40,0	39,5	40,3	40,3	40,4	41,1	41,5	41,0
	Males	35,7	35,2	35,0	35,0	34,1	34,5	35,2	34,9	35,7	35,4	34,9
	Females	46,0	45,8	45,4	45,4	45,1	46,4	45,7	46,0	46,5	47,5	47,0

* Introduction of the ISCED 2011 classification: data up to 2013 are based on ISCED 1997, as from 2014 ISCED 2011 is applied. Online tables present data for three aggregates (see 3.2 above), and at this level of aggregation data are directly comparable for all available countries **except Austria**. The level shift break in Austria is due to the reclassification of a programme spanning levels: the qualification acquired upon successful completion of higher technical and vocational colleges is allocated in ISCED 2011 to ISCED level 5; under ISCED 1997 the same qualification was reported on ISCED level 4, but earmarked as equivalent to tertiary education.

Source: Eurostat, Population by educational attainment level, sex and age (%)[edat_lfse_03]

Over the last 10 years Spain has seen only a minimal increase in the share of tertiary educated population among the group of 25 to 34 years old- it has risen by only 0.3%. This is in stark contrast to the average EU 28 which saw a 9.6% percentage increase. This can be attributed to the relatively high place that Spain occupied in 2005. In contrast to the EU 28 average of 28.3% of 25 to 34 years olds with tertiary education, in Spain this figure was 40.7%. Regarding the representation of women and men – women's share of tertiary educated population among 24 to 34 years in 2005 was 5.3 percentage points greater in terms of their share - this increased to 12.1 percentage points in 2015. The share of men with tertiary education aged 25 to 34 actually fell by 0.8% from 2005 to 2015.

Figure 6: Percentage of Female Graduates in Tertiary Levels of Education



Note: The black line shows the 50% mark.
1. Year of reference 2013.
Countries are ranked in descending order of percentage of women graduating with bachelor's or equivalent.
Source: OECD. Table A3.4. See Annex 3 for notes (www.oecd.org/education/education-at-a-glance-19991487.htm).
StatLink http://dx.doi.org/10.1787/888933396824

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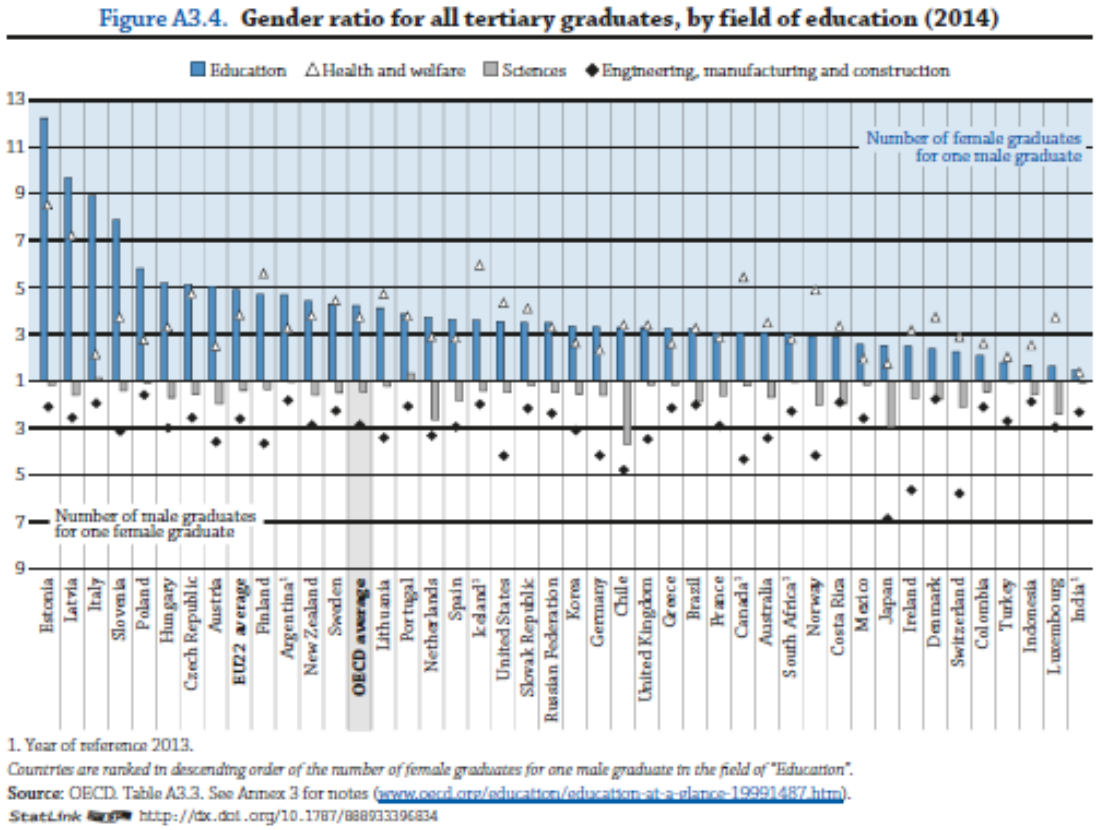
Source: Education at a Glance 2016, p64[52]

3.2.2 Gender ratio for all tertiary graduates, by field of education

Figure 7: Gender ratio for all tertiary graduates by field of education



3.2.3 Development of the proportion of women ISCED 6 graduates

Table 27: Development of the number of women ISCED 6 graduates

	2006		2007		2008		2009		2010		2011		2012	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
EU 27	55.163	43.519	57.196	46.754	59.784	50.743	54.876	46.586	56.162	47.185	62.626	54.628	63.472	56.916
Spain	3.812	3.347	3.745	3.405	3.749	3.553	4.053	3.862	4.608	4.088	4.598	4.149	4.879	4.604

Source: SHE Figures 2015, p.36 (data for 2008-2012); SHE Figures 2012, p.78 (data 2006 and 2007)[53]

In Spain in 2012 there are still more men ISCED 6 graduates than women. This is consistent with data from the EU 27. From 2008 to 2009 we see a decline in the overall numbers of men (-4908) and women (-4157) ISCED 6 graduates at the EU 27 level. In Spain from 2006 to 2008 it is more or less

[52] http://www.oecd-ilibrary.org/docserver/download/9615031e.pdf?expires=1471868754&id=id&accname=guest&checksum=6D904BF1168DFCF2E1CA3980FF88F0FA

[53] http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf

constant for both men and women. In Spain from 2008 to 2009 this rises for both men (304) and women (309) with a more or less constant increase for both sexes until 2012.

3.2.4 Development of the proportion of women ISCED 6 graduates differentiated by field of study

Table 28: Development of the proportion of women ISCED 6 graduates differentiated by field of study

		Education	Humani-ties & arts	Social sciences, business and law	Science, mathema-tics and compu-ting	Enginee-ring, manufac-turing and construc-tion	Agricul-ture and veterinary	Health and welfare	Services
EU 27	2006	64	52	47	41	25	51	54	
	2010	64	54	49	40	26	52	56	
	2012	64	54	51	42	28	57	59	45
Spain	2006	57	48	46	48	25	44	54	
	2010	60	51	49	48	34	42	56	
	2012	55	52	47	47	30	56	56	30

Source: SHE Figures 2015, p.26 (data for 2012); SHE Figures 2012, p.79 (data for 2010, calculations JR); SHE Figures 2009, p.51 (data for 2006)[54]

In Spain we can see how there seems to be slightly less gendered segregation per field of study at the ISCED 6 graduate level than in the EU27. For example, in the field of education – which tends to be a feminised field - at the EU 27 level (for the years 2006, 2010 and 2010) 64% of ISCED 6 graduates were women, in Spain this ranged from 55% in 2012 to 60% in 2010. In the most masculinised area of study engineering, manufacturing and construction figures for the EU 27 ranged from 25% in 2006 to 28% in 2012 - in Spain there was a slightly greater female presence –ranging from 25% in 2006 to 30% in 2012. In science, mathematics and computing at the EU 27 level female presence ranged from 40% in 2010 to 42% in 2012- in Spain there was a slightly greater female presence ranging from 47% in 2010 to 48% in 2006 and 2010.

[54] https://ec.europa.eu/research/science-society/document_library/pdf_06/she_figures_2009_en.pdf

3.2.5 Development of the proportion of women ISCED 6 graduates differentiated by narrow fields of study in the natural sciences and engineering

Table 29: Development of the proportion of women ISCED 6 graduates differentiated by narrow fields of study in the natural sciences and engineering

		Life Science	Physical Science	Mathematics and Statistics	Computing	Engineering and Engineering Trades	Manufacturing and Processing	Architecture and Building
EU 27	2004	53	34	31	18	19	30	36
	2010	57	34	32	19	23	42	34
	2012	58	37	36	21	25	35	38
Spain	2004	60	47	39	22	21	48	41
	2010	60	40	42	22	33	61	31
	2012	62	46	34	22	29	19	38

Source: SHE Figures 2015, p.31 (data for 2004 and 2012); SHE Figures 2012, p.80 (data for 2010, calculations JR)

The proportion of women ISCED 6 graduates differentiated by narrow fields of study in the natural sciences and engineering in Spain shows how Spain fares slightly better than the EU 27 in terms of gender balance. However life sciences in Spain tended to be feminised to a greater degree than the EU 27 level. At the EU 27 level this ranged from 53% in 2004 to 58% in 2012 – in Spain this ranged from 60% in 2004 to 62% in 2012. In all other narrow fields of study in the natural sciences and engineering however Spain fares slightly better than the EU 27 in terms of gender balance – specifically having a slightly larger proportion of women in those very masculinised narrow fields of study. Spain does particularly better than the EU 27 in physical science – in 2004 at the EU-27 level only 34% ISCED 6 graduates were women this rose to 37% in 2012 whereas in Spain in 2004 - 47% of ISCED 6 graduates were women slightly falling to 46% in 2012. In computing – the most masculinised narrow field of study in the natural sciences and engineering – in the EU 27 in 2012 only 21% of ISCED 6 graduates were women – in Spain in 2012 only 22% were women.

3.2.6 Distribution of ISCED 6 graduates across fields of study by sex

Table 30: Distribution of ISCED 6 graduates across broad fields of study, by sex, 2012

		Teaching and education science	Humanities and arts	Social sciences, business and law	Science, mathematics and computing	Engineering, manufacturing and construction	Agriculture and veterinary	Health and welfare
EU-28	Women	4	14	20	26	9	4	23
	Men	2	10	17	32	21	3	14
Spain	Women	6	12	19	36	5	4	19
	Men	4	11	20	38	11	3	14

Source: SHE Figures 2015, p.29 (data only for 2012)

If we look at the distribution of ISCED 6 graduates across fields of study by sex we can see how women tend to have a more even distribution across broad fields of study at both the EU-28 level and in Spain. Whilst gender segregation is rife across broad fields of study – we can see how at both the EU-28 level and in Spain – men represent the highest and the lowest percentages of distribution – in comparison to women.

3.3 Labour Market Participation of women and men in the RTDI (whole sector)

3.3.1 General Labour market participation

3.3.1.1 Employment rate by sex

Table 31: Employment rates in the total population aged 20-64, by sex and gender gap

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Males	75,9	76,8	77,6	77,8	75,7	75,1	75,0	74,6	74,3	75,0	75,9
	Females	60,0	61,1	62,1	62,8	62,3	62,1	62,2	62,4	62,6	63,5	64,3
	Gender Gap	15,9	15,7	15,5	15,0	13,4	13,0	12,8	12,2	11,7	11,5	11,6
Spain	Males	79,8	80,7	80,6	77,9	71,0	69,2	67,7	64,6	63,4	65,0	67,6
	Females	55,1	57,1	58,6	58,9	56,8	56,3	56,1	54,6	53,8	54,8	56,4
	Gender Gap	24,7	23,6	22,0	19,0	14,2	12,9	11,6	10,0	9,6	10,2	11,2

Source: Eurostat, LFS http://ec.europa.eu/eurostat/de/data/database

In Spain in 2015 the gender gap in employment rates in the total population aged 20 to 64 was 11.2% at 0.4% smaller than the gender gap for the EU28. Since 2005 the gender gap in Spain has substantially reduced falling from 24.7 % in 2005 to 11.2% in 2015. This can be predominantly be explained – not by an increase in female employment (from 2005 to 2015 the female employment rate rose by only 1.3% - after one takes into consideration the decline in female employment by 5.1% from 2008 to 2013) but from the decline in male employment– which fell by 17.2% from 2007/8 (80.6%) to 2013 (63.4%) coinciding with the years of the economic crisis.

3.3.1.2 Employment rate by age of children and sex

Table 32: Employment Rate of Persons Aged 25-49 by Age of Youngest Child, Sex, Country and Year

			2005	2006	2007	2008	2009	2010	2011	2012	2013
Spain	Female	Child aged under 3	56	56,8	58,2	59,4	58,4	59,7	59,7	59,5	59,9
		Child aged 3-5	55,9	59,7	61,2	62,2	61,7	60,4	60,8	59,9	59,7
		Child aged 6-16	57,6	59,9	62,7	63,7	61,6	60,5	60,4	59,6	58,8
	Male	Child aged under 3	94	93,3	93,7	91,4	83,2	82	81,9	79,4	79
		Child aged 3-5	92,6	93,7	93,4	89,9	84	82,1	80,9	77,9	77,6
		Child aged 6-16	92,2	92,7	92,8	90	83,9	83,4	81,5	78,8	78,7

Sources: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy

In Spain the employment rate of men falls from 2007/ 2008 until 2013 regardless of the age of the youngest child. In fact it seems difficult to identify a pattern linking the employment rate of men to

the age of their youngest child. However, in Spain from 2006 to until 2011 the employment rate of women was greater for those with their youngest child aged 3-5 than with a child under 3. From 2005 to 2008 the employment rate for women with a child aged 6-16 was greater than for those whose youngest child was between 3 and 5.

Table 33: Employment Rate of Persons Aged 25-49 without children by Sex, Country and Year

		2005	2006	2007	2008	2009	2010	2011	2012	2013
Spain	Female	78,8	79,7	81	80,2	77,4	75,4	75,6	74,5	73,6
	Male	89,2	89	88,9	86	79,1	78,8	77,5	74,4	74,5

Sources: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy

If we consider the data in the above table with the data considering the employment rate of persons aged 25-49 by age of youngest child, sex, country and year – we can see how men with children (regardless of the age of the youngest child) have a higher employment rate than those without children. This is consistent for every year from 2005 to 2013 across all groups of men with children (youngest under 3, youngest 3-5, youngest 6-16). If however we compare the employment rate of females aged 25- 49 we can see how their employment rates are substantially lower if we factor in parenthood for every year from 2005 to 2015 across all groups of women with children (youngest under 3, youngest 3-5, youngest 6-16).

Table 34: Employment impact of parenthood (age 20-49)

	Males	Females
OECD Average	-11,3	10
Spain	-13,1	4

Source: Eurostat 2014; Plantenga 2014, p40

The employment impact of parenthood is positive for men in Spain (resulting in a negative score) – 13.1 and negative for women (resulting in a positive score), 4. In comparison with the OECD average it seems as though impact of parenthood on employment rates of women in Spain is smaller. The impact on men however is more in keeping with the OECD average.

3.3.1.3 Employment by full-time and part-time status, sex

Table 35: Full-time equivalent (FTE) employment rates among women and men aged 20-64 (%) and gender gap (percentage points), 2010-2014

		2010	2014
EU28	Males	73,1	72,7
	Females	53,5	54,5
	Gender Gap	19,6	18,2
Spain	Males	68,0	63,0
	Females	50,4	48,1
	Gender Gap	17,6	14,9

Source: EC 2016, Report on equality between women and men, p.49[55]

The gender gap of full-time employment rates among men and women aged 20-64 has fallen at a greater rate in Spain (2.7%) than at the EU 28 level (1.4%). This is to do with a falling employment rate of men – which fell from 68% in 2010 to 63% in 2014. Female full time equivalent also fell – but not to the same extent from 2010 from 50.4% to 48.1%. Average FTE employment rates were higher in the EU 28 than in Spain in 2010 and 2014 for both men and women.

3.3.2 Participation of women and men in RTDI

3.3.2.1 Proportion of scientists and engineers in total labour force, by sex

Table 36: Proportion of scientists and engineers in the active population between 15 and 74 years, by sex and year

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	:	:	:	4,9	4,9	5,0	6,4	6,5	6,6	6,6	6,8
	Males	:	:	:	6,0	6,1	6,2	7,3	7,2	7,3	7,4	7,5
	Females	:	:	:	3,5	3,5	3,6	5,5	5,5	5,7	5,8	6,0
Spain	Total	4,5	4,4	4,5	4,6	4,5	4,6	5,3	5,2	5,4	5,5	5,6
	Males	4,5	4,4	4,6	4,4	4,3	4,6	5,1	5,1	5,2	5,4	5,3
	Females	4,5	4,4	4,4	4,9	4,7	4,7	5,6	5,3	5,6	5,6	5,9

Source: Eurostat, HRST by category, sex and age [hrst_st_ncat]

The total proportion of scientists and engineers in the active labour force in Spain is slightly lower for Spain than the EU28 average. In 2015 in the EU 28 the total was 6.8% whereas in Spain this figure was 5.6%. In Spain since 2005 (4.5%) every year (except for 2008/2009 and 2011/2012) this proportion has slightly increased until 2015 (5.6%). At the EU 28 level since 2008 it has increased from 4.9% to 6.8% in 2015. At the EU 28 level the proportion of scientists and engineers in the active labour force are more likely to be men than women –in contrast in Spain from 2008 to 2015 they are more likely to be women.

3.3.2.2 Employment in knowledge intensive activities (KIA) by sex

Table 37: Annual data on employment in knowledge-intensive activities as a percentage of total employment at the national level, by sex (from 2008 onwards, NACE Rev. 2)

GEO	SEX/TIME	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	34,2	35,0	35,4	35,6	35,7	35,8	35,9	36,0
	Males	27,2	28,0	28,5	28,7	28,8	28,9	29,1	29,1
	Females	42,7	43,5	43,8	43,8	43,9	43,9	44,0	44,2
Spain	Total	28,6	30,7	31,7	32,3	32,9	32,8	32,8	32,7
	Males	23,5	25,7	26,8	27,4	27,9	28,1	28,3	28,0
	Females	35,4	37,0	37,8	38,4	38,8	38,5	38,2	38,3

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

[55] http://ec.europa.eu/justice/gender-equality/files/annual_reports/2016_annual_report_2015_web_en.pdf

In Spain in 2015 the percentage of women employed in knowledge intensive activities (38%) continued to be approximately 10 percentage points higher than men employed in knowledge intensive activities (28%). This gender gap has been constant at between 10 and 12 percentage points since 2008 when this type of activity was carried out by 35% of employed women and 24% of employed men. At the level of the EU 28 the gap in 2015 was approximately 15 percentage points also in favour of women. The average percentage of employed European women in knowledge intensive activities tends to be approximately 5 percentage points higher than employed Spanish women working in knowledge intensive activities. This is in contrast to employed men in Spain in knowledge intensive activities – who since 2011 have tended to be only 1 percentage point behind the EU 28 average (Cientificas en Cifras, 2015, 18).

3.3.2.3 Employment in knowledge intensive activities – business activities (KIABI) by sex

Table 38: Employment in knowledge intensive activities – business activities (KIABI) by sex

GEO	SEX/TIME	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	13,2	13,4	13,5	13,7	13,8	13,8	13,9	14,0
	Males	13,3	13,6	13,9	14,1	14,2	14,4	14,5	14,6
	Females	13,1	13,2	13,1	13,2	13,3	13,2	13,3	13,4
Spain	Total	11,5	11,7	11,8	11,8	12,2	12,4	12,3	12,4
	Males	11,1	11,5	11,9	11,9	12,5	12,8	12,7	12,7
	Females	12,0	11,9	11,8	11,7	11,8	11,9	11,8	11,9

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

Employment in knowledge intensive activities – particularly business activities is slightly lower in Spain in comparison with the EU28 level. At both the EU28 level and the in Spain employment rates in knowledge intensive activities – particularly business activities tends to be slightly greater for men than women. In 2015 in the EU 28 the gender gap is 1.2% and in Spain 0.8% - and in both cases favouring men.

3.3.2.4 Researchers in all R&D sectors

Table 39: Number of researchers in all R&D sectors by sex and years (in full time equivalents)

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	1.374.760	1.422.499	1.458.115	1.523.245	1.555.606	1.602.765	1.626.802	1.680.987	1.731.241
	Males	-	-	-	-	-	-	-	-	-
	Females	-	-	-	-	-	-	-	-	-
Spain	Total	109.720	115.798	122.624	130.986	133.803	134.653	130.235	126.778	123.225
	Males	68.349	72.367	76.166	80.996	82.277	82.822	80.002	78.007	75.465
	Females	41.371	43.431	46.458	49.990	51.526	51.831	50.233	48.771	47.760

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In Spain the total number of researchers has grown from 109.720 in 2005 to 123.25 in 2013. From 2005 (41,317) until 2010 (51,831) the number of female researchers grew every year. From 2010 (51,831) until 2013 the number of female researchers fell every year to 47,760 in 2013. In 2005

37.7% of these researchers were women and 62.3% were men- changing to 38.8% women in 2013 and 61.2% men.

Table 40: Share of women in R&D by countries

	share of female researchers in R&I				
	2005	**2007**	**2009**	**2011**	**2013**
EU28	:	:	:	:	:
Spain	38%	38%	39%	39%	39%

Source: Eurostat, rd_p_persocc (calculations JOANNEUM RESEARCH)

Latest figures show the proportion of women in R&D in Spain has been constant since 2009 at 39%- rising in 2008 by 1 percentage point. For this indicator Spain is higher than the European average - if we use the latest She Figures Data for 2012 the EU 28 average is 33% - the same as for the EU-27 in 2009 (Cientificas en Cifras, 2015, 18).

3.3.2.5 Researchers differentiated by R&D sectors

Table 41: Number of researchers in the BES by sex and years (in full time equivalents)

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	626.081	654.004	667.464	695.179	695.602	719.935	747.215	792.692	830.713
	Males	-	-	-	-	-	-	-	-	-
	Females	-	-	-	-	-	-	-	-	-
Spain	Total	35.034	39.936	42.101	46.375	46.153	45.377	44.915	44.920	44.714
	Males	25.491	28.679	29.836	32.771	32.378	31.791	31.370	31.336	30.792
	Females	9.543	11.257	12.265	13.604	13.775	13.586	13.545	13.584	13.922

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc] http://appsso.eurostat.ec.europa.eu/nui/show.do

There is a clear under-representation of women in the business sector – in 2013 just under a third of the total number of R&D personnel in this sector were women. This is the sector where the gender gap is the greatest. This has improved slightly over time – in 2005 only 27% of researchers in the business sector were women –rising to 31% in 2013. This however, is considerably higher than the average at the EU level (20%) according to She Figures 2012 data – when in Spain in 2012 it was 30%.

Table 42: Number of researchers in the HES by sex and years (in full time equivalents)

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	551.459	566.464	585.624	618.351	642.780	663.331	656.965	661.902	675.973
	Males	-	-	-	-	-	-	-	-	-
	Females	-	-	-	-	-	-	-	-	-
Spain	Total	54.028	55.443	58.813	61.736	63.175	64.590	62.185	59.775	57.641
	Males	32.156	32.937	34.897	36.379	37.164	38.078	36.385	34.931	33.684
	Females	21.872	22.506	23.916	25.357	26.011	26.512	25.800	24.844	23.957

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc] http://appsso.eurostat.ec.europa.eu/nui/show.do

The share of R&D personnel in the higher education sector that were women was 40.5% in 2005 rising slightly to 41% in 2013.

Table 43: Number of researchers in the GOV by sex and years (in full time equivalents)

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	181.758	185.036	188.306	192.370	199.210	201.547	203.821	207.428	210.635
	Males	-	-	-	-	-	-	-	-	-
	Females	-	-	-	-	-	-	-	-	-
Spain	Total	20.446	20.063	21.412	22.578	24.165	24.377	22.893	21.850	20.673
	Males	10.613	10.563	11.290	11.698	12.573	12.789	12.118	11.630	10.901
	Females	9.833	9.500	10.122	10.880	11.592	11.588	10.775	10.220	9.772

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc] http://appsso.eurostat.ec.europa.eu/nui/show.do

The share of R&D personnel in the government sector that were women was 48% in 2005 dropping to 47% 2013. This is the sector with the greatest representation of women in R&D personnel.

Table 44: Number of researchers in the PNP by sex and years (in full time equivalents)

GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	15.462	16.995	16.721	17.345	18.014	17.952	18.802	18.965	13.920
	Males	-	-	-	-	-	-	-	-	-
	Females	-	-	-	-	-	-	-	-	-
Spain	Total	213	357	299	298	311	309	242	232	197
	Males	89	189	144	149	164	164	129	109	89
	Females	124	168	155	149	147	145	113	123	108

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]http://appsso.eurostat.ec.europa.eu/nui/show.do

The number of R&D personnel that work in the non-profit sector in Spain is extremely small in comparison with the EU 28 average – at only 1.4% of the EU 28 average. In this sector in 2013 55% of R&D personnel in Spain were women. Women's representation in R&D personnel in this sector oscillates from 58% in 2004, to 47% in 2006, 51% 2007, 50% in 2008, 47% in 2009, 2010, 2011 to 53% in 2012 and 55% in 2013.

3.4 Horizontal segregation

3.4.1 General horizontal Segregation

3.4.1.1 Gender segregation in occupations and in economic sectors, 2004 vs 2014

By economic sectors:

Table 45: Gender segregation in occupations and in economic sectors, 2004 vs 2014

	Gender segregation in occupations (%)		Gender segregation in sectors (%)	
	2004	**2014**	**2004**	**2014**
EU 28	24,7	24,4	17,7	18,9
Spain	26,3	25,3	20,2	19,4

Source: EC 2016, Report on equality between women and men, p.52

Gender segregation in occupations in Spain is slightly higher in 2004 and 2014 than the EU 28 levels. It has decreased very slightly from 2004 to 2014 by 0.3 % in the EU 28 and by 1 % in Spain. Gender segregation in sectors at the level of the EU -28 has in increased by 1.2 percentage points from 2004 to 2014 whilst it has decreased by 0.8 % in Spain over these ten years.

This index reflects the proportion of the employed population that would need to change occupations/sectors in order to bring about an even distribution of men and women across occupations or sectors. The index varies between 0 (no segregation) and 50 (complete segregation).

Table 46: Employment by Occupation, Sex, Measurement, Country and Year

SPAIN		2004	2014
Legislators, senior officials and managers	Female	31,6	30,9
	Male	68,4	69,1
Professionals	Female	50,3	54,9
	Male	49,7	45,1
Technicians and associate professionals	Female	44	39,7
	Male	56	60,3
Clerks	Female	65,4	66
	Male	34,7	34
Service workers and shop and market sales workers	Female	62,2	58,3
	Male	37,8	41,7
Skilled agricultural and fishery workers	Female	22,3	18,8
	Male	77,7	81,2
Craft and related trade workers	Female	7,2	8
	Male	92,8	92
Plant and machine operators and assemblers	Female	13	12,5
	Male	87	87,5
Elementary occupations	Female	50,4	62,1
	Male	49,6	37,9
Armed forces	Female	14	..
	Male	86	86,2

Source: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy/004_en_GEWEEmpISCO88SPN_r.px/?rxid=144ff3cd-f9b5-4e36-a865-47609264ae8f

Regarding occupational segregation – we can see how in 2014 in Spain the most feminised occupation is clerks at 66% and the most masculinized occupation is Craft and Related Trade work at a staggering 92% in 2014.

3.4.2 Proportion of female researchers by economic activities (NACE Rev. 2) in the business enterprise sector, by sex

Table 47: Proportion of female researchers in the business enterprise sector, by economic activity (NACE Rev. 2) 2012

		Manufactu-ring	Manufacture of chemicals and chemical products	Manufacture of basic phar-maceutical products and preparations	Services of the business economy	other NACE category
EU 27	2009	15	27	45	19	83
	2012					
Spain	2009	25	37	60	30	35
	2012	27	42	59	30	35

Source: SHE Figures 2015, p.60 (data only for 2012); calculations JOANNEUM RESEARCH

In Spain within the economic activities of the business enterprise sector, the highest proportion of women researchers (out of the total for both sexes) can be found in the pharmaceutical manufacturing industry. This is consistent with data from the EU 27 for 2009 – although in Spain this is substantially higher. In the EU-27 and in Spain men made up a larger proportion of researchers than women in all other economic activities in the business enterprise sector: manufacturing, manufacture of chemicals and chemical products and services of the business economy. The main difference between Spain and the EU 27 was for other NACE categories - 87% of whom were women at the EU-27 level whilst only 35% were women in Spain.

3.4.3 Distribution of researchers in the Higher Education Sector (HES), across fields of science, by sex

Table 48: Distribution of researchers in the Higher Education Sector (HES), across fields of science, 2012

Country	Gender	Natural sciences	Engineering and technology	Medical sciences	Agricultural sciences	Social sciences	Humanities
Spain	Women	19	19	17	2	26	16
	Men	19	23	16	3	25	15

Source: SHE Figures 2015, p.84 (data only for 2012)

Distribution of researcher in the HES across fields of science is similar for men and women.

3.4.4 Horizontal segregation by scientific field in the higher education sector

Table 49: Dissimilarity index for researchers in the higher education sector and government sector

	Dissimilarity Index 2006		Dissimilarity Index 2009		Dissimilarity Index 2012	
	HES	GOV	HES	GOV	HES	GOV
EU 27	0,14	0,18	-	-	-	-
Spain	0,03	0,07	0,03	0,09	0,03	0,11

Source: SHE Figures 2015, p.80 (data only for 2012); SHE Figures 2012, p.77; SHE Figures 2009, p64

In the higher education sector Spain's DI is lower than the EU-27 average – indicating less segregation of women and men across scientific fields – this is also true in the government sector- data referring to 2006. In Spain this is constant in the higher education sector for 2009 and 2012 – whilst in the government sector we can see how there has been a 0.02 increase from 2006 to 2009 and a 0.02 increase from 2009 to 2011 – indicating growing segregation.

3.5 Vertical Segregation

3.5.1 General vertical segregation

3.5.1.1 Share of male and female members of boards in largest quoted companies, supervisory board or board of directors

Table 50: Share of Decision-Making Bodies or Posts

	share of female ministers	share of female members of parliament	share of female members of regional Assemblies	share of female members of boards, in largest quoted companies, supervisory boards or board of directors	share of female members of central bank
EU	**22**	**25**	**31**	**16**	**17**
Spain	26	36	42	12	22

Source: EIGE gender equality index 2015, page 173[56]

Spain does relatively well if we examine the share of women's participation in political life, i.e. the share of female ministers, the share of female members of parliament, and the share of female members of regional assemblies- which are 4%, 11% and 11% percentage points (respectively) above the EU average. Spain is also 5 percentage points above the EU average in the share of female members of central bank. It is in the corporate sphere, i.e. the share of female members of boards in largest quoted companies, supervisory boards or boards of directors where Spain lags 4 percentage points behind the European average.

3.5.2 vertical segregation in RTDI

3.5.2.1 Proportion of women academic staff, by grade

Table 51: Proportion of women academic staff, by grade and total

		Grade A	Grade B	Grade C	Grade D	Total
EU 27	2007	19	36	44	44	38
	2010	20	37	44	46	40
EU 28	2013	21	37	45	47	41
Spain	2007	18	36	48	52	43
	2010	17	38	49	52	45
	2013	21	40	49	51	38

Source: She Figures 2015, p.129 (data only for 2013); She Figures 2012, p90 (data for 2010); She Figures 2009, p75 (data for 2007)

[56] http://eige.europa.eu/sites/default/files/documents/mh0415169enn.pdf

Vertical segregation demonstrated by the decreasing proportion of women academic staff the higher up the career ladder occurs in Spain in public universities mirroring and accentuating the pattern at the EU-28 level. The proportion of women at the highest level (grade A) of the academic career mirrors the EU -28 average in 2013 at 21%. At every other grade – the share of women is greater in Spain than at the EU -28 level: In 2013 at Grade B –Spain is three percentage points higher (40%) than the EU -28 average (37%). In 2013 at Grade C Spain has 4% more women (49%) than at the EU 28 level (45%) which extends to 5% higher than the EU average (47%) for Grade D. This shows how in Spain women's integration is higher at the lower levels of academia.

Gender balance at the top has fared better in private universities –with 43% women at the highest level (profesorado director/ ordinario/catedrático). However in both types of universities women researchers are under-represented in all analysed single member governing bodies (Cientificas en Cifras, 2015, p20). The case of female rectors is especially worrying given that in 2015 only 2% of rectors in public universities were women – this fell from 8% in 2010- and subsequently fell to 6% in 2012. However in private universities the proportion of female rectors was 29% in 2015. Therefore only 10% of universities - (public and private) are led by female rectors – which is substantially lower than the EU-28 average – 20% in 2014 (ibid).

3.6 Employment conditions/status/contracts

The labour market for researchers in Spain is highly regulated and institutions have relatively low levels of autonomy at the level of management (RIO Country Report, 2015, 63). It is characterised by a 'dual labour market' – which is comprised of civil servants and non-civil servants- who have different rights and regulations. The former are normally permanent staff at universities and public research institutions (Mora, 2001; RIO Country Report, 2015, 63). Research positions in the Spanish R&I system are regulated by the University Law (LOU), the regulations of PROs and all the legislation governing access to the civil servant status including article 103.3 of the Spanish Constitution.[57]

[57] "Law 4/2007 modiefied Law 6/2001 (LOU) on the Access of university personnel, changing the 'habilitation' system to a national 'accreditation' system, which is necessary to participate in the recruitment process 'concur' which provides Access to university personnel. Universities are responsable or launching the call according to their own regulations. In addition, Royal Decree 1312/2007 and Royal Decree 1313/2007 are important in this regard. The role of the universities is regulated by Law 30/1992, Royal Decree 774/ 2002 and Law 7/2007, which regulated the Public Functionaries staff regulations." RIO Country Report, 2015, p64.

3.6.1 General working time culture

Table 52: Actual weekly working hours of full-time workers by gender and country

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	women	39,4	39,2	39,2	39,1	38,9	39,1	39,1	39,0	38,9	38,9	38,9
	men	42,5	42,3	42,3	42,1	41,7	41,9	41,9	41,7	41,6	41,5	41,5
	total	41,4	41,2	41,2	41,0	40,7	40,8	40,8	40,7	40,6	40,5	40,5
Spain	women	39,7	39,6	39,5	39,4	39,2	39,3	39,2	39,2	39,5	39,3	39,1
	men	42,3	42,2	42,0	41,9	41,6	41,6	41,6	41,5	41,8	41,7	41,5
	total	41,4	41,2	41,1	41,0	40,7	40,7	40,7	40,6	40,9	40,7	40,6

Source: Eurostat, Average number of actual weekly hours of full-time work, http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.doc

In 2015 in Spain women worked slightly more hours (0.2) than the average of women in the EU28- whereas men in Spain worked the same as the EU28 average (41.5). Since 2005 however this has decreased from 39.7 hours to 39.1 hours. In 2015 the total (women and men) weekly working hours of full time workers was slightly (0.1) higher than the EU28 average. In Spain a long working hours culture exists – which tends to be coupled by rewarding physical presence as oppose to achieved objectives. This has been shown to negatively impact on those with family commitments.

3.6.2 Working time in RTDI

Table 53: Actual weekly working hours of full-time employed persons in academic professions by gender and country

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	women	38,0	38,0	38,2	38,2	38,1	38,3	38,1	38,2	38,2	38,3	38,3
	men	42,3	42,0	42,0	41,8	41,6	41,6	41,7	41,7	41,4	41,2	41,2
	total	40,4	40,3	40,4	40,2	40,1	40,2	40,1	40,1	40,0	39,9	39,8
Spain	women	36,8	36,9	37,1	37,4	36,8	36,9	37,4	37,5	38,4	38,0	37,7
	men	40,2	39,9	40,0	40,0	40,1	39,8	40,1	40,2	40,7	40,4	40,2
	total	38,5	38,4	38,5	38,7	38,4	38,3	38,7	38,8	39,5	39,1	38,9

Source: Eurostat

At the EU-28 level we can see that whilst women academics are working marginally (0.3) more hours in 2015 than in 2005 – male academics are working less hours (1.1). In Spain – women are working 0.9 more hours in 2015 than in 2005 – whilst male academics are working the same 40.2 hours.

Table 54: Part-time employment of researchers in the higher education sector out of total researcher population, by sex 2012

	Men	Women
EU 28	8,5	13,5
Spain	5,8	7,9

Sources: SHE Figures 2015, p102

In keeping with many European countries the part-time employment rate for women researchers is greater for women than for men. Although for both women and men the rate for part-time

researchers in Spain is lower than the EU 28 average. This is congruent with the labour market in general – as part-time work in Spain has traditionally been low in Spain – 12% before the crisis (2007) (Eurofound: Working Life Country Profile, Spain, 2015).[58] In 2008 the percentage of women working part-time was higher – (approx. 23% in 2008) yet still lower than European average. In the National Labour Survey (2008) with women working part-time, 32% of women and only 5%- of men said that they did so to reconcile family and care responsibilities. Part-time work has also increased with the crisis – from 12% in 2008 to 16% in 2013 (European Labour Force Survey). The growth of part-time work in Spain during this period however must be seen through the lens of precariousness and not in terms of a preferred working arrangement of employees – in 2013, 62% of employees who worked part-time stated they would rather have a full time job. (Eurofound: Working Life Country Profile, Spain, 2015).[59]

3.6.3 Working contracts in RTDI

3.6.3.1 Fixed-term contracts vs. permanent positions/contracts

Table 55: "Precarious" working contracts of researchers in the higher education sector out of total researcher population, by sex, 2012

	Men	Women
EU 28	7,3	10,8
Spain	6,4	8,4

Sources: SHE Figures 2015, p104, figure 5.2

In Spain as in most other European countries in 2012 more women than men had 'precarious' working contracts. The proportion of female and male researchers with precarious working contracts in the higher education sector is slightly lower than the EU 28 average in Spain for both men and women.

In terms of career stage with stable employment conditions Spain is quite typical within Europe and offers stable working conditions for researchers from R3 career stage onwards (see below table). The lowest career stage (R1-R4) at which university researchers can obtain permanent contracts –is the same for Spain, EU and US. (MORE2 Country profile – Remuneration Spain 2012, p3).[60]

[58] https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/national-contributions/spain/spain-working-life-country-profile

[59] https://www.eurofound.europa.eu/observatories/eurwork/comparative-information/national-contributions/spain/spain-working-life-country-profile

[60] http://ec.europa.eu/euraxess/pdf/research_policies/more2/country_files_more2/2013_07_05_country_profile_ES.pdf

Table 56: Career stage with stable employment conditions

Career stage with stable working conditions	Number of countries	Countries
R1	2	Romania, Brazil
R2	4	Belgium, Ireland, Netherlands, Slovenia
R3	17	Austria, Bulgaria, Cyprus (no tenure-track option in R4), Czech Republic, Denmark (no tenure-track option in R4), Finland, France, Germany, Hungary, Iceland, Italy, Luxembourg, Poland, Portugal (no tenure-track option in R4), Spain, Turkey, Singapore
R4	11	Croatia, Serbia, USA, Australia, Japan, South Korea, Bosnia and Herzegovina (no tenure-track option), Lithuania (no tenure-track option), Montenegro (no tenure-track option), Norway (no tenure-track option), Sweden (no tenure-track option)
No career stage provides stable working conditions	5	Estonia (tenure-track option in R1+2), Macedonia, Latvia, Russia, China
Miscellaneous	1	Israel
Missing information	6	Liechtenstein, Switzerland, Canada, Albania, Greece, Faroe Islands

Source: MORE2 Draft Report WP3 and WP4 2012, p68

3.6.3.2 Career opportunities

At the level of the university two main categories make up civil servant research and teaching personnel 1) Catedráticos de Universidad (equivalent to full professor) and 2) Titulares de Universidad. Non civil servants in the university level include 1) Profesorado contratado doctor – who have permanent contracts but not civil servant status (RIO Country Report, 2015: Spain, 64). Academics are also employed on temporary contracts- often in the rank of *asociado*. This dual status is also reproduced in OPIs – civil servants include 1) Profesor de Investigación (Research Professor) 2) Investigador Cientifico and 3) Cientifico titular. Non civil servants include *personal laboral*. The LCTI regulates human resources for R&I and stipulates four types of non-civil servant labour contracts: 1) undertake a PhD- (four years employment contract with minimum wages) 2) to grant access (five years with a maximum of 80 hours of teaching) 3) researchers working on research projects and 4) distinguished researchers or scientists – of prestige – to occupy key positions in management or important programmes – which can be permanent (ibid).

Whilst a professional career has been created with the LCTI career progression remains unregulated. The LCTI defines three official professional scales for civil servant scientists in public research organisations – in line with those of CSIC: 1) research professor, 2) scientific researcher and 3) permanent scientist – which enable greater mobility within public research organisations. Researchers' careers were improved in various ways with the passing of the LCTI – including: the four year employment contract for PhD students – (this replaced the two year scholarship followed by a two year employment contract) and meant that rights such as maternity leave or unemployment benefit – could be fully exercised. Mobility between the public and private sector was also facilitated

by the LCTI – as it enabled extended leave (up to five years) and it made working in private firms (mainly spin-offs) more compatible (RIO country report 2015: Spain, 82).

Whilst the recruitment process in the Spanish R&D system is at the formal level 'open', 'transparent' and 'merit-based' –subtle (and not so subtle) processes tend to favour 'insiders' i.e. (students, or researchers from the same university, faculty or department). Whilst positions are advertised, detailing job profile and selection procedures – strong 'internal labour markets' means that it is difficult for 'outsiders' to access research positons (Fernandez Esquinas et al., 2006: 167; Cruz-Castro and Sanz-Menéndez, 2010). Processes that often favour 'insiders' include: vacancy timescales; institute/ department influence composition of selection panel members; lack of international external members; vagueness of criteria. Therefore it seems that 'openness, 'transparency' and 'merit-based' appointments – is at the discretion of the hiring institution- although recent changes – in the R&I system, for example greater competition and 'accreditation' have aided a more 'open' system (RIO country report 2015: Spain, 82).

One programme, the Ramón y Cajal' provides 175 grants (total budget EUR 54 million) to outstanding researchers - with less than 10 years of career experience – five years of financial support to start a tenure-track research position in a Spanish Institution (RIO country report 2015: Spain, 45).

3.7 Gender Pay Gap

3.7.1 General Gender Pay gap

The gender pay gap is the difference between average gross hourly earnings of male and female paid employees, expressed as a percentage of the former.

Table 57: Gender Pay Gap by country

GEO/TIME	2007	2008	2009	2010	2011	2012	2013	2014
EU28	:	:	:	16,1	16,5	16,6	16,4	16,1
Spain	18,1	16,1	16,7	16,2	17,9	19,3	18,8	18,8

Source: Eurostat, Structure of Earnings Survey [earn_gr_gpgr2][61] und Report on equality 2015, http://ec.europa.eu/justice/gender-equality/files/annual_reports/2016_annual_report_2015_web_en.pdf, page 51

In 2010 the difference between the gender pay gap and the EU28 average was minimal – although slightly greater in Spain (0.1%) –this however has increased dramatically – peaking in 2012 and 2014 with Spain at 2.7 % higher than the EU 28 average.

[61] The unadjusted gender pay gap (GPG) represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. The GPG is calculated on the basis of:
- the four-yearly Structure of Earnings Survey (SES) 2002, 2006, 2010, etc., and with the scope as required by the SES regulation,
- national estimates based on national sources for the years between the SES years, from reference year 2007 onwards, with the same coverage as the SES.

Data are broken down by economic activity (Statistical Classification of Economic Activities in the European Community - NACE), economic control (public/private) of the enterprise as well as working time (full-time/part-time) and age (six age groups) of employees. Data are released in February/March on the basis of information provided by national statistical institutes.

3.7.2 Gender Pay Gap in RTDI

Table 58: Gender pay gap (%) in the economic activity "Scientific research & development" and in the total economy, 2010

	Scientific research and development services	Total economy
EU 28	17,9	16,6
Spain	17,7	16,2

Source: SHE Figures 2015, p. 109 (for 2010 only)

In Spain, in line with the EU-28 in scientific research and development services there is a wider gender pay gap than in the total economy.

3.7.3 Gender Gap in Scientific Outputs

3.7.3.1 Gender Gap in Scientific publications

Table 59: Numbers of scientific publications by country

Men and women	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	5310	5834	6139	6463	6830	6947	7706	7926	8327	8282
Denmark	5727	6200	6527	6900	7656	8041	9065	9920	10298	10405
France	25817	27543	28665	30424	32236	33359	35192	36351	37427	35724
Germany	48431	52258	53757	55009	57631	59463	63161	65838	67463	66007
Hungary	1450	1664	1717	1830	1896	1855	2087	2133	2141	2145
Spain	15516	18269	19865	21684	23769	25261	28132	30308	32076	31197
Sweden	11085	11690	11841	11920	12645	12859	13534	14217	15153	14964

Source: Scopus, calculations by Fraunhofer ISI

Despite the economic crisis and the budget cuts seen in Spain in RTDI – the number of publications indexed in Scopus have continued to grow and have doubled between 2005 and 2014.

Table 60: Proportion of publications written by women as main author

Share of women	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	22%	23%	23%	24%	24%	25%	26%	26%	27%	27%
Denmark	25%	26%	27%	28%	28%	29%	30%	31%	31%	31%
France	28%	29%	29%	30%	30%	31%	31%	32%	32%	32%
Germany	20%	20%	21%	22%	22%	23%	24%	24%	25%	26%
Hungary	37%	35%	38%	40%	40%	40%	40%	40%	40%	42%
Spain	33%	34%	34%	35%	35%	36%	36%	37%	37%	37%
Sweden	29%	30%	32%	32%	32%	33%	34%	34%	34%	35%

Source: Scopus, calculations by Fraunhofer ISI

In Spain the percentage of publications indexed in Scopus where a woman is the main author have increased by 4% from 2005 to 2014.

Table 61: Women to men ratio of authorships (when acting as corresponding author) in all fields of science (2011-2013)

	Ratio
EU 28	0,5
Austria	0,3
Denmark	0,4
France	0,4
Germany	0,3
Hungary	0,3
Spain	0,5
Sweden	0,5

Parity between women and men = 1

Spain reflects the EU-28 average regarding the women to men ratio of authorships at 0.5 (i.e. 31% of all publications have a woman corresponding author) in all fields of science – where parity between men and women is indicated by a 1.

Source: SHE Figures 2015, p. 153

Table 62: Women to men ratio of scientific authorship (when acting as corresponding author), by field of science, 2007-2009 and 2011-2013

		Natural sciences	Engineering and technology	Medical sciences	Agricultural sciences	Social sciences	Humanities
EU 28	2007-09	0,3	0,2	0,5	0,6	0,5	0,6
	2011-13	0,3	0,3	0,5	0,7	0,6	0,6
Spain	2007-09	0,3	0,3	0,4	0,7	0,5	0,6
	2011-13	0,3	0,3	0,5	0,8	0,6	0,6

Source: SHE Figures 2015, p. 155

In all fields of science for all years studied the corresponding author in scientific publications is more often a man than a woman – Spain forms part of this world wide phenomena.[62]

In the natural sciences and in engineering and technology Spain mirrors the EU-28 average for 2011-2013 – where women are the least represented across fields of science. In 2007-2009 Spain did marginally better in terms of the women to men ratio of scientific authorship than the EU average for engineering and technology. Across other fields of study and in line with the EU-28 average women fared marginally better - mirroring the EU28 average in social sciences and humanities – whilst performing slightly better than the EU-28 average in agricultural sciences and slightly lower in 2007-2009 in medical sciences.

[62] The Republic of Moldova is the only country where women produce more papers than men (She figures, 2015:95).

3.7.3.2 Gender Gap in Scientific patents

Table 63: Number of patents by country

men and women	2005	2006	2007	2008	2009	2010	2011	2012	2013
Spain	1672	1765	1923	1996	2179	2269	2216	2083	1921
Share of Women	15%	13%	14%	17%	16%	16%	15%	16%	16%

Source: Patstat, calculations by Fraunhofer ISI

From 2005 until 2010 Spain saw an increase in the number of patents registered; yet from 2011 until 2014 this number has declined. The proportion of patents filed by women in Spain ranges from 13% in 2006 to 17% in 2008. From 2009 to 2013 - it seemed pretty stable at 16 % - except 2011 – when it was 15%.

3.8 Sex differences in international mobility of researchers

3.8.1 During their PHD

Table 64: International mobility rates of HES researchers during their PhD, by sex and sex difference 2012

	Women	Men	sex difference
EU 27	17,6	18,9	1,3
Spain	35,3	43,2	7,9

Source: She Figures 2015, p.106 and 124 (based on More2):

The sex difference is calculated by subtracting the share of internationally mobile women researchers from the share of internationally mobile men researchers.

In Spain the rate of mobility of HES researchers during their PhD – is more than double the EU-27 average for both women and men. The sex difference in Spain is particularly high at 7.9 in comparison to the EU-27 average 1,3.

3.8.2 In their post-PhD careers

Table 65: International mobility rates of HES researchers in post-PhD careers, by sex and sex difference 2012

	Women	Men	sex difference
EU 28	25,1	34,2	9
Austria	45,1	45,5	0,4
Denmark	53,7	52,6	-1,1
France	19,9	29,9	10
Germany	30,3	50,5	20,2
Hungary	29,2	37,1	7,9
Spain	27,8	34,6	6,8
Sweden	30,9	44,7	13,8

Source: She Figures 2015, p.107 & 125 (based on More2)

The figures for Spain for international mobility rates of HES researchers in post –PhD careers are more in line with the EU 28 average (than during the PhD) – although higher for both women (2.7 higher) and slightly higher for men (0.4 higher) in Spain than the EU-28 average.

3.9 Women in decision making positions in RTDI

3.9.1 Proportion of women grade A staff by main field of science

Table 66: Proportion of women grade A staff by main field of science, 2013

		Natural sciences	Engineering and technology	Medical sciences	Agricultural sciences	Social sciences	Humanities
	2007	-	-	-	-	-	-
EU27	2010	13,7	7,9	17,8	15,5	19,4	28,4
EU 28	2013	15,8	9,8	23,3	22,7	23,5	30
Spain	2007	17,2	8,2	18,1	16,1	20	27
	2010	16	7,9	16,3	12,9	17,8	25,5
	2013	19,5	11,5	23,9	15,9	21,9	27,5

Source: She Figures 2015, p.133 (data only for 2013); She Figures 2012, p93 (data for 2010); She Figures 2009, p 116 calculations by JR (data for 2007)

The proportion of women grade A staff by main fields of science at the EU-28 level for 2013 – has the lowest proportion of women in engineering and technology, followed by the natural sciences, then agricultural sciences then the medical sciences, followed by the social sciences with the highest proportion of women at grade A in the humanities. In Spain in 2013 and in line with the majority of European countries the lowest proportion of women was also in engineering and technology – which was slightly higher (1.7%) in Spain than the EU-28 average in 2013. In Spain this was followed by agricultural sciences (6.6% less in Spain than the EU 28 average), natural sciences (1.4% more in Spain than the EU-28 average), social sciences (1.6% less in Spain than the EU 28 average), medical sciences (0.6% higher in Spain than the EU-28 average) and humanities (2.5% higher in Spain than in the EU-28 average).

3.9.2 Glass Ceiling Index

Table 67: Glass Ceiling Index

	2004	2007	2010	2013
EU 27	2	1,8	1,8*	1,8*
Spain	1,9	1,9	2	1,8

* Data for EU 28

Source: She Figures 2015, p.136; She Figures 2012, p.96; She Figures 2009, p.78

The GCI compares the proportion of women in grade A positions to the proportion of women in academia. A GCI of 1 indicates that there is no difference between women and men being promoted. A score of less than 1 means that women are over-represented at grade A level and a GCI score of more than 1 points towards a Glass Ceiling Effect.

In 2013 Spain's Glass Ceiling Effect was the same as the EU-28 average whereas in 2004 it was slightly less (0.1) than the EU-27 average.

3.9.3 Proportion of women heads of institutions in the higher education sector

Table 68: Proportion of women heads of institution in the higher education sector

	2007	2010	2014
EU 27	13	16	20*
Spain	-	-	-

* Data for EU 28

Source: She Figures 2015, p.141; She Figures 2012, p.115; She Figures 2009, p.97

In both private and public universities women researchers are under-represented in all analysed single member governing bodies (Cientificas en Cifras, 2015, p20). In 2015 only 2% of rectors in public universities were women – this fell from 8% in 2010- and subsequently fell to 6% in 2012. However in private universities the proportion of female rectors was 29% in 2015. Therefore only 10% of universities - (public and private) are led by female rectors – which is substantially lower than the EU-28 average – 20% in 2014 (ibid).

3.9.4 Proportion of women on boards, members and leaders

Table 69: Proportion of women on boards, members and leaders

	2007	2010	2014	
			Members	Leaders
EU 27	22	36	28*	22*
Spain	-	34	32	63

* Data for EU 28

Source: She Figures 2015, p.143 (data only for 2014); She Figures 2012, p.117; She Figures 2009, p.98

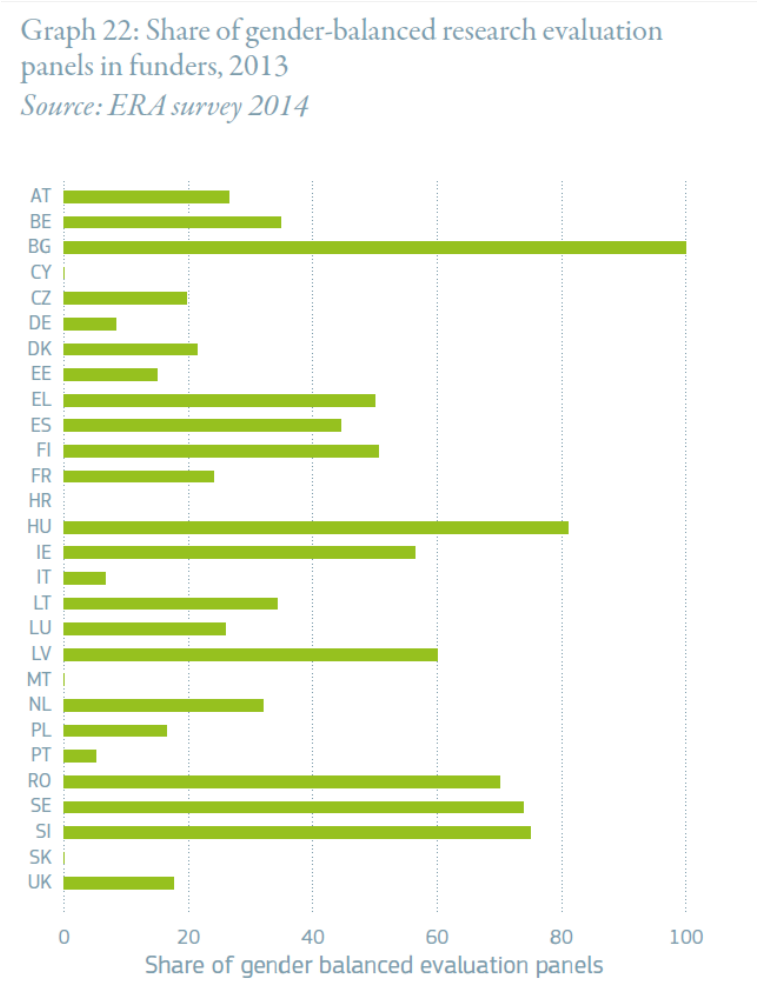
The presence of women on boards such as scientific or R&D commissions, boards, councils, committees, foundations, academy assemblies and councils – which usually hold a large degree of decision making power is slightly higher in Spain for members (4%) than at the EU-28 level. Regarding women leaders of boards – Spain is almost three times the EU-27 average. This data must however be interpreted with caution as this high proportion may be due to the low number of institutions.[63]

3.9.5 Percentage of research evaluation panels in RFOs that included at least 40% of target of under-represented sex in boards.

Within the ERA-compliant cluster in Spain, the share of gender-balanced recruitment committees for leading researchers in research-performing organisations is higher than within the EU ERA-compliant cluster. The share of gender-balanced research evaluation panels amongst responding research funding organisations in Spain is higher than the EU average. (ERA facts and figures 2014, 593).

[63] She Figures, 2015, p144.

Figure 8: Share of gender-balanced research evaluation panels in funders, 2013



Source: ERA Facts and Figures 2014, p. 32

3.10 Inclusion of gender in research and teaching

3.10.1 Support to the inclusion of gender contents in research agendas by funders (%)

Table 70: Support to the inclusion of gender contents in research agendas by funders (%)

	frequently	occasionally	none	not applicable	no answer
Spain	1,7	0,2	83,5	9,7	5

Source: ERA facts and figures S 85

In Spain support to the inclusion of gender contents in research agendas by funders was only frequently given by 1.7% of research funders yet none was given by 83.5% of research funders.

3.10.2 Inclusion of the gender dimension in research contents (%RPO)

Table 71: Inclusion of the gender dimension in research content (%RPO)

	yes	no	not known	not applicable
Spain	28,1	41,4	27,7	2,8

Source: ERA facts and figures S 85

The percentage of RPOs where the gender dimension in research content is included is 28.1% - this is in comparison to the percentage of RPOs where the gender dimension is not included 41.4% and not known which is 27.7%.

3.10.3 Inclusion of the gender dimension in teaching/curricula

Verge (2017, 16) shows in her research that on average the proportion of universities that offer degrees with a specific module on gender is very low at an average of 17%.

4 Evaluation Culture and Policy

4.1 Description of Evaluation Culture

4.1.1 Explicit legislation and adoption of evaluation standards:

In Spain a cohesive "evaluation system" does not exist- whilst various organisations have evaluation mandates and carry out a range of evaluation practices – these tend to be ad hoc and carried out without an overall evaluation policy framework or a consolidated evaluation system (Feinstein & Zapico-Goñi, 2010). Arriazu Moños (2009) identifies three historical periods in the development of evaluation culture in Spain: 1) Genesis of evaluation- First projects and the American influence (1982-86); 2) The essential boost – Spain in the European Union (1986-99); 3) Consolidation and institutionalization of the evaluation process (2000-2009). We would add a fourth that spans the years of the economic crisis 2008-2013 – and instead of further consolidation we see a retrenchment of the institutionalisation of evaluation.[64]

Genesis of evaluation- first projects and the American influence (1982-1986)

Accountability in the public sector was strengthened by the political transition in the mid-1970s. In 1982 the evaluation process was included in public policy for the first time. The management model was 'Budget for Programmes' and was based on the American Programming Planning and Budgeting System as well as the French 'Rationalisation des Choix Bugétaires' (Ballart, 1992). It was driven by a desire to fulfil political accountability (Arriazu Muñoz, 2009, 103). Whilst evaluation processes occurred with more frequency – an embedded evaluation culture was still lacking (ibid).

The Essential Boost: Spain in the European Union (1986-99)

In 1986 Spain entered in the European Union (then the European Economic Community) – this was a major economic turning point and meant that Spain could access Structural and Cohesion funds. The Spanish government than carried out various programmes and projects in the areas of education, social services and health care (Arriazu Muñoz, 2009, 104). Structural funds regulations were amended in 1988 to include mandatory evaluation of European Structural policies by both the European Commission and Member States and in 1999 evaluation requirements were strengthened by reform (Viñas, 2009). In the 1990s the Spanish government established a range of institutions (in 1992 the 'Service for Attention to the Citizen was established by the National Institute for Social Services and in 1993 the Ministry of Education created the National Institute for the Evaluation and Quality of the Education System) in order to assess levels of demand, type of service provision and effects of policies on target populations (Feinstein & Zapico-Goñi, 2010, 1). Regional governments also began to carry out programme evaluations and public services assessment – evaluations tended to be descriptive focusing on measurement of objectives and performance and assessing citizens' opinions and needs (ibid).

In the R&I sector the first initiative *Experimental Programme for Assessment of Quality in the University System* was carried out in 1992 and led to the launch of the institutional assessment of

[64] Feinstein and Zapico-Goñi, in 2010, note that the "European crisis has created in Spain an environment of uncertainty, which affects practically all public and private sector institutions, generating new challenges and opportunities for the evalaution of governement performance."pviii.

Quality in Universities Plan (PNECU) in 1995. These programmes focused on evaluating research, teaching and management from an institutional lens (Vidal & Ferreira, 2013, 1). Whilst these were not mandatory – the majority of Spanish universities took part in the process (ibid). The PNECU was followed by the Second Plan for Quality of Universities (PCU) in 2001 –which included as an objective the provision of a set of indicators about the quality of universities (ibid). These processes resulted in the introduction of structures –both formal and permanent to carry out evaluation and quality assurance processes within universities (ibid).

Consolidation and institutionalization of the evaluation process (2000-2009)

Within the third phase of consolidation and institutionalization of the evaluation culture in Spain Feinstein and Zapico-Goñi, (2010, viii) note how since 2005 this really was accelerated and experienced a qualitative shift. At the end of 2006 the creation of the Spanish Evaluation Agency (AEVAL) really took forward the remit of institutionalising evaluation. The mission of the agency is to promote evaluation, evaluate public policies and programmes and, with the support of management, to enhance the quality of services in order to improve the use of public resources and accountability. Its' main objectives include: better use of public resources and stronger accountability for the general public including transparency and participation (Feinstein and Zapico-Goñi, 2010, 5). It has elaborated a methodological guide[65] and various tools to facilitate evaluation.

Development of RTDI Policy Evaluations in Spain

The intention to establish an evaluation culture regarding RTDI policies is present but there are still limited instruments to actually realise this goal (ERAC, 2014; RIO Country Report: Spain, 2014). The Spanish Strategy for Science, Technology and Innovation (2013–2020) calls for 'the setting up of an integrated information system and the improvement of the quality of indicators for monitoring the actions funded by the Public Administrations and their impact' (RIO Country Report, 2015, 11); this has the aim of achieving efficiency and accountability in all public administration actions linked to the promotion of research, development and innovation (RDI).

In 2014 ERAC carried out the the most recent evaluation of the Spanish R&D system- the main point of the report is that whilst the objectives of the LCTI 2011 and the EECTI (2013-2020) are good – these do not define any effective paths in order to implement these objectives. It highlights how these paths are particularly needed to a) address the dual character of the research system (i.e. high quality peak performances but low average performance) b) its integration with the business sector (i.e. its small number per capita of businesses with R&D innovation capabilities) c) fragmented system of governance (national and regional competences) (RIO Country Report: Spain, 2015, 24). This disjuncture between policy objectives and effective implementation highlights the dire need for thorough evaluation studies in this area. One of the ERAC's ten recommendations is "Effective monitoring and evaluation to support evidence-based policy" (ibid).

Whilst thorough evaluations are scarce, monitoring processes are in place– carried out by the Secretary of State for R&I, with the support of the Spanish Foundation for Science and Technology (FECYT) and the Centre for Industrial and Technological Development (CDTI) – which cover the national policies and most of the business-oriented R&I policies (RIO Country Report, 2015, 11). The monitoring reports mainly focus on the distribution of funding and there is an overall lack of

[65] http://www.aeval.es/export/sites/aeval/comun/pdf/actualidad/Funcion_evaluadora.pdf

thorough assessment of the efficiency and quality of the funding mechanisms. Increasingly, some of the evaluation analyses are used as a basis for further strategies and plans, but these are not always publicly available (RIO Country Report 2014).

4.1.2 Budget, Number, frequency and public access to of evaluations

No information to this regard has been found.

4.1.3 Actors and Institutions:

A range of different actors are engaged in RTDI evaluation on a national level in Spain (RIO country report 2015: Spain, p. 17, 25f.). At the state level, the Spanish Ministry of Economy, Industry and Competitiveness (MINECO) effects evaluations through the Spanish Foundation for Science and Technology (FECYT) and the Executive Committee for Science, Technology and Innovation Policy (CDTI). Research and teaching activities are evaluated by the National Agency for Quality Assessment and Accreditation (ANECA). A range of R&I stakeholders also conduct or commission several different reports in relation to R&I.

State level R&I policies are supported by the CDTI, which is an inter-ministerial body responsible for the planning, evaluation and coordination of the main Spanish instruments for R&D and innovation (RIO country report 2015: Spain, p. 17). The CDTI and also the FECYT – both the responsibility of MINECO – produce reports on R&I national policies and the main R&I input and output indicators. They also commission external evaluations on the R&I system.

The CDTI produces various reports (Rio country report 2015: Spain, 25f.). First, it reports its yearly activities regarding the management of R&I programmes for companies (e.g. CDTI, 2014a), which also includes information on funding and impact. It also publishes 'cuadernos' that review specific policy programmes in detail, including impact indicators (e.g. CDTI, 2014b). In addition, CDTI commissions impact analyses that have pointed to positive additionalities from public R&I support for company R&I investments (Huergo et al., 2009).

FECYT produces a range of different reports on R&I business, funding, analysis and impacts, also incorporating reports from other bodies (Rio country report 2015: Spain, p. 25f.). FECYT reports on the results of the Panel on Innovation and Technology (PITEC) (FCYT, 2014b), which itself reports on company behaviour, sources of funding and R&I funding, and has provided statistics on the innovation activities of Spanish companies since 2005. FECYT also publishes mainly descriptive reports on the international analysis of the Spanish R&I system (FECYT, 2015). In addition, the FECYT commissions impact analysis studies (e.g. Sánchez Muñoz et al., 2014) which indicate that: intangible assets (intellectual capital) of companies are more important than company size in explaining innovation activity; and innovative businesses apply flexible management models. However, since 2012, FECYT's yearly reports on national plans have not been available (FECYT, 2013).

The National Agency for Quality Assessment and Accreditation (ANECA) produces evaluations on research, teaching and policy programmes (e.g. ANECA, 2014). However, the reports on policy programmes mainly refer to the programmes undertaken by MEDU and the results are not usually publicly available (Rio country report 2015: Spain, 25f.).

A range of different R&I stakeholders conduct and commission yearly R&I reports (Rio country report 2015: Spain, p. 25f.). These stakeholders include the Spanish Conference of University Rectors (CRUE), the Spanish Confederation of Scientific Societies (COSCE), the COTEC Foundation and the Foundation associated with the trade union CCOO ('Fundación 1º mayo'). CRUE commissions detailed yearly reports on R&I in universities as well as other evaluations on education activities in universities. COSCE commissions yearly reports on the central government's public budget for R&I, which include general trends and breakdowns of the R&I budget. During the financial crisis, they underlined concerns and supplied empirical evidence about the consequences of decreasing public funds for the sustainability of the R&I system. The COTEC Foundation produces annual reports on the main R&I input and output indicators (including international comparisons), central government public funding and the results of its yearly survey to experts on the evolution and problems of the Spanish innovation system (COTEC 2014, 2015). In addition, the 'Fundación 1º de Mayo' releases data on human resources for the main R&I OPIs (e.g. Fundación 1º de mayo, 2014).

4.1.4 What kind of evaluations are commissioned and conducted?

Bustelo (2003, 387) carried out a meta-analysis of eleven evaluations of gender mainstreaming in Spain and considers how these deal with various different aspects of evaluation, e.g. summative or formative, and whether it considers programme design, process or results. She highlights that all the eleven cases analysed in her study were summative evaluations. In her study only two of the evaluations explicitly considered the design of the programme, i.e. examining the objectives, internal coherence, strategies for implementation, etc. Other evaluations however did touch on design elements by examining different types of activities/ actions implemented, the target population and budget. Regarding process evaluation, she notes how all but one claimed to carry out a 'process evaluation' –which tended to be limited to an assessment of actual implementation of planned actions and did not address – timetable deviations, adequate assessment of whether the intended target group was reached, nor did they identify difficulties arising during the implementation process. Regarding the results she notes how all the evaluations studied claimed to examine what the plan had generated in terms of products or outputs- which was carried out by assessing which of the plans' activities had actually been carried out. This was our experience when looking at evaluations of various gender equality plans implemented in universities. In some instances there is an attempt to quantify the extent to which the activities stipulated in the plan have actually been implemented.[66] Bustelo (2003, 387) notes how the quality of the outputs tended not to be evaluated. Whilst some of the evaluations attempted to detail an 'effects assessment' the difficulties of isolating the effects attributable to the programme or plan as oppose to another intervening variable were not sufficiently resolved.

4.1.5 Relevance of gender equality in RTDI evaluations & evaluation of gender equality initiatives in RTDI

In Spain gender is not fully considered in RTDI policy evaluations. Evaluation in RTDI is not thoroughly institutionalised or embedded within the RTDI system as an established practice.

[66] See http://www.uab.cat/doc/avaluacioPla

4.1.6 Recent trends/developments in RTDI policy evaluation

Several sources consider the R&I policy evaluation system in Spain to be moderately developed (Eparvier, 2009; Heijs and Martinez, 2011; Heijs et al., 2011; Molas-Gallart, 2012; ERAC, 2014). On the one hand, data collection and impact assessment of all policy programmes and instruments of the R&I policy are carried out by SICTI. However, on the other hand, reports from both ERAC and EECTI emphasise the need to reinforce evaluation systems (RIO Country Report, 2015, 18). ERAC's most recent peer-review exercise of the Spanish R&D system states that there is 'a lack of an effective system of evaluation at policy, institutional or research quality levels and only a partial existence of a policy intelligence system' (ERAC, 2014, 4). According to this report, the second-most cross-cutting challenge necessary to improve policy impact is the need to reinforce a monitoring and evaluation system (ERAC, 2014, 73). This need to extend the evaluation culture is also recognised by EECTI (2013–2020), which describes the intention to reinforce a culture of policy monitoring, accountability and evaluation. It should be noted that learning and distributive evaluation functions are diminished due to the evaluation culture in Spain being dominated by its control functions (Molas-Gallart, 2012).

4.2 Evaluation utilisation and policy learning:

The 2015 RIO country report states that overall the evaluation system would benefit from two main improvements: better integration into the policy system; and a generalised and standardised common evaluation system incorporating international evaluation standards from several levels (programmes, institutions, etc.) (RIO country report 2015: Spain, 11f.). The report argues that such a monitoring system is feasible, since information on R&I indicators and policies is increasingly collected systematically by different stakeholders. There are other factors which show a mixture of opportunities and limitations. Opportunities to implement an integrated monitoring policy system are diminished because the evaluation culture of the Spanish R&I system is dominated by an auditing function due to strict requirements regarding public accountability from the Ministry of Finance over a learning function. At the same time, the establishment of the National Research Agency provided a good opportunity to strengthen evaluation practices (ERAC, 2014).

Finally, as outlined in the RIO country report 2015, yearly reviews of the R&D public calls for proposals were carried out under the mandate of MINECO: from 2006 until 2010, the FECYT carried out the yearly reviews as SISE; and for subsequent years, as annual reports for R&I. By 2015, MINECO had decided to perform these reviews with a longer time frame and the last annual report referred to 2012. These annual reports are a resource, however as mentioned above, their scope is limited as they mainly describe how funding was distributed across instruments, and an assessment of the quality and efficiency of the funding mechanisms is usually lacking. Most of the business-oriented instruments are evaluated and reported on by the CDTI in up to date yearly reports (e.g. CDTI, 2014a) which include some impact indicators (e.g. cuadernos; see CDTI, 2014b). Some of the evaluation analyses are increasingly used as a basis for further strategies and plans, but these are not always publicly available. Therefore, although there have been improvements, insufficient use has been made of output indicators, international benchmarking, ex ante or ex post evaluation tools, and impact analysis, and as a result, an effective monitoring and review system has not been established. Another weakness comes from the fact that although data on funding through R&D programmes are made publicly available, the delays are so significant that 'it is difficult to assess whether or not this information is used as input for designing subsequent funding cycles' (RIO country report 2015: Spain, 18).

5 Conclusions

5.1 Comparison between gender equality in the labour market and in RTDI

Vertical segregation is extremely marked in the RTDI sector. For example, vertical segregation in RDTI at the top decision-making level is particularly problematic in Spain. In both public and private universities in 2015 only 2% of rectors in public universities were women – this fell from 8% in 2010 and to 6% in 2012. This is in sharp contrast to women in political life, i.e. the share of female ministers, the share of female members of parliament, and the share of female members of regional assemblies –which in Spain are 4, 11 and 11 percentage points (respectively) above the EU average.

Regarding the whole labour market horizontal segregation in occupations in 2014- Spain was 1 percentage point higher than the EU 28 average indicating greater horizontal segregation in the Spanish labour market. The dissimilarity index however for researchers in the higher education sector is in fact lower than the EU-27 average – indicating less segregation of women and men across scientific fields.

5.2 Main strengths and weaknesses of the innovation system and their impact on gender equality in RTDI

The Women and Science Unit, in the Economics and Competitiveness Ministry acts as the institutional and structural link between gender equality and RTDI. Despite a lack of resources – the work that the Unit carries out provides a real impulse in the area. Guides on how to integrate the gender dimension into different areas of research are provided as is a multi-annual publication on female scientists in Spain. More work needs to be done at the national level linking the innovation system and gender equality issues in RTDI. The unit is currently responsible for the gender equality plans implemented in the public Research Performing Organisations (OPIs).

5.3 Main issues of evaluation culture and policy in RTDI

The evaluation culture and policy in RTDI in Spain has suffered a major set-back which can be linked to the years of the economic crisis. Until 2009/2010 real progress was being made in terms of academic publications looking at evaluation and governmental bodies propensity to carry out evaluations. Since 2009/10 we can observe a real stagnation in terms of the development of the evaluation culture in Spain. This has been coupled with a reduced budget for gender equality policies and the downgrading of gender equality institutional structures.

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