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Country Note Austria

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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 not only that progress towards more gender equality in RTDI has 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

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Introduction

This Austrian Country Note is one of seven country notes 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 Austria 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 hand.

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 programmes 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 programmes 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 programmes 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)

The European Innovation Scoreboard (EIS) – previously referred to as the Innovation Union Scoreboard (IUS) – is also an important benchmark for the Austrian federal government for the purposes of evaluating the development of Austria's innovation performance as compared internationally. According to the EIS 2015, Austria belongs to the country group of "**Innovation Followers**" which means it has an innovation performance below those of the so-called innovation leader countries (i.e. Germany, Sweden, Finland and Denmark).

Innovation performance increased until 2010, but declined in 2011, followed by a strong recovery in 2012 and 2013. In 2014 and 2015, performance has declined once again. The performance relative to the EU peaked at 119% in 2010 and is at 13.3% above average in 2015. The overall stability of Austria's innovation performance relates to the fact that the Austrian economy has greatly expanded its innovative activities and innovative orientation in the past decade (Austrian Research and Technology Report 2015, 24).

Tab. 1: Summary Innovation Index of EIS for 2008 to 2015

	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
Austria	0,583	0,598	0,608	0,577	0,581	0,604	0,599	0,591

Source: EIS database 2016

As of 2015, Austria is ranked eleven among the 28 EU Member States, and is ranked 13 out of all European countries considered in the EIS.

Tab. 2: Ranking in the EIS between 2008 and 2015

	2008	2009	2010	2011	2012	2013	2014	2015
EU	15	15	15	15	15	15	15	15
Austria	9	8	9	11	12	9	11	11

Source: EIS database 2016

Most dimensions and indicators show positive growth in recent years. However, compared to other EU member states, Austria performs less well in *economic effects*, particularly because of poor relative performance in license and patent revenues from abroad and exports of knowledge-intensive services. Also, with the exception of Austria (and Finland), all the compared countries were able to improve their performance on *human resources* over the last eight years (European Union 2016, 19).

In terms of indicators, relative strengths for Austria are particularly international scientific co-publications, public-private co-publications, community designs, R&D expenditures in the business sector and community trademarks. Austria's innovation system is, such as in other countries, characterised by high shares of firms involved in innovation activities (European Union 2016, 25). Knowledge and technology transfer as well as science-industry collaborations are well established in

Austria and a plethora of support measures exists to further improve cooperation, with a particular focus on involving SMEs to a stronger extent.

The identified challenges for Austria's R&I system are (RIO Country Report 2015, 7):

(1) Moderate effectiveness of public support for business innovation

(2) Supply shortage of private equity, especially venture capital

In sum, the expenditure on R&D is considered to be high by European standards. However, it appears that Austria may not exploit and maintain its innovative potential sufficiently.

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

GERD increased steadily from 2.68% in 2011 to 2.99% in 2014. The public share in funding of GERD was 37.7% in 2014 and an estimated 37.3% in 2015. Only very few Member States among the innovation leader countries show higher current GERD per GDP percentages than Austria (RIO Country Report 2015, 14).

Tab. 3: 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
Austria	All sectors	2.38	2.37	2.43	2.59	2.61	2.74	2.68	2.89	2.96	2.99
	BES	1.66	1.67	1.72	1.79	1.78	1.87	1.84	2.03	2.1	2.11
	GOV	0.12	0.12	0.13	0.14	0.14	0.14	0.14	0.13	0.13	0.13
	HES	0.59	0.57	0.58	0.65	0.68	0.71	0.69	0.71	0.72	0.73
	PNP	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Source: Eurostat 2016

The system of research in Austria is dominated by private R&D. The domestic business enterprise sector in Austria financed 46.6% of overall R&D expenditure in 2014 and an estimated 47.2% in 2015. This corresponds to 1.39% of the GDP in 2014 (EU-28: 1.12% in 2013). The public share in GERD financing is 37.7% in 2014 and an estimated 37.3% in 2015. This corresponds to 1.13% of the GDP in 2014 (EU-28: 0.66% in 2013). In terms of R&D performance, however, the BES consumed by far the largest share (70.8% in 2013), because the vast majority of funding from abroad (14.7% of R&D financing in 2013; 15.2% in 2014) financed almost exclusively this sector in Austria (RIO Country Report 2015, 14).

The share of GERD financed from abroad originated mainly from Multinational Enterprises (MNEs) with Austrian subsidiaries, but also from EU funding sources. This foreign share of GERD financing is significantly higher than the EU-28 average, but has been slowly but steadily decreasing in relative

terms in the last years (2005: 18.0%). The share of GERD financed from abroad was 0.46% of the GDP in 2014 (EU-28: 0.2% in 2013)." (RIO Country Report 2015, 14)

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

R&D employment belongs to the most dynamic labour markets in Austria. In 2013, 66,186 full-time equivalents (FTEs) were active in research and development (R&D) in Austria. Of this total, 40,426 FTEs were working the occupation category of "researcher" (see table below). Around 20,300 were listed as "technicians and equivalent staff", around 5,450 as "other supporting staff".

Of the total employees working in research and experimental development, the majority were engaged in the business enterprise sector (70.1%), followed by the higher education sector (HES; (25.4%). Around 4 % worked in the government sector (GOV), including public research organisations (PROs). Only about 1 % was active in the private non-profit sector. The increase in recent years is mainly caused by a strong growth in the BES (+10.2%), a fair increase in HES (+4.6%) and moderate losses in PROs (-1.2%) and the PNP sector (-3.2%) (RIO Country Report 2015, 77pp).

The largest research performers in terms of volume are the 22 public universities and the corporate sector with 3,326 enterprises systematically active in R&D (2013). The number of enterprises systematically active in R&D has grown by 31.9% compared to the 2,521 companies in 2007 (Schuch und Gampfer 2016, 20).

Tab. 4: Number of researchers in all R&D sectors (in full time equivalents)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	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
Austria	28,470	29,199	31,676	34,508	34,664	36,581	37,114	39,346	40,426

Source: Eurostat 2016, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In 2013, 25,752 (FTEs) worked as researcher in business enterprise sectors.

Tab. 5: Number of researchers in the BES (in full time equivalents)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	626,081	654,004	667,464	695,179	695,602	719,935	747,215	792,692	830,713
Austria	18,155	18,471	20,058	21,852	21,599	22,799	23,138	24,900	25,752

Source: Eurostat 2016, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In 2013, 12,846 (FTEs) worked as researcher in the higher education sector.

Tab. 6: Number of researchers in the HES (in full time equivalents)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	551,459	566,464	585,624	618,351	642,780	663,331	656,965	661,902	675,973
Austria	8,962	9,261	10,112	11,016	11,262	11,954	12,199	12,635	12,846

Source: Eurostat 2016, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In 2013, 1,567 (FTEs) worked as researchers in the government sector.

Tab. 7: Number of researchers in the GOV (in full time equivalents)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	181,758	185,036	188,306	192,370	199,210	201,547	203,821	207,428	210,635
Austria	1,232	1,349	1,389	1,513	1,559	1,568	1,511	1,549	1,567

Source: Eurostat 2016, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

In 2013, 261 (FTEs) worked as researchers in the private non-profit sector.

Tab. 8: Number of researchers in the PNP (in full time equivalents)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	15,462	16,995	16,721	17,345	18,014	17,952	18,802	18,965	13,920
Austria	121	118	117	127	243	260	266	262	261

Source: Eurostat 2016, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

1.2 Knowledge intensity of economies

1.2.1 Share of ISCED 6 STEM graduates in the whole population

In 2015, Austria's tertiary attainment rate was 38.7 % in 2015, the same as the EU-28 average. This is almost in-line with the Europe 2020 national target of 40%. Slightly more women (40 %) graduated than men (37.5%)

The ISCED 6 STEM classification refers to tertiary attainment, e.g. PhD programmes, in the academic disciplines of engineering, manufacturing and construction. In 2014, Austria had 20.8% graduates in STEM, above the EU average of 14.4%. However, while 5.8% are master degrees and 0.9% PhDs, 8.9% are so-called short-cycle graduates and 6.8% bachelor degrees. This reflects the predomination of lower qualification levels in Austria compared to other EU countries with similar economies. Having fewer graduates in the higher qualification levels (Master degree, PhD) is assumed to have a negative impact on R&D in Austria, potentially limiting the countries ambition to join the most innovative of the industrialised nations (European Union 2016).

Tab. 9: Share of ISCED 6 STEM graduates in the whole population

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	0.00010902	0.00010993	0.00010403	0.0001114	0.00011842	0.00012591	0.00012083	0.0001261	0.00012218
Denmark	7.55E-05	7.30E-05	7.16E-05	8.12E-05	8.4735E-05	0.00010707	0.00011435	0.00011839	0.0001455
France	8.51E-05	9.14E-05	9.8481E-05	0.00010321	0.00010833	0.00011638	0.00012263	0.00012511	0.00012587
Germany	0.00010957	0.00010369	0.00010658	0.00011564	0.00011428	0.00012434	0.00013224	0.0001378	0.00014798
Hungary	2.0125E-05	2.3135E-05	3.3712E-05	2.5602E-05	4.1406E-05	4.96E-05	3.5801E-05	3.9515E-05	4.0129E-05
Spain	5.93E-05	6.16E-05	6.25E-05	6.21E-05	6.8589E-05	7.946E-05	9.2549E-05	9.1442E-05	0.00010163
Sweden	0.00013378	0.00021959	0.00021141	0.00019567	0.0001839	0.00017296	0.00017345	0.00017816	0.00017812

Source: Innovationsindikator 2015

The following table shows the proportion of scientists and engineers as a percentage of the total labour force. In Austria, the proportion of men and women working as scientists and engineers increased to 6.0 % in 2013 (2013: 5.6 %). Since 2005, the proportion showed a steady increase, but was below EU28 average during that time frame.

1.2.2 Proportion of scientists and engineers in total labour force

Tab. 10: 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
Austria	3.0	3.0	3.2	3.2	3.4	3.5	4.9	5.3	5.7	5.6	6.0
Denmark	5.7	5.8	5.5	5.8	6.0	6.1	8.5	8.8	9.2	9.0	8.8
France	4.9	5.1	5.3	5.4	5.4	5.5	6.4	6.8	6.4	5.8	5.8
Germany	5.3	5.4	5.4	5.3	5.5	5.8	7.2	6.9	7.0	7.1	7.2
Hungary	3.8	4.0	3.9	4.3	4.1	4.2	4.9	5.0	5.0	5.1	5.3
Spain	4.5	4.4	4.5	4.6	4.5	4.6	5.3	5.2	5.4	5.5	5.6
Sweden	6.4	6.3	6.5	6.8	6.9	6.8	9.5	9.6	9.6	9.7	10.0

Source: Eurostat 2016, HRST by category, sex and age [hrst_st_ncat]

1.2.3 Employment in knowledge intensive activities (KIA) by sex

In 2015, about 77.7 million people were employed in knowledge-intensive activities (KIA; where more than one third of the workforce is tertiary-educated) in the EU28, which represented 36% of total employment. For Austria, the figure was slightly above at 36.4%. This figure has slightly approved since 2005.

Tab. 11: 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
Austria	34.3	35.4	35.8	35.0	35.2	36.1	36.5	36.4
Denmark	36.3	38.6	39.5	39.2	39.5	39.6	39.4	39.1
France	38.8	39.3	39.0	39.3	39.4	39.0	39.4	39.5
Germany	36.6	37.2	37.6	37.4	37.5	36.9	36.9	36.9
Hungary	33.1	33.6	34.5	34.7	34.4	35.0	34.6	34.5
Spain	28.6	30.7	31.7	32.3	32.9	32.8	32.8	32.7
Sweden	41.6	42.3	42.6	42.7	43.3	43.4	43.9	44.4

Source: Eurostat 2016, employment in knowledge intensive activities [htec_kia_emp2]

Narrowing the scope to knowledge-intensive activities in business industries (KIABI), the figure for Austria was 14.5 %, thus performs near the EU28 average (14.0%). This rate has not changed significantly but remained stable during the last years.

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

Tab. 12: 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
Austria	13.9	14.3	14.4	14.0	14.2	14.6	14.7	14.5
Denmark	14.8	15.3	15.8	15.6	15.5	15.2	15.4	15.6
France	13.5	13.8	13.8	14.4	14.3	14.0	14.0	14.3
Germany	14.9	15.2	15.4	15.4	15.3	14.7	14.6	14.6
Hungary	12.8	12.3	12.7	13.0	12.5	12.9	12.3	12.0
Spain	11.5	11.7	11.8	11.8	12.2	12.4	12.3	12.4
Sweden	16.6	16.8	16.9	17.2	17.6	17.7	17.9	18.2

Source: (Eurostat 2016), employment in knowledge intensive activities [htec_kia_emp2]

Austria has constantly increased the number of scientific papers in relation to the population size every year since 2005. In 2014, Austria produced 1,655, which is above the figure of Germany, but lies behind other innovation leaders such as Denmark and Sweden.

1.2.5 Number of scientific papers in relation to the population size

Tab. 13: Number of scientific papers in relation to the population size

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	1092.88	1119.89	1188.24	1256.14	1294.33	1384.84	1474.44	1525.27	1613.33	1654.71
Denmark	1674.35	1740.95	1783.78	1855.24	1936.23	2120.16	2314.30	2521.83	2697.98	2873.62
France	853.81	880.54	888.52	949.98	972.24	982.05	1002.12	1031.02	1069.31	1059.73
Germany	916	938	960	997	1037	1077	1118	1185	1202	1225
Hungary	493.90	508.87	514.03	563.85	545.86	515.50	576.33	617.82	649.65	672.91
Spain	713.58	764.55	807.71	856.09	911.18	959.51	1026.56	1100.10	1146.31	1163.22
Sweden	1880.49	1919.72	1943.90	1953.01	2019.35	2082.29	2143.99	2308.03	2436.99	2484.40

Source: Innovationsindikator 2015

With regard to patenting, Austria has followed an upward trend since 2005, arriving at around 12 patents developed by publicly financed research. However, as the low number for Sweden and Hungary implies, it is important to note that the handling and regulation of intellectual property, patents and inventions differs from country to country. Regulations may specify who the actual owner of the patent is, for instance the university or the person who worked at a university department. In the latter case, patents might not be counted as "developed by publicly financed research" (Innovationsindikator 2015).

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

Tab. 14: Number of patents developed by publicly financed research per inhabitant/citizen

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	7.2	10.2	8.9	7.5	11.6	10.5	11.2	11.6	11.7
Denmark	12.7	19.3	23.8	25.7	16.3	17.3	21.2	22.4	26.0
France	15.6	15.8	19.5	24.2	23.7	23.0	25.5	24.8	25.6
Germany	16.2	17.9	18.3	19.2	19.4	19.9	20.1	18.7	17.3
Hungary	0.2	0.8	0.6	1.0	0.7	0.5	0.4	0.4	0.2
Spain	4.8	4.9	6.4	8.5	9.9	10.4	10.2	9.7	7.9
Sweden	0.8	0.4	0.4	0.9	1.3	0.2	0.4	0.7	0.6

Source: Innovationsindikator 2015

Development over time with regard to the share of tertiary educated among the 25 to 34 years in Austria displays a very moderate dynamic up until 2013. Between 2013 and 2014, the figure changed significantly from 24.9 % to 38.4 %, which was due to a change of the respective indicator in favour of defining selected national types of degrees as tertiary degrees. Besides performing above the EU28 average in 2014 and 2015, the development since 2005 was significantly below the level among the Innovation Leaders and other Innovation Followers.

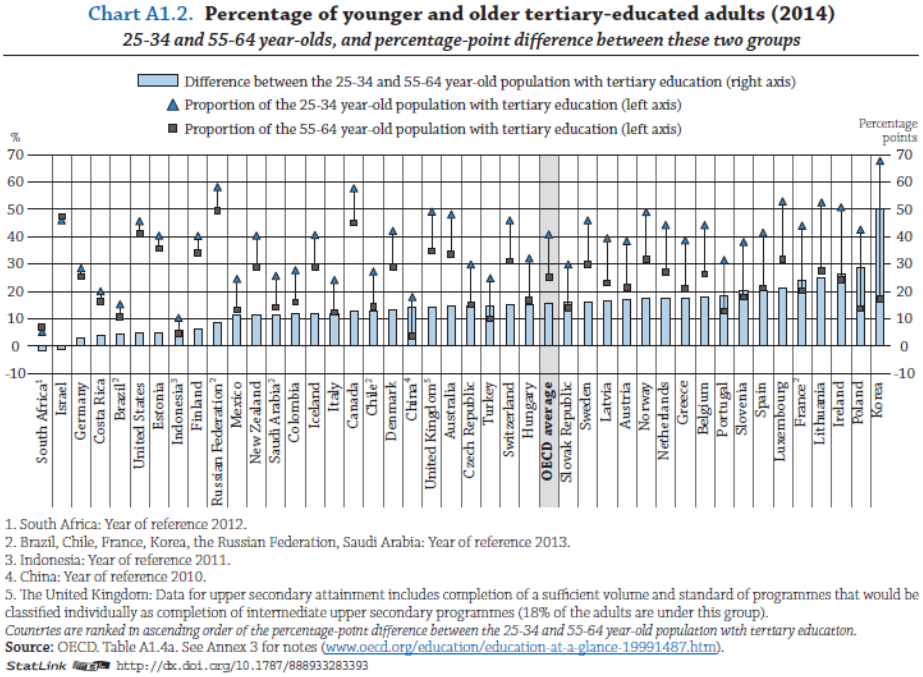
1.2.7 Share of tertiary educated population among the group of 25 to 34 years old by sex

Tab. 15: Share of tertiary educated population among the group of 25 to 34 years old[1]

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
Austria	19.7	19.0	18.7	19.2	21.0	20.7	20.9	22.8	24.9	38.4	38.6
Denmark	39.8	40.8	36.2	36.4	37.6	37.6	38.6	40.2	41.2	42.7	44.5
France	39.9	41.5	41.4	40.6	42.9	42.7	42.8	42.6	43.9	44.3	44.7
Germany	22.5	22.0	22.6	23.9	25.7	26.0	27.6	28.9	29.9	28.4	29.6
Hungary	19.6	20.7	22.0	24.1	25.1	26.1	28.2	30.5	31.2	32.1	32.1
Spain	40.7	40.3	40.0	40.0	39.5	40.3	40.3	40.4	41.1	41.5	41.0
Sweden	37.3	39.2	39.9	40.9	42.4	42.3	42.8	43.5	44.9	46.0	46.5

Source: Eurostat 2016, Population by educational attainment level, sex and age (%)[edat_lfse_03]

In all OECD and partner countries except Israel and South Africa, the share of younger adults with tertiary qualifications is larger than that of older adults with that level of qualification. It is noted that in Austria, but also in Canada, about half of all tertiary-educated adults have a qualification from a short-cycle tertiary programme. Across OECD countries, 27% of 25-64 year-olds have at least a bachelor's degree or equivalent. In Austria, Chile, France, Italy, Mexico and Turkey, less than 20% of adults do. In OECD countries, on average 16% of 25-64 year-olds have earned a bachelor's degree or equivalent, 11% have earned a master's degree, and about 1% have earned a doctoral degree or equivalent (OECD 2015, 33).



Source: OECD 2015, 33

[1] 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.

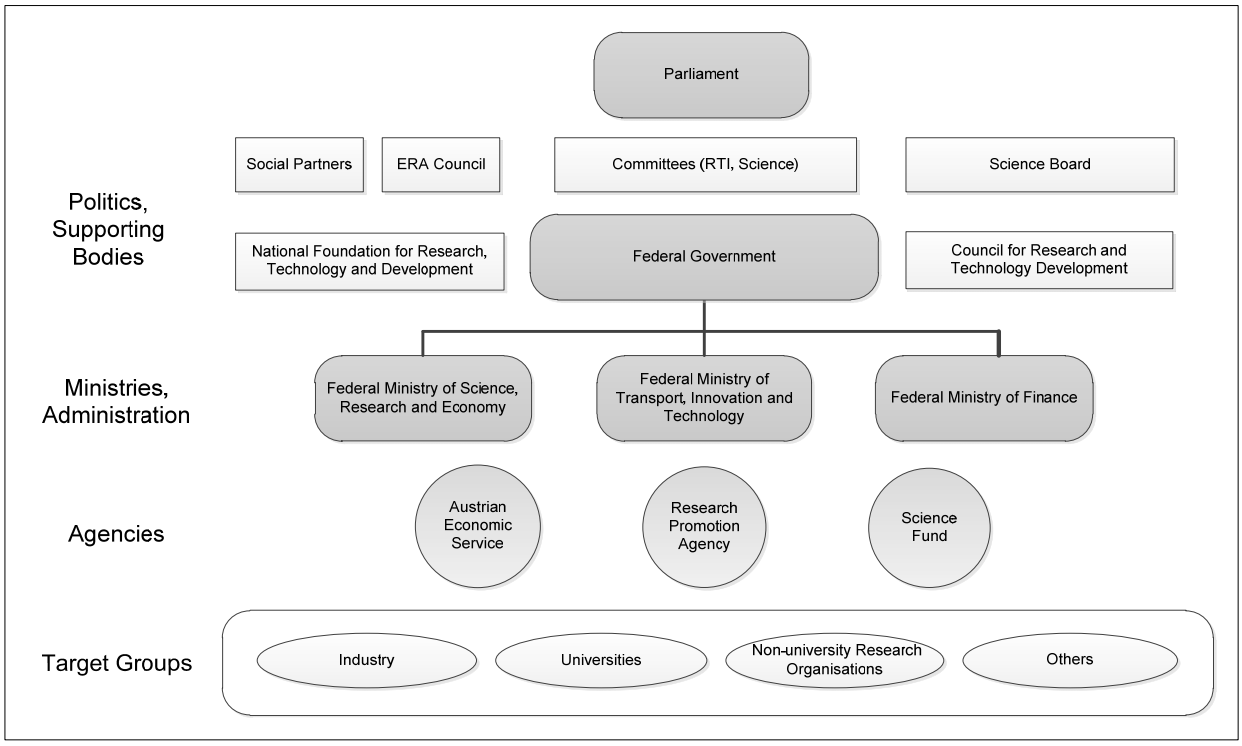
1.3 Governance

Research, technology and innovation (RTI) has become a key factor for economic growth and job creation in Austria during the last decades. Hence, the Austria RTI system and policy has undergone major changes, including a fundamental shift in political orientation towards more systematic approaches in R&D support activities and a greater variety of programmes and instruments. The most important change, however, concerned the institutional and organisational set-up of RTI policy making: a large share of policy regulation and implementation power was shifted from the ministries to autonomous regulatory agencies (termed as "agencification"; Streicher 2017, CREST 2008, Schibany and Jörg 2005). While there has been some reorganisation of responsibilities in recent years, Austrian RTI governance is still characterised by high complexity, somewhat fragmented, and overshadowed by the interdisciplinary and inter-ministerial nature of the policy field (Streicher 2017).

1.3.1 Main actors in research and innovation governance

RTI policy-making is characterised by a split between law-based and actually existing RTI competences (Streicher 2017). Various actors are involved in the formulation and implementation of policy measures in Austria, all of them interrelated in a system of complex interdependencies. The following illustration offers an overview on the relevant levels and actors in R&D policy-making in Austria.

Figure 1: Key Actors in Austria's RTI system



Source: Streicher 2017

1.3.1.1 Ministries responsible for R&I

	Main responsibility
Austria	Ministry of Transport, Innovation and Technology (BMVIT) Ministry of Science, Research and Economy (BMWFW)

On the policy level, two ministries have specific responsibilities for R&D and innovation: the Federal Ministry for Transport, Innovation and Technology (BMVIT) and the Ministry of Science, Research and Economy (BMWFW). The BMVIT is the relevant authority with regard to all matters related to mobility and transport, telecommunication, applied scientific and industrial R&D, technology and innovation, and also linking national to international R&D programmes, in particular at the EU level. The BMWFW was established as a merger in 2013 between the former Federal Ministry of Economy, Family and Youth (BMWFJ) and the former Federal Ministry of Science and Research. Despite the merger, the organisation of the BMWFW is functionally split: The science part is responsible for tertiary education and for basic research, i.e. for universities, universities of applied sciences and for non-university research institutions such as the Austrian Academy of Sciences (ÖAW), IST Austria and the Ludwig Boltzmann Society (LBG). The industrial and economic oriented R&D part within BMWFW is in general responsible for innovation support, technology transfer and the promotion of entrepreneurship.

In addition, several other ministries either have their own (but comparatively small) budget for (funding) RTDI. The Federal Ministry of Finance (BMF) plays also an important role in this context, as it is responsible for indirect offerings such as R&D taxes and allowances. While it works closely with the relevant ministry departments in the administration and organisation of policies, it is not involved in any policy making roles within the RTI system (Streicher 2017, 67).

The ministries work (relatively) independently but are responsible to the federal government and parliament. In practice, however, the policy debate and the development of new policy measures in R&D, science and innovation largely take place outside the parliament. Main drivers are the ministries in charge (European Commission 2016, 16; Streicher 2017, 61).

RTI policy-making in Austria is supported by several advisory bodies of which two stand out. The Austrian Science Council (ASC) deals with research at universities and related affairs and reports to the parliament, the Ministry for Science and Research and directly to the universities. The Austrian Council for Research and Technology Development (RFTE) advises the respective ministries, the government and the National Foundation in all questions related to research, technology and innovation. In addition, two committees for science, research, industry and economic affairs interact between the federal government and the parliament and assist with research-related issues. Since 2014, the European Research Area (ERA) Council advises the Federal Ministry of Science, Research and Economy on European research policy and the national science, research and innovation system.

Streicher (2017) finds that, besides formal structures and institutional set-ups, the Austrian RTI-Governance is characterised by an interactive policy network, formal and informal interlinks between ministries and agencies, exchanges with the scientific communities, applied research institutes and universities, and the involvement of stakeholder groups, the latter particularly referring to the (diminishing) role of the social partnership.

RTI (sub-)strategies

In 2011, the Austrian federal government adopted a long-term framework for its research, technology and innovation strategy. Its objective (still) is to make Austria one of the most innovative countries in the EU by 2020. One expression of this objective is to raise the R&D intensity to 3.76% of GDP by 2020 (BMWFW, BMVIT 2014, 8). The RTI strategy is implemented at multiple levels and pursues a comprehensive approach that does not only target funding for science and technology. To facilitate the systematic implementation of the RTI strategy, a Task Force was established at a high administrative level. It has established a total of nine inter-ministerial working groups responsible for the coordination and implementation of the strategy (RIO Country Report 2015, 17).

In addition, a growing amount of RTI relevant, strategic initiatives have been put forward in recent years by federal ministries which are aimed at achieving the targets for the RTI strategy that have been established at different levels and in differing contexts of political effectiveness and (self) commitment (BMWFW, BMVIT 2014, 42). Some examples include the "Intellectual Property Strategy (2017)", the "Life-Sciences Strategy" (2016) or the "Open Innovation Strategy (2016)".

Streicher (2017) argues that the development towards strategy orientation clearly interlinks with the shift towards outcome-orientation. Supranational and national strategies provide the guidelines for what kind of outcomes the specific policies should aim. However, strategy-orientation in RTI mainly has not taken the form of creating new and discontinuing existing programmes, but rather constantly aligns the historically evolved policy instruments with new strategic visions and goals.

1.3.1.2 Major Funding Agencies (national & regional)

	Major funding agencies
Austria	AWS (Austria Business Service) FFG (Austrian Research Promotion Agency) FWF (Austrian Science Fund

The implementation and management of the R&D support instruments is carried out by three main agencies (Streicher 2017; RIO Country Report 2015):

- The Research Promotion Agency (FFG) is the national funding agency for applied and industrially oriented research and development. It offers a wide range of programmes, information and services for all areas of technology and all company sizes. The FFG partners with regions to complement their funding via Structural Funds.
- The Austrian Economic Service (aws), together with the European Recovery Programme Fund, which was established under the Marshall Plan for European reconstruction after World War II, provides business-related financial support, e.g. for start-ups, entrepreneurs and innovation projects in companies.
- The Austrian Science Fund (FWF) is the central body for the promotion of basic research at universities and public research institutions. It provides programmes that cover virtually all research disciplines.

Also, the Christian-Doppler-Gesellschaft (CDG) is entrusted with the operational processing of direct public RTDI funding. In addition, the OeAD, the Austrian agency for international mobility and cooperation in education, science and research, implements some activities at the fringes of science and research in Austria, including the Commission for Development Research, the office for administering the bilateral inter-governmental science and technology agreement and several activities at the interface between science and society and mobility support (RIO Country Report 2015, 17).

Within this institutional structure, the past has seen the development of a diversified system of instruments to fund RTDI publicly, be it "direct measures" such as (agency based) funding programmes or indirect measures such as tax incentives. Within a short period of time, a broad variety of different approaches, funding schemes, support programmes, and initiatives in the field of RTI support have been made available to its potential user (e.g. companies, research institutes, etc.).

In 2015, a decision to increase the research premium to 12% by 2016 was adopted by the Austrian government. In 2018, the research premium will – following a respective evaluation – increase to 14%.

While the range and number of instruments and programmes was expanded rapidly in a short time, the high diversity of support measures has increasingly been questioned, addressing issues such as transparency, clearness and efficiency. Hence the terms "funding jungle" (e.g. Jörg 2005) or, more recently, "funding supermarket" (e.g. Aiginger et al. 2009) were coined.

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

Multi-level governance, meaning co-decision-making not just influenced by public and private actors, but also by the regional states and the RTI policy of the European Union, has practical importance in Austrian RTI policy decision-making (Ohler 2004, Streicher 2017). However, R&I policy and public financing in Austria is relatively centralised at national level. Only 9.4% of the public R&D investments are financed by the regions (i.e. "Bundesländer" or federal states) and a mere 0.2% by the municipalities. According to the RIO Country Report 2015 (p. 15), the regions' R&I policies are mainly focussing on direct funding of applied R&D to foster science-industry relations, technology transfer and innovation support measures for the regional economies.

Formal coordination of R&I policies on national and federal state levels follows the so-called "Bundesländerdialog", a semi-annual conference involving stakeholders on all levels. In addition, several ministries regularly meet with representatives from regional governments, or information exchange takes place on informal but regular basis. Enhanced commitment of Austrian regions to the concept of "smart specialisation" also helps to fine-tune and coordinate policies launched on multiple levels in the medium-term. The focus here is on regional and location-specific effects and the strategic importance of the higher education sector, particularly universities. The "Lead Institution Initiative", launched by the Federal Ministry of Science, Research and Economy (BMWFW), addresses the strategic goal of solidifying universities' understanding of themselves as locally embedded research institutions (Rio Country Report 2015, p. 19; Austrian Research and Technology Report 2015, p. 64pp).

The regional smart specialisation strategies of Austria's Bundesländer contain the Lead Institution Initiative, which aims to empower research institutes to become central nodes of regional innovation networks including business, regional policy makers, and civil society. The intention is to grow dense local or regional networks that are able to create and exploit synergies from the individual strengths

of participants. The RIS3 process has been somewhat protracted in Austria. Whereas both the federal and Bundesländer governments have been quite active in contributing to peer reviews of other regions, no Austrian region has undergone a peer review up to now. Unclear allocation of competences for strategy implementation and spending between the federal and the Land level has been an obstacle in the approval process, and has not yet been entirely resolved. The contribution of Structural Funds for the period 2014-2020 to the relevant Operational Programme that includes R&I is relatively low (€536m), and has decreased compared to the previous programming period.

With regard to regional governance of RTDI, some federal states have developed extensive strategy papers, while others focus on the administration of funding innovation projects, e.g. of companies. Evaluation of the regional programmes is typical carried out on the basis of annual reports on regional innovation performance. In recent years, the capital of Vienna has developed a differentiated and independent governance-system for RTDI. They include (Berger and Gassler 2007):

- The Vienna Business Agency (WWFF, est. 1982) is the main actor for stimulating regional economic development in Vienna.
- DEPARTURE Economy, Art and Culture (est. 2003) is another subsidiary of the WWFF, with the objective to fund activities of the so called 'creative industries' (e.g. fashion, design, music and multimedia).
- The Vienna Science and Technology Fund (WWTF, est. 2001) is a non-profit organisation under private law (founded by an Austrian foundation and the City of Vienna) which funds science and research in Vienna.
- The Viennese Employee Promotion Fund (WAFF, est. 1995) was established by the City of Vienna, the Austrian Trade Union, the Chamber of Labour Vienna, the Chamber of Commerce Vienna and the Employment Market Service Vienna. Despite its focus on employment policy the WAFF conducts RTDI relevant activities such as funding qualification measures and funding human resources development.

2 Gender Equality Policies

2.1 Employment and labour market policies

2.1.1 Description of equal opportunity/ anti-discrimination legislation and legislation to foster gender equality

The Austrian equal opportunity and anti-discrimination legislation is based on the Federal Constitutional Law and the labour legislation. The principle of equality is embedded in the Constitution under Article 7, which states that 'all nationals are equal before the law' and excludes any privileges based upon birth, sex, class or religion. Since 1998 all levels of authorities (Federation, federal states and municipalities) are responsible to implement measures apt to achieve de-facto equality of men and women (EIGE 2017).

Equal treatment measures are included in labour legislation and in all statutes covering civil servants (Equal Treatment Act for the private sector, Federal Equal Treatment Act for Civil Servants). The equal treatment acts cover discrimination on the grounds of sex, ethnicity, age, sexual orientation, and religion or ideology. The prohibition of discrimination includes sex discrimination, sexual harassment, equal pay, and equal treatment concerning access to employment, working conditions, and the termination of contracts within the context of employment and self- employment as well as equal treatment concerning access to goods and services on the grounds of sex and ethnicity (EC 2015a, Country Report Gender Equality: Austria, 7f).

According to the Equal Treatment Act since 2011, employers employing a certain number of employees are obliged to produce an income report. The income reports are an attempt to establish more transparency concerning income distribution in larger enterprises (upwards of 150 employees) (EC 2015a, Country Report Gender Equality: Austria, 16). Moreover employers now have to state the minimum wage in job vacancy advertisements. Since 2004, the relevant Federal Ministries have been obliged to submit bi-annual reports on the implementation of the Equal Treatment Act.

To foster gender equality in the public sector institutions as equal treatment officers, contact women / women representatives and the Federal Equal Treatment Commission were created. But also legal instruments such as compulsory women's promotion plans are laid down in the Federal Equal Treatment Act for Civil Servants.

Part of the Federal Equal Treatment Act is the compulsory Women's Promotion Plan and was first introduced in 1993 (Bundesgesetzblatt 1993). The valid version states that public authorities are obliged to take steps to eliminate under-representation of women among civil servants and discrimination of women civil servants in terms of employment conditions (RIS 2017).

The Maternity Protection Act regulates when pregnant employers go on maternity leave, as well as the relationship between employers and pregnant employees before maternity leave. They have to be removed from dangerous and/or problematic workplaces and be offered a safe working environment. If this is not possible within the company they have the right to fully paid leave which covers all contract-related rights (EC 2015a, Country Report Gender Equality: Austria, 21). The law does not apply to self-employed women.

The Fathers Parental Leave Act governs the dependently employed father the right to unpaid leave until the end of the second year of his child. (More information on maternity and parental leave regulations see Chapter 2.2.2.)

The Care Allowance Reform Act 2012 and the Care Allowance Act defines that maternity leave is not a discriminating factor; pregnancy automatically freezes temporary contracts; women have the right to return to an equal position to the one held before their maternity leave; women are entitled to have a part-time position when they end their maternity leave (FEMM Committee 2015, 41).

Gender mainstreaming was implemented on federal level by five cabinet decisions taken between 2000 and 2011 by the Council of Ministers. These cabinet decisions established the IMAG GMB (2000) – the interministerial working group on gender mainstreaming / budgeting; approved the implementation of a long-term work programme for gender mainstreaming (2002); and set out the requirements for a targeted implementation of gender mainstreaming at federal level (2008). The cabinet decision in 2011 affirmed the application of a guideline on drafting laws/regulations and a guideline on budget-related legislation. It also called for the provision of sex-disaggregated statistics in federal government reports, studies and publications as well as for reinforced information and training, and inclusion of civil servants in gender-mainstreaming projects (EIGE 2017).

In 2009 gender budgeting was anchored in the Federal Constitution. The federal level, the federal states and the municipalities have to strive for the actual equality of women and men (Article 13 (3) B-VG). This target was further strengthened in 2013 with the introduction of the effective budget management, as every ministry is obliged to link its use of resources to clearly defined and measureable outcome targets – one of these targets has to be a gender equality target (EIGE 2017).

2.1.2 Description of structures for gender equality

On the federal level the Federal Minister of Health and Women's Affairs is responsible for gender equality. Within the ministry the department for gender equality policies and legal affairs in the directorate for women's issues and equality is responsible for gender mainstreaming. But on the basis of the five cabinet decisions in 2000, 2002, 2004, 2008 and 2011 all ministries are responsible for accomplishing gender-mainstreaming objectives. Gender-mainstreaming working groups have been activated in many ministries. And the ministries cooperate in the inter-ministerial working group for gender mainstreaming/budgeting (IMAG GMB) in leading, monitoring and supervising the process of implementing gender mainstreaming at federal level. The IMAG GMB also supports regional authorities with seminars about gender mainstreaming and impact assessment, gender budgeting etc. Austria is a federal republic that is divided into nine states. For each of the nine states, a department for women's affairs and/or gender equality has been created to supervise the gender-mainstreaming process at the local level.

Sex-disaggregated data is used by the Federal Minister for Education and Women's Affairs to produce an annual Gender Index that provides an overall understanding of gender differences and inequalities, and their structure (EIGE 2017).

2.1.3 Description of relevant policy initiatives to foster equality

In addition to legal provisions, there are also some other initiatives in Austria to promote gender equality:

Labour market participation / work life balance etc.: In 2010 a "National Action Plan for Gender Equality" in the labour market has been introduced, and a "Charter for a Better Reconciliation of Family and Work" was adopted. The plan covers the period 2010-2013 and aims at four strategic goals: i) providing gender-sensitive career guidance and diversifying education paths and career choices; ii) reducing gender-specific differences in employment, and supporting transitions to full-time employment; iii) promoting more women in leadership positions; and iv) reducing the gender pay gap. This plan contains a package of 55 measures, of which 35 have already been implemented by mid-2014 (RIO Country Report: Austria 2014 2015, 10f).

The government programme for the years 2013 to 2018 defined the continuation of the NAP for equality between women and men on the labour market. Areas of action have been defined where there is still a need to catch up. A future focus will be on part-time employment. The aim is to raise awareness of the advantages and disadvantages of full and part-time employment. Also the income transparency, the closing of the gender pay-gap and measures to increase the proportion of women in top positions remain in the focus (BMFG 2010).

Incentives for women's labour market participation have also been improved by the tax reform 2015/16. If both parents have a taxable income, a split child allowance of €300 can be claimed by now. As a result, the child allowance for splitting is €600. For a family with only one taxpayer it is only €440. A further important lever for the increase in the labour market participation of women is the requirement on the labour market service (AMS), which has been anchored for years, to use at least 50% of the active labour market policy for women (BKA 2016, 12).

Child care facilities: In 2014, the Federal Government decided to accelerate the expansion of childcare provision. The main focus of the expansion campaign is the approach to the Barcelona target for the under-three-year-olds. To cover the additional needs for 0–3 year olds in big cities and to close regional gaps for the three- to six-year-olds, the expansion of full-day care will be continued until 2017. In addition, the aim is to stimulate improvements in the quality of care, to expand the opening hours, to promote day-to-day care and to provide flexible, cross-generational care solutions (BMFJ 2016a).

Promoting non-discriminatory gender roles: In 2010, 2012 and 2014 the Federal Ministry of Education and Women launched the campaign "Echte Männer gehen in Karenz" (Real men take paternity leave). In autumn 2010, for the first time Minister Gabriele Heinisch-Hosek has drawn attention on the issue "paternity leave" with a campaign. In 1996 Minister Helga Konrad launched the campaign "Ganze Männer machen halbe halbe". The campaign called for settling an equitable distribution of housework between men and women by law and was turned off after a few weeks of very emotional debates.

Vocational orientation for non-traditional occupations: For many years a lot of initiatives have been set up in Austria to support vocational orientation for non-traditional occupations in order to counteract horizontal labour market segregation. Most initiatives, e.g. the Girls' Day or HTL4Girls have the goal to increase the proportion of girls in science-technical education (see also 2.3.3.1).

Gender balance in decision making: In 2011, the Federal Government committed itself in the Council of Ministers to comply with a women's quota of 25% in the supervisory boards of companies which have a close relationship with the Austrian Republic. The quotas are also stipulated in the Public

Corporate Governance Code, as is a clause on the reporting obligation and the setting of measures (Kammer für Arbeiter und Angestellte für Wien 2016, 15).

“The Act for Incorporated Stock Companies and the Code of Company Regulations contain non-binding and largely unspecified rules for diversity measures concerning a balanced representation in respect of the age and gender of board members and corresponding reporting commitments. The term ‘balanced representation’ is not defined. The Corporate Governance Code for Companies listed on the Austrian Stock Exchange contains a non-binding obligation in section 52 to include the number of women on boards and in management positions in their internal reporting processes.” (EC 2015a, Country Report Gender Equality: Austria, 12)

Additional activities: The IMAG GMB has published several guidelines about implementation of gender in research, gender budgeting, gender-neutral language etc. (EIGE 2017).

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

Tab. 16: Relevant policy legislation and initiatives to foster equality between women and men[2]

Equal economic independence	• Labour market participation • Work-life-balance • Childcare facilities	X 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 X X 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	X X X
Additional activities	• Gender budgeting in legislation	X

As the table shows, Austria can refer to a variety of laws and initiatives to promote gender equality. However, the legal framework and recent policy effort leave the issue of voluntary trade-offs by women and men between work and family responsibilities unaddressed.

Equal economic independence: The National Action Plan for Gender Equality mainly promotes full time employment but part-time work take-ups by women do not decline in Austria, they are still on the rise. The main reasons therefore are persisting traditional gender roles and public family benefits accounted for roughly 3% of GDP in 2009 (only topped by public benefits in France and Sweden) combined with a shortage of child care facilities especially for children under 3 years of age (RIO Country Report: Austria 2014, 2015 10f). The expansion of childcare provision started in 2014 has not yet had the desired effect; the care rate for the 0–2 year-olds was 25.5% in 2015, 7.5% below the Bologna target (Statistik Austria 2016a).

Qualitative as well as quantitative analysis show positive effects of the gender budgeting objective to use at least 50% of the active labour market policy for women on the promotion of equality between women and men (Lutz et al. 2013, 12).

Concerning parenthood the Maternity Protection Act and the Fathers' Parental Leave Act can be criticized. Neither of them contains specific rules against discrimination. Workers claiming discrimination based on maternity protection or parental leave would have to rely on the provisions of the applicable Equal Treatment Act. In a court case claimants have to offer evidence that connects the fact of taking parental leave to their sex and to their family status as well as to a discriminating fact

[2] This table is based on the European Commissions strategy for equality between women and men 2010-2015 – it may help to structure the initiatives and think of everything relevant. The sub-topics are meant to give examples.

or incidence while the defendant can offer evidence of other circumstances or motives being the more probable reasonable cause for their decisions. This seems to confront claimants with an enhanced burden of proof in these circumstances (EC 2015a, Country Report Gender Equality: Austria, 43).

Equal pay: The income reports, which the Equal Treatment Act provides, are mandatory for companies with at least 150 employees. Employees of smaller enterprises are not covered. “Moreover, the rules for using the income reports are quite bureaucratic involving confidentiality rules that may deter works councils and employees from pursuing wage negotiations with their employers and even more so from submitting court cases. As far as can be ascertained no case law involving income reports exists.” (EC 2015a, Country Report Gender Equality: Austria, 16)

Work evaluation systems are contained in some collective agreements but are mostly dealt with on the level of obligatory agreements between works councils and employers. The Equal Treatment Act for the private sector contains no provisions that regulate collective bargaining processes; employees who consider works council agreements as a violation of the principle of equal pay would have to take this up individually with their employers. The principle of equal pay would gain much more traction if it were to be implemented not only as an individual claim but also as a mandatory guideline in collective bargaining rules.

Currently policies concerning income transparency are informally considered, it remains to be seen if this results in formal activities (EC 2015a, Country Report Gender Equality: Austria, 43).

Regarding the labour market segregation in Austria, a study of the labour market service from 2015 shows that the extent of the gender-specific unequal distribution of employment by sector was increasing from 2004 to 2013, while the level of unequal distribution in the same period decreased slightly. As regards the labour market segregation in Austria, a study of the labour market service from 2015 shows that the extent of the gender-specific unequal distribution of employment by industry was increasing from 2004 to 2013, while the level of unequal distribution in the same period decreased moderately (AMS 2016, 62). Overall, one can say that the efforts to counter horizontal segregation in the labour market have not been successful yet.

Equality in decision making: The fourth progress report on the increase of the proportion of women in supervisory boards of state-owned enterprises, which was last presented in March 2015, shows that the target of at least 35% by 2018 is already exceeded: on average, the share of women in the previous year rose by one percentage point to 37% (Kammer für Arbeiter und Angestellte für Wien 2016, 15). As the Act for Incorporated Stock Companies and the Code of Company Regulations contain only non-binding and largely unspecified rules for diversity measures, the share of women in supervisory boards in the private sector remains low.

Horizontal issues: “Several policy measures in Austria address gender-specific aspects because e.g. the Austrian economy and society shows a much stronger persistence of traditional gender roles than in most other OECD countries, at least in the last decade” (RIO Country Report: Austria 2014 2015, 10f).

Promoting non-discriminatory gender roles: The campaign "Ganze Männer machen halbe halbe" that called for settling an equitable distribution of housework between men and women by law triggered a broad, very emotional social discourse in Austria and led subsequently to a reformation of the Marriage Law. In 1999, the assignment of the partnership-based division of the care work was included into the legal marital duties. The campaign "Real men take paternity leave" brought the issue paternity leave in the public discourse. The number of fathers who are on parental leave is low in Austria, but

has been increasing slightly for years, as shown by studies by the Chamber of Labour (2015) and by Joanneum Research (2013). This data does not indicate that this development has been reinforced by the campaign in short term. In order to assess long-term effects, current data would be necessary.

Additional activities: The Federal Chancellery has implemented a publicly accessible impact monitoring system for impact-oriented budget management. This indicates the extent to which individual ministries have reached their impact targets, and therefore their gender equality / gender budgeting objectives: www.wirkungsmonitoring.gv.at. Almost each target was achieved at least partially, perhaps because the ministries chose targets that could be met easily.

2.2 Welfare and gender regimes

2.2.1 Fiscal policies

Austria has an individual taxation system. In principle the individual taxation does not provide any barriers for the labour market participation of women in Austria. But the tax- and transfer/benefits system as a whole is primarily focused on male breadwinner households and women are seen as providers of additional income mainly responsible for childcare and household. Taxation rules discourage double-income families (Lutz u. Schratzenstaller, 2010, 670; Tazi-Preve, 2009).

The Average Effective Tax Rate (AETR) (Carone et al. 2004, 10) also shows that despite an individual taxation the fiscal treatment of secondary earners and singles with the same level of income is not equal in Austria but it is closer to equality than the average of the EU member states.

The AETR shows the amount of additional taxes and lost benefits relative to gross earnings for a person who has just entered or re-entered work. The higher the AETR the lower the incentive to participate in paid work (see also Bettio and Verashchagina 2013, 180). When comparing the AETR of a secondary earner in a household with two children and the net average tax rate accruing to a single person with the same level of income the ratio for Austria is 1.1 as the table shows (Jaumotte 2003). If they would be treated equally, the ratio should be 1 (Plantenga 2014, 13f).

Tab. 17: 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
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, 41)

Incentives for women's labour market participation have also been improved by the tax reform 2015/16. If both parents have a taxable income, a split tax free child allowance of €300 can be claimed by now. As a result, the children's fee for splitting is €600. For a family with only one taxpayer it is only €440 (BKA 2016, 12).
From a women policy perspective this is not very beneficial. In the majority of the families, men earn more than women and will take advantage from the tax-free child allowance. On the other hand, single-parent households (mostly mothers) often cannot apply for the allowance since their income is often below the tax limit (Pirklbauer 2015).

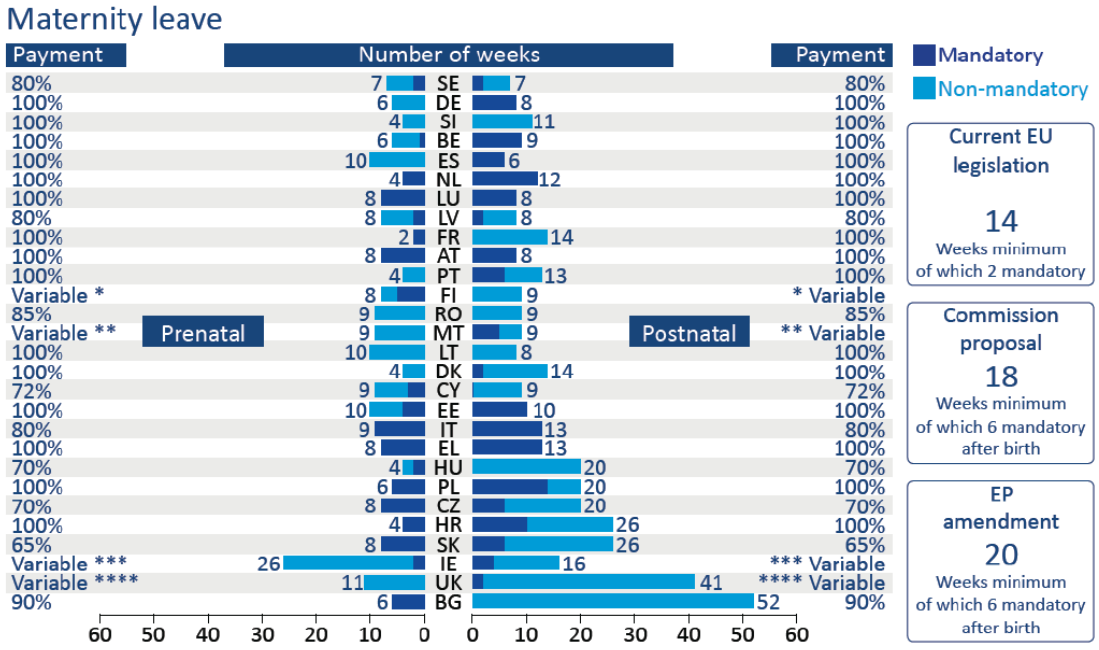
What the federal government sees as an incentive for women's labour market participation can also be viewed critically: The tax loss resulting from the new regulation of the tax-free child allowance is estimated at €100 million annually. As a result, the cash benefits will be further expanded in 2014 after the increase of family allowances in three steps to 2018 with cumulative budgetary costs of €830 million. As a result, the cash benefits will be further expanded. This is also reinforced by the 2014 increase in family allowance. However, a shift away from monetary services towards the expansion of care facilities would be more appropriate to strengthen labour market participation of women (Schratzenstaller 2015).

2.2.2 Parental leave policies

2.2.2.1 Possible duration of maternity leave

Maternity leave in Austria is at least 16 weeks (eight weeks before and eight weeks after delivery). In cases of premature births, multiple births or C-sections it is extended to 20 weeks (12 weeks after delivery). In some cases specified by medical reasons maternity leave can begin at an earlier date before delivery in order to preserve maternal health (Paragraphs 3 and 5 of the Maternity Protection Act). Because women on maternity leave are legally excluded from work the maternity leave period is considered to be part of the active contract. All work-related rights are preserved and extended during this time (EC 2015a, Country Report Gender Equality: Austria, 20).

Figure 2: Maternity leave, comparison between EU-countries



Source: FEMM Committee 2015, 114

2.2.2.2 Possibility of paternity leave

Only fathers working as federal public servants or federal contractual employees can apply for four weeks of additional unpaid leave when their child is born. Most collective agreements offer at least two or three days of additional paid leave to fathers after birth of a child (EC 2015a, Country Report Gender Equality: Austria, 26). In contrast to mothers who receive 100% of their salary during maternity leave, paternity leave in Austria is unpaid. This is untypical for an EU member state, where fathers mostly get the same compensation as mothers (FEMM Committee 2015, 74).

2.2.2.3 Possible duration of parental leave

Employees are entitled to parental leave until the end of the second year (day before the second birthday) of the child when they live with the child in the common household. The parental leave begins with the end of the maternity leave. The legal concept grants this period to both parents who must reach an agreement how to divide it between themselves (EC 2015a, Country Report Gender Equality: Austria, 23). The protection against dismissal ends with the 2nd birthday of the child. If parents wish to take a longer leave, a written agreement with the employer is required. Children's allowance is paid for a maximum of 3 years, if the parents share the parental leave. If the parental leave is not shared, one parent can get children’s allowance for a maximum of 2 and a half years.

2.2.2.4 Who is entitled to take parental leave?

Both parents have the right to parental leave independently. Parents have to coordinate the amount of parental leave with each other. Leave may be taken in up to three parts with a two-month minimum duration for one of those parts (EC 2015a, Country Report Gender Equality: Austria, 23).

2.2.2.5 Flexibility of Parental Leave arrangements

Parental leave is by legal definition full-time leave. Parents can voluntarily shorten the leave period and save up to three months of the legal duration for later use (until the child is seven years of age) (EC 2015a, Country Report Gender Equality: Austria, 23).

Both parents cannot take leave at the same time except for one month the first time they alternate leave; during this month only one of the two parents can receive the childcare benefit; in that case parental leave ends one month earlier (Rille-Pfeiffer and Dearing 2016, 3). With the reform of the childcare allowance, which came into force on 1st March 2017, both parents can receive childcare allowance for up to 31 days at the same time (BMFJ 2017).

Additionally, parents have the right to change their contractual working time or their working patterns after parental leave (right to parental part-time work). Primarily employees and employers are required to reach an agreement on the part-time arrangement that the employees suggest. If no agreement can be reached a rather complex set of procedural rules is in place to ensure a timely and fair resolution according to both the employers' and the employees' interests (EC 2015a, Country Report Gender Equality: Austria, 23).

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

In Austria, the number of weeks for parental leave increases if parents share parental leave (FEMM Committee 2015, 67). With the reform of the childcare allowance the proportion reserved for fathers will be increased from 16% to 20% (BMFJ 2016).

With the reform of the childcare allowance, a partnership bonus was introduced in March 2017: If the parents have drawn a flat-rate or income-dependent child-care allowance in roughly equal parts (50:50 to 60:40) and at least in the amount of 124 days, each parent will be entitled to a partnership bonus of €500 after the end of the total period of parental leave (a total of €1,000 for both parents) (BMFJ 2017).

In addition, a family time bonus will be introduced with the reform: Permanently employed fathers, who devote themselves intensively and exclusively to the family for a certain time right after the birth of a child, receive a support in the form of a bonus of €700. Entitled to this are physical fathers, adoptive fathers or permanent caregivers or same-sex adoptive or permanent caregivers who interrupt their employment for 28 to 31 days within 91 days after the birth of the child (Parlamentsdirektion 2016).

Moreover the Ministry of Families and Youth plans another campaign for paternity leave and introduced a "Väter Barometer" in 2016 that monitors the development and progress in terms of paternity leave (BMFJ 2016b).

2.2.2.7 Regulations and initiatives supporting parents returning to work

The Maternity Protection Act (paragraph 15) and the Fathers' Parental Leave Act (paragraph 3) regulate that the main duties of a work contract are suspended during maternity leave and during parental leave. Work-related rights are guaranteed during maternity leave and during the first year of parental leave. Some – but not all – collective agreements grant parents full advancement in pay also during parental leave. After parental leave, the work contract resumes with full effect and employees have the right to return to their former occupation (EC 2015a, Country Report Gender Equality: Austria, 22). Contractual changes or relocations of employees returning from parental leave have to be consensual, in some cases requiring also consent from the works council (EC 2015a, Country Report Gender Equality: Austria, 25).

2.2.2.8 Compensation rate for wages[3] for maternity leave

The social security maternity benefit for employees usually equals the former net salary, with no limit. The benefit usually equals the former net earnings. Similar regulations apply for self-employed workers. Self-employed workers who earn above the social security threshold can require an assistant (Betriebshilfe) for whom the cost is borne by the social security body or claim a special maternity benefit of €53.11 per day (in 2017) (EC 2015a, Country Report Gender Equality: Austria, 21). Freelance workers receive income-based maternity benefit. Marginally employed self-insured women receive a flat-rate payment of €8.91 a day (2016) (Rille-Pfeiffer and Dearing 2016, 1). Eligible unemployed women are entitled to 100% of previous unemployment benefit or 180% of previous emergency assistance (Arbeiterkammer 2017).

2.2.2.9 Compensation rate for wages[4] for parental leave

A childcare benefit is available to all families who meet the eligibility conditions. Parents can choose between five payment options; four flat-rate related and one income-related:

- €436 a month for 30 months or for 36 months if both parents apply for the payment (30+6 bonus months' option);
- €624 a month for 20 months or 24 months (20+4 bonus months' option);
- €800 a month for 15 months or 18 months (15+3 bonus months' option);
- €1,000 a month for 12 months or 14 months for those earning less than €1,000 income a month (12+2 bonus months' option);
- 80% of the last net income for 12 months or 14 months for those earning between €1,000 and €2,000 a month (12+2 bonus months' income-related option).

On any of the four flat-rate childcare benefit options, a parent may additionally earn 60% of the income they earned in the calendar year prior to the child's birth or at least €16,200 a year. For the earnings-related option, additional earnings may not exceed €6,400 a year (Rille-Pfeiffer and Dearing 2016, 2f). In March 2017, the "Child Benefit Account" was introduced instead of the flat rate options. Depending on the length of parental leave, the daily rate is between €14.53 and €33.88. The child care allowance can be claimed from 365 to 851 days by one parent or 456 to 1,063 days by both parents. Of the

[3] *% of wages covered by leave benefits during leave period*
[4] *% of wages covered by leave benefits during leave period*

respective total claim period, 20% are non-transferable to the second parent (in the shortest "option", 91 days) (BMFJ 2017).

2.2.2.10 Additional paid leave for working parents?

Employees have the right to additional paid leave up to one week per year to take care of sick relatives living in the same household. In cases of children under 12 years the period is extended to up to two weeks per year. This leave may be taken on a daily basis (EC 2015a, Country Report Gender Equality: Austria, 26).

2.2.2.11 Legal right to reduce working time on request (Elternteilzeit)

The Maternity Protection Act (paragraph 15) and the Fathers' Parental Leave Act (paragraph 8) contain the right to change working time and/or working patterns for the parents of children up to the age of four. This period is extended to the 7th birthday of the child if the work contract of the parent has lasted for at least three years and in enterprises with more than 20 employees. Parents can claim parental part-time work either subsequent to maternity leave or to parental leave or at any time within the eligibility period (EC 2015a, Country Report Gender Equality: Austria, 27).

2.2.2.12 Protection against dismissal

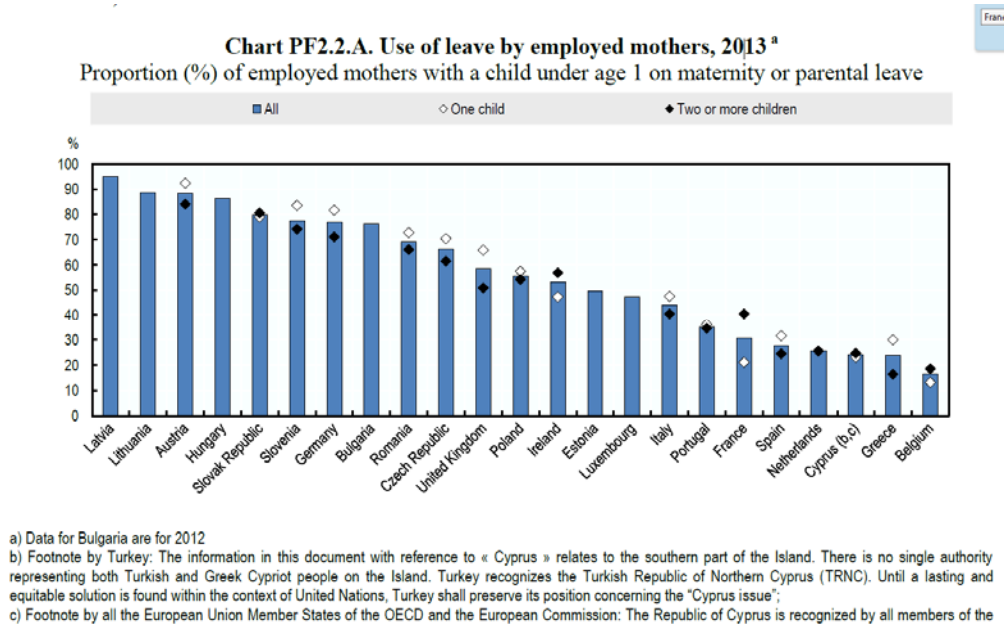
The Maternity Protection Act (paragraph 15) and the Fathers' Parental Leave Act (paragraph 7) refer to the Maternity Protection Act: Protection against the termination of a contract and against dismissal during parental leave and during parental part-time work (up to the fourth birthday of the child) is equal to that during pregnancy. During the second year of parental leave and during parental part-time work possible grounds for the termination of the contract are extended to unacceptable behaviour by the employee and urgent matters in connection with the organisation of the enterprise (EC 2015a, Country Report Gender Equality: Austria, 26).

2.2.3 Empirical evidence for gender regime

2.2.3.1 Usage of parental leave

OECD data on use of childbirth related leave by mothers and fathers in Austria, based on the EU-Labour Force Survey show, that in 2013 88% of employed mothers with a child under one year of age were on maternity or parental leave:

Figure 3: Use of leave by employed mothers, 2013



a) Data for Bulgaria are for 2012
b) Footnote by Turkey: The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue";
c) Footnote by all the European Union Member States of the OECD and the European Commission: The Republic of Cyprus is recognized by all members of the

Source: OECD Family Database 2016, 2

These data show that in Austria it is not common for mothers to work with a child under 1 year. Reasons for this are still prevailing traditional role models, an attractive childcare allowance system and a lack of childcare places for children less than 1 year old.
Data from Statistik Austria show that the share of fathers among recipients of child allowance remains low:

Tab. 18: Share of men among recipients of child allowance

		Lump sum child allowance				Income based child allowance
		Option	Option	Option	Option	Option
	All Options	30 + 6 months	20 + 4 months	15 + 3 months	12 + 2 months	12 + 2 months
Year	Share of men among recipients, December					
2008	3.9	3.9	3.0	6.9		
2009	4.7	4.1	5.4	10.0		
2010	4.5	3.7	5.3	11.6	8.8	6.6
2011	4.3	3.4	5.0	8.8	11.2	6.4
2012	4.3	3.3	5.0	7.7	10.6	6.1
2013	4.3	3.2	4.8	8.2	11.2	6.0
2014	4.2	3.1	4.5	7.2	9.5	6.4
2015	4.2	2.9	4.4	7.2	10.4	6.2

Source: Statistik Austria 2016b

This monthly official statistics on recipients of childcare benefit shows cross sectional data at one point in time. Because fathers mainly take shorter periods than mothers they appear less often in the statistics. Looking at fathers who have taken any period of childcare benefit, the percentage is much higher (Rille-Pfeiffer and Dearing 2016, 5f), varying between the different options from 11% for the longest option to 30% for the income based child allowance (May 2016) (BMFJ 2016c). Overall in 2012, every fifth father receives child-care allowance (Sozialministerium 2014, 5).

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

In Austria, no current statistics are available on the duration of mothers' and fathers' parental leave. Latest data are from 2011 and show that fathers take considerably shorter leaves than women: therefore the share of leave days taken by fathers was only 4.2% in 2011 compared to 1.7% in 2002. In 2002, academically educated fathers spent an average of 159 days in parental leave; by 2010, the average duration decreased to 128 days (Reidl and Schiffbänker, 2013, 9).

In December 2015, the new income dependent model was chosen only by 14.5% of all parents obtaining childcare allowance, whereas the 30+6 months long model was chosen by 52.5%. The proportion of the 30+6 model among all chosen models has declined since 2008 from 84% to 52.5% (see Statistik Austria 2014).

The table also shows that men are overrepresented in shorter parental leave options.

Tab. 19: Average duration of parental leave periods by sex

		Lump sum child allowance				Income based child allowance
		option	option	option	option	option
	All options	30 + 6 months	20 + 4 months	15 + 3 months	12 + 2 months	12 + 2 months
	Total number	Share of recipients by options, December				
all	127,476	52.5	25.5	4.3	3.2	14.5
women	122,156	53.2	25.5	4.1	3.0	14.2
men	5,320	36.0	27.1	7.3	8.0	21.5

Source: Statistik Austria 2016b

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

Despite societal change, traditional role models still predominate in Austria. A father who focuses on career and does not participate in the child care is still accepted by 73% of the Austrian citizens, whereas fathers who take parental leave are accepted by only 32%. But 72% of fathers with children under two years of age would like to have more time for their family (Radaelli 2016). One reason that is frequently raised against paternity leave is that families can't afford it. This argument is undermined by the income-

based child benefit model (Kreimer 2011, 94). But fathers also fear negative career effects after a parental leave, especially in male-dominated economic sectors and in companies with long-hours work culture (Schiffbänker and Holzinger 2014).

2.2.3.4 Fertility rate

Tab. 20: 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
Austria	1.41	1.38	1.42	1.39	1.44	1.43	1.44	1.44	1.44

Source: Worldbank 2016

Compared to the EU28, the total fertility rate in Austria is with 1.44 births per woman quite low, but very slightly increasing since 2009. The low fertility rate in Austria is particularly interesting as governmental expenditure for family benefits is above average in international comparison: the spending for family benefits by the Austrian government amounted to 3% of the GDP in 2009, whereas on OECD average to 2.6%. In Austria family benefits are dominated by direct or indirect monetary transfers. Only a small amount of the budget for family benefits is spent for maintaining and improving childcare facilities (around 17% in 2009) (Schratzenstaller 2014, 10). All these efforts have neither contributed to a higher fertility rate nor to more gender equality in the Austrian labour market (Lutz and Schratzenstaller 2010, 664).

In Austria, childlessness increases with the level of education: it is 30% among tertiary educated, 22% among women with higher secondary education, and 14% among women who have lower secondary or basic education (Prskawetz et al. 2008). Also, the field of education matters for childlessness in Austria. 40% of women educated as social scientists, one third of female scientists in the humanities, and one quarter of female natural scientists do not have children (Neyer and Hoem 2008).

2.2.3.5 Mean age of women at birth of first child

Tab. 21: Mean Age of Women at Birth of First Child 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		

Source: UNECE Statistical Database

Women are postponing motherhood to a later stage in their life: Since 1990 the mean age of mothers when giving birth to their first child has constantly increased: in 1990 the mean age was 25 years, and in 2011 28.5 years. The age of motherhood is patterned by education: low educated women become mothers earlier than tertiary educated ones. Therefore, the increasing number of women graduating from higher education institutions is a major factor driving the postponement of parenthood. Other relevant factors for Austria are the declining economic position of younger adults, the increase in youth unemployment, in part-time and temporary jobs as well as the low availability of childcare facilities and the poor possibilities to combine work and family (Sobotka, 2010).

2.2.3.6 One parent families and children by sex of parent

Tab. 22: One parent families and children by sex of parent, Measurement, Country and Year (Number of families)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number of female parent	254,400	251,300	257,900	251,100	249,600	254,400	245,800	245,400	257,000
% among families with children	18.0%	17.6%	18.1%	17.6%	17.6%	17.6%	17.9%	17.5%	18.5%
Number of male parent	45,600	44,400	44,000	44,700	42,900	41,300	41,000	41,500	48,000
% among families with children	3.2%	3.1%	3.1%	3.1%	3.0%	2.9%	2.9%	2.9%	3.5%

Source: UNECE Statistical Database, Statistik Austria 2012, Statistik Austria 2016c

The figures show that in Austria between 2005 and 2013 the share of both female and male single parents in relation to all families with children remained more or less at the same level. It is apparent that women are far more likely to be a single parent than men: in 2013 18% of all families with children include a single mother, whereas only 3% a single father. Therefore single fathers still represent a diminishingly small minority.

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

Tab. 23: Child Care by Indicator, Country and Year

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Austria	10	11	12	14	16	17	20	21

Source: UNECE Statistical Database

In Austria the enrolment rate of children aged under 3 years in childcare facilities is rather low: According to Statistik Austria in 2015 only 26% of children aged under 3 years were enrolled in childcare facilities. But the enrolment rate has constantly increased since 2005. However, Austria is still not meeting one of the Barcelona targets defined by the European Commission (European Commission, 2013a), which states that at least 33% of children under 3 years of age should be enrolled in childcare facilities. In 2015, the second Barcelona target of 90% enrolment rate for children between 3 years old and mandatory school age was reached, as 93% were enrolled in formal childcare facilities[5]. Although the enrolment rate for children over 3 years is relatively high, the opening hours of childcare facilities do not meet the needs of full time employed mothers and fathers as most kindergartens close early (especially in rural areas) (Festl et al. 2010). Therefore usage of formal childcare can be characterized as part-time in Austria (Plantenga 2014). Furthermore, as there are hardly any full time

[5]https://www.statistik.at/wcm/idc/idcplg?IdcService=GET_PDF_FILE&RevisionSelectionMethod=LatestReleased&dDocName=021658

schools in Austria, more facilities for after school care for pupils are needed to enhance the full time participation of women in the labour market (Lutz a. Schratzenstaller 2010).

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

Tab. 24: 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 childcare 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
Austria	33,795	21	35,834	20

Source: EU-LFS data 2010, 34

In Austria in 2010 21% of mothers with children under 3 years of age did not work or work part-time because of inadequate childcare services. This percentage is slightly lower than the EU average. The fact that the percentage for Austria is so low can only mean that many mothers do not want to work with children younger than 3 years of age, given the low enrolment rate of children aged under 3 years in childcare facilities (see 2.2.3.7).

For mothers with children aged between 3–6 years the percentage of those who can't work or work only part-time because of inadequate childcare facilities is still 20%, 2% higher than the EU average. Since in Austria 85% of all children between 3–6 years of age go to kindergarten (see 2.2.3.10) (the last kindergarten year before school entrance is also obligatory), these mothers may be predominately involuntarily part-time employees. Especially on the countryside many kindergartens close at noon.

2.2.3.9 Main reasons for women not working or working part-time

Tab. 25: 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
Austria	57	22	

Source: EU-LFS data 2010, 35

As the table shows, the main reason for women not working or working part-time is lack of availability of childcare facilities. In 2010 all in all 57% of mothers don't work or work part-time because of shortcomings of childcare facilities, compared to only 25% in the EU-27 countries. But as this survey data is from 2010 and the availability of childcare facilities has improved since, it can be assumed that these results will have changed too.

22% of all mothers in Austria don't work or work part-time because childcare facilities are too expensive. In the EU average, this problem is much greater with a share of 53% of mothers. In Austria the funding of childcare facilities is a matter of federal states. The costs for a child care place for a family therefore differ depending on the federal state.

2.2.3.10 Percentage of children in formal child care, 2012

Tab. 26: 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
Austria	11	3	14	57	28	85

Source: Eurostat: EU-SILC; wwwforeurope 2014

As the table shows, in Austria children under 3 years of age are less likely and shorter in external care than the EU average. The proportion of children between 3 and 6 years in external care is similar to that of the EU average, but 57% of Austrian children spend less than 30 hours a week there – only 37% of the EU average. One reason for children spending less time in child care facilities in Austria is the opening hours. In the country, kindergartens often close at noon. Another reason is the still predominating traditional social belief that children until the age of three are best looked after by their mother.

2.2.3.11 Time spent on unpaid work

Tab. 27: Time spent in unpaid and paid work, by sex, minutes per day

	paid work		unpaid work		
	Women	Men	Women	Men	
OECD Average	215.3	328.5	271.7	137.6	
Austria	248.8	364.8	268.9	135.3	2008-09

Source: OECD database

The table shows that Austrian men and women invest more time in paid work than the EU average. All in all, Austrian women spend 29 hours per week (248.8/60*7) in paid work and Austrian men over 42 hours (364.8/60*7). This shows the part-time orientation of women and the overtime orientation of men and it makes the prevalent breadwinner model with women as providers of additional income evident. Additionally women spend more than 31 hours per week with unpaid work, whereas men spend only less than 16 hours with housework and childcare. All in all Austrian women work 517.7 minutes per day – this is 8.6 hours a day and 60.4 hours a week. Men work a bit less – 500 minutes / 8.3 hours per day and 58.3 hours a week.

2.2.4 General assessment of the gender regime

The weak results are explained by the weak performance of Austria in providing enough incentives and support for women to stay in employment. In principle the individual taxation does not provide any barriers for the labour market participation of women in Austria. But the tax- and transfer/benefits system as a whole is primarily focused on male breadwinner households and women are seen as providers of additional income mainly responsible for childcare and household. The traditional division of labour between women and men is sustained by a set of different measures like generous child related benefits, rather extensive parental leaves taken by mothers with low compensation rates for income losses, lack of available and affordable childcare facilities which are compatible with full time jobs and taxation rules which often discourage double-income families (deductions for single breadwinner households) (Lutz and Schratzenstaller 2010, 670; Tazi-Preve 2009). Women sharing a household with a partner and children are still less likely to participate in full time in the labour market – regardless of their level of education. They act as additional earners and sustain the still dominant male breadwinner model (Biffl 2009, 159). Therefore the rising participation of women in the labour market does not impact the traditional division of labour: women still work nearly twice as much in the household as men in Austria (OECD, 2012). Although in the younger generation women have closed the gender gap in educational levels to men (OECD 2012), they are still less likely to translate their educational efforts into respective occupational positions: in 2003 56% of men with a tertiary degree were occupying highly qualified or leading positions, but in comparison only 18% of tertiary educated women (Mairhuber and Papouschek 2010, 444).

There is strong evidence that policies in Austria are directed towards more emphasis on gender equality and new egalitarian division of labour. There is also some evidence that this translates into new social values and attitudes (see for example Haas 2009; Tazi-Preve 2009; Holzinger et al. 2014). Still, traditional social roles for women and men are quite dominant and especially the birth of a child leads to a fall back to traditional gendered patterns of division of labour in Austria (Haas 2009, 135). Only a minority of fathers is making use of their entitlement to parental leave, although there is evidence that working fathers want to be more involved in childcare activities.

The Austrian welfare system and labour market policies are still founded on conservative, family-oriented and essentialist social perceptions of sex and gender differences (Sauer 2009, 53). This has contributed to an equation of family policies with gender equality policies in Austria (Kreisky and Löffler 2010; Appelt 2009). Despite progress in equal treatment and gender equality legislations and initiatives, the Austrian welfare state still shows »a certain reluctance to give up the support of family life« (Plantenga 2014, 32), and therefore comprises conflicting elements of a male breadwinner model as well as of an adult worker model. Consequently, Bergmann et al. (2014) characterize Austria's process of modernization in respect to gender equality following Kreimer (2011) "as stuck halfway".

2.3 Gender equality policies in RTDI (Current developments)

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

In the 1970s first measures and initiatives to promote women and gender equality were implemented at Austrian universities. In the 1990s a process of juridification of the promotion of women took place. In 1991 working groups on equal opportunities at Austrian universities were founded based on the 1990 amendment of the University Law from 1975 (Wroblewski et al., 2007).

In 1995 in the decree of the first affirmative action plan (Bundesgesetzblatt 1995) for the Federal Ministry of Science and Research concrete measures (e.g. the priority for women where their qualifications are equal) are formalized with the goal of increasing the percentage of female employees in the BMWFW's sphere of responsibility to 40% (BMWFW 2014a). In 1997 the principle of equal treatment of women and men in all legal norms relevant to universities was introduced in the University Studies Act, and the aim of institutionalizing women's and gender studies in all curricula was formulated (BGBl I Nr.48/1997). In 1999 the White Paper on the Advancement of Women in Higher Education and Research was issued. It includes 25 concrete measures for gender equality and the advancement of women in academia and in the non-university research sector (Bundesministerium für Wissenschaft und Verkehr 1999). The University Act 2002[6] contains legal protection instruments (Working Groups on Equal Opportunities and arbitration commission), affirmative action instruments for the reduction of structural inequalities (e.g. a female quota of 40% for university committees, Women's Studies Coordination Centres and Women's Offices or Children's Offices) and organizational parameters for the continuation of successful facilities, as well as a commitment of autonomous universities to the implementation of affirmative action plans (measures to increase the proportion of women in leadership positions and to promote female junior researchers) (BMWFW 2014a, BMWFW 2014b, EC 2013).

As one can see, until 2002 the main focus of promoting women in science was on the higher education sector. In 2002 the interministerial action umbrella programme fForte (Women in Research and Technology) was founded in order to increase the amount of women in science and technology in the higher education sector as well as in the business enterprise sector (details see 2.3.3).

In 2006, the regulation on formula based budgets for Austrian Universities (FBV)[7] formulates two indicators related to the promotion of women: Indicator 8 measures the share of women in grade A positions (full professors) and indicator 9 measures the number of women PhD graduates weighted by discipline of PhD study (EC 2013). This formula-based indicator budget was abolished in 2012 and replaced by the "*Hochschulraum-Strukturmittelverordnung*" that contains no gender equality indicators (Eckstein 2016, 61). In 2007 the BMWF (since 1 March 2014: BMWFW) introduced gender monitoring, including indicators that make the supervision of the implementation of gender equality possible (BMWFW 2014a). In 2009 the University Law Amendment Act[8] sets a 40 % quota for the underrepresented sex at all university committees (EC 2013). In 2015 this quota was increased to 50% in another amendment. The enforcement of the law seems to be taken up progressively by the universities, although it is too early to have a clear picture on the results. In addition, strategic gender equality objectives will be defined for the universities in the performance agreements for the 2016–2018 period (RIO Country Report 2015: Austria 2016, 28). The BMWFW monitors the implementation of the quota annually. In 2009 also Gender Budgeting was implemented in the Federal Ministry of Science, Research and Economy (BMWFW) and in universities. Since 2012, this concept has been

[6] Act on Universities 2002, (Universitätsgesetz 2002), BGBl I Nr. 120/2002
[7] Formelbudget-Verordnung BGBl Nr. 120/2006
[8] Universitätsrechts-Änderungsgesetz 2009 BGBl. I Nr. 81/2009, amendment to the University Act / Universitätsgesetz 2002

further strengthened with the establishment of 'outcome-oriented budgeting' at federal level (Deloitte Researchers´ Report: Austria 2014, 4). Now each federal ministry and supreme state organ has to determine gender equality outcomes for every societal aspect of its activities (i.e. see Federal Constitutional Act (BV-G), Federal Budget Act (BHG) and Federal Equal Treatment Act). The federal authorities have to define concrete measures (outputs) and indicators in order to realise and monitor the respective gender equality outcome (RIO Country Report 2014: Austria 2015, 16).

Additional to these activities the two major R&D funding organisations in Austria, FFG (Austrian Research Promotion Agency) and FWF (Austrian Science Fund) have integrated the consideration of gender and equal opportunities into their application and reporting mechanisms in order to anchor gender in research more deeply. The FFG also developed gender equality guidelines for all programmes (RIO Country Report 2015: Austria 2016, 84).

A long-term perspective is also taken up by the Strategy for Research, Technology and Innovation of the Austrian Federal Government (2011) (BKA 2011), which postulates the inclusion of gender-specific budgeting measures in all research support, the establishment of individualised support measures for women studying to become scientists as well as support measures for improved compatibility between career and family (RIO Country Report 2015: Austria 2016, 86). The RTI-Strategy is followed by many sub-strategies in recent years, where gender equality in RTDI is mentioned partly very detailed (e.g. Austrian ERA Road map), partly rather superficially (e.g. Open Innovation Strategy (BMWFW 2016).

Since 2016 the "Austrian ERA Roadmap" is the most recent strategy document regarding gender equality in RTDI as gender equality and gender mainstreaming in Research is one of its priorities. The Austrian ERA Roadmaps foresees a wide range of measures addressing the gender equality ERA targets (see Austrian ERA Observatory and BMWFW 2016).

2.3.2 Main challenges concerning GE in RTDI

So far, in Austria there was and still is a strong focus on raising the participation of women in science and technology on all hierarchy levels (e.g. RTI-Strategy, Austrian ERA Road Map etc.). Especially in the business enterprise sector this remains a big challenge as the not fulfilled gender equality target of raising the percentage of women in industrial research from the BMVIT show[9]. One reason therefore are persisting traditional role models that lead to a very gender-specific occupational choice. A still vertically very segregated labour market and male dominated organisational cultures do not encourage women to enter male dominated employment fields (see 3.5).

In recent years also the challenge of cultural change and change of institutions in favour of gender equality was put on the agenda and addressed by ministries and funding organisations in some measures (Austrian ERA Road Map 2016, 28f). But the idea of fostering cultural change in RTDI has not yet been fully and widely pursued. Male dominated organisational cultures of R&D companies also lead to a low share of women in BES. Therefore involving R&D companies in gender mainstreaming activities is still one of the main challenges. Furthermore research is needed about what it takes to succeed in this sector.

[9] See: https://www.wirkungsmonitoring.gv.at/

Concerning the Higher Education Sector one main challenge is still the high degree of employment insecurity in the early career stages. This together with the dominant beliefs about excellent scientists being male and living only for their work makes it more difficult for women to succeed in this sector.

Also the integration of the gender dimension in research and teaching is addressed by funding organisations and funding programmes and is also subject of the performance agreements of the universities, as the ERA Road Map shows. However, the implementation and impact of gender criteria in research funding has not yet been evaluated.

2.3.3 Policy measures promoting gender equality in RTDI

2.3.3.1 Measures addressing GE in scientific careers

In the 1990s the first measures for promoting women in science were established in the higher education sector like the Charlotte Bühler Scholarship (1992, from 2005 on Elise Richter Program) for senior post-docs or the Hertha Finberg Scholarship (1998) which supports women at the start of their scientific career (two-stage funding for a maximum of six years), financed by the Austrian Science Fund (EC 2013). Since 2003 Austria has put more effort into raising the share of women researchers especially in industrial research as the first benchmarking report "She Figures" was published by the European Commission. This report made evident that Austria had one of the lowest participation rates of women researchers in the European Union (Ihsen et al. 2013). In 2002/2003 the interministerial action umbrella programme fForte (Women in Research and Technology) was founded in order to increase the amount of women in science and technology. The initiative consists of the following funding programmes:

- fFORTE academic (BMWFW – Ministry of Science, Research and Economy)
- w-fFORTE (BMWFW): The w-fFORTE project – economic impulses by women in research and technology – aims at establishing equal opportunities in scientific and technological worlds of work. It is a programme of the Austrian Federal Ministry of Science, Research and Economy and is implemented by the Austrian Research Promotion Agency (FFG). The focus of the programme is on understanding different types of culture in research institutions. An important part of the programme is funding research centres for applied basic research that are headed by outstanding female scientists (Laura Bassi centres of expertise – LBC). The LBC programme establishes centres of excellence at the interface between academic and industrial research under the leadership of female scientists and seeks to increase visibility of female accomplishments in science as well as increase female participation in the long-run. The program's objectives are:
    - To improve the visibility of the research work undertaken and results achieved by highly qualified women in a way that addresses research, management and careers.
    - To work as a learning and teaching instrument to contribute to increased equality of opportunity in Europe's scientific landscape (BMWFW und BMVIT 2014) (RIO Country Report 2015: Austria 2016, 84f).
- FEMtech-fFORTE (BMVIT – Ministry for Transport, Innovation and Technology): Seeks to increase female participation in industry innovation and applied sciences at PROs in the medium and long-run. Support activities include for example FEMtech internships or FEMtech PhD grants in applied science for female MINT (mathematics, informatics, natural sciences, engineering) students or support of PRO institutions to implement e.g. fair recruitment strategies. Furthermore, certain

FEMtech R&D grants target gender-specific innovation since 2010. FEMtech is a line of fFORTE-Programmes and since 2011 a line of the Talents Programme.

- fFORTE Schule (BMBF – Ministry of Education and Women's Affairs): This is the schooling branch of the initiative and supports activities on school level to encourage e.g. gender-specific teaching schemes for MINT (mathematics, informatics, natural sciences, engineering) subjects at school and to strengthen general and female participation in MINT subjects.
- DOC-fFORTE: Scholarships for young female scientists in technology, natural sciences, medicine, life sciences and mathematics; introduced in 2003 but discontinued in 2011.

In 2011 the Ministry of Transport, Innovation and Technology started the Talents Program, administered by the Austrian Research Promotion Agency (FFG). This programme addresses women and men. For women it aims to encourage their access to research positions and improve working conditions in research and technology while motivating women to choose a career in science and technology and enhancing their career prospects. Moreover, it promotes the potential of young female scientists and engineers at the beginning of their career by encouraging close cooperation between businesses and institutes of higher education (Deloitte Researchers´ Report: Austria 2014, 7).

2.3.3.2 Measures addressing gender balance in decision making

The Austrian public universities as well as the OeAW and the BMWFW include gender equality provisions in all performance agreements. The 2015 amendment to the Austrian Universities Act stipulates that 50% of the members of university decision-making bodies have to be female. Universities have to prepare plans for the promotion of women and gender equality, especially when it comes to the compatibility of work and family (RIO Country Report 2015: Austria 2016, 85). Since 2011 the new legal regulations for Universities of Applied Science provide for a 45% quota for women on academic panels (Deloitte Researchers´ Report: Austria 2014, 7).
To support the work of university boards on an ongoing basis, the Ministry of Science, Research and Economy offers training and individual coaching for new board members in order to increase the number of women in leading positions and functions in universities. This initiative aims to support the implementation of the 50% quota. Sixty individual training courses were offered in 2013, whereas the follow-up project in 2014 provided 30 (Deloitte Researchers´ Report: Austria 2014, 7; BMWFW 2014c).

To fight the underrepresentation of women, especially in leadership positions, the Diversity Award has been introduced, which is given to higher education and research institutions that have implemented diversity management in their organisational structures and work processes (RIO Country Report 2015: Austria 2016, 85).

The Ministry of Transport, Innovation and Technology (BMVIT) launched an Initiative to raise the proportion of women in highly skilled positions in research, technology and innovation (RTI field). The initiative calls for an increase in the proportion of women project leaders by six percentage points yearly, from 16% in 2010. In addition, the proportion of women in selection bodies is to go up by seven percentage points until the year 2013, from 23% in the year 2010, in order to raise women researchers' influence on R&D (Deloitte Researchers´ Report: Austria 2014, 6).

2.3.3.3 Measures addressing the integration of gender dimension in research

Since 1997 every two years the Gabriele Possanner State Prize has been awarded as a science prize for the promotion of gender research on the proposal of a specialist jury at the Federal Ministry of Science, Research and the Economy every two years (Deloitte Researchers´ Report: Austria 2014, 6).

Since 2008 the Austrian Research Promotion Agency (FFG) runs the FEMtech research projects. This funding programme aims to support innovative projects that include consideration of the gender dimension in R&D. The differences between men and women are taken into consideration throughout the development of technologies and products. FEMtech research projects aim to increase the level of interest among scientists on the gender issue when developing and carrying out research projects, with a view to improving the quality and capability of solutions, products, and technologies to meet the needs of all customers (Deloitte Researchers´ Report: Austria 2014, 8).

In 2009 the Austrian Research Promotion Agency has introduced gender criteria in application procedures. Applicants need to argue how they deal with gender aspects of their research. Also the FWF (Austrian Science Fund) has integrated the consideration of gender and equal opportunities into their application and reporting mechanisms in order to more deeply anchor gender in research (RIO Country Report 2015: Austria, 2016, 84).

2.3.3.4 Other measures

Gender monitoring as part of uni:data (ongoing): As part of the collection of information for the 'uni:data' data warehouse, the Federal Ministry of Science, Research and Economy undergoes an accompanying monitoring process with regard to the implementation of gender equality and the promotion of women at universities while it also measures the impact of programmes for the promotion of young scientists (Austrian Science Fund-FWF, Austrian Academy of Science-OeAW). This indicator system integrates the following instruments: the Universities Act 2002, performance agreements with universities, university development plans, gender-specific indicators and EU benchmarks (Deloitte Researchers´ Report: Austria 2014, 4).

2.3.4 Actors responsible for GE in RTDI

With the establishment of 'outcome-oriented budgeting' at federal level in 2012 every federal ministry and supreme state organ has to determine gender equality outcomes for every societal aspect of its activities (i.e. see Federal Constitutional Act (BV-G), Federal Budget Act (BHG) and Federal Equal Treatment Act). Since in Austria the **Federal Ministry for Science, Research and Economy (BMWFW)** is responsible for research and science and the **Federal Ministry for Transport, Innovation and Technology (BMVIT)** for innovation and technology development, they are also responsible for gender equality in RTDI. They have to define concrete measures (outputs) and indicators in order to realise and monitor the gender equality outcome in RTDI (RIO Country Report 2014: Austria, 2015, 16).
In 2012 the **Working Group "Human Potential" was implemented with** representatives of different ministries who are responsible for HR issues relating to pupils, students and researchers. The working group formulated recommendations on existing and planned measures in the field of MINT (mathematics, informatics, science, and technology), e.g. to extend Sparkling Science in terms of the projects approved; to continue the Young People Initiative; to continue and ensure the long-term

development of the wfForte/ Laura Bassi Centres of Expertise (Deloitte Researchers´ Report: Austria 2014, 4).
Gender equality funding programmes that are designed by BMWFW and BMVIT are managed by the **Austrian Research Promotion Agency (FFG)** mainly in the field of applied science, and by the **Austrian Science Fund (FWF)** mainly in the field of basic research.
At university level, the Rectors' Conference has set up a gender & diversity task force. The aim of the Task Force is to increase women's share of top-level positions at universities by offering coaching to prospective female heads of universities (Deloitte Researchers´ Report: Austria 2014, 6).
The **Council for Research and Technology Development** was established in 2000 became a legal entity under public law in 2004. The Council's work covers the entire national innovation system and it may be consulted by both federal and regional institutions. In 2005 the Council published a short recommendation regarding gender mainstreaming (Austrian Council for Research and Technology Development 2005).

2.3.5 Assessment of gender equality policies in RTDI

In the Higher Education Sector Austria has a long tradition of fostering gender equality. Since 2002 also the non-university research sector and the business enterprise sector are addressed by measures. The gender equality policies in RTDI focused for a long time on raising the share of women in science in technology. Since the first decade of the 21st century they also have been addressing organisational change with measures like the Laura Bassi Centers of expertise or FEMTECH career. But the idea of fostering cultural change in RTDI has not yet been fully and widely pursued.

Clearly, it was easier in the university sector to introduce legal measures on gender equality, which now have an effect. But the universities for applied sciences are not yet addressed adequately by measures and instruments to foster gender equality. In the business enterprise sector no legislative measures or quotas were implemented up to now, so the increase of women's share in leadership positions is much more difficult.

Also the integration of the gender dimension in research and teaching is addressed by funding organisations and funding programmes and it is also subject of the performance agreements of the universities, as the ERA Road Map shows. However, the impact of gender criteria in research funding programmes has not yet been evaluated. So it remains unknown how the juries are dealing with the gender criteria and how much influence they have on the decision-making process in practice. Moreover the quality of the consideration of the gender dimension in the research process is not evaluated at the end of the project.

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

Tab. 28: Proportion of RPOs that have adopted gender equality plans, 2013

	2013
EU28	36
Austria	38

SHE Figures 2015, 116 (data only for 2013) (based on ERA Survey 2014)

According to the ERA Survey in 2013, 38% of Austrian RPOs hold a gender equality plan. As the definition of RPO in this data remains unclear, it can be assumed that these are mainly universities which had to develop women's promotion plans according to the university law. Since 2015 gender equality plans have become mandatory following an amendment to the university law. Current data on the share of RPOs with an equality plan is not available.

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

Tab. 29: Proportion of research & development personnel working in RPOs who adopted gender equality plans, 2013

	2013
EU28	70
Austria	90

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

If we assume that the 38% of Austrian RPOs holding a gender equality plan are mainly universities, a percentage of 90% might be plausible, since universities employ more people than non-university research institutions, but still appears to be very high. Information about the definition of RPO would be necessary to interpret this data correctly.

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

Tab. 30: Share of tertiary educated population among the group of 25 to 34 years old by sex[10]

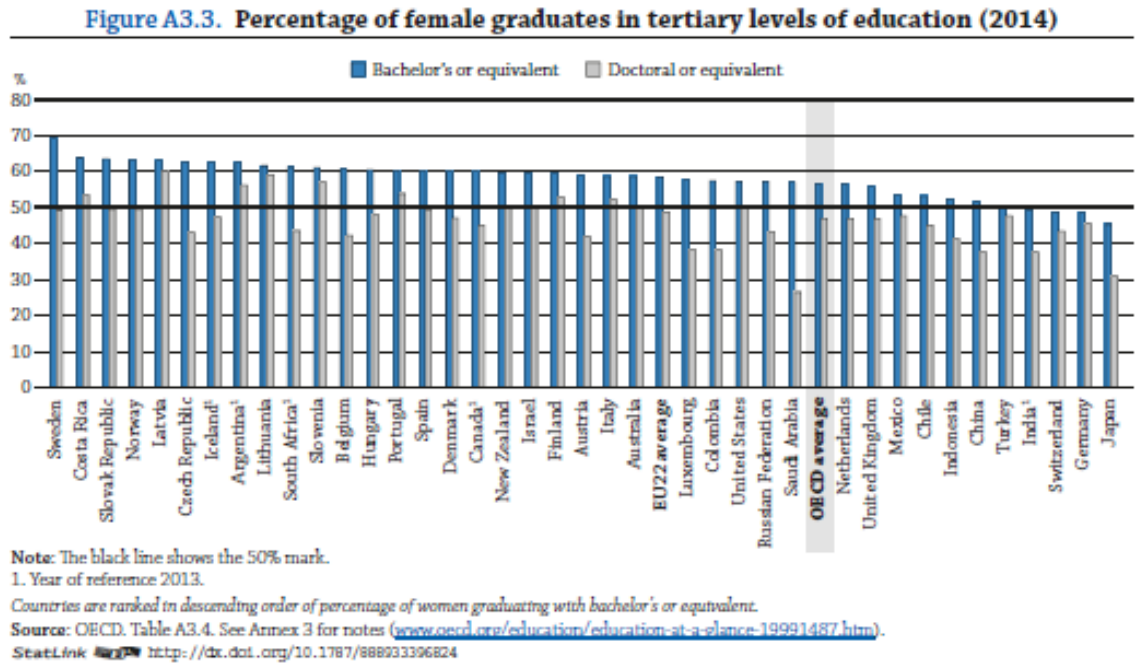
GEO	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	28.3	29.2	29.9	30.9	32.3	33.3	34.4	35.5	36.5	37.2	37.9
	Males	25.4	25.9	26.4	27.2	28.2	29.1	30.0	30.8	31.7	32.5	32.9
	Females	31.1	32.5	33.6	34.8	36.4	37.6	38.8	40.2	41.3	42.0	42.9
Austria	Total	19.7	19.0	18.7	19.2	21.0	20.7	20.9	22.8	24.9	38.4	38.6
	Males	18.9	18.7	18.4	18.5	19.6	18.7	19.5	21.3	23.3	35.8	35.8
	Females	20.6	19.3	18.9	20.0	22.5	22.6	22.4	24.3	26.6	41.1	41.5

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

The level shift break in Austria seen between 2013 and 2014 can be ascribed to the reclassification of a programme spanning levels: the qualification acquired upon successful completion of higher technical and vocational colleges was 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.

All in all the share of tertiary educated population in the group of 25-34 years olds in Austria is similar to the EU28 average. Austrian men show a higher percentage than the EU28 average, but the share of Austrian women is higher, as it has been for years.

Figure 4: Percentage of female graduates in tertiary levels of education, 2014



Source: Education at a Glance 2016, 64

[10] 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.

As the OECD figure shows: nearly 60% of bachelor graduates in Austria are female, but only about 41% of doctoral graduates. On OECD average, 58% of first-time graduates from bachelor's programmes or the equivalent were women, whereas 47% of doctoral-level graduates.

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

It can be seen from the table, that some fields of study in Austria have an unbalanced gender distribution. This unbalance is a little less pronounced than in the OECD or the EU average. E.g. on EU average there are nearly five times more female graduates in education than male graduates. Austria has a gender imbalance in education of 3 women per man. In the field of engineering the unbalance is similarly high.

Tab. 31: Gender ratio for all tertiary graduates, by field of education in 2014

	Education	Humanities	Social Science, Business and Law	Sciences	Engineering, manufacturing and construction	Agriculture	Health and welfare
Austria	3	1.7	1.3	0.6	0.3	1.1	3.5
OECD	4.2	2	1.5	0.7	0.3	1.2	3.7
EU22	4.9	2.2	1.7	0.7	0.4	1.2	3.8

Source: OECD 2016: Education at a glance, Table A3.3, 70

These results can be partially explained by gender differences in young people's attitudes and aspirations. The OECD Programme for International Student Assessment (PISA) has consistently found that 15-year-old girls have higher expectations for their careers than boys. However, on average across OECD countries, it can be observed that fewer than 5% of girls of that age contemplate a career in engineering or computing (OECD, 2015b; OECD 2016, 65f).

3.2.3 Development of the number of women ISCED 6 graduates

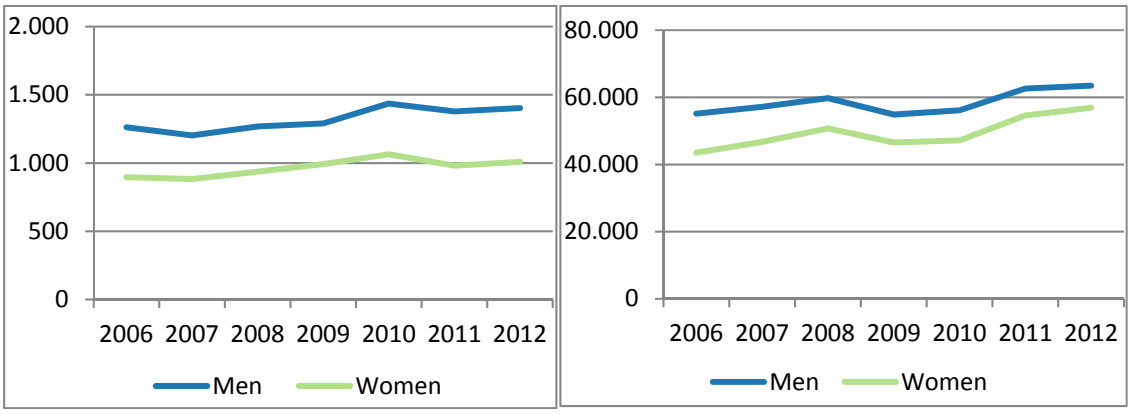
Tab. 32: Development of the number of women ISCED 6 graduates

	2006		2007		2008		2009		2010		2011		2012	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W
EU27	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
Austria	1,262	896	1,202	883	1,268	937	1,291	993	1,436	1,064	1,378	981	1,403	1,009

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

When we transform the table on the development of the number of women in ISCED 6 graduates into two graphs, we can see that the number of male and female graduates in Austria evolves almost parallel. This finding means that in Austria women do not pick up to men, whereas they do on EU-average.

Figure 5: Development of the number of women ISCED 6 graduates in Austria and EU27



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

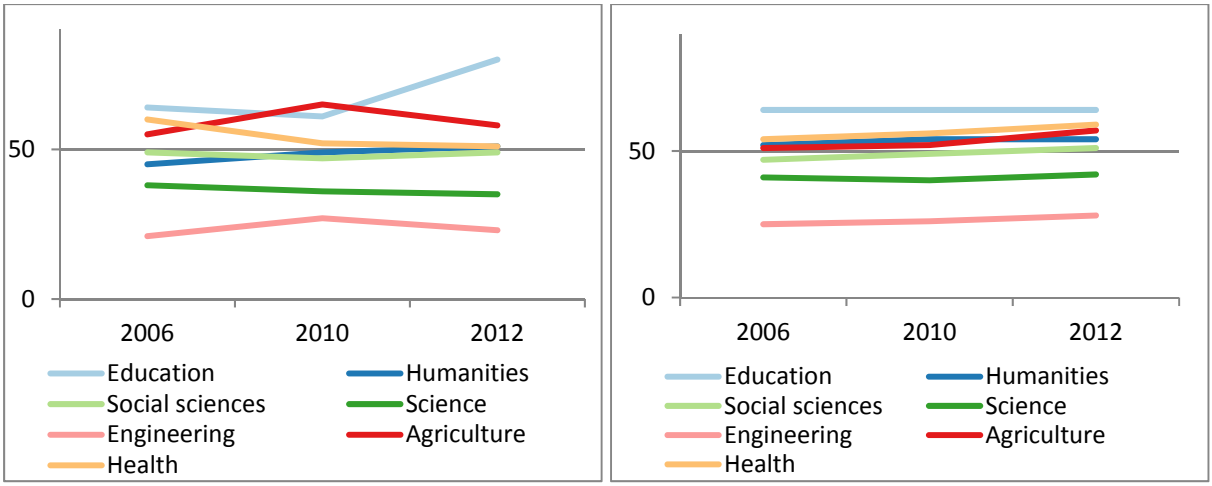
Tab. 33: Development of the proportion of women ISCED 6 graduates differentiated by field of study

		Education	Humanities & arts	Social sciences, business and law	Science, mathematics and computing	Engineering, manufacturing and construction	Agriculture and veterinary	Health and welfare	Services
EU27	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
Austria	2006	64	45	49	38	21	55	60	
	2010	61	49	47	36	27	65	52	
	2012	80	51	49	35	23	58	51	36

Source: SHE Figures 2015, 26 (data for 2012); SHE Figures 2012, 79 (data for 2010, calculations JOANNEUM RESEARCH); SHE Figures 2009, 51 (data for 2006)

When looking at the development of the numbers separately for Austria and the EU27, it becomes apparent that the gender unbalance in Education, Science and Engineering in Austria tends to increase over time while it decreases or stays the same on EU level.

Figure 6: Development of the proportion of women ISCED 6 graduates differentiated by field of study in Austria and EU27



On the long run the share of women in engineering may increase slowly, but 23% in 2012 can still be classified as very low. As the interest in the teaching subject is of tremendous importance for the choice of studies, the reason for the low proportion of women in industrial science must be sought in the school system.

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

Tab. 34: 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	Mathema-tics and Statistics	Computing	Enginee-ring and Enginee-ring Trades	Manufactu-ring and Processing	Architec-ture and Building
EU27	2004	**53**	34	31	**18**	19	30	36
	2010	**57**	34	32	**19**	23	42	34
	2012	**58**	37	36	**21**	25	35	38
Austria	2004	**56**	34	9	**8**	14	30	22
	2010	**64**	25	41	**10**	26	30	30
	2012	**61**	32	21	**15**	23	20	23

Source: SHE Figures 2015, 31 (data for 2004 and 2012); SHE Figures 2012, 80 (data for 2010, calculations JOANNEUM RESEARCH)

The figure reveals that the proportion of women in both Austria and EU27 is highest in life science (e.g. in 2012 58% women in EU27 and 61% in Austria) and lowest in computing (e.g. in 2012 21% women in EU27 and 15% in Austria). Generally speaking Austria shows a greater gender unbalance in the narrow fields of study in natural sciences and engineering than the EU average.

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

Tab. 35: 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
Austria	Women	5	15	**32**	20	11	5	11
	Men	1	10	24	**27**	**27**	2	8

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

In Austria as well as in the EU average, women spread more evenly over the fields of science than men. In Austria, most women study social sciences, business and law (32%), whereas most men can be found in science, mathematics and computing (27%) and engineering, manufacturing and construction (27%). In EU average the biggest group of men and women appears in science, mathematics and computing (26% / 32%). It is striking that many women in Austria are studying health and engineering (11%). On EU level these percentages differ greatly; 23% of women graduating in health and welfare and only 9% in engineering.

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

Tab. 36: Employment rates in the total population aged 20-64, by sex and gender gap[11]

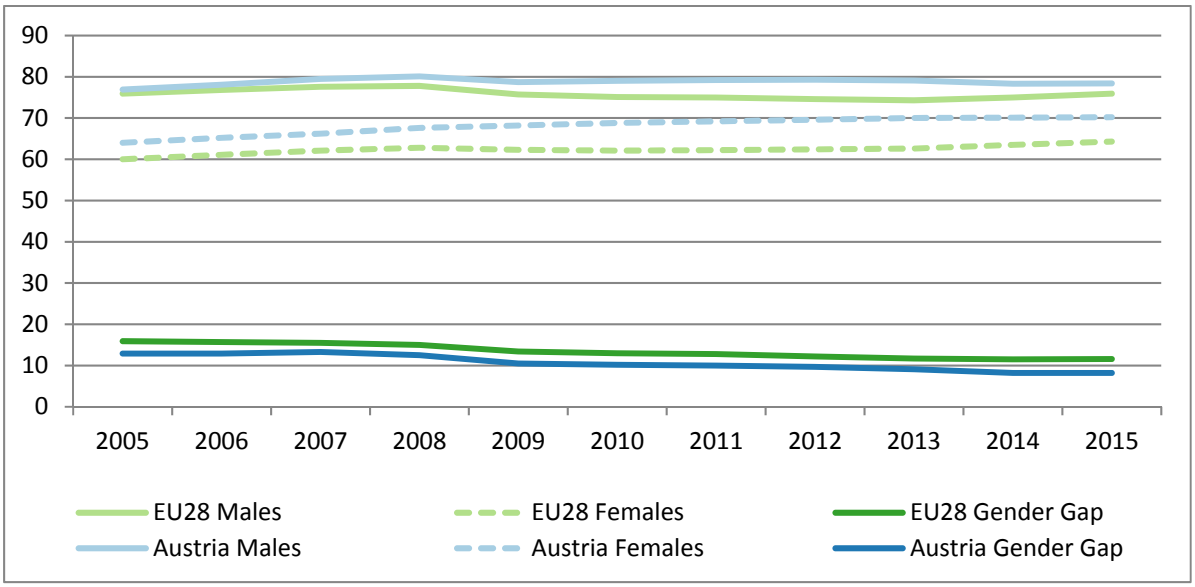
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Males	75.9	76.8	77.6	77.8	75.7	75.1	75.0	74.6	74.3	75.0	75.9
	Females	60.0	61.1	62.1	62.8	62.3	62.1	62.2	62.4	62.6	63.5	64.3
	Gender Gap	15.9	15.7	15.5	15.0	13.4	13.0	12.8	12.2	11.7	11.5	11.6
Austria	Males	76.9	78.1	79.5	80.1	78.7	79.0	79.2	79.3	79.1	78.3	78.4
	Females	64.0	65.2	66.2	67.6	68.2	68.8	69.2	69.6	70.0	70.1	70.2
	Gender Gap	12.9	12.9	13.3	12.5	10.5	10.2	10.0	9.7	9.1	8.2	8.2

Source: Eurostat, LFS

The data about employment rate by sex displays that in general the labour market participation in Austria is above EU average. Between 2005 and 2015 the labour market participation of women in Austria rose more strongly than in EU average. Furthermore it can be witnessed that the gender gap is lower for Austria than for EU28.

[11] This means the difference of employment rates between women and men. It is calculated by subtracting the employment rate for women form those of men.

Figure 7: Employment rates in the total population aged 20-64, by sex and gender gap, 2005-2015



Source: Eurostat, LFS

3.3.1.2 Employment rate by age of children and sex

Tab. 37: Employment Rate of Persons Aged 25-49 by Age of Youngest Child and without children, Sex, Country and Year

			2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	Female	Child aged under 3	59.6	58.5	57.4	60.7	64.5	63.9	65.7	69.2	..
		Child aged 3-5	65.5	67.2	70.3	70.9	73.7	70.8	73.4	76.7	..
		Child aged 6-16	79	80.2	79.8	81	82.2	82.8	82.5	83.3	..
		without children	84.6	84.1	84.4	85.1	85.5	85.5	85.4	85	..
	Male	Child aged under 3	93.4	91.6	93	93.7	91.7	91.7	94.3	93.2	..
		Child aged 3-5	92.3	93.6	95	93.3	93.1	92.9	94.8	93	..
		Child aged 6-16	94.3	94.4	94.8	95	94	93.9	94.9	94.6	..
		Without children	86.1	87.7	88.8	87.9	86.2	85.5	85.9	86.5	..

Sources: UNECE Statistical Database

The different impact of parenthood on men and women can be viewed as a crucial reason for the varying labour market behaviour. The table makes clear that in Austria men with children tend to work more than men without children. The opposite is true for women: women without children have higher employment rates than women with children. The typical gendered division of labour in which men have the primary responsibility to earn and women to care is still valid in Austria (Plantenga 2014, 7). But the data also reveals that the labour market participation of women with children up to 5 years increased in Austria substantially between 2005 and 2012. In the same period of time it hardly ever changed for men. There is a social change of a growing employment orientation of mothers' observable, but at the same time no increasing responsibility of men with regard to child care is distinguished. This can be confirmed by data on paternity leave (see 2.2.3.1 and 2.2.3.2). The labour market orientation of Austrian men and women without children is nearly the same.

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

Tab. 38: 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
Austria	Males	76.6	75.5
	Females	54.9	55.1
	Gender Gap	21.7	20.4

Source: EC 2016, Report on equality between women and men, 49

In Austria 55% of women work full time, similar to EU average. For men the share is higher with 76%. The gender gap in Austria is slightly higher than in EU average. The part-time orientation of women in Austria is due to the fact that they are still primarily responsible for childcare. Up to now Austria only moved from a male breadwinner model to a male breadwinner model with women as providers of additional income.

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

Tab. 39: 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
Austria	Total	3.0	3.0	3.2	3.2	3.4	3.5	4.9	5.3	5.7	5.6	6.0
	Males	4.1	4.2	4.4	4.4	4.7	4.8	6.1	6.8	7.3	7.1	7.7
	Females	1.7	1.5	1.8	1.8	1.9	2.1	3.6	3.5	4.0	3.9	4.0

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

The proportion of scientists and engineers in the total labour force increases steadily, both in Austria and in EU average. But since 2013 the increase in Austria is only based on men, the proportion of women stagnates. Before 2013 the proportion of female and male scientists in Austria was clearly lower than EU average; since 2013 men in Austria are on a similar level with men in EU28. But female scientists are clearly underrepresented in the Austrian labour force in comparison to EU28. Reasons therefore are persisting traditional gender segregated occupational choices and traditional role models. As long as women are mainly responsible for childcare they tend to choose occupations with a better work life balance. Employment opportunities in science and engineering in Austria are often dominated by men with a male-oriented work culture and full-time orientation.

3.3.2.2 Employment in knowledge intensive activities (KIA) by sex

Tab. 40: 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
Austria	Total	34.3	35.4	35.8	35.0	35.2	36.1	36.5	36.4
	Males	28.6	29.5	29.8	28.9	28.7	29.5	30.3	29.9
	Females	41.0	42.1	42.7	41.9	42.6	43.5	43.5	43.6

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

In 2015 36% of the Austrian labour force work in knowledge intensive activities, women (44%) more often than men (30%). Austria is thus on average in the EU. The percentages rose slightly between 2008 and 2015.

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

Tab. 41: 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
Austria	Total	13.9	14.3	14.4	14.0	14.2	14.6	14.7	14.5
	Males	14.5	15.0	14.9	14.4	14.2	15.1	15.6	15.3
	Females	13.2	13.5	13.8	13.5	14.3	14.2	13.8	13.5

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

In 2015 15% of the Austrian labour force works in knowledge intensive activities – business activities, which is in line with the average in the EU. No substantial gender differences and change in time can be observed.

3.3.2.4 Researchers in all R&D sectors

Tab. 42: Number of researchers in all R&D sectors by sex and years (in full time equivalents)

	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									
Austria	Total	28,470	29,199	31,676	34,508	34,664	36,581	37,114	39,346	40,426
	Males		23,530	25,155		26,899		28,651		31,140
	Females		5,669	6,521		7,765		8,463		9,286

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

The number of researchers in the R&D sector is increasing continuously in Austria and the EU average between 2005 and 2013, as shown in the table above. In the table below women show a slightly greater increase than men: The share of women among researchers in R&D rose modestly between 2007 and 2013.

Tab. 43: Share of women in R&D by countries

	share of female researchers in R&I				
	2005	2007	2009	2011	2013
EU28	:	:	:	:	:
Austria	:	21%	22%	23%	23%

Source: Eurostat, rd_p_persocc (calculations JOANNEUM RESEARCH)

3.3.2.5 Researchers differentiated by R&D sectors

Tab. 44: Number of researchers in the BES by sex and years (in full time equivalents)

		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									
Austria	Total	18,155	18,471	20,058	21,852	21,599	22,799	23,138	24,900	25,752
	Males		16,207	17,382		18,356		19,597		21,698
	Females		2,264	2,676		3,243		3,541		4,054

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

The number of researchers in the Business Enterprise Sector is growing continuously in Austria and the EU average between 2005 and 2013, as the table above shows. The share of women among researchers in BES increased from 12% in 2006 to 16% in 2013 and therefore represents a greater expansion than the men's.

Tab. 45: Number of researchers in the HES by sex and years (in full time equivalents)

		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									
Austria	Total	8,962	9,261	10,112	11,016	11,262	11,954	12,199	12,635	12,846
	Males		6,383	6,812		7,431		8,010		8,380
	Females		2,878	3,300		3,831		4,189		4,466

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

As can be seen from the table, the number of researchers in the Higher Education Sector in Austria and the EU average is constantly on the rise between 2005 and 2013. A slightly stronger increase can be stated for the women: The share of women among researchers in HES grew from 31% in 2006 to 35% in 2013.

Tab. 46: Number of researchers in the GOV by sex and years (in full time equivalents)

		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									
Austria	Total	1,232	1,349	1,389	1,513	1,559	1,568	1,511	1,549	1,567
	Males		884	903		958		889		903
	Females		465	486		601		622		664

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

Likewise the number of researchers in the Government Sector continued to climb constantly in the EU average between 2005 and 2013. In Austria however the number of researchers in this small sector grew until 2010 and kind of stagnates since then. The share of female researchers in this sector increased from 34% in 2006 to 42% in 2013.

Tab. 47: Number of researchers in the PNP by sex and years (in full time equivalents)

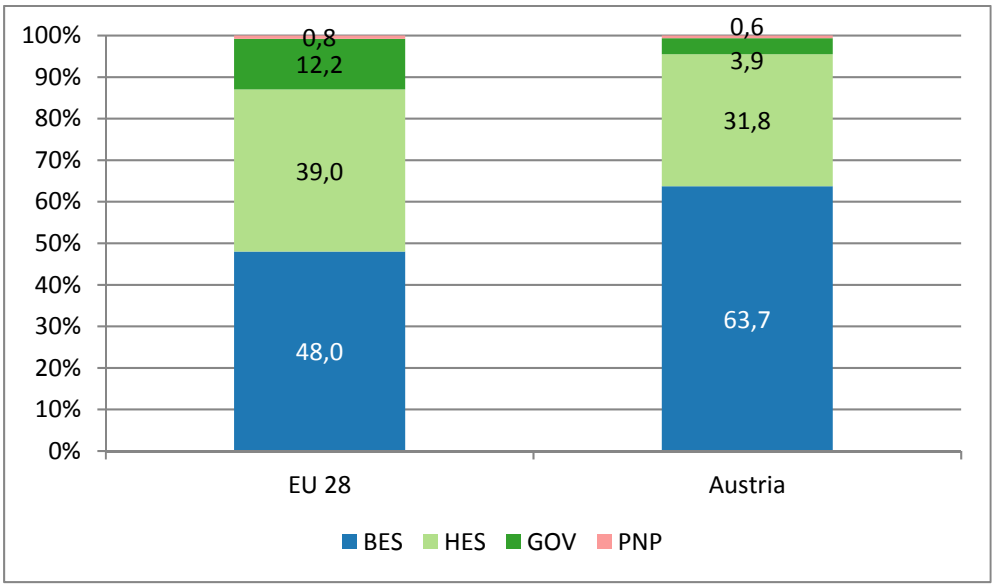
		2005	2006	2007	2008	2009	2010	2011	2012	2013
EU28	Total	15,462	16,995	16,721	17,345	18,014	17,952	18,802	18,965	13,920
	Males									
	Females									
Austria	Total	121	118	117	127	243	260	266	262	261
	Males		55	57		153		155		158
	Females		63	60		90		111		103

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

According to the table above the number of researchers in the private non-profit sector was increasing continuously in the EU average between 2005 and 2012 and dropped drastically in 2013. In Austria the number of researchers in this small-scale sector rose until 2010 and since then remains stable. The share of female researchers in this sector dropped from 53% in 2006 to 39% in 2013.

Overall, the BES sector plays a much larger role in Austria than in the EU on average, as the following chart shows:

Figure 8: Distribution of the researchers on R&D sectors, EU28 and Austria



64% of all researchers in Austria work in the BES-Sector, the sector with the lowest share of women (16%). 32% of the researchers work in Higher Education, where the share of women is much larger (35%). The governmental sector and private non-profit sector are negligible in Austria.

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

Tab. 48: Gender segregation by occupation and economic sectors

	Gender segregation in occupations (%)		Gender segregation in sectors (%)	
	2004	2014	2004	2014
EU28	24.7	24.4	17.7	18.9
Austria	26	26.9	18.9	18.9

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

The index above reflects the proportion of the employed population that would need to change occupation or sector 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). In Austria in 2014 27% of employees would have to change the occupation and 19% would have to change the sector. The segregation index of the economic classes is slightly smaller than that of the occupations despite the further differentiation of the sectors. Women and men tend to work more often in the same workplace than in the same professions. For Austria the segregation index for occupations is slightly above the EU average, the 2014 segregation index for sectors is on the EU average.

The following table is coloured according to an Austrian classification of women and men's professions (Reidl and Schaffer 2009, 90) and shows male dominated occupations in blue, integrated mixed professions in white and female dominated occupations in red[12].

Tab. 49: Employment by Occupation, Sex, Measurement, Country and Year

AUSTRIA		2004	2014
Legislators, senior officials and managers	Female	26.3	30.3
	Male	73.7	69.7
Professionals	Female	44.1	50.9
	Male	55.9	49.1
Technicians and associate professionals	Female	49.3	47
	Male	50.7	53
Clerks	Female	68	70.9
	Male	32	29.1
Service workers and shop and market sales workers	Female	73.4	68.8
	Male	26.6	31.2
Skilled agricultural and fishery workers	Female	49.4	43.1
	Male	50.7	56.9
Craft and related trade workers	Female	8.1	8.6
	Male	91.9	91.4
Plant and machine operators and assemblers	Female	13.5	14.5
	Male	86.5	85.5
Elementary occupations	Female	56.6	61.9
	Male	43.4	38

Source: UNECE Statistical Database

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

Tab. 50: Proportion of female researchers in the business enterprise sector, by economic activity (NACE Rev. 2) 2012

		Manufacturing	Manufacture of chemicals and chemical products	Manufacture of basic pharmaceutical products and preparations	Services of the business economy	other NACE category
EU27	2009	15	27	45	19	83
	2012					
Austria	2009	11	24	46	24	15
	2012	11	27	44	23	16

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

[12] The classification is based on a women share of 45% among all employees and therefore defines occupations with a share of women above 55% as female dominated. Occupations with a share of women between 35-55% are integrated mixed professions and occupations with a share of women under 35% are male dominated.

In Austria in 2013 16% of the researchers in BES were female (see 3.3.2.5). Within the BES sector the share of women is in 2012 highest in manufacturing basic pharmaceutical products preparations (44%) and lowest in manufacturing with a share of 11%. This can be explained by the fact that the share of female graduates in life science is higher than it is in engineering (see 3.2.5)

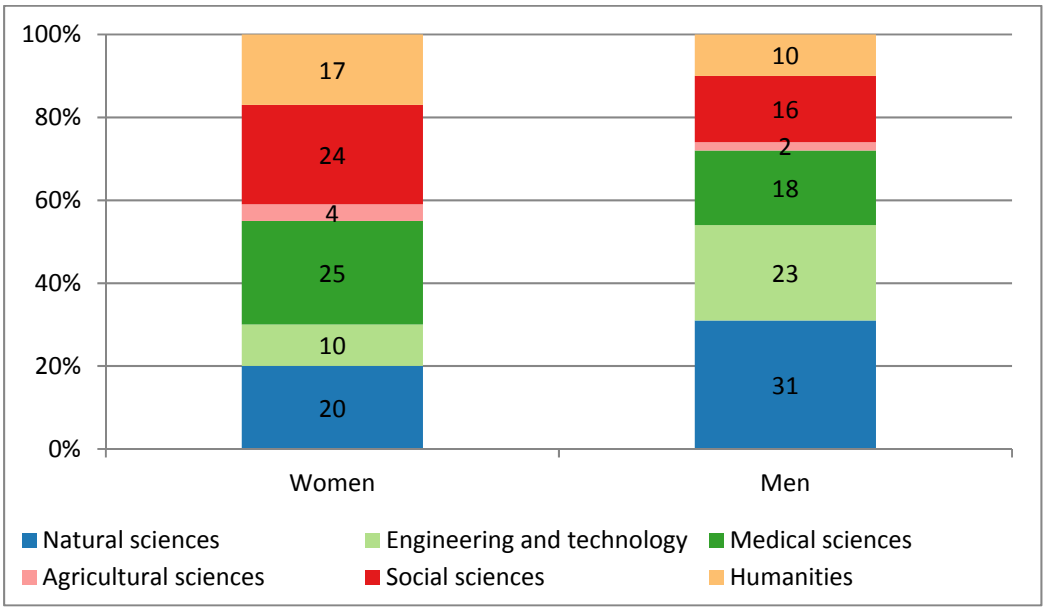
3.4.3 Distribution of researchers across in the Higher Education Sector (HES), across fields of science, by sex

Tab. 51: Distribution of researchers in the Higher Education Sector (HES), across fields of science, 2012

	Gender	Natural sciences	Engineering and technology	Medical sciences	Agricultural sciences	Social sciences	Humanities
Austria	Women	20	10	25	4	24	17
	Men	31	23	18	2	16	10

Source: SHE Figures 2015, 56 (data only for 2012)

Figure 9: Distribution of researchers in the Higher Education Sector (HES), across fields of science, 2012



The graph shows that female researchers in Austria tend to work more often in the fields of Social Sciences, Medical Sciences and Humanities and male researchers favour Engineering and Natural Sciences. When it comes to the choice of studies the interest in the teaching subject plays a crucial role (Mauk 2016). Therefore the reason for the low proportion of women in industrial science must be sought in the school system.

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

Tab. 52: Share of male and female members of boards in largest quoted companies, supervisory board or board of directors, in 2012

	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
Austria	33	29	33	12	0

Source: EIGE gender equality index 2015, 173

In the public sector the share of women in leading positions like ministers (33%) or members of parliament (29%) was higher than the EU average in 2012, excluding the share of female members of the central bank which was non-existent. In the private sector women are disproportionally underrepresented in boards (12%) compared to the EU average (16%). According to the Gender Index (Bundeskanzleramt 2015, 47f) the share of female ministers decreased to 31% in 2015 and the share of female members of parliament increased to 31%.

3.5.2 Vertical segregation in RTDI

3.5.2.1 Proportion of women academic staff, by grade

Tab. 53: Proportion of women academic staff, by grade and total

		Grade A	Grade B	Grade C	Grade D	Total
EU27	2007	19	36	44	44	38
	2010	20	37	44	46	40
EU28	2013	21	37	45	47	41
Austria	2007	14	19	40	41	35
	2010	17	22	44	42	38
	2013	20	25	47	42	39

Source: She Figures 2015, 129 (data only for 2013); She Figures 2012, 90 (data for 2010); She Figures 2009, 75 (data for 2007)

The share of female professors (Grade A) increased in Austria from 14% in 2007 to 20% in 2013. With this increase, Austria has now almost reached the EU average of 21%. This development indicates that the measures for the promotion of young female scientists and the legal reforms at the universities since the 1990s have been effective.

The share of female associated professors and lecturers (Grade B) remains with 25% in 2013 significantly below the EU average of 37%. Among the assistant professors, university assistants and senior scientists women are nearly equally represented with 47%.

3.6 Employment conditions/status/contracts

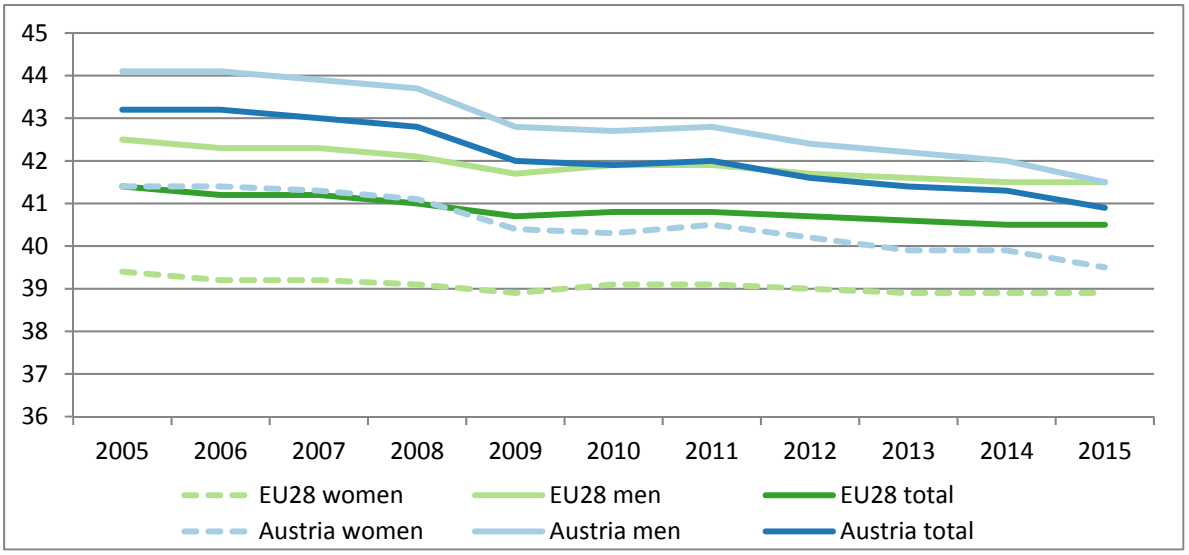
3.6.1 General working time culture

Tab. 54: 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
Austria	women	41.4	41.4	41.3	41.1	40.4	40.3	40.5	40.2	39.9	39.9	39.5
	men	44.1	44.1	43.9	43.7	42.8	42.7	42.8	42.4	42.2	42.0	41.5
	total	43.2	43.2	43.0	42.8	42.0	41.9	42.0	41.6	41.4	41.3	40.9

Source: Eurostat, Average number of actual weekly hours of full-time work

Figure 10: Actual weekly working hours of full-time workers by gender



Source: Eurostat, Average number of actual weekly hours of full-time work

The number of hours worked per week influences the work-life balance, which in turn has an effect on subjective well-being. However, this effect is not linear. Research has shown that subjective well-being increases with the number of hours an individual works per week, but only up to a certain point. Beyond this point it starts to deteriorate, possibly because excessive (over 48hrs per week) working hours reduce job satisfaction, which results in a reduction of the overall fulfilment (Abdallah, Stoll and Eiffe, 2013).

In 2015, the average number of hours worked by full time employed persons per week in the EU28 was 40.5 hours, for Austria it was with 40.9 hours close to the EU average. However, in 2005 the average working time of men and women in Austria was significantly higher than in the EU. Especially

for men who worked over 44 hours in 2005 and 41.5 hours in 2015 a trend away from overtime culture can be suspected. Full time employed women didn't have this strong tendency towards overtime, in 2005 they worked 41.4, in 2015 39.5 hours per week. These changes can ascribed to the fact that Austria is moving away from the male breadwinner model and that men are beginning to face other needs regarding their work life balance (Bergmann 2014).

3.6.2 Working time in RTDI

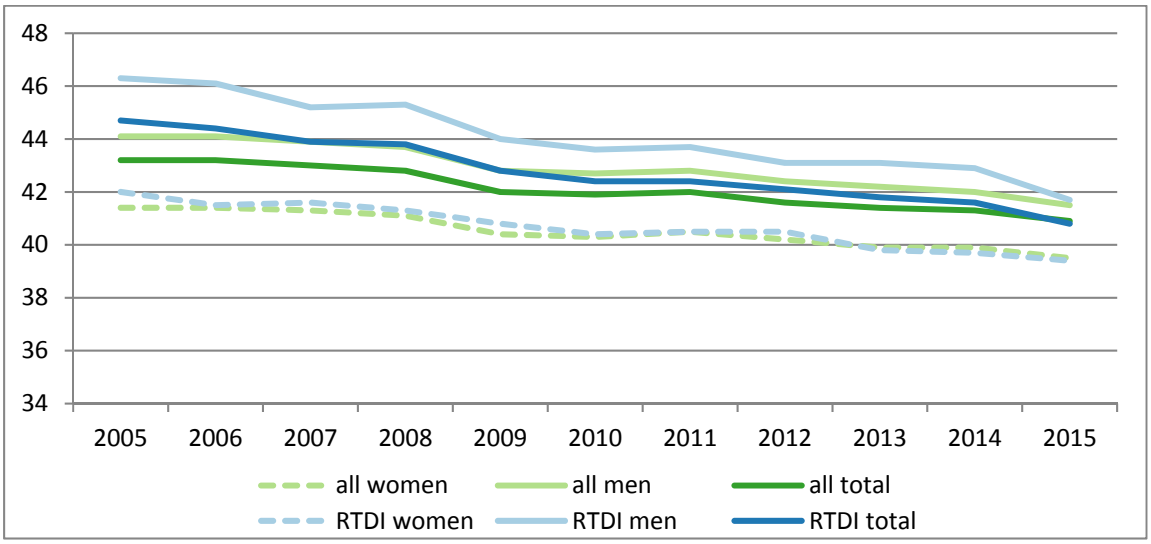
Tab. 55: Actual weekly working hours of full-time employed persons in academic professions by gender and country

		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
Austria	women	42.0	41.5	41.6	41.3	40.8	40.4	40.5	40.5	39.8	39.7	39.4
	men	46.3	46.1	45.2	45.3	44.0	43.6	43.7	43.1	43.1	42.9	41.7
	total	44.7	44.4	43.9	43.8	42.8	42.4	42.4	42.1	41.8	41.6	40.8

Source: Eurostat

The table shows that the average weekly working time of full time employed researchers in Austria has substantially decreased from 45 hours in 2005 to 41 hours in 2015, which is only one hour above the long-term EU average. The average working time of female academics decreased by 2.6 hours during this period, whereas those of male academics fell by 4.6 hours. So it can be assumed that the overtime orientation that has been characteristic for Austria diminishes.

Figure 11: Actual weekly working hours of full-time employed persons in general and in academic professions by gender in Austria



Source: Eurostat

If we compare the working time of all employees in Austria with researchers in RTDI, we can see that especially male researchers had an even stronger overtime culture than other male employees 10

years ago. By 2015 the researchers are approaching all male workers. Female researchers always had a similar amount of weekly working hours as all female full-time workers.

Tab. 56: Part-time employment of researchers in the higher education sector out of total researcher population, by sex, 2012

	Men	Women
EU28	8.5	13.5
Austria	16.6	30.9

Sources: SHE Figures 2015, 102

In 2012 31% of female and 17% of male researcher in HES worked part-time. This means that female researchers are less likely to work part-time in comparison to other occupations, as the part-time rate for women in Austria in 2012 was 45%. However, male researchers work part-time more often; the part-time rate among male employees in Austria is just under 10% (Bundeskanzleramt, Gender Index 2013, 32).

Likewise, in non-university research organisation the proportion of men and women in part-time employment positions has risen significantly since 2004. In 2013, 49% of all female scientists and 26% of all male scientists were part-time employed. This trend can be observed in all research sectors and is partly caused by the introduction of a legal right to part-time employment for parents ("parental part-time employment") that came into force on 1 July 2004 (Rio country report 2015).

3.6.3 Working contracts in RTDI

3.6.3.1 Fixed-term contracts vs. permanent positions/contracts

Tab. 57: "Precarious" working contracts of researchers in the higher education sector out of total researcher population, by sex, 2012

	Men	Women
EU28	7.3	10.8
Austria	7.5	12.2
Denmark	9.2	10.3
France	2.9	5.7
Germany	15	19.3
Hungary	6.6	16.5
Spain	6.4	8.4
Sweden	10.4	13.8

Sources: SHE Figures 2015, 104, figure 5.2

As shown in the table women in HES are more likely to work in precarious working conditions than men. 8% of male researchers and 12% of female researchers have precarious working contracts in the HES sector, meaning that they have a fixed-term contract of one year or less or no contract at all. Respondents who reported being self-employed are not included in the category of 'precarious working contracts'.

All in all 75% of scientific personnel at Austrian universities are employed on basis of temporary contracts with only a few years duration. Their prospects to become part of the permanent staff are rather poor. This is evidenced by the number of permanently employed researchers in the HES sector merely increasing by 1,000 FTEs between 2002 and 2013. Temporary contracts are often based on competitively acquired research grants[13] and can be prolonged on a yearly basis up to six times (respectively eight years in part-time employment). After that no further extension can be granted according to §109 of the University Act. Although in 2009 a collective agreement for university employees between the association of Austrian universities and the labour union was implemented, the provision of PhD and post-doctoral positions in combination with adequate career opportunities is still problematic; not least because of the practice of temporary contracting which is caused by a conservative approach towards hiring and firing (RIO Country Report 2015: Austria 2016, 78; Aigner 2015).

However, as most European countries, Austria offers stable working conditions for researchers from R3[14] career stage onwards (MORE2 Draft Report WP3 and WP4 2012, 68).

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.

Tab. 58: 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
Austria	25.5	25.1	24.3	24.0	23.7	23.4	23.0	22.9

Source: Eurostat, Structure of Earnings Survey [earn_gr_gpgr2][15] und Report on equality 2015, 51

In 2014 the gender pay gap in Austria was with 23% the second highest in the European Union and 7% above EU average. The gender pay gap has only minimally reduced in Austria since 2007. The declared wage differential in Austria can be traced back mainly to the segregation of the labour market. Furthermore it is based on differences in the level of training, age, duration of the company's affiliation

[13] 268 For instance, as of December 31st, 2014, the FWF funded the salaries of nearly 4,000 people working in science and research, mostly in the HES (which is almost a quarter of employees in this sector). This figure has more than doubled since the year 2000; FWF 2015. 30% of the researchers employed by universities are financed through competitively acquired grants (Leitner et al. 2014).

[14] R3: researchers who have developed a level of independence

[15] 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.

or the type of employment contract. The greater part of the income differences cannot be explained (Geisberger and Glaser 2014, 215).

3.7.2 Gender Pay Gap in RTDI

Table 59: Gender pay gap (%) in the economic activity "scientific research & development" and in the total economy, 2010

	Scientific research and development services	Total economy
EU28	17.9	16.6
Austria	19.5	24

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

The table shows that in Austria the gender pay gap for researchers is with 20% lower than in the total economy (24%), whereas on EU level it is with 18% higher for researchers than for the total economy (17%). Part of the wage differential in Austria is based on segregation of the labour market, differences in the level of training, age, duration of the company's affiliation and the type of employment contract. However, the majority of influences on the income differences are not clarified (Geisberger / Glaser 2014, 215).

3.7.3 Gender gap in scientific outputs

3.7.3.1 Gender gap in scientific publications

Tab. 60: Numbers of scientific publications by country and proportion of publications written by women as main author

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
men and women	5,310	5,834	6,139	6,463	6,830	6,947	7,706	7,926	8,327	8,282
share of women	22%	23%	23%	24%	24%	25%	26%	26%	27%	27%

Source: Scopus, calculations by Fraunhofer ISI

Between 2005 and 2014, the number of scientific publications in Austria rose by 55% from 5.310 to 8.282. At the same time, the share of women as main authors of scientific publications rose from 22% to 27%. Therefore, the overall increase in publishing activities can be attributed more to women rather than men.

In EU average in 5 out of 10 publications women are involved as authors, in Austria the ratio is 3:10 (SHE Figures 2015, 153).

Tab. 61: 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
EU28	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
Austria	2007-09	0.2	0.1	0.3	0.8	0.3	0.5
	2011-13	0.2	0.2	0.4	0.7	0.5	0.5

Source: SHE Figures 2015, 155

Separated by fields of science, the lowest man to women ratios of scientific authorship in Austria can be found in engineering and natural sciences with 5:1, which is below the EU average in these fields. The ratio is higher in social sciences and humanities with 2:1 (5:3 in EU average). Yet, as the share of women in social sciences (50%) and humanities (53%) in Austria is by 50%, women are more underrepresented among scientific authors in these fields of science than in natural sciences (30% women) and engineering (23% women) (Eurostat).

3.7.3.2 Gender Gap in Scientific patents

Tab. 62: Number of patents by country and proportion of patents filed by women

	2005	2006	2007	2008	2009	2010	2011	2012	2013
men and women	1,767	1,991	2,013	1,884	2,014	2,139	2,164	2,155	2,248
share of women	3%	5%	5%	5%	5%	4%	5%	5%	5%

Source: Patstat, calculations by Fraunhofer ISI

The number of patents in Austria rose by 27% from 1.767 to 2.248 between 2005 and 2013. Meanwhile the share of patents filed by women increased from 3% to 5%. Despite the fact that the proportion of patents filed by women has doubled, women as patent submitters are still a diminishingly small minority.

3.8 Sex differences in international mobility of researchers

3.8.1 During their PhD

Tab. 63: International mobility rates of HES researchers during their PhD, by sex and sex difference, 2012

	Women	Men	sex difference
EU27	17.6	18.9	1.3
Austria	8.4	15	6.6

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

In 2012 15% of male researchers and 8% of female researchers were internationally mobile during their PhD. Austrian women in particular are much less internationally mobile (8%) than the EU average of 18%.

3.8.2 In their post-PhD careers

Tab. 64: International mobility rates of HES researchers in post-PhD careers, by sex and sex difference, 2012

	Women	Men	sex difference
EU28	25.1	34.2	9
Austria	45.1	45.5	0.4

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

In their post PhD career Austrian researchers are far more internationally mobile compared to the EU average. The data reveals no indications of gender difference regarding international mobility in post-doc careers. The high proportion of internationally mobile researchers can perhaps be explained by the fact that Austria is a small country. For their post PhD careers researchers are expected to move to another university and for Austrian researchers it is more likely to leave not only the university but also the country.

3.9 Women in decision making positions in RTDI

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

Tab. 65: 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
EU28	2013	15.8	9.8	23.3	22.7	23.5	30
Austria	2007	5.7	0.5	11	11.8	15.1	28.3
	2010	7.6	7.7	14.4	18.2	20.9	28.1
	2013	11.7	7.8	14.7	17	24.1	33.4

Source: She Figures 2015, p.133 (data only for 2013); She Figures 2012, 93 (data for 2010); She Figures 2009, p 116 calculations by JR (data for 2007)

In 2013 one third of professors in humanities were female, followed by one quarter of professors in social sciences. In natural sciences, engineering and medical sciences the share of female professors is under the EU average, especially in medical sciences. It should be stressed that in all fields of science a substantial increase in the proportion of women among professors could be recorded between 2007 and 2013.

3.9.2 Glass Ceiling Index

Tab. 66: Glass Ceiling Index

	2004	2007	2010	2013
EU27	2	1.8	1.8*	1.8*
Austria	2.4	2	2	1.8

* Data for EU28

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.

The Glass Ceiling index in Academia in Austria was above the EU average until 2013; now it is equal. In both the EU and Austria, women are still underrepresented among professors in relation to their representation in academia.

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

Tab. 67: Proportion of women heads of institution in the higher education sector

	2007	2010	2014
EU27	13	16	20*
Austria	6	16	24

* Data for EU28

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

In 2007 only 6% of heads of institutions in HES were female; this figure was below the EU average of 13%. Until 2014 the share of female rectors increased to 24% and now excels the EU average of 20%. Since the group of rectors is very small in Austria, such a rapid increase in the percentage of women is easier to achieve than in other areas of the university.

3.9.4 Proportion of women on boards, members and leaders

Tab. 68: Proportion of women on boards, members and leaders

	2007	2010	2014	
			Members	Leaders
EU27	22	36	28*	22*
Austria	–	31	38	27

* Data for EU28

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

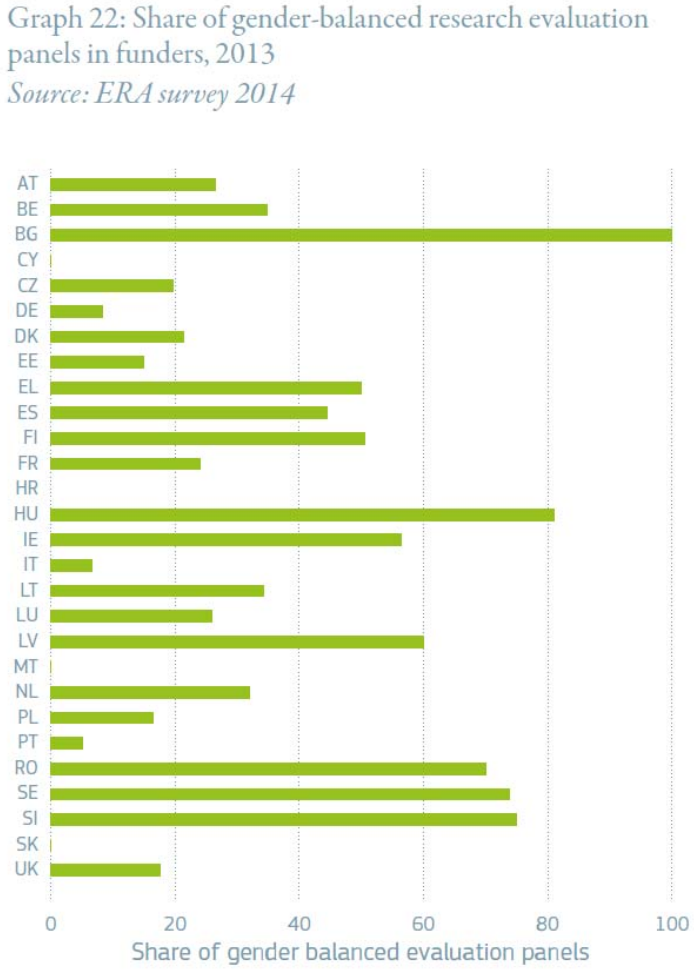
This table shows the presence of women on boards such as scientific or R&D commissions, boards, councils, committees, foundations, academy assemblies, which usually hold a large degree of decision-

making power. Board leadership lays behind membership positions in Austria as in the EU but Austria shows a higher percentage of women, especially as members, than EU27.

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

Another important issue concerns the participation of the underrepresented sex in evaluation and recruitment panels. A target of a minimum of 40% for all panels has been agreed upon. According to the results of the ERA survey 2014 36% of research evaluation panels include at least the 40% of the underrepresented sex in their composition (34). The share of gender-balanced evaluation panels in funding in Austria is below the EU average (see figure below) (EC 2015b, Facts and Figures 2014, 32).

Figure 12: Share of gender-balanced research evaluation panels in funders, 2013



Source: EC 2015, ERA Facts and Figures 2014, 32

Austrian research funding organizations are dealing differently with this topic. The FWF has anchored in its guidelines the goal of gender balance on its board. Corresponding changes have been observed during the last ten years in the filling of the committees of the FWF (Austrian Research and Technology Report 2015, 51f). The FFG also strives for a balanced gender relationship in juries, but there are no binding regulations. Since the bmvit's departments are responsible for the staffing of the juries, the

FFG can only try to find and suggest women. In some research areas, there are very few women who are heavily loaded by expert activities. The bmvit has now set a target of a female share of 10% in juries in the context of results-based budgeting.

3.10 Inclusion of gender in research and teaching

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

Tab. 69: Support to the inclusion of gender contents in research agendas by funders (%)

	frequently	occasionally	none	not applicable	no answer
Austria	40.2	53.5	1.9	4	0.4

Source: EC 2015b, ERA Facts and Figures, 85

In Austria, the frequent support of the inclusion of the gender dimension in research content is with 40% below the EU average (European Commission 2015a), but there are already measures identified like the introduction of gender criteria in the research funding by FWF and FFG.

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

Tab. 70: Inclusion of the gender dimension in research contents (%RPO)

	yes	no	not known	not applicable
Austria	69.9	10	7.7	12.4
Denmark	61.1	31.6	7.1	0.1
France	50.8	27.3	6.5	15.4
Germany	62.9	9.5	14.3	13.2
Hungary	11.4	66.8	10.3	11.5
Spain	28.1	41.4	27.7	2.8
Sweden	52.9	18.2	4.1	24.8

Source: EC 2015b, ERA facts and figures, 85

Regarding the inclusion of the gender dimension in research contents, Austria is also below EU level, but has already identified measures (European Commission 2015a).

About 70% of Austrian RPOs state that they include the gender dimension in research contents, 10% don't, 8% don't know if they consider the gender dimension und 12% think, it is not applicable for their field (European Commission 2015a).

3.10.3 Inclusion of the gender dimension in teaching/curricula

All Austrian universities, with the exception of the Veterinary University and the Montan-University of Leoben, offer either gender studies as courses or individual gender courses as optional compulsory subjects. At two universities, there are compulsory courses with gender focus in certain areas of study. For further information see http://www.oeggf.at/forschung-lehre.

4 Evaluation culture and policy

4.1 Description of evaluation culture

As the fields of research, technology and innovation (RTI) have developed to become keys to competitiveness and economic growth in Austria, and RTI policy has undergone major changes to foster this development (see chapter 1). The increased public attention and the growth in RTI expenditures demanded legitimation and information for control and learning (Zinöcker 2007). Evaluations have become the instrument of choice to assess the performance of programmes, initiatives and measures.

4.1.1 Explicit legislation and adoption of evaluation standards

Rising from a low point in activity in the early 1990s, the RTI evaluation culture in Austria has strongly developed since then (EVAL-INNO 2014, 11f, CREST 2008, Streicher 2017). Some of the factors that contributed to this development were the Austria's EU accession in 1995 that brought new standards and norms for evaluations, limited (financial) resources to promote R&D activities (Holzinger 2002, 29) and the programme orientation of the Austrian RTI policy (Zinöcker 2007, 24; Jörg 2005). The on-going global trend towards New Public Management, the trend of separating policy-making and policy-implementation in the Austrian RTI-Governance system ("agencification") and the incorporation of respective laws and regulations, such as the 2013 implementation of new, impact-oriented budget principles as part of the Federal budget reform, played an important role. Through its publications and recommendations made with regard to the evaluation and monitoring of RTDI programmes, the Council for Research and Technology Development has also been named an important driver in this development.

Today, evaluation activities are an indispensable part of the process of introducing and implementing RTI policy measures, both from a legal perspective and in daily practice. The relevant statutory foundations are provided by a series of laws in Austria, most notably the 2004 Act for Creation of the Austrian Research Promotion Agency, the 2010 Research and Technology Promotion Act, the Research Organisation Act, and guidelines for research funding based on these laws and for the promotion of commercial-technical research, technology development and innovation, generally known as the RTI guidelines. These guidelines, which were revised in 2015, state that "a written evaluation plan must be created for all subsidy programmes and measures". The plan "must include the purpose, objectives, and procedures, as well as deadlines for evaluating the achievement of the funding objectives, and must define appropriate indicators". Following the 2013 implementation of new budget principles, a greater focus has been made in the guidelines on contextual targets and indicators. Also, an appropriate monitoring system must be created to collect the necessary information that provides standardised basic information for the duration of the project (Austrian Research and Technology Report 2016, 81).

In addition to the legal and administrative framework, Austria also developed an active discourse on the role, benefits and possibilities of dealing with evaluations. The activities set around the Platform for Research and Technology Policy Evaluation (fteval) have made a major contribution to this development. Since its foundation in 1996, fteval pursues its mission "to encourage more, better and more transparent evaluations for an optimal strategic planning of RTD-policy in Austria and to develop a culture of evaluation". Starting as a loose cooperation within various actors dealing with RTI

programme design and policy analysis, the platform is known today as a highly institutionalised network – but has no coordinating function in this respect. Members of the platform include the ministry and agency representatives, research institutes and consulting firms. Platform offerings include the provision of discussion forums, training courses and relevant publications. The platform also organises international conferences in Austria which provide an opportunity for evaluators and political stakeholders to discuss the current best practices and challenges for evaluations.

Most notable, the platform has developed and published evaluation standards for RTI that serve as a framework and code of conduct for those involved in evaluations. These standards do not represent legal or otherwise formally binding mechanisms of any kind. Platform members have committed themselves to comply with these standards. These standards are currently revised. An updated version is due to be published in late 2017.

In a recent comparative report (Tsipouri and Sidiropolous 2014), Austria has been recommended as a role model to newcomers who are trying to establish a research, technology, and innovation (RTI) evaluation culture in a reasonable time frame. Unlike the Anglo-Saxon or Scandinavian countries, whose tradition in evaluation goes back several decades, Austria succeeded in leapfrogging and has become one of the leading European countries in RTI evaluation in only a few years.

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

Evaluations have achieved a widespread acceptance in Austrian RTI policy making and implementation as an effective method and assessment for public policy measures, programmes and institutions. The increasing amount of RTI support measures has led to a vast number of a specific form of evaluation, namely interim evaluations for formative purposes, representing the majority of all RTI evaluations in Austria. They tend to be aimed at enhancing or readjusting programmes and their execution (Dinges and Schmidmayer 2010).

Evaluations take place on different levels, from programmes to institutions or organizations. Although recent figures are not available, it is safe to assume that Austria is found in the top of Europe with regard to the number of the evaluations. Between 2003 and 2007 more than 50 RTI policy evaluations were carried out (see Zinöcker 2007). Reasons for this development are, most notably, the high number of existing RTI programmes, the long-term continuity of policies and programmes in Austria and the formalisation of evaluation requirements – which makes the planning of an evaluation concept obligatory for new programmes (Streicher 2017, p. 73). Also, the ministry of finance (BMF) plays a distinct role as it decides upon allocation of funds even for single programmes. Hence, this number is most likely to increase in the future (Dinges and Schmidmayer 2010). In 2009, a systems evaluation of the Austria RTI funding landscape was carried out (Aiginger et al. 2009). Notably, findings added to the development of the Austrian RTI strategy (see Chapter 1).

In 2014 and 2015, RTI related programme evaluations included, amongst others, the accompanying evaluation of the women led “Laura Bassi Centres of Expertise”, the ex-post evaluation of the competence centre programmes Kplus and K_ind/K_net (the precursors of the COMET programme), the evaluation of the Austrian bilateral science and technology agreements and MoUs, the ex-post evaluation of the Austrian genome research programme (GEN-AU), the terminal evaluation of the AT:net (the Austrian electronic network programme), the evaluation of the R&D support programme for universities of applied sciences (FHplus), the impact evaluation of the Erwin Schrödinger

Fellowships with return phase, the interim evaluation of the human resource development programme "Talente", the ex-post evaluation of the Austrian R&D security programme "KIRAS", the evaluation of the Doctoral Programme of FWF and others (RIO Country Report 2015: Austria 2016, 53). In 2016, an evaluation with the goal to assess the agencies FFG and aws was tendered. Findings from the evaluation of the tax incentives scheme are expected in March of 2017.

The preferred limited tender procedure reflects the funding volume provided for the evaluation, which usually ranges between €10,000 and €120,000, with a moderate average around €55,000. Dinges and Schmidmayer (2010) point out that this corresponds, firstly, with the overall supportive and formative character of evaluations and secondly, with the high number of RTDI policy measures in Austria – a good share of which are endowed with only limited funding volumes (RIO Country Report 2015: Austria 2016, 26). Following the fteval standards, it is assumed that approx. 0.5 – 1% of a programme budget should be spent on evaluations. However, as it's argued, this depends on the objectives and the scope of the evaluation task.

Evaluation reports are collected and published in Austria to a high degree, for instance via the websites of the ministries or on the fteval platform. The annual Austrian Research and Technology Report also present a selection of recent evaluation results to Parliament and to a broader public (RIO Country Report 2015: Austria 2016, 53).

4.1.3 Actors and institutions

Most of the programmes under the RTI directive have been established by the BMVIT and the BMWFW, and are administered by one of the three major RTI agencies in Austria: the FFG, the aws and the FWF. As programme owner, the ministries are usually responsible for tendering the evaluations. However, the agencies itself may also be allowed to tender evaluations. Evaluations of the agency itself are required by law.

Evaluations have become a standard procedure for both ministries and agencies that relies on certain rules, regulations and forms that shape the evaluation process (Streicher 2017, p. 117). They have established organisational routines which enable them to efficiently handle every step of the set-up and process of an evaluation, as well as, follow-up activities. fteval standards are typically used as guidelines when tendering evaluations.

As argued by Dinges and Schmidmayer (2010, 252), tender procedures in Austria work differently compared with other countries. Tenders are typically allocated through a "closed" tender procedure, which means that only a limited number of evaluators are invited to apply. The majority of evaluations are carried out by external experts, predominantly national consulting and research companies, sometimes in collaboration with an international partner.

4.1.4 What kind of evaluations are commissioned and conducted?

Numerous evaluations were carried out in the Austrian RTI area in recent years, including a rather broad systemic meta-evaluation in 2009 of the Austrian system of research support and financing ("systems evaluation"; Aiginger et al. 2009). Key features of the practice of evaluation can be summarised as follows (as synthesised from Streicher 2017, RIO Country Report 2015, Reiner and Smoliner 2012, Dinges und Schmidmayer 2010):

- Programme based funding schemes are regularly evaluated and benchmarked against comparable schemes in other countries.
- The majority of RTI evaluations have a formative character, especially interim evaluations are designed to give advice how programme management can be enhanced or readjusted.
- Impact analyses as well as ex-ante considerations are less common. Most evaluations are commissioned during the duration of a programme. Ex ante evaluations are typically conducted within the responsible ministry.
- Because of the increased impact orientation, a growing consideration of evaluation criteria that focus on economic aspects can be observed. Broader approaches to measure e.g. socioeconomic effects have found little use so far.
- The most prominent topics addressed/covered in evaluations are outputs/outcomes and impact, policy/strategy development and internal consistency. Input and output additionality issues as well as quality of outputs are only considered in a limited number of evaluations.
- A mixture of different examination methods is usually used, whereby a dominance of qualitative and descriptive procedures is to be determined. Quantitative method approaches, especially those for the estimation of causal effects as well as the application of experimental approaches are still rare. Data collection and analysis are frequently designed to be low cost, drawing on descriptive statistics, existing databases and – if available – monitoring data.
- The small proportion of final ex-post evaluations and (quantitative) efficacy analyses is often due to limited data availability and quality, apart from evaluation purposes and requirements. At present, the access to official, company-specific micro data is particularly restrictive in international comparison, according to the existing Austrian legal situation.

Overall, the quality of Austrian FTI evaluations is perceived as satisfactory and professionally conducted by clients. Evaluation designs and applied methods are considered to be appropriate; recommendations for policy development are deemed relevant.

In addition, Reiner and Smoliner (2012; see also Dinges and Schmidmayer 2010) identified the following issues that require attention in the future: Lack of clear ex-post evaluations and portfolio-evaluations as well as efficiency analysis and limited access to public census data of companies. More advanced qualitative and quantitative methodological applications has to be developed and applied in for a better appraisal of efficiency and efficacy. Nonparticipant surveys and control-group approaches are little used in Austria, and peer reviews in programme evaluations are almost completely absent. Also, sophisticated quantitative and qualitative methods (econometric analysis, control group approaches, network analysis) are used only in very specific cases.

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

The topic of gender equality in RTDI evaluations is typically relevant in the following cases:

- If gender equality relates to goals or objectives of a policy or programme, the evaluation assesses if this goal or objective has been reached. For instance, the impetus programme "Laura Bassi Centres of Expertise" funds research centres for applied basic research at the interface between science and economy that are managed by top-level female scientists. Gender-sensitive RTI funding (and how to best implement it) has been a major topic in the evaluation.

- If gender equality emerges as an issue strategically relevant for pursuing a certain goal, e.g. to "strive for gender equality in research" as put forward by the Austrian RTI strategy, or for understanding of certain developments, it receives more attention in evaluations. For instance, in the 2015 evaluation of the AplusB programme, which aims to promote academic spin-offs at universities and research institutions, evaluators were specifically requested to elaborate on the role of women in the enterprise-creation process – because AplusB monitoring data has shown that only few spin-offs (9% of total) were established by women.
- In addition, the topic of gender equality might be considered as a priority by individuals amongst the programme owner or staff that manages the policy. Relevant questions are collected and placed as part of the compiled list of questions in the tender.

In recent years, extended performance monitoring has gained increasing attention as a tool for supporting programme evaluation. The fteval evaluation standards for RTI recommend that "good monitoring systems are supposed to collect all relevant data – and only that – and to document it, as far as possible, in a straightforward, systematic and gender-sensitive manner."

It is also noteworthy, that in the tender process for evaluations the Federal Ministry for Transport, Innovation and Technology (BMVIT) invites parties to outline equality policies currently operating or planned at their organisation. Relevant policies score into the overall score for the tender bid.

4.1.6 Recent trends/developments in RTDI policy evaluation

The desire to understand better the socio-economic effects and the trend towards a systematic assessment and (quantitative) control of public support measures has increased the demand for and use of more sophisticated methods in evaluations. This links with increased requirements concerning data availability. In light of this, the extended use of indicators to measure impact, counterfactual analysis using econometrics and economic modelling or control group approaches are gaining importance in Austria. One aspect of having a well-develop evaluation culture is that governments and administration have strengthened their evaluation capacity and related knowledge. Certain policy makers ask for and insist on the application of "innovative", consistent and robust methods in evaluations. However, notwithstanding the increasing complexity, a mixed methods approach will most likely continue to be the mainstay of methods used in evaluations.

The increased tendency to measure effectiveness and impacts, and to present (robust) results, has resulted in a lack of attention towards the actual purpose and relevance of support measures, in particular in case of long-running policies.

While there is growing demand for systemically oriented knowledge, e.g. with regard to the role of a measure in the context of different support instruments in a national innovation system, there have not been many evaluations in Austria investigating this issue.

To capture the effects of complex research and innovation in the best possible way, in particular considering an appropriate cost-benefit ratio, needs and expectations of relevant decision-makers have to be clarified right from the start. The clarification of requirements and questions contribute to better "terms of references" that outline the scope of work and responsibilities with regard to the evaluation.

4.2 Evaluation utilisation and policy learning

With the increase in the number and quality of evaluations, the question of the effectiveness of evaluations and their contribution to policy and action development has also increased, in Austria as well as on the international level. Recent research work for Austria (Streicher 2017, Landsteiner 2015) suggests that RTI evaluations generate a wide range of diverse effects. However, use and utilisation is mostly limited to the respective measure (i.e. the object of evaluation) and the directly involved actors (e.g. programme administration). Decisions mainly concern the adaptation and development of existing programmes. Hence, evaluations are mainly used for on-going programme management. Knowledge growth outside the respective areas is less pronounced, although efforts have been made recently to initiate discussion processes beyond organisational boundaries on the basis of evaluation findings.

Improvements with regard to usefulness of evaluation reports and evaluation processes link with the actual write-up and preparation of reports, which should be in a clear, understandable language, a concise presentation of the overall approach, and a (more detailed) discussion of the applied assessment criteria – for an audience that is not part of the RTI policy environment. Evaluation processes, of which the potential is not yet fully exploited for discussion and learning processes would also benefit from an increased debate about the purpose and benefits of the evaluation project as well as the involvement of potential users.

Recent research on evaluation use and influence emphasises the need for a holistic perspective on the benefits and usefulness of evaluations to understand better the complex effects that can occur at different levels and in different forms (Streicher 2017). While previous research has put much emphasis on the conduct of evaluations and their implementation, there are less empirical studies that address institutional or contextual explanations when it comes to the effects of evaluations. Using Austria as case in point, Streicher (2017) investigated how evaluation processes and results can contribute to policy development in RTI, with special emphasis on factors and mechanisms that condition the effects of policy evaluation on actors and the policy making process. Results indicate that evaluations generate effects on various levels, beyond individual learning, and clearly and visibly impact programme development. However, changes are often the result of a combination of different impulses, such as other evaluations that produce additive or cumulative ("trickle-down") effects. In the analysed cases it was found that most of the issues that were presented and discussed in the evaluation had apparently been addressed before the evaluation actually started.

Factors and mechanisms which influence the use and usefulness of evaluations include, in addition to the legal and political framework conditions, the prevalent evaluation and discussion culture and the characteristics of the evaluation object (e.g. its duration, continuity). Important aspects are the drive towards outcome-orientation in new public management, and the increasing importance of what the study termed as “strategy-orientation”, which determines the relevance of policy fields and their long-term future. The individual interest and the specific needs of the organisations involved, in particular the agency, are also deemed important. Evaluations have led to the development of a common view on things among actors, and have fostered shared understandings (“bonding experience”). Professionalism and credibility of the evaluators is also viewed as an important factor in increasing the use and utilisation. The lack of interaction with stakeholders in evaluations is viewed as a limiting factor for the benefit of and learning from evaluations.

Due to the tight structures and the high degree of formalisation, evaluations have become a routine, which entails two sides of a coin: On the one hand, there is a broad acceptance among actors, a high evaluation capacity, and established patterns on how to set up and run evaluations. On the other hand, it has developed to become a standardised, instrumental approach that puts accountability and legitimation at forefront. In this light, it is argued that routinisation might distance evaluations from an interested audience (e.g. stakeholder, beneficiaries), thus limiting the possibility to learn from them. The high number of evaluative activities may also add to an increasing evaluation fatigue in the future (Streicher 2017).

5 Conclusions

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

Between 2005 and 2015 the labour market participation of women in Austria increased from 64% to 70%, while participation of men has grown only insignificantly from 77% to 78%. At the same time the proportion of scientists and engineers in the active population doubled from 3% to 6% – the proportion of female researchers increased from 1.7% to 4% and the proportion of male researchers from 4% to 7.7%. In the last decade the research and innovation sector in Austria has become more attractive for women which resulted in a higher participation of female researchers. It can be assumed that the parallel increase of labour market participation of women in general has supported the rising participation of women in research and innovation.

The horizontal labour market segregation in Austria is higher than within the EU. This is also reflected in the RTDI sector: the origin of horizontal segregation in the labour market as well as in the RTDI sector is rooted in gender segregated educational and study choices and consequently gender segregated occupations. The same applies to vertical segregation: in the general labour market as well as in the RTDI sector women are underrepresented in decision making positions. Here, a difference between the public and the private sectors can be identified as quotas contributed to increase the representation of women in decision making bodies in the public sector in Austria.

Concerning working conditions data show a decrease of average weekly working time in general and also for academics. Experts in both national workshops doubted whether these data can be applied to the RTDI sector as they represent a bigger occupational group. Longitudinal data was not available for the RTDI sector and therefore this development could not be confirmed for this sector. It was assumed by the experts that the average weekly working time has remained very high due to the increasing competitive pressure in the RTDI sector.

For the higher education sector the following interesting finding can be reported: whereas women work less often part-time compared to women in other economic sectors men work more often part-time in the higher education sector compared to men in other sectors. It can be assumed that this is more indicative of the precarious working conditions in HES than of an equality effect. In non-university research organisations the share of part-time employees is higher than in Austria in general.

The gender pay gap in the RTDI sector is a little bit lower than generally in Austria.

The report makes evident that the differences concerning gender equality between the general labour market and the RTDI sector are not as significant as might have been assumed. Although the RTDI sector is influenced by specific regulations and policies, it shares common contextual features like fiscal policies, family policies, e.g. parental leave regulations, or support of childcare facilities. Because of these shared contextual features the differences between the general labour and the RTDI sector might not be so significant.

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

Austria's innovation system is, like in other countries, characterised by high shares of firms involved in innovation activities and it is in general dominated by private R&D. R&D employment belongs to the most dynamic labour markets in Austria. Of the total employees working in research and experimental development, the majority were engaged in the business enterprise sector (70.1%), followed by the higher education sector (25.4%). But the share of female researchers working in the business enterprise sector remains very low compared to the higher education sector. A main reason is that gender equality regulations in RTDI in Austria mainly focus on the public sector. Apart from the Equal Treatment Act for the private sector there are no laws or regulations in place, which require the promotion of women's promotion plans or quotas in supervisory boards in the private sector, as is the case for universities. In addition, the BES sector in Austria consists of many small SMEs. Awareness raising and advocacy for gender equality is much more complex and elaborate here than with a few large players.

But in Austria knowledge and technology transfer as well as science-industry collaboration are well established and many support measures exist to further improve cooperation, with a particular focus on involving SMEs to a stronger extent. One example is the COMET Centres that are urged by funding providers to implement measures to ensure equal opportunities. Gender equality is also a consistent topic in the interim reports. An above-average percentage of women in the COMET Centres provide evidence that, in case gender equality is considered as a priority in RTDI funding measures, positive effects on the participation of women can be expected.

5.3 Main issues of evaluation culture and policy in RTDI

Evaluations have become popular in supporting RTDI policy making. Besides the renewed emphasis on accountability for public money and efficiency in what is termed new public management, major reasons are the increasing complexity and interdependence of innovation processes, and the continuing interest in innovation and technology as key factors for economic growth and job creation. The Austrian RTDI scene features a strong and shared evaluation culture that also promotes evaluation capacity development. In light of this, Austria's evaluation culture has been referred to as best practise example from an international perspective. The quality of RTDI evaluations is perceived to be high, methods used are appropriate, and recommendations are considered to be relevant and useful.

The set-up of relevant laws and tighter control mechanisms has increased the focus on accountability, output and impacts of RTDI policies. This has somewhat resulted in a focus on quantifying impacts that at the same time has led to an extended development and use of impact indicators, counterfactual analysis or control group approaches. The actual purpose and relevance of support measures, in particular in case of long-running policies, seems to recede into the background. Also, the (potential) role of a measure in the context of different support instruments in a national innovation system is less of a topic in Austrian RTDI evaluations.

Notwithstanding this, interim evaluations for formative purposes currently represent the majority of all RTDI evaluations in Austria. They tend to be aimed at enhancing or readjusting programmes and their execution. Main reasons are the overall high number as well as the long-standing nature of

(many) RTI support measures. Limited funding volumes, but also a lack of data availability do not always go together with in-depth performance evaluations.

Gender equality has received growing attention in RTDI in recent years, most notably following overall strategies that seek to promote gender equality and the empowerment of women in these areas on the international and national level. Hence, RTDI evaluations usually refer to gender equality i) when the topic relates to goals of the evaluation objective such as a programme (and if they have been achieved), ii) when gender equality links with overall strategy processes and to better understand developments in certain areas such as (women) “entrepreneurship or “leadership” and iii) when it is considered important by individuals, e.g. in the administration of the programme, who then list relevant questions to be answered in the tender for the evaluation.

6 Glossary

AETR	Average Effective Tax Rate
ASC	Austrian Science Council
AT:net	Austrian electronic network programme
BES	business enterprise sector
BHG	Federal Budget Act
BMF	Federal Ministry of Finance
BMVIT	Federal Ministry for Transport, Innovation and Technology
BMWFJ	Federal Ministry of Economy, Family and Youth (until 2013)
BMWFW	Federal Ministry of Science, Research and Economy
BV-G	Federal Constitutional Act
CDG	Christian-Doppler-Gesellschaft
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CEEPUS	Central European Exchange Program for University Studies
DI	Dissimilarity Index
EIS	European Innovation Scoreboard
ERA	European Research Area
ESF	European Science Foundation
FFG	Austrian Research Promotion Agency
FTE	full-time equivalent
fteval	Platform for Research and Technology Policy Evaluation
FWF	Austrian Science Fund
GE	Gender equality
GCI	Glass ceiling index
GERD	Share of gross domestic expenditure on R&D
GINOP	Operative Programme for Economic Development
GOV	Government sector
GYED	Child care payment
GYES	Child care allowance
HEI	Higher education institution
HES	Higher education sector
HRST	Human resources in science and technology
IMAG GMB	Inter-ministerial working group for gender mainstreaming/budgeting
ISCED	International Standard Classification of Education
IT	Information technology
KIA	Knowledge intensive activities
KIABI	Knowledge intensive activities – business activities
KTIA	Research and Technological Innovation Fund
LBG	Ludwig Boltzmann Society
NACE	Statistical classification of economic activities in the European Community [Nomenclature statistique des activités économiques dans la Communauté européenne]
NGO	Non-governmental organisation
NRDI Office	National Research, Development and Innovation Office
ÖAW	Austrian Academy of Sciences
OeAD	Austrian agency for international mobility and cooperation in education, science and research
OECD	Organisation for Economic Co-operation and Development
PPP	purchasing power parity
R&D	Research and Development

R&I	Research and Innovation
RFO	Research Funding Organisation
RPO	Research Performing Organization
RFTE	Austrian Council for Research and Technology Development
RTDI	Research, technology, development, innovation
STEM	science, technology, engineering and mathematics
STI	Science, technology and innovation
TFR	Total Fertility Rate
WAFF	Viennese Employee Promotion Fund
WWFF	Vienna Business Agency
WWTF	Vienna Science and Technology Fund

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