



***“SHE DECIDES,
YOU SUCCEED”***

Women in Science, Technology and engineering companies in Italy, Latvia, Romania, Spain and the UK

Accelerating business growth by
gender balance in decision-making



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Prepared by WITEC
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DISCLAIMER

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Foreword

Women
in middle
management

This guide “She decides, you succeed – Women in Middle Management” is published as part of the EU project “She decides, you succeed”. The project is initiated and led by AFAEMME, the Association of Organizations of Mediterranean Businesswomen, in cooperation with project partners¹. The project is jointly funded by the project partners with financial support from the European Commission under the Directorate-General Justice’s PROGRESS program.

“She decides, you succeed” aims at promoting gender balance in the private sector by developing toolkits to disseminate the benefits for companies of having more women in decision-making positions at all levels in the organization. The project is carried out in five countries in which the project partner organizations are established: Italy, Latvia, Romania, Spain and the UK.

This guide forms the basis of and input for the development of the toolkits. It is one of a series of four guides, each on a specific segment or sector in which women in decision-making positions are seriously underrepresented. The following guides are part of the series and can be downloaded from: <http://www.afaemme.org/she-decidesyou-succeed/documentation>

- Guide on Women in Middle management
- Guide on Women in Top management
- Guide on Innovative Women Business Owners on Boards of Innovative Companies
- Guide on Women in Decision-making in Science, Technology and Engineering (STE) companies.

Each guide provides information on the specific segment or sector of women in decisionmaking positions in the five selected countries on the following key issues:

- What is the current status of women in decision-making positions and has there been any progress over the past years?
- What are the obstacles or barriers for women to access decision-making positions in the private sector?
- What are the enablers for women to access

decision-making positions in the private sector?

- What is the legal framework (national and European) in which companies operate, and in what way is the legal framework a barrier or enabler for women to access decisionmaking positions?
- Which arguments can be used to convince companies of the benefits of having more women in decision-making positions?
- Which national initiatives, projects and activities have been successful in improving the situation and may serve as ‘best practices’?
- Which recommendations can be put forward to help private companies that are serious in addressing the underrepresentation of women in decision-making positions?

Based on these Guides **five Country Reports** will be published, bringing together all relevant information on the topic of women in decisionmaking positions in corporations per country. The research for the guides has been conducted by the project partners: AFAEMME (Guide on Women in Middle management), the Centre for Inclusive Leadership (Guide on Women in Top Management), the European Women Inventors and Innovators Network EUWIIN (Guide on Innovative Women Business Owners on Boards of Innovative Companies) and the European Association for Women in Science, Engineering and Technology WITEC (Guide on Women in decision-making positions in science, technology and engineering (STE) companies), in cooperation with the project partners The Women’s Business Development Agency (WBDA), Associazione Donne Imprenditrici e Donne Dirigenti di Azienda (AIDDA), the Spanish Organisation of Businesswomen and Management (OMEGA), Women in Business Romania and the Women’s NGO’s Cooperation Network of Latvia (WNCNL).

The Centre for Inclusive Leadership (CFIL) coordinated and supervised the content of the research and guide development with the project partners.

¹ See last page for a full overview.

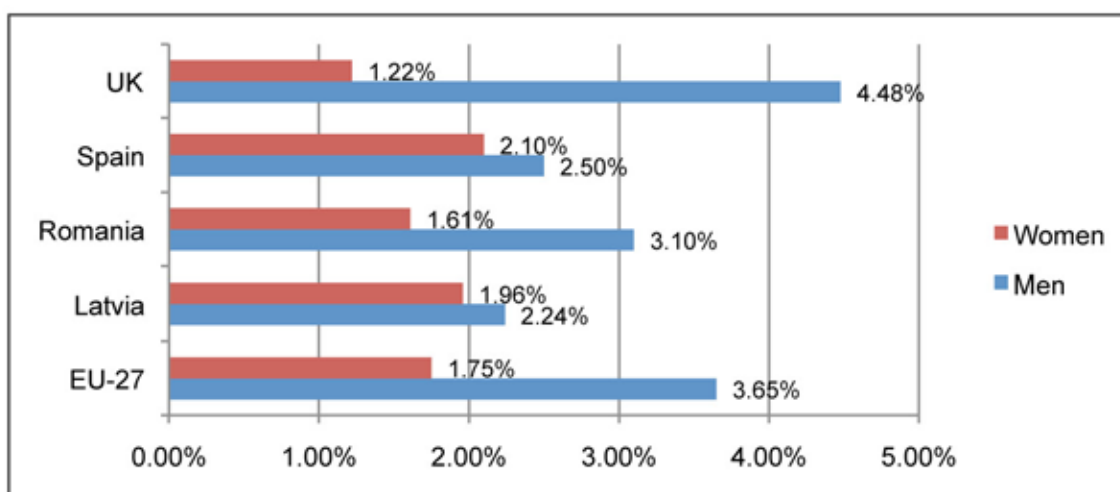
3. INTRODUCTION

Science, technology, engineering and mathematics (STEM) are fundamental to assuring humanity's welfare and enabling continued improvements in length and quality of life. In recent years, science and engineering organizations, business enterprises, governments, and civil society institutions have increasingly recognized **the global need for a larger science and technology workforce** in general and for **women's full presence** in it in particular. The focus of this Guide is to highlight the situation of women in research careers in the industry and in academia through the analysis of 5 different European countries: Italy, Romania, Latvia, Spain and UK.

Since 1980s, when computing first emerged as a significant new area of work, there have been many and widespread attempts by public authorities, voluntary organizations and private sector employers, to attract and retain women into computing professions. Most of these initiatives were informed by a perspective, which was based on the simple idea that “adding” women in technological jobs would provide a solution to the exclusion of women from technology. However, the solution is not only “adding women”, rather creating inclusive cultures and placing women in top positions with the same salaries as men.

At the beginning of the 21st century, the structural developments taking place in the STEM sectors have not provided a positive environment for improving women's representation in the STEM professions. Girls and women are significantly underrepresented in science and engineering jobs in the EU (see figure 1). However, large differences exist across the EU. Women in Latvia and Spain seem to have almost caught up with men whereas the gap in the UK is much larger than the EU average.

Table 1. Proportion of scientists and engineers in the total labour force, by sex, 2010



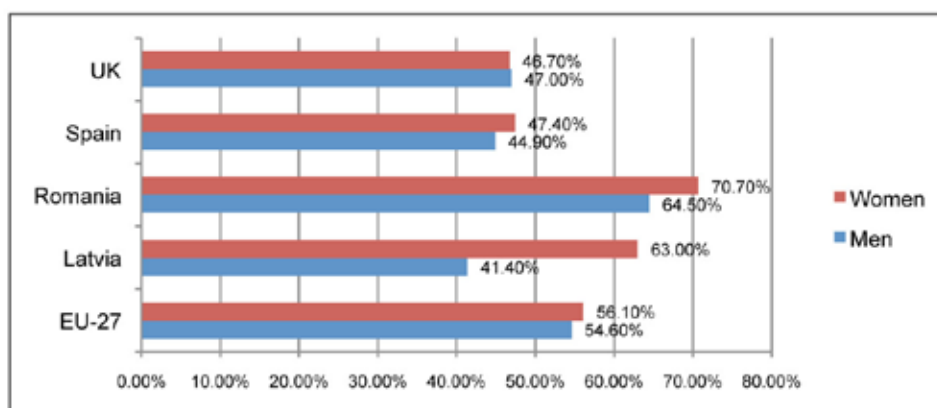
Source : Eurostat – Human Resources in Science & Technology // She Figures 2012

Although women's employment level is still below men's, women have been catching up between 2002 and 2010 for both groups, 'scientists and engineers' and 'professionals and technicians'; of these groups growth has been the highest for 'scientists and engineers'. In addition, women's

employment in these sectors increased more than women's overall employment rate, which is a positive development.

In the EU the proportions of highly educated women and men in an S&T field working as professionals and technicians were rather similar at respectively 54.6% and 56.1%. However, large differences are noted in Romania and Latvia, as is shown in the figure below.

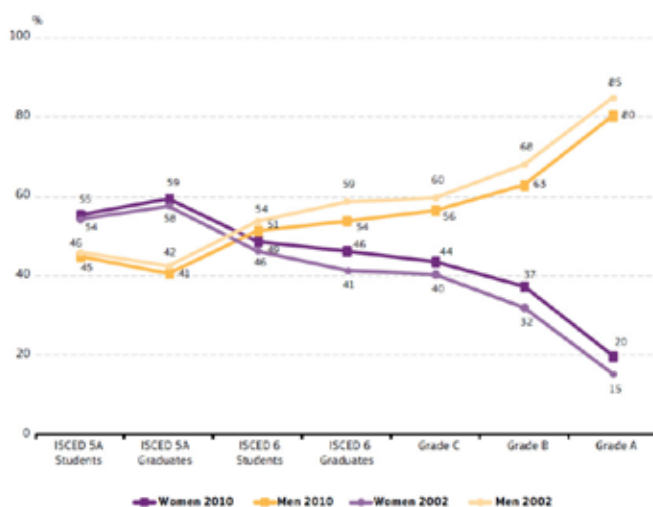
Table 2. Tertiary educated in an S&T field and employed as professionals and technicians (HRSTC), as a percentage of tertiary educated in an S&T (HRSTE) by sex, 2010



Source : Eurostat – Human Resources in Science & Technology // She Figures 2012

As for women in academia the following pattern can be observed, the so-called pattern of an opening pair of scissors.

Figure 3. Proportions of men and women in a typical academic career, students and academic staff, EU-27. 2002-2010.



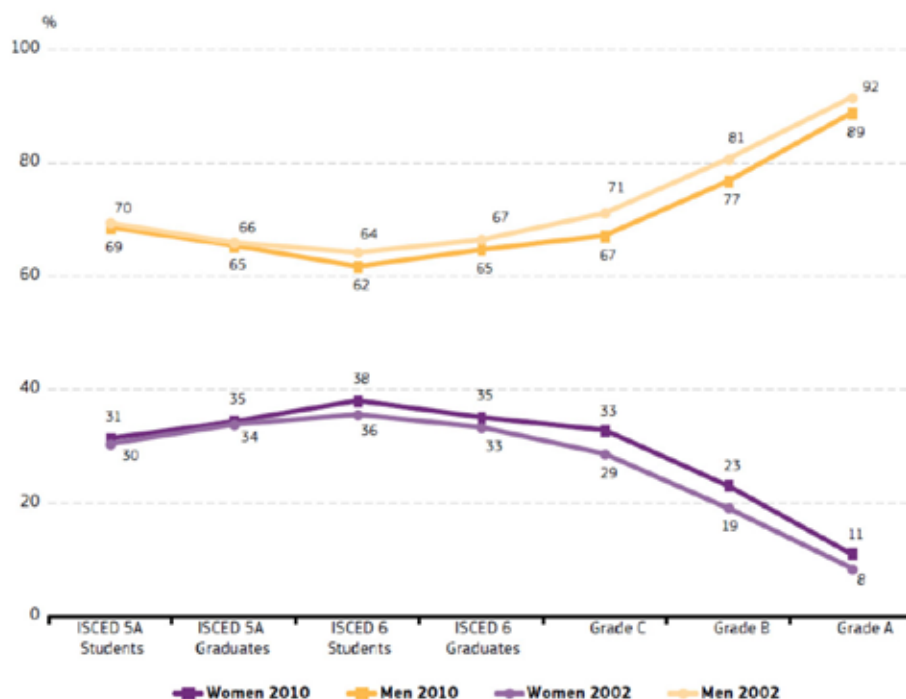
Source: Eurostat - Education Statistics; WIS database (DG Research and Innovation) ; IT-MIUR-Italian Ministry of Education (2010).

Source: Eurostat - Education Statistics; WIS database (DG Research and Innovation) ; IT-MIUR-Italian Ministry of Education (2010).

An even wider opening pair of scissors in science and engineering

Although a picture of strong vertical segregation transpires through the analysis of the overall situation in the academic world, the situation can vary considerably according to the field of science considered. Despite girls' impressive gains in education, progress has been uneven, and science and engineering remain overwhelmingly male fields. As shown by Figure 4, in science and engineering, women account for only 31 % of the student population at the first level. In contrast to what was observed for all fields of study taken together (figure 3), the proportion of women increases throughout the first hierarchical echelons to reach 38 % at the level of PhD students and 35 % at the level of PhD graduates. However, the proportion of women decreases significantly at the level of academic staff, reaching 11 % for Grade A and 8 % for Grade B.

Figure 4. Proportions of men and women in a typical academic career in science and engineering, students and academic staff, EU-27, 2002–2010



Source: Eurostat - Education Statistics; WIS database (DG Research and Innovation)

The lack of appeal of science and engineering studies for young women is particularly problematic at the earliest stage of a typical academic career in this field, as women tend to be better represented among PhD students and graduates. However, the problem of horizontal gender segregation in education is almost always presented from the perspective of the educational choices made by young women, even though gender segregation is also due to young men's preferences for certain fields of study: why are there so few young men in disciplines such as history, philosophy, and

so forth? The absence of a mixed gender composition in the different fields of study can already be observed in secondary education and is in turn reflected in higher education.

The same pattern was noted for academic careers in science and engineering as in all fields of study. From 35 % of female PhD graduates, the proportion of women drops to 32 % in grade C academic staff, 23 % in grade B and just 11 % in grade A (Figure 4). The pattern observed regarding women's attrition rate in science and engineering is thus comparable to the one for all study fields taken together. A comparison between 2002 and 2010 points towards an improvement in the proportion of female scientists and engineers that is slightly less pronounced than for all study fields taken together.

In science and engineering, the hands of the scissors do not even cross; among students and academics, women form a minority (31%). However, as for all science fields together, in particular in the fields of science and engineering, the attrition rate of women increases at each stage up to and above the PhD level and improvement over time has been small and slow. Only 11% can be found at the top level. These data show, again, the need to emphasize the current situation and the lack of real progress in Europe in relation to women's presence in STEM fields in education and employment.

From the experience of WiTEC European Association, the most surprising fact concerning the data collected is that these data have not improved since we began working as an Association in 1988 and also **that women in engineering and technological professions still face the same problem** that they always have did, namely how to combine their personal and professional lives. The world of new technology development is one of the most affected by the lack of female presence and the sector, which is most lacking women, is the industrial production sector.

Data from U.S. show that 40% of women with engineering studies have left their jobs in the industry rather quickly or they just have never worked at all (FOUAD, 2012). The evidence shows that professional development, supporting actions and company culture are crucial factors holding back women in their workplaces. Engineers are not an exception.

“She decides, you succeed” is a project that aims to give a general vision of what is happening in Europe in innovation and STEM companies and women's presence in these companies.

For this Guide WiTEC investigated the situation in 5 countries, with different stories and development processes, but all included in the EU. These countries are: Italy, Latvia, Romania, Spain and the UK. In the analysis, we do not only refer to large companies and the absence of women in decision-making there, rather we considered the importance of the causes for this situation to exist in the first place. Therefore, in our Guide we included an analysis of women's presence in technology education and their career development after completion of their studies.

The data shown in this introduction are not presented by chance. **The alarming conclusion is that similar data seem true for every decade.** This Guide contains data and analysis with the hope that future studies may start with more equal situations and more general knowledge about the need to have women join at all levels in companies and especially in Science, Technology and Engineering companies.

Distribution of the Guide

It is the aim of the project “She Decides You Succeed” to disseminate the findings as widely as possible. Therefore this Guide and parts thereof may be used and distributed widely, provided the source is always mentioned in this way: “Guide on Women in Science, Technology and Engineering - Afaemme EU project She Decides You Succeed, 2015, by WITEC”.

More information

For more information on this Guide contact: secretariat@witec-eu.net. For more information on AFAEMME and “She Decides You Succeed” contact AFAEMME: projectassistant@afaemme.org.
March 2015, Margarita Artal Serrat, Graciela Fernández Solar, WITEC

Part 1

The case of Italy

4. PART 1 – THE CASE OF ITALY

4.1 State of play

In this chapter we analyze the situation of women on the job market, their education level and their presence in the decision-making process in STE companies.

Even today in developed societies there are difficulties for women to access top management and decision-making positions, especially in the Science, Technology and Engineering (SET) sector.

One of the first female scientists Rita Levi Montalcini, a wife and a mother of science, experienced that it is often really hard to reconcile private and professional life. As she said in her bibliography: “The first time I went to the USA they asked me who my husband was. They were not used to a woman who conducts her life alone. “I’m my own husband”, I said. They didn’t understand. They thought I didn’t know English”.³

Women in the workforce

The **employment rate** in Italy is 59.8%, which is some points below the average in the EU28 (68.4%). Between 2007 and 2014 the proportion of the population in the labour force increased, an unusual development given the increase of long-term unemployment and the protracted slack of labour utilization. The increase of labour supply was particularly strong during the recession triggered by the 2011 sovereign debt crisis.⁴ In single-earners households, more stringent household’s economic needs resulting from uncertain or lacking labour income had a positive effect on activity rate (the so-called added work effect) that compensated for the “discouraged workers” effect typical of recessions.⁵ The added worker effect led to a significant increase of female activity rates, from 50.7% in 2007 to 54% in 2014,⁶ while tax incentives adopted in 2012 might have also played a role. In fact during the crisis, male employment fell significantly more than female employment.

The **female unemployment** (disoccupazione femminile) **rate** in Italy is 13.1%, one of the highest among the principal European countries, as we can see in the graphic below.

Probably for this reason the share of women actively looking for work in Italy (12%) is above the EU-27 average (10.6%).⁷

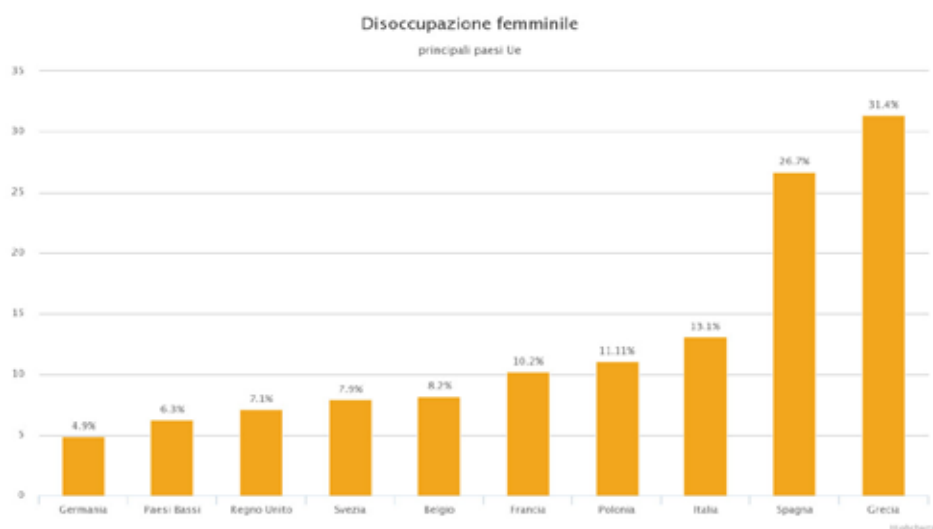
³ Levi Montalcini, R. “Cantico di una vita”, Milano, Cortina, 2000

⁴ Source:Istat

⁵ Franceschi, F. “The added worker effect for married women in Italy” in “Gli effetti della crisi sul potenziale produttivo e sulla spesa delle famiglie in Italia”, Bank of Italy- Workshops and Conferences No. 18, 2014

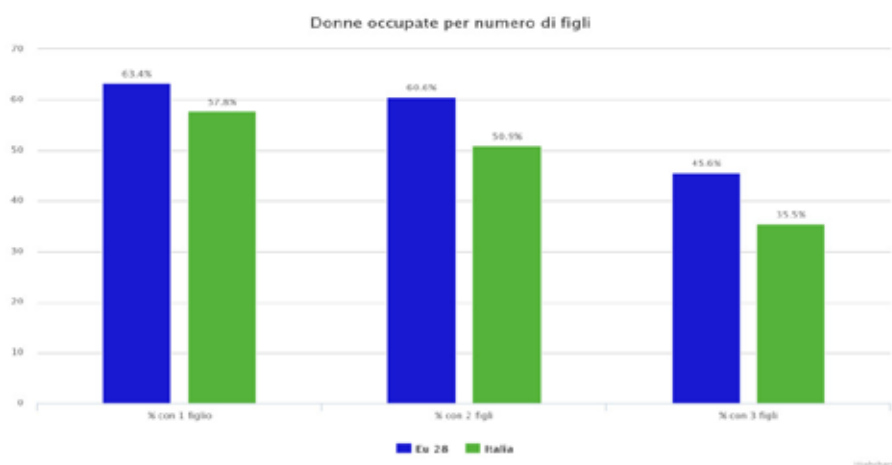
⁶ See footnote above.

⁷ Eurostat Labour Force Survey, 2013

Figure 5. Female unemployment rate in selected EU countries (2013)

Source: Eurostat and Consob

Why are there so few women in the labour market? It is interesting to see the graphic below, which shows women employed and the number of children they have. It shows that the more children women have, the higher the probability that they will quit their job.

Figure 6. Employment rate of women with children (2013)

Source: Consob

For this reason, to avoid quitting their job, some women choose part-time work, 31.8% of them against 7.4% of men.⁸ The average part-time working hours for women in Italy (21.4 hours) ranges slightly above the EU-27 average (20.2 hours).⁹

Normally part-time work is related to childcare facilities. In Italy the percentage of children between the ages of 0-3 who were in any kind of formal childcare in 2012 (21%) was still well below the EU

⁸ Source: Eurostat

⁹ Eurostat Labour Force Survey, 2013

average (28%). In addition, **maternity leave** is only for 5 months. Although there is a law establishing public kindergarten, there are still few of them available.

As we can see in the section on legal framework, no measures have been taken so far to remove the financial disincentives deterring married women in particular from entering the labour market. Measures have been tabled to counter regional disparities in the availability of childcare facilities through structural funds and a Cohesion Action plan, and additional funding for early childcare has been envisaged by the 2015 Stability Law.

The **gender pay gap** in Italy significantly increased after the economic crisis, reaching the EU-28 average. This negative trend is contrary to the EU-wide tendency of a decreasing gender pay gap.

Education

The 2012 OECD Programme for International Student Assessment (PISA) shows that the performance of Italy's education system is in line with or above the EU average. A similar position can also be seen in the 2011 Trends in International Mathematics and Science Study & Progress in International Reading Literacy Study on 10 year-olds, conducted by the International Association for the Evaluation of Educational Achievement.

The gap between males and females in ITC is one of the highest in Europe. Only 29.6% of the total graduates in ITC are women (2011). From the women graduated in ITC (almost 30% of the total graduates), 30% find a job, which does not let them make use of their studies. The most important reason is that women have difficulty to enter the ICT labour market because it is male dominated. In addition, they often do not aspire to do so out of fear for having to work in a male-dominated environment.

Research has shown that teachers need to relate to girls and young women by talking about science and technology in ways that resonate and relate to their lives and aspirations. Girls are more likely to be attracted to technology education if STEM curricula and ICT projects are tied to the real world beyond school and domestic contexts.

Tertiary education attainment of women has increased to 15.6%, which is still below the EU-27 average of 25.8%. In particular in Italy, 56% of adults aged 25-64 have earned the equivalent of a high-school degree, well below the OECD average of 75%. There is little difference between men and women, as 55% of men have successfully completed high-school compared with 57% of women.

10 ISTAT, "Tendenze demografiche e trasformazioni sociali. Nuove sfide per il sistema di welfare. 2014 Annual Report", 2014

11 Legislative Decree No. 151 of 2001 (original language), Sec. 2

12 Law Establishing Public Kindergarten, Art. 1

13 Territorial differences are very marked: in the regions of the south, only 22.5% of municipalities run nurseries and crèches (with extreme situations such as in Calabria, where they exist in 9% of municipalities) while these services exist in 76.3% of municipalities in northern Italy. In future, municipalities, responsible for most of the expenditure, will have to cope with a substantial reduction in the national support to the financing of these services.

OCSE, Education at a Glance, 2014

The promotion of gender atypical fields of study still remains a main challenge. In fact, in Italy the existence of “typical” female fields of study as well as “typical” male fields of study is still present, with women predominantly engaged in fields of humanities, healthcare and education. In particular in Italy the average of female graduates is 47% in 2013.¹⁴

It is remarkable, that in Italy the number of women enrolled in the fields of “science, maths and computing” as well as “Engineering, manufacturing and construction” is above EU- Average.¹⁵

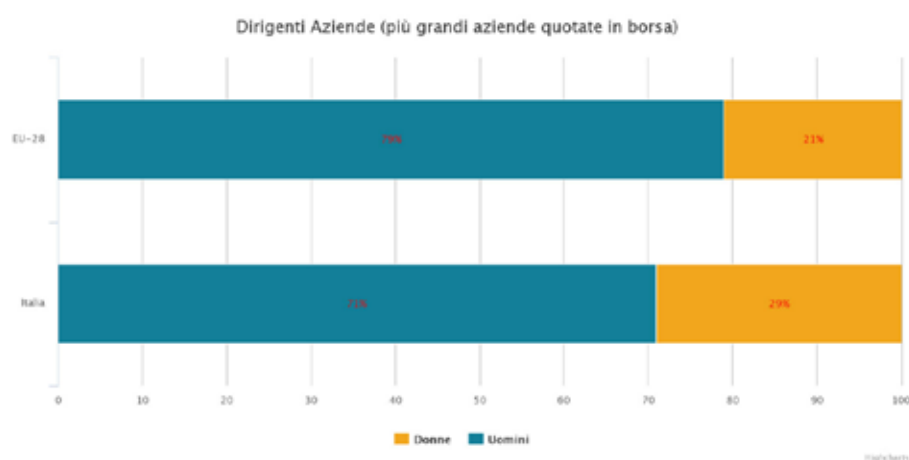
In 2011 the distribution of women graduated in the SET sector was: Engineering 23.5%, Architecture 54.8% and Science 36.5%.¹⁶

Women in decision-making positions

The current percentage of women on boards reaches 11.0% in the largest publicly listed companies in Italy (FTSE MIB index). This proportion is below the EU average (15.8%). There are **no women board chairs or CEOs** in the companies covered.

The proportion of women on boards in Italy has risen from nearly 2% in 2003 to 11% in October 2012. This represents an average increase of 1 percentage point per year. At this rate of change, it would take nearly 30 years to achieve at least 40% representation of each gender on corporate boards and the quota target would not be met. However, the implementation of the quota is starting to have an effect and there was an increase of 5 percentage points between 2011 and 2012, which represents a significant acceleration in the rate of change.¹⁷

Figure 7. Women on company boards



¹⁴ OCSE, Education at a Glance, 2014

¹⁵ “The current situation of gender equality in Italy”. Country Profile 2013

¹⁶ http://www3.istat.it/dati/catalogo/20121218_00/PDF/Cap7.pdf

¹⁷ European Commission's database on women and men in decision-making, October 2012

Women account for 12.9% of non-executive directors in the largest publicly listed companies and 3.9% of executive directors. Both figures are below the respective EU averages (10.2% and 16.8%).

Finally, female representation is 40% in the Government and 30% in the Parliament. So although the Italian European Commissioner (Federica Mogherini), and the chairman of Camera dei Deputati (Laura Boldrini) and two vice-presidents of the Senate (Valeria Fedeli and Linda Lanzillotta) are women, in general the numerical presence of women in politics is low.

Conclusions

1. The data show a positive trend for Italy. The female share in corporate boards has increased considerably in the last few years, but the challenge remains to establish gender equality in the business environment and also in board positions.

2. The representation of women in Italian companies has been characterized by a wide presence in the middle and lower levels of management and a rather low representation of women at the highest levels (in 2011 women on boards of directors in Italy were only 6.8%). Numerous studies have shown that this situation causes a net loss value for companies, because a greater representation of women in top positions leads to a more harmonious and better performance from both an economic and financial point of view. Furthermore, women achieve, on average, better academic results than men and the lack of valorization of their talent causes a non-optimal use of the company's potentials.

3. In general terms, the promotion of female presence in science could be seen by three perspectives: economic, of equal opportunity and of diversity.

4. From the economic perspective the underrepresentation of women should be interpreted as a pool talent profligacy (waste); from the equal opportunity perspective it must be seen as a lack of equality to access those positions, so it provokes the need to make it possible; while for the last one, women should be bearers of diversity so their entry in scientific research could bring significant enhancements

4.2 Legal framework

Italy introduced a boardroom gender quota in 2011. It requires public limited companies and state-owned companies to have at least 33% of each gender on their boards (executives and non-executives) by 2015 (with a target of 20% for the transitional period). In the event of non-compliance there is a progressive warning system, which will eventually lead to the dissolution of the board.

Although the Italian corporate governance code included recommendations regarding the balanced composition of the board, it was the introduction of the quota law (Act No. 120 of 12 July 2011) that made significant positive impact. The Act introduced a quota system for the appointment of directors and auditors of listed companies. It provides that the articles of association of the relevant companies must provide that the choice of directors to be elected is made on the basis of a criterion ensuring a balance between the genders.

Act No. 120 of 12 July 2011 introduced a quota system for the appointment of directors and auditors of listed companies. This Act modifies a provision of the Merchant Banking Code.

The articles of association of the relevant companies must provide that the choice of directors to be elected is made on the basis of a criterion ensuring a balance between the genders.

In particular, directors and auditors of one gender cannot be elected in a proportion, which is greater than two-thirds compared to the directors and auditors of the opposite gender. Thus, at least one-third of the directors and auditors who are appointed must be of the less-represented gender.

These provisions have also been referred to as the ‘pink quotas’. The provisions of this Act will apply from the first renewal of the corporate administrative and supervisory bodies of listed companies on regulated markets in the year following the date of the entry into force of this Act. The law came into force on 12 August 2011. Thus the Act provides gender quotas for the three board appointments, beginning from the first renewal of the board after 12 August 2012. The Italian Senate’s Justice Commission expressed concerns about the legitimacy of the new law in 2011 during the approval phase of the law by the Italian Parliament. The Senate’s Justice Commission argued that it is doubtful that mandatory gender quotas for corporations would be in compliance with Article 3 of the Italian Constitutional Law. However, as Act 120 of 12 July 2011 is only legally binding for three consecutive terms, it has also been argued that given the temporary nature of this Act, this initiative is considered to be in compliance with the Italian Constitution.

4.3 Barriers and enablers

Society

The majority of people in Italy (87% and 88% of EU) consider that, given equal competences, women should be equally represented in positions of leadership in companies and 80% (and 75% of EU) are in favor of legislation on this matter under the condition that qualification is taken into account without automatically favoring one or the other gender.¹⁸

Nevertheless, there is a glass ceiling which is when women reach the so-called crunch time age of 35-40 years, where society sees women’s role in the stereotype of “it’s a time to become a mother”, which, of course, represents a strong obstacle for women to access higher decision-making positions in the private sector.

Organisational level

Unemployment remains historically high and domestic demand is weak.

Maternity leave is just for five months, and in Italy teleworking or other form of flexible working is not common. The high costs for childcare services are often named as one of the main reasons why women have difficulties combining professional and private life in Italy.

Investment in research and innovation is low, Italy also has a modest level of public-private cooperation in scientific research and development.¹⁹

Investment by the government sector fell by 18% over the 2008-2013 period; investment by the corporate sector fell by nearly as much and accounted for 9.5% of GDP in 2013.²⁰

Female participation on the labour market remains low and labour policies are weak.

¹⁸ Source: Rapporto Censis , 2014.

¹⁹ Source: Centro Studi Banca d'Italia

²⁰ Source: Centro Studi Banca d'Italia

- The Italian education system continues to suffer from long-standing problems.
- Lack of innovation in the business process. Only 38% of the workforce has sufficient digital skills (below the EU average of 54%). So there is a low use of digital technology in Italian small and medium-size companies.²¹

Individual level

Women would like to have the possibility to choose flexibility of work time, without risking their professional career.

- There is a higher propensity of women not only to change but also to accept a lower salary than men do for the same work. The contractual power of men continues to be higher de facto. Women still get paid less than men and continue to take up different types of jobs that do not correspond to their studies. The average wage salary in Italy is 1.327 euro and men earn on average 7.3% more than women.²²

4.4 Best practices

Public initiatives

- In June 2014, the Italian Government launched a Plan of intervention (Piano di interventi) to support the access to credit for more than 1.400.000 SMEs with prevalent female representation and autonomous women workers in particular. It will be activated “banks plafond” for new investments and start-ups that could benefit from State guarantees.

- “Innovation Noun Female” (Innovazione sostantivo femminile), is a program promoted by Lazio Region, with a budget of one million euro that aims to support projects for the creation of new products or services through the use of new technologies. The target is the micro, small and medium enterprises, even in the form of individual enterprise, of which women hold at least 51% of shares, and also cooperatives and partnerships in which the number of women members is at least 60% of the shareholders. Moreover, the beneficiaries will also be women (individual or team of women to 100%) wishing to activate a startup in Lazio.

- New research and development tax credit (for the period 2015-2019) for all types of business investing in research and development.

- Progress is a project promoted and implemented by The Italian Department for Equal Opportunities, which aims to design innovative policies and interventions for elderly women; it originated from the context that gender differences were a central issue of social exclusion.

- Payments for childcare are tax deductible.²³

Private initiatives

- The Pink Cloud is a socio-cultural initiative organized by Microsoft in collaboration with the Prime Minister's Office Department for equal opportunities, with the support of La Sapienza University, Italian institutions, ITU, Unesco, UN Women and UNRice. The Pink Cloud is aimed at

²¹ “Poveri salari”, Rapporto sui salari, ISRF LAB, Settembre 2014

²² Presidential Decree No. 917/1986, Art. 12

²³ <http://www.lanuvolarosa.it>

increasing awareness among young women and the general public regarding the need to close the gender gap in the fields of science, technology, engineering and mathematics (STEM). The project falls within the scope of the national development plan that Microsoft has undertaken in order to promote the digitalization of government and small medium enterprise, and young people and to bring about innovation through software in order to bolster progress in Italy.

- **Boardroom** is a program promoted by Valore D (the first association of large companies formed in Italy in order to support women's leadership in the corporate world) and GE Capita, targeted towards women who sit on the executive boards of Italian listed companies. The training program focuses on all the steps necessary to promote and include talented women on boards. It aims to increase competences and strengthen capabilities necessary to properly perform the role of a board member. It also directly involves the companies and encourages them to identify potential internal candidates. Launched in June 2012 – two months before the entry of the Golfo-Mosca law 120/2011 on gender quotas in listed companies - the project aims to over three years train 270 women coming from the fields of business, culture and politics. The program lasts 12 months with monthly meetings focusing on different topics: specific training on the role of a board member – including its obligations, responsibilities, remuneration - and on the functioning of the Board of Directors; discussions and networking with board members and testimonials expert on the field; coaching and workshops on self empowerment; training for a conscious use of social networks for business strategy and personal branding.
- **WINNET8** is a project implemented in Italy and other seven European countries, which aims to contribute to regional growth by counteracting horizontal gender segregation on the labour market and by improving women's participation in innovation and entrepreneurship.
- **Concresco** is a mentoring program in Italy between managers and students, in collaboration with Valore D and Prospera , with the aim of helping young people in successfully achieving the transition to the working world and ensure equal opportunities for young graduate students and newly graduates. The first phase of the project, which started in June 2012, involved 60 graduate and undergraduate students of the Polytechnic of Milan, the Polytechnic of Turin and the University La Sapienza of Rome and 60 managers, of which over 50% are women who are engaged in an intergenerational agreement to convey their own life experience to young people and through their support the managers will give young women the tools to face the working world.
- A model to follow is the one of enterprises that have a crèche in the same location to help the organization's life of their employees (such as Google, Mediaset..).
- “Help desks for women's territorial welfare”. Is an innovative experiment for the promotion and support of microenterprise services to women in order to strengthen territorial welfare, through branches in each province, to provide concrete answers to the growing needs of reconciliation of working and living (guidance, support and facilitation for 'start of new micro enterprises as part of the female work-life balance).

24 <http://valored.it/>

25 [http:// www.winnet8.eu](http://www.winnet8.eu)

26 An association of managers, academics, entrepreneurs and professionals who are seeking to form a leading class with committed values of responsibility, transparency and intellectual honesty

28 http://www.prospira.it/media-center/comunicati-stampa/Pages/progetto_mentoring.aspx
www.pariopportunita.gov.it

- Assintel, the National Association of Enterprises ICT, in which there is a Group of Women Entrepreneurs ICT, has created a permanent observatory at national and international level on the topic “Women and enterprise” and “women and ICT”. Among various projects “Donne@work“, which is an on-line desk for women in ICT and “ICTDonne@NETwork” , which is directed to help women to create networks and be updated on news and initiatives.
- Association Donne e Scienza, constituted by a group of scientists and scholars from several disciplines, has taken part in the European project called GenderTime. The aim of the project is to identify and implement the best systemic approach to increase the participation and career advancement of women researchers in selected institutions where self-tailored action plans are implemented. The plans will involve activities as recruitment, retention and promotion policies, supporting work-life balance measures, updated management and research standards.
- AIDIA, a national association born in 1957 to defend the rights of women graduates in engineering and architecture. Nowadays it is an observatory of the status of women in the technical field.

4.2 Recommendations

- To avoid sectoral segregation patterns: trying to incentivize women to enter university careers in the scientific and technological fields. Raise awareness among high school students regarding the full spectrum of education and training options.
- To match studies with job offer. Women who graduated in SET studies should work in SET jobs.
- To establish collaboration between schools, universities and companies to attract female SET students. To raise awareness of students and academic staff in addressing gender equality aspects in decision-making processes.
- To ensure teachers relate to girls and young women by talking about science and technology in ways that resonate with them and relate to their lives and aspirations. Girls are more likely to be attracted to technology education if STEM curricula and ICT projects are tied to the real world beyond school and domestic contexts.
- To attract female top SET talent: In order to attract top talent, companies need to build up a relationship with talented graduate students early on and show them what it is like to work in their company. Additionally, they need to tap the dormant work force by mobilizing women to start working.

- To promote entrepreneurship of female SET graduates. There is an Italian law aimed at promoting women entrepreneurship (Law 215/1992 Positive Actions for women entrepreneurship), however, a new one ought to be made aimed specifically at the SET field.
- To reduce horizontal as well as vertical segregation. Trying to increase the self-confidence of women already in the SET sector. To avoid the “leaky pipeline” effect.
- To create modern working conditions. Work-life balance initiatives are very important for promoting achievement of gender equality, such as flexible working hours or the possibility of working a part of the working hours remotely. The effectiveness of the Work-Life Balance instruments is however more effective when used by both men and women. For this reason a model of innovative work, not based on control but rather on the assessment of objectives, should be promoted and which also meets the needs of all employees, both men and women.
- To establish gender equality as part of a company’s DNA. Through awareness campaigns to highlight the issue to the public. This is essential for reducing/deleting the pay gap within a company
- To promote career advancement of women in SET companies. People needs models to follow, as Rita Levi Montalcini or Marie Curie. Having models as a reference and learning for emulation is very important for leadership development and to identify one’s own management style.
- To reduce the pay gap. The end of discrimination in remuneration would represent an incentive for women to follow a determinate career.
- To organise formal and informal training: educational programs, coaching/mentoring programs and activities or any other training useful for managers, HR specialist and in the decision-making process. Considering that planning and communication skills are important for the person’s election on the executive boards, training to gain abilities on those two fields should be considered.
- To create a database gathering information on women in top positions in STE companies. The database would be an instrument to facilitate the recruitment of women for these leading posts.
- To create more networks as a platform for exchange experiences and help for women’s advancement in STE careers.
- To give awards for the most equal SET company and special awards for most successful SET company led by a woman.

Part 2

The case of Latvia

5. PART 2 – THE CASE OF LATVIA

5.1 State of play

Latvia has done substantial and fast progress in adjusting its economy since the economic crisis, as shown by its successful entry in the Eurozone in January 2014. Nevertheless, the economy is volatile and GDP is still below its pre-crisis level.³² Historical international experience shows that much of growth will have to come from multi-factor productivity, which can be understood as diffusion of technological frontier knowledge to the domestic economy.³³

Latvia adopted in 2012 the “Latvian Smart Specialisation Strategy”³⁴ focused on the effective coordination between knowledge specializations and capabilities of industries, increasing the knowledge pool, improving policies to transfer and absorb the knowledge at all level of governments and society. The selected priorities areas, clearly from the SET fields, are: biomedicine, medical technologies, biopharmacy and biotechnology, smart materials, technology and engineering, smart energy and ICT.

Women’s employment rate in Latvia (67.7%) is above the EU-28 average (62.6%). This figure has remained steady over the last ten years. Despite this great rate, men’s employment rate is a little bit higher (71.6%) but below EU average (74.3%).

Table 8. Employment rates and gender pay gap in Latvia

		2013	2012	2011	2010	2009	2008	2003
Employment rate	Latvia	63.9	63.8	62.8	63.3	63.5	64.4	63.7
	EU28	68.4	68.4	68.5	68.5	69	70.3	67
Women's employment rate	Latvia	67.7	66.4	65.3	64.5	66.5	71.9	64.3
	EU28	62.6	62.3	62.2	62	62.3	62.8	58.7
Men's employment rate	Latvia	71.6	71.4	69.9	70.8	70.7	71.6	70.5
	EU28	74.3	74.5	74.9	75	75.7	77.8	75.4
Women's part-time employment	Latvia	9.3	9.7	10.1	9.9	9.1	9.3	11.5
	EU28	32.1	31.9	31.5	31.3	30.8	30.4	28.6
Men's part-time employment	Latvia	8.4	8.6	8.7	9.6	8.0	8.1	9.9
	EU28	8.8	8.4	8.1	7.9	7.4	7.0	6.1
Gender pay gap	Latvia	9.1	9.7	11	8.8	7.4	8.5	12.5
	EU28	16.5	16.4	16.2	-	-	-	

32 OECD Economic Surveys, Latvia 2015.

33 Johansson, A. “Long-Term Growth Scenarios”, OECD Working Papers, 2013.

34 <http://www.lzp.gov.lv>

While the share of men with a part-time employment in Latvia and in the EU-28 is almost the same (8.4% and 8.8%, respectively), there is a big difference among women: in Latvia, most of working women have a full-time job, or are not working, and part-time jobs are a rarity (9.3%). Part-time work is considered as transitional, until one finds a full-time job.

Maternity leave is 112 days and paternity leave, 10 days, in both cases 80% is covered by the government. Until child turns 18 months parents can take a care leave or continue to work. There have been recent regulatory changes on maternity/paternity leave in terms of coverage. However, as Eurofound states: “Latvia has one of the highest proportions of people who experience a conflict reconciling work and family life”.³⁶

Horizontal segregation is more noted in Latvia than in other EU countries. The sectors with more presence of women are: “wholesale & retail”, “manufacturing”, “health and social work”, “education” and “public administration”. In the first two sectors, men are very present, too. In the other three sectors, men are under-represented. On the contrary, women are under-represented in one of the top male sectors “transport and storage”. The differences in these three sectors are very pronounced.

Notwithstanding the high number of highly qualified women, **the gender pay gap** is bigger in Latvia than in the EU. Female workers earn 17.6% less than men workers, one point above the EU average (16.4%). In the category of “Professional, scientific and technical activities”, the differences in salaries between men and women are not as large as in other categories. The category of workers more affected by gender gap is the public administration, which suffered pay cuts due to the crisis and is one of the most important sectors for women's employment. The average wage and salary for women is 558 latos and for men 637 latos.³⁷

According to a recent UNESCO Institute for Statistics Research “Women in Science”, Latvia has a quite **proportionate distribution of women and men among scientists**. They are more present in the public sector (58%) and in academic institutions (52%) and less in the private sector (40%).³⁸

Education

According to the results of the OECD PISA (Program for International Student Assessment) report, Latvian schoolchildren demonstrate **good results in sciences and mathematics**. That is relevant if we agree that there is a certain relation between the outcomes at school and their choice of study field at secondary school and/or university.

The level of attainment in secondary education is quite substantial (80%) and in tertiary education, Latvian women participation is 29.9%, higher than Latvian men, 17% and than the female EU average, 24.8%. Tertiary education attainment has been increasing over the years to 27% in 2013.³⁹

³⁵ Gender Equality Index, by European Institute for Gender Equality.

³⁶ www.eurofound.europa.eu/pubdocs/2010/02/en/1/EF1002EN.pdf

³⁷ “Women and men in Latvia”, by Central statistical bureau of Latvia, 2013.

³⁸ Article “Latvia 2nd in the world by percentage of women in senior management” <http://latvia.eu/news/latvia-2nd-world-percentage-women-senior-management>

³⁹ OECD Economic Surveys, Latvia 2015

Consequently, there is a great representation of women with high studies. In general, the average educational level of women members in executive board is tertiary education (69%), which are predominant (59%), and more men (41%) than women (27%) on the board have a master's degree.⁴⁰

In recent years, the number of women in SET fields has increased rapidly. However, the number of women enrolled in these sectors is insufficient and unbalanced. For instance, in the Faculty of Computing, one out of five students is a girl. This proportion is repeated in terms of graduates and employees. Overall, among these sectors, while “social sciences, business and law” is the field of education with the highest number of students, “agriculture and manufacturing” is the one with fewer students.

The **entrepreneurship rate** among women in Latvia is quite high. In 2012, around 40% of all entrepreneurs were women, a share higher than at EU level (31% EU28). A study by “Firmas Lv” Ltd and “Baltinc Consulting” reveals that “In 2012, approximately one third of all newly registered enterprises were owned by women and the number of these companies has increased by almost 31% comparing to 2007”.⁴¹

Women in decision-making positions

Women are very present in decision-making in Latvian economics, administration and politics. In the **national public administration**, women's participation in top positions has increased up to 61% in 2013 but there are still differences between low-grade positions and high-grade positions.

In the **private sector**, in 2014, Latvia had the highest share of women in decision-making positions in publicly listed companies (31%) of the EU. That percentage is by far higher than for the rest of EU countries, with an average of 19%. In the following table, we can confirm that women in Latvia have a remarkable participation in decision-making positions in the largest publicly listed companies in Latvia (OXM Riga Index) (30 companies), especially compared to the EU average. The most outstanding difference is in board positions.

Table 9. Percentage of women on boards and presidents⁴²

	Latvia	EU-28
Board Chairs	17%	7%
CEOs	3%	3%
Members of boards	32%	20%
Executive board members	20%	13%
Non-executive board members	32%	21%

As we see, the number of **women occupying board positions exceeds the EU-average: 32% of the members of the board were women (EU-average 20%) and 17% lead the board**

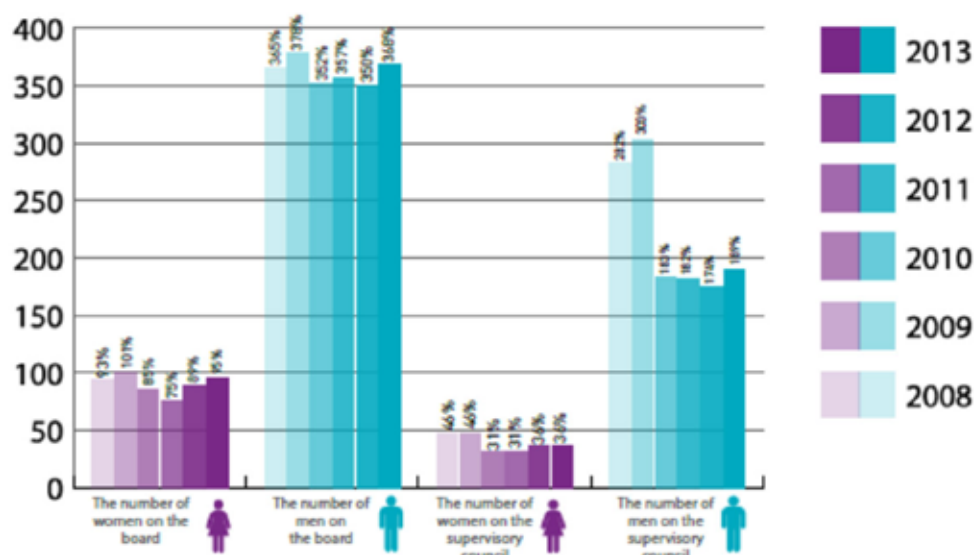
⁴⁰ “Study of the situation of Men and Women in the large companies in Latvia”, by LLC “SAFEGE Baltija” and LLC “ArtSmart”, 2014.

⁴¹ Study by “Firmas Lv” Ltd and “Baltinc Consulting” Ltd, 2014.

⁴² Source: National Factsheet “Gender balance in Boards. Latvia” & EC Database Women and Men in decision-making.

As we see, the number of women occupying board positions exceeds the EU-average: 32% of the members of the board were women (EU-average 20%) and 17% lead the board (EU-average 7%). The typical composition of an executive board in Latvia is one woman and four men, and a CEO being a man. There is the trend towards growing the gender balance of these top positions. Until now, a small proportion of companies have gender equality on the executive board, on average 11% throughout the period 2008-2013.

Figure 10. Distribution of men and women in executive and non-executive positions⁴³



The participation of women on the executive board of large companies is not the same for all sectors. The lowest representation is in the sector of “professional, scientific and technical services”, as well as in “accommodation and food services” and in “administrative and support activities”. On the contrary, the highest participation is the “health sector”, “commercial sector” and “real estate-related activities sector”.⁴⁴

Figure 11. Proportion of female CEOs in Latvia⁴⁵



43 Source: Study of the situation of Men and Women in the large companies in Latvia, 2014

44 “Study of the situation of Men and Women in the large companies in Latvia”, by LLC “SAFECE Baltija” and LLC “ArtSmart”, 2014.

45 Source: Study of the situation of Men and Women in the large companies in Latvia, 2014.

Middle managers and senior managers usually have the same level of education (higher education or bachelor's degree) with no big differences between men and women. In the next graphic, we can see the qualification required at management level. It is worth to notice that engineering studies are relevant in these positions.

Table 14. Gender balance in the largest listed companies of Romania and the EU⁶⁹

	Romania	EU28
Board chairs	20%	7%
CEOs	22%	3%
Members of boards	11%	20%
Executive directors	23%	13%
Non-executive directors	10%	21%

Despite the rapid growth of the IT sector, the participation of women at all levels is still low. Women in top decision bodies of IT companies represent just 19%, one of the lowest percentages of women in leading positions from all sectors. Furthermore, women in the staff of the IT industry are underrepresented, with only 30%.

To sum up, Latvia is doing better than other EU countries in terms of the gender balance in decision-making positions. However, there are some challenges, which prevent more gender equality in SET studies, in SET companies and finally in SET top positions, especially influenced by stereotypes.

5.2 Legal framework

The Corporate Governance Code does not contain any provisions for promoting gender diversity on company boards. In addition, there is no quota legislation or other measures to improve the gender balance on boards.⁴⁶ Despite the lack of specific legal or regulatory approach to deal with the issue of under-representation of women on company boards, Latvia shows one of the highest figures in the EU and higher than the other countries in this Guide.

Equality law

Art. 91 of the Constitution of Latvia provides for the principle of equality of rights before the law and for protection of these rights without any kind of discrimination. There are no legal norms allowing for positive measures in general or allowing for any positive measures to be taken by private persons (legal or natural) in the private sector.⁴⁷

⁴⁶ See Z. Kreckova, Are quotas solving the problem?, European Scientific Journal 2013, vol. 9, p. 234, L. Senden and M. Visser, Balancing a Tightrope: The EU Directive on Improving the Gender Balance among Non-Executive Directors of Boards of Listed Companies, European Gender Equality Law Review 2013/1, p. 23 and K. Dupate, National Report Latvia, in: G. Selanec and L. Senden, Positive Action Measures to Ensure Full Equality in Practice between Men and Women, including on Company Boards (2011), p. 132.

⁴⁷ K. Dupate, National Report Latvia, in: G. Selanec and L. Senden, Positive Action Measures to Ensure Full Equality in Practice between Men and Women, including on Company Boards (2011), p. 129, 131.

On 29 November 2012, the Latvian Parliament adopted amendments to the Law on the Prohibition of Discrimination against Natural Persons – Performers of Economic Activities.⁴⁸ This Law entered into effect on 2 January 2013. Such amendments were necessary to correctly implement the Directive on the application of the principle of **equal treatment between men and women** engaged in an activity in a self-employed capacity and the Directive establishing a general framework for equal treatment in employment and occupation.⁴⁹

Corporate Governance Code

In May 2010, the Exchange NASDAQ OMX Riga published a Corporate Governance Code, which is referred to as Principles of Corporate Governance and Recommendations on their Implementation. This Corporate Governance Code entered into force on 1 June 2010. Upon the implementation of the corporate governance principles in their business, the relevant companies have to prepare the Corporate Governance Report that shall be prepared in compliance with the principle of “comply with or explain”. Thus, the companies have the freedom to choose what principles to implement in their business and to what extent they will be applied. If any principle is not applied or is only partially applied, the company has to provide in its Report information on the circumstances due to which the principle in question is not or cannot be implemented. The relevant companies have to provide the Corporate Governance Report together with the annual report within the term set by the Stock Exchange as well as to publish the said information on their website.

Most of the people in Latvia (87%) are in favor on balanced leadership positions in companies and a large majority (76%) think that there should be legislation to deal with the differences, but under the condition that qualification is taken into account without automatically favoring one or other gender. However, Latvia was initially opposed to the European Commission proposal to establish binding quota among non-executives directors in listed companies.

5.3 Barriers and enablers

In Latvia, traditional perceptions of **family roles** prevail. Thus, men are responsible for the most important family income, even if the dual-earner family model is widespread. In addition, women are in charge of household work, spending twice as much time on it as men. Strong gender stereotypes are more visible in education, occupations and economic sectors. However, according to the “European Gender Equality Index” Latvia’s performance in the field of “power” is above the EU average.

The good performance of Latvia in terms of balanced participation of women in public and in private life justifies the lack of specific gender equality legislation to enhance their participation as well as the opposition of Latvian leaders to establish quotas, as it is foreseen in the proposal of EU Directive. It is believed that quotas will result in additional constraints on

48 Fizisko personu – saimnieciskās darbības veicēju – diskriminācijas aizlieguma likums, Official Gazette No. 199, 19 December 2012.

49 Directive 2010/41/EU of the European Parliament and of the Council of 7 July 2010 on the application of the principle of equal treatment between men and women engaged in an activity in a self-employed capacity, Official Journal L 180/1 and Council Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation, Official Journal L 302, 2.12.2000, p. 16-22. See also K. Dupate, National Report Latvia, European Gender Equality Law Review 2013/1, p. 82. www.diena.lv/diena-tv/politika/diskusija-vai-vajadzetu-ieviest-kvotas-sievietem-uznemumu-valdes-13891042

companies.⁵⁰ Besides that, public authorities think that efforts should be focused on the promotion of equality in educational and economic independence of men and women.

Nevertheless, gender is a horizontal issue. As a result, Latvia has important public bodies working on gender equality. For example, in 1999 the Ministry of Welfare was created, in charge of the development of gender equal policy in the country. Besides, there is a Gender Equality Unit, the main executive institution for gender equality policy within the Latvian administration, and the Gender Equality Commission, a consultative body that promotes cooperation between ministries, NGOs, social partners, municipalities and other bodies.

Companies share the opinion of public authorities and consequently, as we will see in the section of Best practices, there are no private initiatives by local companies to support balanced gender on top positions. These types of initiatives are more taken by multinational companies.

However, the Special Eurobarometer "Women in decision-making positions" showed that initiatives to enhance gender equality are not be considered from a negative point of view and the Latvian population wants this type of measures. Moreover, the Society Integration Foundation has published a "Survey on gender equality" which shows that the majority of citizens (65%) are in favor of equal treatment of men and women in the workplace. Nevertheless, a high share of society considers that men have more advantages than women in the labor market.⁵²

It is not good to notice that public and private investment in R&D is low. However, government has an ambitious goal to increase this spending, from current 0.6 to 1,5% of GDP by 2020.⁵³

Nowadays, there is not **a friendly environment** for women to participate in the labour market and manage a family. From the internal perspective of the roles in the family, there is not an equal distribution of the housework and the care of children and from the external, government (child care services) and companies (working conditions) do not facilitate work life reconciliation.

From the perspective of **SET companies**, we can outline the following barriers:

- Clusters and territorial concentration are insufficiently developed and fragmented, and in general the most part of science and research infrastructure.
- There is a low number of laboratories with up-to-date equipment for the implementation of projects with a technological orientation.
- Low volume of funding in R&D, low private sector investment in R&D and consequently a low proportion of innovative enterprises.

Women's decisions to study a certain education field are still influenced by stereotypes, and the classical division of male and female studies or workplaces.

⁵⁰ www.diena.lv/diena-tv/politika/diskusija-vai-vajadzetu-ieviest-kvotas-sievietem-uznemumu-valdes-13891042

⁵¹ Special Eurobarometer 379 Women in decision-making positions. http://open-data.europa.eu/es/data/dataset/S1016_76_1_EBS376

⁵² Survey on gender equality, Society Integration Foundation (SIF), 2014.

⁵³ OECD Economic Surveys, Latvia 2015

Taking into account the difficulties for working women in reconciling their professional life with the care of children, maternity is an important break. The shortage of childcare services can have an important weight in the decision to continue or stop working, or to opt out for part-time employment. SET is a sector requiring continuous updating and, in some cases, mobility. As a result, if a woman decides to take parental leave, her career may be affected. Moreover, women do not want to take big risks when starting a business because they are more involved in family life than men, for example, with a child or adult depending on them. These outlined barriers to balance professional and personal are even deeper in the case of positions in decision-making, where flexibility is not very common.

5.4 Best practices

Private Initiatives

- Swedbank. This Swedish bank has a branch in Latvia, which is overrepresented by women, with 76% of women in their staff. As for decision-making positions, women represent 33% of the managers. This company has set two goals: 1) to reach a balanced representation in the management teams in 2015 and 2) to eliminate the gender gap.
- Ogres rajona sliminca has set indicators of the share of the gender representation in order to increase the participation of the less represented gender.
- CEMEX has adopted some measures to reach gender balance: It uses indicators to analyze the gender balance among employees and among senior managers. They introduced gender equality in the company's internal documents and procedures. It allows employees to work from home. It foresees the option to reduce load for mother and fathers.
- Latvijas Balzams, in the recruitment process of staff takes its decisions taking into account the less represented gender in the company.
- Latvijas Radio un televīzijas centrs has integrated the gender perspective in their internal documents and procedures.
- Digigirlz is a Microsoft program aimed to encourage young girls to choose a career in the ICT sector. It is a worldwide program started in 2000 but with the first event in Latvia in 2012. They organized an event with 30 girls and Microsoft employees and managers.⁵⁴
- L'OREAL Baltic granted with the support of Latvian National Commission for UNESCO a scholarship "Women in Science" that covers financial support for a period of up to 3 months mainly from June to August when awardees will perform research work in an academic discipline of their choice and in one of the laboratories of the Institut Pasteur in France. The awardees will be supervised by senior researchers of Institut Pasteur.

⁵⁴ <http://www.microsoft.com/en-us/diversity/programs/digigirlz/>

Public initiatives

- “Nursery schools where there is place for both Peppy-princes and Pirate-princesses”. The Ministry of Welfare organised in 2012 a project ⁵⁵ to adapt the Danish methodology of the materials used by preschool education experts in seminars. Throughout this methodology stereotypes of male and female abilities are discussed.
- **Society Integration Foundation** being a governmental agency working with the issues of integration and gender equality through administration of grant programs for NGOs, as well as leading implementation of some larger-scale projects of national scope.
- On taxation, Latvia has introduced a new tax to stimulate investment, development and innovation. ⁵⁶

Organizations/Associations.

- LIKTA, the Latvian Information and Communications Technology Association, is a professional association of the ICT sector. It has developed a strategic ICT vision with some key priorities to work on the next years focused on women and citizens. This initiative⁵⁷ has the support of organizations, universities, companies and public authorities.
- Lidere⁵⁸ is an association that connects female entrepreneurs and organisational leaders and supports women with mentoring activities and workshops. It promotes co-operation and exchange of experience between new and experienced businesswomen.

International initiatives

- The European Commission organises the e-Skills for Jobs Week, an event that puts together representatives from the EU countries. Latvia is very present in this event and it is good to see that 59% of the participations in the 2012 edition were women.

5.5 Recommendations

- Continue improving the **connectivity of networks of women in SET** with the rest of European Union.
- Eliminate **stereotypes** regarding SET through education programs at pre-school, schools and universities.
- Create a **friendly environment from the gender perspective**. Despite the good situation, there should be more information about the still existing inequalities. In addition, companies could implement socialization measure to encourage integration of the less represented gender in the company.

- **Campaigns** to explain the importance of gender equality in ICT and other STE fields. This initiative can be carried out by the media, kindergartens, schools, universities...
- Establish **collaboration between schools, universities and companies** to attract female students in STE studies.
- **Organize formal and informal training:** educational programs, coaching/mentoring programs and activities or any other training useful for managers, HR specialist and in the decision-making process in STE companies.
- **Flexible working policies.** Flexible conditions at work can be an incentive for women.
- Help to reconcile professional and personal life for women in STE companies. With the independence from the Communist system, some measures aimed at reconciling work and children were abolished (full time child care, maternity leave). Taking into account that balancing work and family has been analyzed being one of the main barriers for women, better reconciliation measures should be a priority.
- It is important to ease the return to job in STE companies with an adjustment period, with accompanying support and, with training to update skills.
- Recruitment procedures in STE companies should not to be an opaque system. Human Resources policies on recruitment and on appointments should guarantee independence and be based on expertise, experience and knowledge.
- Introduce the gender perspective in the STE companies internal and external communications and documents. In order to maximize the positive impact of their efforts to champion gender equality.
- Create a database with information on women in top positions in STE companies. The database could serve as an instrument to facilitate the recruitment of women for these leading posts.
- Reduce the gender pay gap in STE companies. Balance salaries. Companies should review salaries from the perspective of gender

55 <http://www.lm.gov.lv/text/2362>

56 OECD Economic Surveys, Latvia 2015.

57 <http://www.likta.lv/EN/Pages/home.aspx>

58 http://www.lidere.lv/en_aktual.html

Part 3

The case of Romania

6. PART 3 – THE CASE OF ROMANIA

6.1 State of play

In this section we focus our attention on the situation of women in the STE job market, STE studies and their presence in the decision-making process in STE companies.

Women in the work force

The **employment rate** among women in Romania is 56.2%, some points below from the average in the EU28 (62.6%) and quite far below the employment rate of Romanian men (71.6%).⁵⁹

Women are present, mostly in these **five sectors**: “Agriculture, Forestry & Fishing”, “Manufacturing”, “Whole & Retail”, “Health & Social Work” and “Education”. In the last two sectors, horizontal segregation is more evident but in the first three we can find either men or women working there.⁶⁰ This is mostly due to the communist flagship of gender equality in work places, when women and men shared all the work.

Women with **part-time employment** are quite rare in comparison with the rest of the EU countries. The percentage of women in part-time employment is 9.3% of total employment.

In general, part-time employment is related to **childcare services** and the government provisions on paternity/maternity leave. In Romania, the access to care services for children is insufficient.

The **pay gap** in Romania is not as high as in the rest of the EU. In 2013, a female employee earned 9.1% less than the average male employee. This is not a big difference compared to the EU28 average of 16.4%, although Romania’s tendency is lifting the EU trend upwards to progressively reduce the pay gap. Romania has performed well in the past but it now seems like differences are increasing.

According to Forbes magazine, Romania aims to becoming the capital of start-ups in technology because it has the most IT specialists per capita in all Europe.⁶¹ Currently in Europe around 7 million people are working in the ICT sector of which only 30% are women.

The PISA report shows that in OECD countries just 5% of girls want to study a career in computer and engineering while this percentage is higher, 18%, for boys. In primary education gender is a factor.

One of the most outstanding issues in Romania is the high rate of women graduated in SET studies. From the total of graduates, 19% were enrolled in the field of engineering, manufacturing and construction.

The number of people with tertiary education and employed in science and engineering has positively evolved, too. In 2013, the percentage of Romanian women (8%) exceeded the percentage of Romanian men (6.8%), although it was lower from EU data (12.6%).

⁵⁹ “Report on equality between women and men”, by European Commission, 2014. http://ec.europa.eu/justice/gender-equality/files/annual_reports/150304_annual_report_2014_web_en.pdf

⁶⁰ “The current situation of gender equality in Romania- Country Profile”, by European Commission, 2012.

⁶¹ <http://www.carriereonline.ro/articol/forbes-romania-are-cei-mai-multi-specialisti-it-si-tinteste-sa-devina-capitala-afacerilor-de>

In terms of R&D, in 2012, in Romania 46% of total personnel were women, a figure that has remained stable in the last 10 years.⁶² Data reveals that there is almost gender equality in all fields of study, which is much better than data at EU level show.

In 2010, Romania had the best performance in terms of the Glass Ceiling Index (GCI), which measures the possibilities of women to advance in their career and be promoted in the academic sector. In Romania the Index was the lowest (1.3) among European countries (1.8).⁶³

Women in decision-making positions

Compared to other EU countries, the main gap in Romania is between the high number of women graduated in SET fields at different levels (tertiary, researchers & PhD) and the low rate of women working in SET companies or being in a power-decision position in a SET company.

Entrepreneurship among women has **dramatically dropped** from 42.9% in 2009 to 11% in 2010. That is the reason why from 2010 some initiatives have been adopted to change this controversial movement: financial institutions have facilitated the access to credit; the government has introduced start up funding programmes and associations are working in the same direction.

As a consequence, in 2011, there was a growth of starts ups by 9% compared to 2010. Most of the firms created were in commerce (28.4%), other services (23.9%) and agriculture (15.6%). And in 2012, the female entrepreneurship rate in Romania was 29%, two points below the EU-27 (31%).⁶⁴

Romania has recorded a **negative trend** in the number of women in decision-making positions. In April 2013, 9.7% of the members of the boards of large listed companies were women, a smaller percentage than the EU average (16.6%). Between 2003 and 2013, the percentage of female presence on corporate boards decreased 12.2 points.⁶⁵ That deterioration can be explained by the lack of measures to promote their presence. According to the Global Gender Gap Index, 20% of the firms in Romania have women in top management positions.⁶⁶

As for the private sector, in 2014, women represented 11% of the members of the boards of large listed companies (9) in Romania, again much lower than the EU28 average (20.2%). It is worthy to note that Romania had high figures in the past but the situation has worsened. In the next table, we can see that.

Table 13. Percentage of women on boards of the largest publicly listed companies in the EU

Women's employment rate	2014	2013	2010
Romania	56.2	56.3	55.7
EU-28	62.6	62.4	62.2

62 Eurostat, Total R&D personnel by sectors of performance, occupation and sex.

63 More than 1 point means that women are under-represented in grade A positions; however, in Romania the rate is much better than in other countries.

64 "Statistical Data on Women Entrepreneurs in Europe", by European Commission, 2014.

65 "Gender equality in the Member States. Factsheet 2", by the European Commission, 2012.

66 "Global Gender Gap Index", by World Economic Forum, 2014.

67 "Database on women and men in decision-making", by European Commission, 2014.

68 Source: European Commission, Database on women and men in decision-making

It is important to remark that companies in Romania can have a dual board system, with a supervisory body (consiliul de supraveghere) and a management body (directorat), or a unitary-board system, with a single board of directors (Consiliul de administratie). That can have an influence on the data available.

In the table below we compare the gender balance in the largest listed companies of Romania and the EU.

Table 14. Gender balance in the largest listed companies of Romania and the EU⁶⁹

	Romania	EU28
Board chairs	20%	7%
CEOs	22%	3%
Members of boards	11%	20%
Executive directors	23%	13%
Non-executive directors	10%	21%

According to this table, women are better represented in executive positions, in the position of board chairs and in CEOs roles. On the contrary, Romanian women have a poor participation in non-executive positions. These numbers are defying the EU trends.

Furthermore, in Romania there are **two paradoxes**. Firstly, Romania has the second highest rate of women in SET studies and at the same time the lowest rate in the EU-28 of women in decision-making positions. Explanations may include that women hardly work in the SET fields, that they do not have ambitions or lack interest to reach a power-decision status.

The second paradox is that whereas in the EU the trend is a general inclination to reduce the gender inequality on boards, in Romania there has been a deep cutback, with fewer women than four years ago.

6.2 Legal framework

There are **no national measures** in Romania to improve gender balance on boards. In Romanian company law there are no mandatory quotas for women on corporate boards and the Bucharest Stock Exchange Corporate Governance Code of 2008 does not contain any explicit provision on diversity in company boards. In equality law, there is a provision, which is of relevance for the position of women on corporate boards. Art. 22(1) of the 2002 Act on equal opportunities for women and men stipulates that institutions and central and local authorities, social dialogue structures, associations of private companies (employers) and trade unions, political parties ensure fair and balanced representation of women and men at all levels of decision-making. A violation of this provision may be assessed

Source: EC Database Women and Men in decision-making

by the National Council on Combating Discrimination (CNCD) and sanctioned with a written warning or an administrative fine. However, the provision is not likely to have any practical impact. During maternity leave Government provides 85% of the wage in covered period (126 days). On the contrary, the employer pays paternity leave, which reaches 100% during the covered period (15 days).

If the proposed EU directive to improve the underrepresentation of women on boards of listed companies would become law, Romania will have to change its current legislation. Up till now, there are no binding quotas on the number of women on boards or in the corporate governance code and only soft measures in the public sector. The new Directive will introduce significant changes.

The Special Eurobarometer “Women in decision- making position” showed that 80% of the Romanian participants in the questionnaire were in favour of more equal representation in the leadership of companies. Furthermore, 76% of Romanian, 75% EU average, was in favour of legislation on gender equality in decision-making positions “under the condition that qualification is taken into account without automatically favouring one or other gender”.⁷⁰

6.3 Barriers and enablers

Romanians have a strong patriarchal culture, even if during the communist period there was the motto of full employment and no gender differences among women and men. In addition, there were no initiatives to promote equality in the private sector.⁷¹ Furthermore, in the post-communist period the gender gap in management widened.⁷² It is important to notice this for its consequences in our days: this mentality can prevail in Romanian minds, particularly among people from that period and having a position in the boards of firms from this typical “male” sector. Actually, a sector traditionally led by male values in the organisation can limit the integration of women in the decision-making positions. Thus, men’s prejudice is an obstacle for the advancement of women in their professional career.

Gender stereotyping is omnipresent in the Romanian public sphere.⁷³ According to the Eurobarometer on gender equality, in Romania, as well as for the rest of EU countries, the corporate sector is the space where these stereotypes are more widespread (47%), more than in advertising (13%), media (24%), politics (33%) sports (7%) or schools (18%)⁷⁴. In the same Eurobarometer, Europeans believe that the economy might improve with a major presence of women in the labour market.

Women face some general **barriers** in the progression of their professional life: family constraints; limited advancement imposed by industry specific; lack of networks/associations or lack of models or mentors. Romania is not ICT gender neutral. In a comparative analysis of 31 European countries using as indicators gender and ICT (GIC-TIC), Romania was qualified as a **low e-inclusion country**, measuring gender differences in access to ICT, but with high e-quality, which assesses the level of ICT use. Romania was not in a bad position, ranked 13th.⁷⁵

70 “Special Eurobarometer 376 Women in decision-making positions”, by European Commission, 2012.

71 T. Voicu, M., Tufis, A., “Trends in gender beliefs in Romania 1993-2008”, 2012.

72 Curseu, P.L., Boros, S., “Gender stereotypes in management: a comparative study of communist and postcommunist in Romania”, 2010.

73 “Gender and ICT: An untold story” www.giswatch.org/sites/.../romania_gisw13.pdf

74 “Eurobarometer on gender equality”, 2015.

75 Castano Collado, C., Fernández, J.M. and Martínez, J.L., “The digital divide from a gender perspective in Spain and Europe: Measuring with composite indicators”, 2011.

Furthermore, **government does not seem to be very interested in gender and ICT**. In fact, national statistics do not cover this topic. In general, few national agencies compile statistics on ICT, and those that do, do not provide data by gender. However, Romania foresees a tax regime of 0% for those entrepreneurs who want to work in IT.

The IT sector has not suffered from the crisis in terms of positions. It is an emerging market with a high demand for workers. Actually, it created the most jobs since 2008. It is also a sector with large salaries, from 300-500 euro net per month for an engineer without experience to over 2.000 euro per month for an experienced employee. This stable situation can be an incentive for young graduates to study and engineering degree in IT.⁷⁶

6.4 Best practices

Organisations

- **Femei in Tehnologie** (Women in Technology) is an organisation that supports public and private sector involving successful women in the ICT industry in mentoring and volunteering activities and the development of local communities in order to increase the number of women employed in occupations in the area of information and communication. FIT is a member of the European Organization Center for Women in Technology (ECWT), as the national point.
- **“Women on Board”** is a program by the Professional Women’s Network (PWN)⁷⁷. PWN assists companies in developing gender diversity programs and in giving support to any public policy aiming at improving women’s access to decision-making positions.
- According to the PWN there is a need for a holistic approach in order to ease the scaling of women in decisions-making positions. Companies, women and governments have a role to play.
- **Romanian Association of Women in Business** (Femei in Afaceri)⁷⁸ The association organises business events to put together women.

Other initiatives

- **Girls in Tech Romania**⁷⁹ is a branch of an international network established in San Francisco in 2007. Its objective is to empower women in technology by providing them more visibility.
- The Faculty of Computer Science organized on January 2015 the workshop **“Following Anita Borg”**⁸⁰ aiming to bring together women in Iasi (students, academics and business) and to build the Women in Information Technology of Iasi (WITchIS).
- The Centre for Partnership and Equality has developed the project **“Inovare sociala pentru integrarea durabila a femeilor pe piata mun”** (Social Innovation for sustainable integration of women in workplace).⁸¹

⁷⁶ Article of ZF Profesii “România produce 50.000 de ingineri pe an, dar angajatorii spun că aceștia „nu știu meserie cu adevărat”

⁷⁷ <http://www.pwnromania.ro/programs/women-on-boards/>

⁷⁸ <http://www.femei-in-afaceri.ro/ro/index>

⁷⁹ <http://romania.girlsintech.org/>

⁸⁰ <http://thor.info.uaic.ro/~witchis/events/fab.html>

⁸¹ <http://www.proiectul-elisa.fundatia.ro/>

- The business magazine **Business Review** organises from 2006 a BR awards to recognise success cases in the business community active in the local market. There are several categories of awards, among them “Innovation in Technology”, “Best employment initiative”, “Entrepreneur of the year”, where the majority of candidates of the 2015 edition were from the SET field, or “Best- start-up supporter”.
- Forbes elaborated the list of the 50 more influential women in the country. The most powerful woman is Mariana Gheorghe, general manager of OMV Petrom, the largest company of the country. Another awarded women, from the ICT sector is, Măriuca Talpea founder of Bitdefender, the most famous Romanian software, and Dana Cortina, CEO Porsche Inter Auto.
- The Market Watch Magazine awarded in 2012 for the first time in Romania the prizes “Women in Technology”.
- **L’Oréal UNESCO for Women in Science” National Fellowship.** This award was launched in Romania in 2009 and is addressed to researchers from Romania aged to 35 and who are either PhD students or have obtained a PhD title and follow a postgraduate training program within an educational institution in the country.

There are other initiatives implemented in other countries aimed to encourage girls to study SET. For instance, there is the UK campaign “Little Miss Geek” which tries to inspire girls to become tech pioneers by increasing their presence in technology studies⁸² or the Estonian “Digigirl” that organised an event on IT education for girls from 9th to 12th grade.⁸³ In addition, “**Girls who code**” is an American non-profit project aimed at reducing the gap between women and men and to inspire, educate and equip girls in computing skills.

Corporate initiatives

- **Women@Romania:** Renault launched in 2010 the “Women@Renault” plan aimed to strengthen gender diversity within the firm. Of the 17.000 employees of Renault Romania, 32% of the total staff (17.000) is women and 30% of the key positions in the company are held by women. As for, engineering and production, women account for 28%.
- “**Automobile Dacia**”⁸⁴ has developed a master’s programme (The Auto Project Engineering) with three semesters in automobile engineering projects. The best students of the programme are involved in the IPA internship. This master initiated in 2009 is developed in partnership with four universities in Romania .
- **Petrom:** In 2014, the company Petrom signed a Protocol with the Department of Equal Opportunities between Women and Men to support the promotion of equal opportunities of their employees. The objective of the Protocol is to exchange views between companies and public authorities on initiatives to facilitate the conciliation of private and professional life, support the entrepreneurship among women, combat gender stereotypes in the educational system and in the public and private environment.

⁸² <http://littlemisssgeek.com/>

⁸³ <http://digigirls.ee/et>

⁸⁴ <http://www.daciagroup.com/en/press/press-releases/2014/the-master-programme-car-project-engineering-the-first-career-step-for>

- Bosch, the German firm, wants to show off their diversity, in cultural, ethnic, gender, age or style of work teams, and launched the International Day of Diversity (24 June).
- Intel Romania Software Development Centre (IRSDC) wants to promote SET among students. They organise open days inviting young students from high schools and faculties to visit their offices. They can learn more about the company treatment of women working in IT.
- Pirelli is involved in a project to match students with work. It is helping local universities to develop programs to develop skills needed in the automotive sector. In addition, the company is implementing projects to develop the region and oriented to the local community of the Oltenia region.

EU & International initiatives

- **ADAS award.** At EU level, in 2013 the organisation Zen Digital, in partnership with several associations of women in technology, awarded this prize to recognise girls and women with digital studies and careers as well as organisations that promote the participation of girls and women in the digital sector. These awards are known as “Adas” in honor of Ada Lovelace, the first computer programmer and author of the algorithm for Babagge’s mechanical computer. None of the awarded in this first edition was Romanian.⁸⁵
- **Every Girl Digital** campaign from the European Commission to identify and recognise examples of ITC women that can be considered as models to encourage young women and girls to study and follow a career in IT.
- **Global Board Ready Women Database:** it is a database available in LinkedIn with a list of women with experience and that can occupy a position on the board of a firm. Some countries have established its own database. Romania has not done so.
- **She Will Innovate**, an online competition launched by the Intel Corporation and Ashoka Changemakers to find the world’s most innovative solutions that equip girls and women with new digital technologies.⁸⁶

6.5 Recommendations

- **Eliminate the stereotypes of female fields and male fields.** Romania still has a patriarchal culture. Women are not less willing than men to make a career but some values hinder them from developing a career in “male” fields.
- **Promote the attractiveness of SET studies among students.** High school graduates, girls and boys, who will have to choose in the upcoming future between socio-humanistic studies and scientific studies need broad information on the full spectrum of fields of education.

⁸⁵ <https://ec.europa.eu/digital-agenda/en/european-digital-girl-digital-woman-award>.

⁸⁶ <http://www.changemakers.com/girltech>

- **Increase the self-confidence of women to participate in the SET sector.** It is important to raise awareness among women of their potential, their strength and highlight their positive contribution to the functioning of a company.
- **Companies should divulgate their commitment on the integration of diversity in their corporate strategy.** A company can be identified by its corporate strategy, where it is defined its internal work culture. Some keys words should integrate this strategy, among them gender equality. This is crucial to address the gender pay gap within a company.
- **Match studies with job occupations.** Graduates women in SET studies should work in SET jobs. The gain in their presence in the job market would ease their participation in the decision-making positions.
- **Identify the causes of the gap between female researchers and male researchers in the labour force.** Elaborate studies, surveys, and conferences to identify the reasons and work at the most appropriate level (Government, companies, universities, research centres) to reduce the gap.
- **Draw the attention of top talent in STE companies.** Companies want the best employees and the best decision-makers. Thus, they should promote the interest of graduates in their company and divulgate information about the positives points to work in their firm.
- **Promote entrepreneurship of SET graduated women.** Government should introduce incentives (tax, reduce administrative burdens), programmes of assessment or funding opportunities oriented to women willing to start a (SET) business.
- **Disseminate the good performance of Romanian companies in promoting the gender balance within the company.** Companies should communicate internally and externally their formal commitment on the gender-balance in their corporate strategy and periodically inform on their achievements (recruitment, training, promotion...)
- **Establish targets.** Targets can be a good way of promoting gender equality within the company. Gender equality has to be considered as an indicator, in the same way as financial indicators, to be monitored in the performance of the firm, measuring corporate efforts to enhance gender equality.
- **Increase the awareness among firms to have gender diversity on their corporate board.** Companies should make public the gender composition of the board and communicate to other firms in order to invite them to follow their example.
- **Attract women to decision-making positions.** The high representation of females among SET graduates should be reflected in the number of women on the boards of SET companies.
- **Strengthen social corporate responsibility.** Guarantee that women are a category to be considered when assessing social corporate responsibility.
- **Promote the inclusion of gender issues in the National Institute of Statistic (INS).** Companies should increase the transparency of their efforts on gender balance issues and ask the Government to include gender issues in the national statistics.
- **Monitor the effective accomplishment of the EU target of women representation on boards.** Companies should start preparing the measures to comply with the target fixed in the future Directive and establish an efficient and transparent monitoring system.
- **Give transparency to the recruitment and promotion processes.** Procedures of appointment and selection should be transparent, with the previous publication of the criteria and with the sentence “we invite women to participate”.

- **Establish a national database** of women ready to be on a board of STE companies. The aim is to facilitate the identification of women ready to occupy a position on a board. Nowadays there is the Global Board Ready Women Database.
- **Facilitate the advancement of careers of women in STE companies.** Companies should organise training for women in fields that can help her to progress in their professional career: leadership, coaching, management, solving problems, speaking in public, negotiation skills, sharing at work, strategic planning.
- **Strengthen the visibility of role models** of key women in the technological sector. The participation of real women who have succeeded in the sector can be more useful than a media campaign.
- **Media** can help to give an inclusive discourse, building bridges. There can be a list with top Romanian SET companies with women representation.
- **Recognition of well-performing STE companies.** Government, media and/or associations can give visibility or recognition, and then make it more attractive, the internal projects to promote gender equality in decision-making run by multinational corporations.
- **Strengthen the relationship between private companies and public authorities** (see OMV Petrom Protocol).
- **Strengthen the visibility of Romanian SET women in the European environment:** enrolment in EU associations/platforms and participation in EU projects and EU awards.
- **Create a platform of Romanian women in leadership positions in STE companies.** This platform can be the chance to exchange points of views, share experiences, solve common problems and promote initiatives that can enable the presence of women on more boards.
- **Launch competitions** to find innovative technological solutions to deal with issues of Romanian girls or women (example of She Will Innovate the Intel Corporation and Ashoka Changemakers

Part 4

The case of Spain

7. PART 4 – THE CASE OF SPAIN

7.1 State of play

In the preface of the Organic Law 3/2007, March 22th of Equality between women and men, reference is made to article 14 of the Spanish Constitution; it proclaims the right to equality and the right of non-discrimination because of sex. The data in this chapter will allow us to see if these rights are actually implemented in Spanish society today.

Figure 15. Proportion of women and men in the National Research Council 2013



Source: *Científicas en cifras 2013. Unidad de mujeres y ciencia. Ministerio de economía y competitividad. Pág. 57.*

Figure 15 shows how, in one of the most important scientific institutions in the country, the National Research Council, the presence of women and men develops differently. Women have an important presence in the initial labour categories (starting at 59%) as training research, but as the responsibilities and scientific references in these categories increase, the number of women drops down in an alarming way to 24% for the PI (People in research) position.

In almost all Spanish universities, girls are in the majority: 63% in Social and Legal Sciences degrees; 64% in Humanities; 59% in Experimental Sciences, and 74% in Health Sciences. However, in engineering and other technical studies, there are not more than 27% girls. These numbers are similar to the rest of developed countries.

In this chapter we will introduce data regarding the current situation in Spain, which will show that equality is not being reached despite the country having some of the most improved laws in Europe.

Salary discrimination for women in Spain is double the average in the European Union (15%). A Spanish woman employee earns 28% less than a man for doing a similar job (Source: OIT, 2014). Other important facts are:

- 65% of the Spanish executive women claim that discrimination still exists.
- 46.5% of executive women report having suffered some kind of discrimination during their professional life because of being a woman.

- Only 16.8% of the board members of companies at IBEX are women
- Regarding work life reconciliation, more than half of women on boards (51%) think that Spain is at the bottom of the European countries; at the same time they acknowledge the efforts of their companies to make it easier, as 1 out of 3 believes that there are enough reconciliation measures in the company they work in.

From these data it becomes clear that the situation of women in Spain in the labour market is far from one of true equality. Looking at certain sectors like technology, and the public or private sectors, the situation is even worse and moves further away from real equality that should have been reached long ago in society, especially having in mind the existing legal framework that supports effective equality between women and men.

7.2 Legal framework

Spain is one of the countries that have introduced quota legislation as part of its equality laws. The Law on Equality adopted in 2007 introduced a provision for companies to establish boards of directors with a “balanced presence” of women and men, defined as a minimum presence of 40% of each sex. Companies have eight years to comply with this requirement, but progress has been slow. This may be due to the lack of sanctions. The Equality Law does however contain interesting provisions that should encourage companies to apply gender equality policies.

Equality law

A number of regulations were enacted in order to implement the Constitutional mandate articulated in Article 14 with regard to gender equality. Such regulations, although binding, proved to be ineffective, as parity in different areas, especially in labour and business-related areas, had not been achieved. The Spanish Congress enacted Law 3/2007 on Substantive Equality between Women and Men (the “Equality Law”), with the intention being to unify these disparate regulations and to establish a single norm for equality and gender parity.

The Act applies to listed companies with 250 employees or more and implements several European directives.⁸⁷ A number of provisions are relevant in relation to the promotion of gender equality on corporate boards.⁸⁸ The most important one is article 75, which effectively requires that women should occupy at least **40%** of the board seats of Spain’s largest companies by 2015. However, there is **no sanction in case of non-compliance**.

According to article 45 employers must adopt measures towards preventing occupational discrimination between men and women, and formulate and implement an equality plan, negotiated with workers’ legal representatives.

A very recent development is the adoption of the Law 31/2014,⁸⁹ amending the Spanish Companies Act to improve the corporate governance of companies. This law was published in Spain’s Official Gazette on December 3rd 2014 and came into force on December 24th 2014. It promises to guarantee a

87 Incl. Directive 2002/73/EC of the European Parliament and of the Council of 23 September 2002 on the implementation of the principle of equal treatment for men and women as regards access to employment, vocational training and promotion, and working conditions; and Council Directive 2004/113/EC of 13 December 2004 implementing the principle of equality of treatment between men and women in the access to and supply of goods and services.

88 Paul Hastings LLP, ‘Breaking the Glass Ceiling: Women in the Boardroom’ (Third Edition, 2013).

Law 31/2014, <http://boe.es/buscar/doc.php?id=BOE-A-2014-12589>

balanced presence of men and women on the board of directors by a target representation of the least-represented gender. Furthermore, in procedures for the selection of board members, the appointment of women will be encouraged.⁹⁰ These provisions are all subject to the 'comply or explain' principle. The National Securities Market Commission (CNMV) monitors compliance.⁹²

7.3 Barriers and enablers

7.3.1 The situation of women in technology innovation

The representation of women in the fields of technology and innovation continues to be influenced by prevailing gender stereotypes. Stereotypes are subtler now than in the past when inequality was very evident and there was a social interest to reduce it. Now, it seems that everything is in order, but **inequality still exists below the surface** and is difficult to uncover. So the barriers have remained and are hidden behind the idea that Spain has reached equality between women and men, especially in the fields of education and employment.

The Expert Working Group of Women and Science published the ETAN report in which the European policies were analysed (Mischau, 2001). It concluded that female gender equality in education **is more than ensuring women's presence in the classrooms**: it is also important which subjects they choose and how they develop their knowledge.

Like in the rest of the European Union, **women are in the minority in scientific jobs** in Spain, reaching only 37.5% of the research staff in public universities (in 2009). On average women represented 37.5% of the researchers in higher education and 43.6% in the public sector.

In addition, Spain shows similar proportions of women enrolled in higher education as the EU: women dominate in Health Science with 74%, and are in the majority in the Humanities (62%) and Social Sciences (58%). Women in Science fields (35%) and particularly in Engineering (30%) are still a minority. However, the progress of the proportion of female enrolled students in Engineering has been higher in Spain (30%) than in the EU-15 (25%).

Spain is leading the EU-15 in all knowledge areas with regard to the proportion of women PhDs. The temporary evolution during the period analysed (1995-2009) is favourable to women's presence, especially in specialization areas in which their influence is minor (for instance, in Engineering and Technological fields we can see an increase from 4% to 30% of women's presence in recent PhDs). In the knowledge areas of Natural Sciences, Engineering and Agricultural Sciences, the proportion of women PhDs is higher than in the EU-15.

⁹⁰ La Moncloa, 'Council of Ministers improves corporate governance of companies.' (Accessed 19th December 2014).

http://www.lamoncloa.gob.es/lang/en/gobierno/councilministers/paginas/2014/20140523_council_ministers.aspx/

⁹¹ Allen & Overy LLP, 'Nueva Ley de Sociedades de Capital'. (Accessed 12th January). <http://www.allenoverly.com/publications/es-es/Pages/Nueva-Ley-de-Sociedades-de-Capital.aspx>

⁹² Comisión Nacional del Mercado de Valores.

In the past decade, the glass-ceiling index of the Spanish public universities has decreased. Despite the difficulties that women experience in their professional careers at universities, the situation is slightly positive and optimistic towards the future looking at the next generation. Nevertheless, the index is situated at 2.3% over the EU's average (1.8 in 2007) and important differences exist between knowledge areas; for instance the index is 2.0 for the area of Humanities and 3.06 for Medical Sciences.⁹³

7.3.2 The situation of women in innovation companies

Below figure shows the expenses in R&D activities in four sectors of the economy by all employees and by researchers. In addition, it shows how much of the budget went to women employees and women researchers specifically.

Figure 16. Number of people dedicated to full-time R&D activities based on 12/100 employed population

Occupation						
Sector	All employees			Researchers		
	Total (€)	Variation rate (%)	% Women	Total (€)	Variation rate (%)	% Women
Public Administration	41.786,60	-4,8	51,2	21.849,8	-4,6	46,8
Higher Education	77.238,1	-4,5	44,9	59.755,4	-3,9	41,6
Companies	89.364,3	-0,5	30,6	44.920,3	0	30,2
Non-profit Private Institutions	442,4	4,1	54	232,0	-4,1	53,2
Total	208.831,4	-2,9	40,1	126.777,5	-2,7	38,5

Source: INE Instituto nacional de estadística

From Figure 16 it becomes clear that women are more numerous in the public sector and higher education than in the corporate and not-for-profit sectors. This might be explained by the more favourable labour conditions and the possibility to have more permanent jobs that allow for a better reconciliation between personal life and work.

The lack of data is also significant. The studies that we are referring do not include any gender perspective for technological/innovative private companies. There are some data about gender, but no analysis from a gender perspective. We question if there is invisibility in these sectors? Are we talking about true barriers for women being promoted in the technological and innovative private sectors? Is this an exclusive phenomenon in Spain? Nevertheless it is clear that there cannot be women in technological and innovative fields in the labour market if there are hardly any women in education, either at school or professional/academic training.

In Spain, IT jobs are clearly jobs for men, who are young and have few domestic responsibilities. In addition, these jobs are usually in companies that offer more responsibilities and higher salaries compared to companies in other sectors. Long working hours, projects that are unpredictable and require a flexible working schedule are factors that can be complicated for women with family responsibilities. This is why some women feel forced to take a “break” in their professional careers; some of them disappear from the IT/innovation companies and end up in the Public Sector or become a freelance in sectors outside of technology.

An Every's document from the Education Department shows that engineering has lost 46% of students. Women, now 54% of university students, receive better grades and finish their studies before men; but in the technology fields their presence remains at 26%. In the academic year of 2004-2005 they represented 27%, and only 1% in the field of engineering. In the world, 80% of engineers are men.

In school, girls are better in reading but worse at maths. Spanish students, in general terms, have always shown these skills and incompetence. The differences with their male classmates widen year after year despite their good grades, among other matters, as girls work more and they are more constant (they invest 1 more hour to do homework than boys do).

These characteristics of the Spanish student body could be extended to the rest of European countries, as the OCDE document about gender differences in classrooms shows. With data from PISA studies, the authors of this report propose that **the problem with the underrepresentation of women in STEM is not about abilities, but about the passing on of gender stereotypes from the past, which continues to influence men's and women's educational choices significantly.**

Conclusions:

From our research we find that the main barriers for women to aspire to careers in STEM are:

1. **Cultural and social stereotypes:** it is evident that women and men have the same cognitive abilities to develop in equal conditions in scientific and technological fields, but in many cases the roles assigned to each sex resolve the decision about preferences in all fields of social relationships.
2. **Education:** we have presented examples and different studies in which school and training by teachers impose a determined social model that influences girls' and boys' decisions about their academic and professional future. It is very important to realize that our own educational system may well be a barrier that perpetuates stereotypes for boys and girls.
3. **Role models:** teachers, media and family are role models that have great influence on the decisions for the future of young people. The lack of women on boards and in the upper echelons in STE companies is one of the main causes that young women have no role models when they reflect on their decision to choose science and technology fields.

4. Especially in technological fields, there are some aspects of the technological knowledge that do not seem to be **interesting** to young students, especially young women. Technology is unfriendly in some aspects that are reflected in technical aspects that are linked with people care or people relationships. In the UK chapter we reported on WITEC Association's recent project to develop an education plan for teachers to promote technological studies to young students (girls). One of the findings of this project is that **technology is not so attractive** to young women. Another highlight is that "fear" and "insecurity" exists when we talk about Maths; it seems to be the main obstacle for most of the students to not choose science and technology studies. In addition we have found data regarding Spain that confirms the lack of security related to Maths studies when we talk about female students. Finally, the PISA report confirms this again for Spain.

5. If there are few women that study science and especially technology, it is expected that **very few women** will be in these job fields. The data in this Guide show that there are very few women in industrial areas related to science and technology, especially in the private sector.

6. It is important to emphasize that finding data and statistics about the situation of women in innovative sectors in private companies is very difficult. One of the most important conclusions therefore is that there is a **need to address the lack of data in the private sector about the presence of women in technological and innovative companies**.

7. In Spain, as in the rest of the European countries, legislative actions are being carried out that include equality quotas in workplaces. These measures should also be extended to women in decision-making positions in the academic fields.

7.4 Best Practices

• L'Oréal Spain Experience

François-Xavier Fenart, L'Oréal Spain's ⁹⁴ President, has said: "Our program has contributed to the modification of attitudes, the fight against prejudices and the opening up of new opportunities to women". And: "Our challenge is to help to do a vocational calling to girls of today that think about their academic and professional future, and encourage them to pursue a research career".

• Polytechnic University of Valencia Experience

The Polytechnic University of Valencia has the largest number of engineering degrees of the Community of Valencia. This academic year (2015) 33.6% of students enrolled in engineering and architecture studies; in this course 10,609 women out of a total of 31,593 students are enrolled. The rate of incoming women in this course confirms the trend: 2,770 women (33%) started a degree at the Polytechnic against 5,638 men.

Not satisfied with these numbers, the Polytechnic has decided to take action on the matter and has developed a program to promote technical careers among students in secondary education in order to improve the inclusion of women in these studies. The program, named "Valentina", has been developed

⁹⁴ <http://www.loreal.es/>

by a multidisciplinary team of the Department of Engineering Systems and Automation in the University and staff from the Studies of Woman Institute at the University of Valencia. It is not the first time that they work together. The collaboration goes back more than eight years and during this time they have addressed several studies, some of them European, to promote gender equality in college.

The program showed that a significant percentage of students in secondary school (28%) think that technology is a more appropriate choice for men and only 1% explicitly stated that it may be appropriate for women (whereas the rest of the sample responded neutral). This mentality is transferred to the intentions of the girls who are less interested than their male peers to study engineering. However, the workshops have a real positive effect since the percentage of girls who consider this possibility increases from 30.3% to 35.9%; the percentage of boys decreases from 69.7% to 64.1%.⁹⁵

On the other hand, the school of computing is an almost impregnable male stronghold with 84.7% of men (of only 463 of the 2,573 students enrolled). They are followed by design and Telecommunications, both with more than 75.5% of men and Industry, with 72.5%.

•“Woman and engineering. One plus one not always equals Two”

Unite for Equality of the University of Valencia with the School of Engineering (ETSE) and WIE- IEEE Spain organization invited the entire university community, students and teachers of secondary and high schools and the general public to attend the presentation of the paper ‘Women and engineering. One plus one not always equals Two’, on Wednesday 10th December 2015.

•GENSET (Telefónica Private Foundation)

Because of the many obstacles that women still face in the scientific community, an initiative was conducted to see how gender influences the debate on scientific excellence. A team of EU-funded researchers undertook this initiative, as part of the GENSET project (fighting for gender equality in Science).

The debate focused on five topics, which are considered blocking the full integration of women scientists: creation of scientific knowledge, research processes, recruitment and retention, evaluation and recognition of skills and the value system of scientific excellence.

A large number of leaders in science and personalities participated in the forum. Following the conclusion of the forum, four areas of particular importance to be addressed were identified: management, organization and promotion of human capital, creation of scientific knowledge, policy and compliance in relation to the processes and sex-related practices and practices and evaluation and contracting processes.

This initiative was useful to politicians, scientists and industry leaders to become aware of the need for gender equality as a stimulus for scientific excellence.

In addition, the GENSET project received one million euros of funding, which ended up as part of the Portia Foundation (this is a British non-profit foundation founded by a group of British scientists in 1997).⁹⁶

⁹⁵ Data from article: http://elpais.com/diario/2010/06/04/cvalenciana/1275679092_850215.html(2010)

⁹⁶ Info taken from website: <http://www.mujiencia.es>

• The Women and Science Unit

In 2005 the Board of Ministers, on the occasion of the commemoration of March 8, International Women's Day, established the Women and Science Unit. The creation of the Unit was part of a set of fifty-four equality measures taken by the Government of Spain in various fields of public policy. This was initiated in Spain, following the lead of the European Commission under the mandate of Edith Cresson with the creation of the Women and Science Unit, the publication of the ETAN Report, Women and Science Communication: mobilising women to enrich European Research, various measures incorporated in the 5th Framework Programme, and the start of the regular publication of statistics She Figures.

During these years the Women and Science Unit has developed an intense activity in different areas. The most significant is probably the legislative and the Unit's contribution to articulate three important laws: the Equality Act and the Universities Act (LOMLOU), both of 2007 and the Law on Science, Technology and Innovation, 2011. Taken together these three laws provide a legal framework for gender policies in science in Spain that has become a pioneer in the world.

• Cooperation between University Rovira Virgili and Red Equality

The University Rovira Virgili (URV) holds the vice-presidency of the International Red Equality, an organisation working to improve women's conditions in the workplace. The Governing Council of URV approved last December (2014) the adhesion of the University with this network of cooperation for gender equality.

The cooperation focuses on **3 objectives**: promotion of experiences and abilities between universities that participate and support gender equality; to encourage the development of good practices and systematization of lessons learned between latinamerican schools and the rest of the world; and to create a platform of education to train and exchange experience between institutions to promote good practices to promote gender equality in the countries.

The URV will be a member of the executive committee of the cooperation network for two years and hosted the first meeting of the steering committee in February 2015. Institutions in the international project Equality in Austria approved this, since the network is one of the results of this project funded by the ALFA III program of the European Union in which participated the URV.

• Fem Talent

Fem.talent is an innovative initiative by XPCAT ⁹⁷ together with other organisations as Women's council and Civil Rights of Barcelona's local government, to promote equal opportunities and management of female talent for the knowledge economy. It is focused on female talent activation and promotion of equality in the economy, in enterprises and the workplace in all sectors. Fem.talent organises many activities and forums structured in conferences for professionals, discussions and round tables. In addition it organizes presentations of innovative practices in promoting equal opportunities. Fem.talent is a platform for thinking and discussion, to share experiences, good practices and to design a society that is built for the future. Fem.talent is visible in social networks, where they start the dialogue too.

Fem.talent gives value and visibility to those practices from the fields of Science, Technology, Entrepreneurship and Enterprise that encourage the reconciliation between work and personal life,

the visibility of female talent, women's empowerment and, in general, help to improve productivity and quality of the job to our economy promoting equal opportunities.⁹⁸

7.5 Recommendations

- **Legal framework:** Better enforcement of the equality law. The law exists and is in force and may lead to many changes in laws at lower levels. However, it is not executed and enforced properly.
- **Education:** Overcoming stereotypes. Overcoming stereotypes is about opening spaces to imagine freely and to let creative take over. For this reason, a number of actions are recommended in the classrooms, such as giving regular presentations about women and men in a variety of jobs while addressing the influence of stereotypes.⁹⁹
- **Companies should break the stereotypes.** Data and studies demonstrate the importance of women as part of the workforce. And yet there are many barriers that remain in business for women to achieve parity with men. For women in situations of responsibility or top management the problems are closely related to reconciliation of work and personal life, their absence in formal and informal networks and the lack of visibility of women's capabilities. In addition, there is a serious problem directly affecting companies, which is the lack of critical mass of women so that sufficient capable women are available and a search does not end up like finding a needle in a haystack. **People who run businesses especially technological innovation must break the stereotypes** that result in discrimination when choosing women in positions of all levels of responsibility.
- **Role of the media to break stereotypes.** Also the media should break with the stereotypes that they are perpetuating in their programs. Instead the media should treat men and women equally

⁹⁸ Official website of Fem Talent: <http://femtalent.cat/>

⁹⁹ Stereotypes examples http://www.ite.educacion.es/formacion/materiales/112/cd/m6/los_estereotipos.html

Part 5

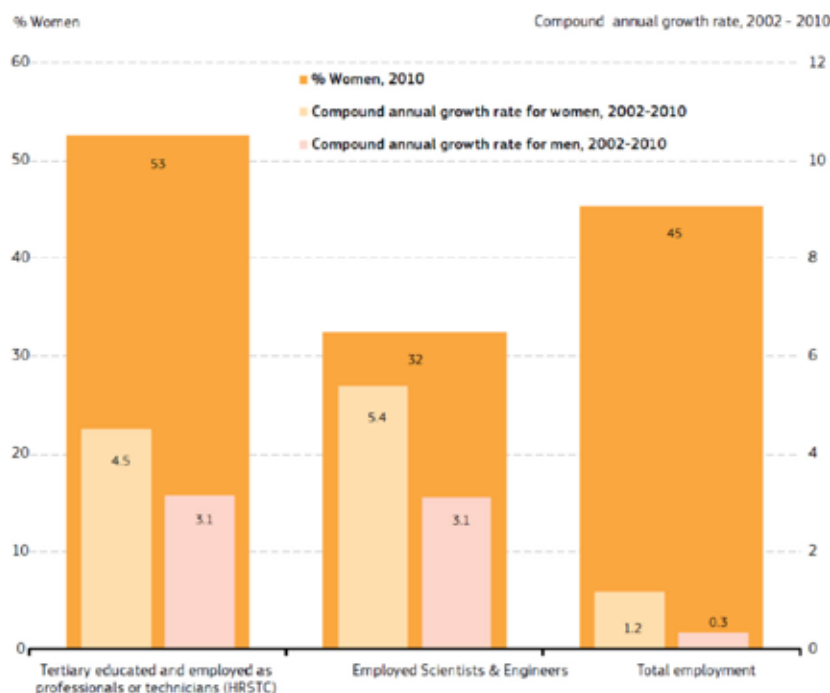
The case of UK

8. PART 5 – THE CASE OF THE UK

8.1 State of play

The purpose of this chapter is to assess the presence of women in research in a UK perspective. It analyses the relative shares of women and men engaged in various forms of scientific employment. The employment participation, both as a snapshot for the year 2010, and as a dynamic process of change over the period 2002–2010, has been analysed by comparing the proportion of women in total employment with their share among the highly educated working in a science and technology occupation as professionals or technicians and among those working only as professionals (scientists and engineers) for the year 2010. Figure 17. Proportion of women in the EU-27 for total employment, tertiary educated and employed as professionals and technicians (HRSTC) and scientists and engineers in 2010, compound annual growth rate for women and men, 2002–2010

Figure 17. Proportion of women in the EU-27 for total employment, tertiary educated and employed as professionals and technicians (HRSTC) and scientists and engineers in 2010, compound annual growth rate for women and men, 2002–2010



Source: *She Figures 2012*

WWAs we have seen in the Introduction of this Guide, the UK scores well below the EU average in terms of the proportion of women scientists and engineers in the workforce (1.22 % against 1.75% at EU level).

8.2 Legal framework

This chapter contains a brief overview of the legal framework regarding the promotion of gender diversity on corporate boards of STE companies.

Until the introduction of the Strategic Report and Directors' Report Regulations (SR regulations) in 2013, the UK framework on gender diversity on corporate boards was characterized by **voluntary, non-legally binding instruments**. Especially the UK Corporate Governance Code and the Lord Davies Review have played an essential role in the promotion of gender diversity on corporate boards. These instruments do not impose any sanctions on non-compliance, but because the results of individual companies are rated and published, they come with a naming and shaming effect. This has proved to be effective: progress has been tracked carefully since the Lord Davies Review of 2011 and shows a steady increase. In 2011 Lord Davies set a target for the FTSE 100 companies to achieve 25% women in their boardrooms by 2015. With 22.8% women's representation in October 2014 (up from 20.7% in March 2014) this target seems within reach. Although it is too soon to comment on the extent of the effect of the SR Regulations in this process, no doubt they will contribute positively in influencing the consciousness of companies when deciding on the composition of their boards. An interesting new instrument in the promotion of the gender diversity on corporate boards is the instrument of a Voluntary **Code of Conduct for Executive Search Firms**, addressing the gender imbalances in board appointment processes.

A special regime applies to companies listed at the AIM (Alternative Investment Market), which are **smaller, fast-growing innovative companies**. Many are active in the fields of ICT and Science. The SR Regulations do not apply to these companies. In addition, the special Corporate Governance Code for Small and Mid-Size Quoted companies does not include specific provision on gender diversity like the Corporate Governance Code. As a result the regime for AIM listed companies regarding gender balance on their boards is lighter than for other listed companies. Research¹⁰⁰ shows that only 7% of non-executive board member appointments to AIM company boards during the last three years have been women. The proportion of women on AIM boards is **severely lagging behind** all other UK quoted companies that have around three times as many female non-executive directors on their boards.

8.3 Barriers and enablers

Women are consistently underrepresented, particularly at senior levels, in science, technology, engineering and mathematics (STEM). Diversity issues also persist in other sectors, however, this Guide focuses on improving diversity in STEM to unlock the benefits that it would bring for individuals and for the UK.¹⁰¹

In 2013 David Cameron stated: "If we are going to succeed as a country then we need to train more scientists and more engineers". There are estimates that the UK has an annual shortfall in domestic supply of around 40,000 new STEM skilled workers and we need to double the number of graduates and apprentices in the engineering discipline alone by 2020 to meet demand. Meeting this challenge will simply not be possible without improving the number of women in STEM. A more diverse

100 <http://www.theqca.com/news/briefs/95112/aim-companies-lagging-behind-on-gender-diverse-boards.shtml>

101 Improving Diversity in STEM A report by the Campaign for Science and Engineering (CaSE) May 2014.

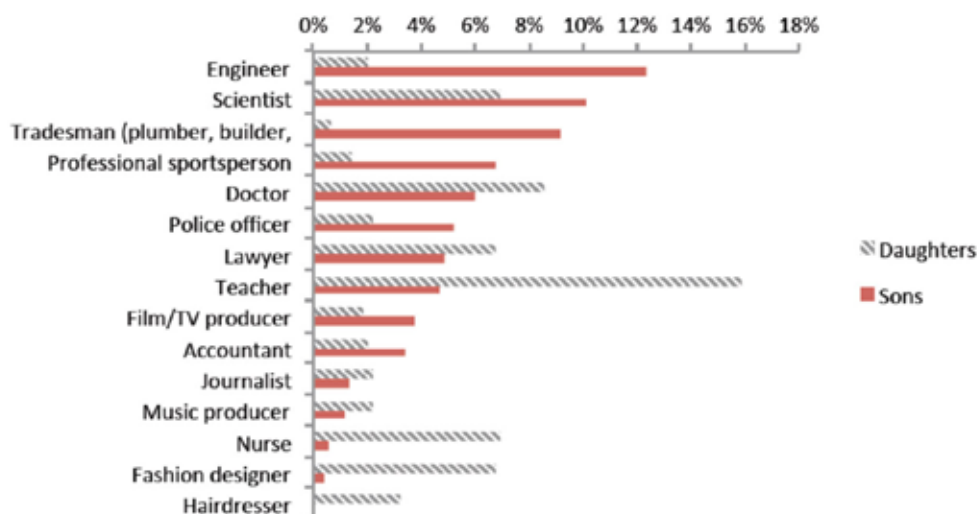
science, technology, engineering and mathematics (STEM) workforce is not simply desirable in terms of equality, but necessary if we are to maximise individual opportunity and meet economic needs.

8.3.1 STEM and education

In terms of diversity in STEM, participation and progression of women in STEM from school through to academia and industry is the area where there has been the most data collection, debate, comment and intervention across the UK. As Women into Science and Engineering (WISE) stated at the beginning 2014, their 30th anniversary year, “Things have moved on since 1984, when only 7% of those studying engineering at UK universities were female, but there is a long way to go if we are to achieve the critical mass of 30% women in the science, technology and engineering workforce”. In this landmark year for WISE, gender diversity is taking centre stage in other long established institutions. For the first time the Royal Institution has an all women line-up for 2014’s monthly Friday Evening Discourse and many more learned societies and professional bodies have female presidents, including for the first time the Royal Academy of Engineering, the Royal Society of Chemistry and the Royal Society of Edinburgh. However, that this is noteworthy is **a pointer to the slow pace of progress**.

The stereotyping of careers by gender is evident in the career advice young people receive and in parents’ career aspirations for their children. In a BIS survey on career choices there were striking divisions in parents’ responses depending on the child’s gender.

Figure 18. BIS survey on career choices



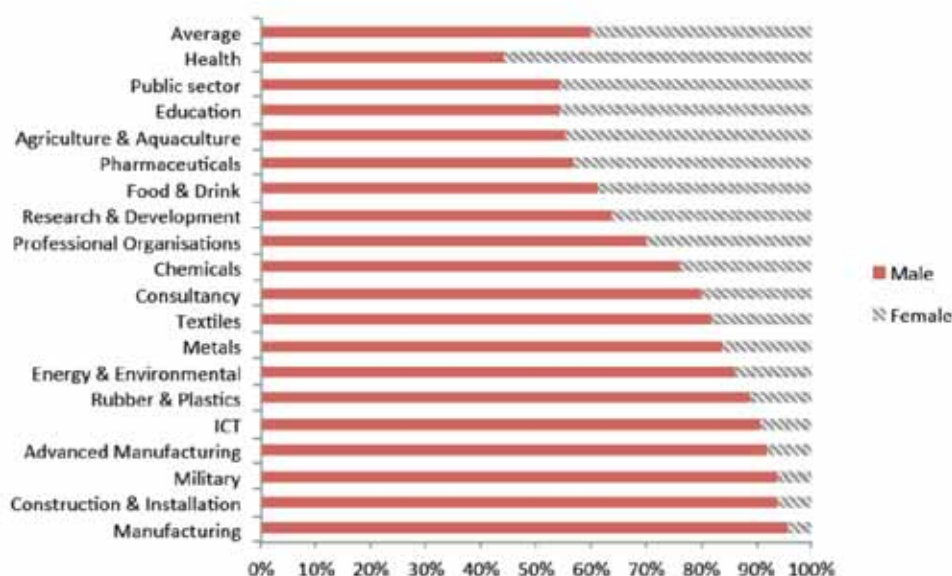
Source: BIS Survey

8.3.2 Women in Industry

Since the 2008 Delivering Diversity report there have been welcome improvements in the volume and quality of data available on women in STEM careers outside of academia. Only 13% of those

employed in STEM occupations, and only 10% of STEM managers, are women. Furthermore, the overall numbers can give a skewed view of what is happening in different STEM sectors and there are difficulties when comparing across data sets as there is no consistent definition of a STEM worker. Primary science workers are those in occupations that are purely science based and require the consistent application of scientific knowledge and skills in order to execute the role effectively. E.g. Chemists, Science & Engineering Technicians or Pharmacists. Secondary science workers are in occupations that are science related and require a mixed application of scientific knowledge and skills alongside other skill sets, such as Conservation & Environmental Protection Officers, Environmental Health Officers, and Teaching Professionals.

Figure 19. Proportion of primary science workers across STEM sectors by Gender (2009)



Source: Science Council analysis of Annual Population Survey (2009).

Around 60% of the primary science workforce is male, whereas in this analysis the balance is tipped in favour of women in the secondary science workforce - in particular, across health, education and pharmaceuticals. That 40% of primary science workers are women masks just how drastic the situation is in some other parts of the sector, as seen in the Figure above. Again there are two different factors to consider; access and progression. Even in sectors such as health and education where the numbers appear more balanced, there is no room for complacency as women are still less likely than men to hold senior positions.

Gender occupational segregation is particularly extreme in STEM skilled trades, with women forming 1% of these occupations in 2008, with a tiny growth of 0.1% since 2003. Women account for only 6% of the construction scientific workforce ¹⁰². The recent Perkins' Review highlighted that only 8% of

¹⁰² Equality and diversity: good practice for the construction sector, Equality and Human Rights report, 2011

British engineers are women, the lowest proportion in Europe, compared to Germany (15%), Sweden (25%) and top-performing Latvia (30%).¹⁰³

In 2011/12 half of all apprenticeship starts were female. However, women are significantly under-represented in the STEM and higher-pay sectors such as engineering (4%), while men are under-represented in lower-pay sectors such as the children's and young people's workforce (7%).¹⁰⁴

A recent survey of young professionals showed that a third of the men questioned were encouraged to take an apprenticeship in school. Just 17% of women received the same advice.¹⁰⁵

Across vocational education the picture is worrying, with low and declining uptake by females of STEM vocational qualifications. The number of females achieving Engineering and Manufacturing Technologies NVQs/SVQs was already low and in 2011 declined by a further 8% compared to a 19% increase for males over the same period. Pilots looking at how to increase diversity within apprenticeships found that although employers saw the main issue was low demand for apprenticeships from young women, not all employers had considered unconscious bias in recruitment.

Research suggests European listed companies with greater gender diversity in top positions outperform sector averages¹⁰⁶ and are more effective.¹⁰⁷ Women remain a small, but growing, proportion of Board members in SET FTSE 100 companies. In 2004, only 8% of SET Board directorships were held by women. In 2011, the FTSE100 were set the ambition by Lord Davies and his Steering Group for women to account for 25% of FTSE 100 boards by 2015. This voluntary approach, combined with a concerted effort from industry¹⁰⁸ has seen significant success in the last three years; women now account for 25% of FTSE100 non-executive board positions, up from 13% in February 2011. Whilst there is movement in the right direction, **the only two remaining companies with all-male boards are STEM businesses** and in general STEM companies still lag behind. However, there are shining examples within STEM; Diageo Plc, a STEM company, tops the list with its Board being 44% female.¹⁰⁹ The FTSE250 have now also been encouraged to increase female representation and aim for 25% of women on boards.

This approach does show that what is monitored makes a big difference to action, clearly shown by the fact that although there have been big improvements in the proportion of women in non-executive posts, only 7% of executive posts in FTSE 100 companies are held by women. With collective effort it is possible to see significant improvement in diversity within senior positions within a short period of time. There seems to be value in taking a voluntary approach. Significant change can happen quickly. We need to build on this approach across other sectors, including government, public appointments, professional bodies, universities and industry to drive forward change.

¹⁰³ Engineering skills: Perkins review, 2013.

¹⁰⁴ Under-representation by gender and race in apprenticeships, TUC, 2013, UKRC statistics guide, 2010.

¹⁰⁵ City and Guilds survey, March 2014.

¹⁰⁶ "Women Matter: Gender Diversity, a Corporate Performance Driver", Desvaux et al 2007, McKinsey and Co.

¹⁰⁷ Review of the Role and Effectiveness of Non-Executive Directors, Higgs for DTI, 2003.

¹⁰⁸ <http://www.30percentclub.org/history/>

¹⁰⁹ Women in Science, Technology, Engineering and mathematics: from Classroom to boardroom, 2012.

Conclusions

- From our research we find that the main barriers for women to aspire to careers in STEM are: Cultural and social stereotypes: it is evident that women and men have the same cognitive abilities to develop in equal conditions in scientific and technological fields, but in many cases the roles assigned to each sex resolve the decision about preferences in all fields of social relationships.
- Education: we have seen in examples and different studies that teachers in education, school and training impose a determined social model which influences girls' and boys' decisions for their academic and professional future.
- Role models: teachers, media and family are role models that have great influence on decisions for the future of young people. The lack of women on boards in upper echelons in the companies and their limited representation at the top of STE companies is one of the main causes for young women not having role models to reflect on their decision to choose science and technology fields.
- Especially in technological fields, there are some aspects of the technological knowledge that do not seem to be interesting to young students. Technology is unfriendly in some aspects.
- If there are few women that study science and especially technology, it is expected that very few women will be in these job fields.
- In the UK, as the rest of European countries, some legislative actions are being carried out that are essential for women that aim equality quotas in workplaces. These measures are also extended to academic fields and decisions.

8.4 Best practices

This chapter contains a selection of national initiatives, projects and activities that have been successful in improving the situation of women in STEM and which may serve as 'best practice'.

WITEC Association is working at this moment in a project that aims to develop an education plan for teachers to promote technological studies to young students (girls), and one of the results of this project is that technology is not that attractive to young women. Another highlight is that "fear" and "insecurity" exist when we talk about Maths; this seems to be the main obstacle to most of the students to shy away from science and technology studies.

• United Kingdom's Biochemical Society

Strategies such as mentoring can make an enormous difference. With help and advice from UKRC, the United Kingdom's Biochemical Society has established a mentoring program for women biochemists, pairing together experienced senior women scientists with more junior women at other institutions, in order to provide encouragement, advice, and practical help. Ruth Brown is one of the first groups of mentees who began a yearlong effort with a mentor at the University of Leeds. It is this program that has kept Ruth on track to complete her Ph.D. "I got to the point where I wasn't sure I wanted to continue. It was the mentoring program which made me want to carry on," she says. Ruth also looks upon her mentor as a role model: "If you see someone senior and they're willing to talk to you then you believe you can get there". Ruth's mentor encouraged her to apply for travel funds to attend a conference,

and to network. The reward for Ruth is increased confidence—so much so that she has volunteered to represent students and chair meetings for her department's Postgraduate Staff-Student Committee—something that she would not have considered before.

- **Swan Charter Awards**

Universities are encouraged to create female-friendly policies by the Royal Society's Swan Charter Awards. A university can apply for a Bronze Award by creating a plan for changes that support women scientists, a Silver Award for implementing these plans, and a Gold Award for producing evidence that the changes are having an impact

- **GenSET**

GenSET ¹¹⁰ is a project that aims to introduce change at scientific institutions across Europe so as to achieve a balanced representation of women in all areas. Key to the GenSET philosophy is that gender equality in science improves scientific quality. It is not just a women's career issue but a societal issue, and that through gender diversity, the entire workforce has the potential to be more creative and productive. The European Union supports the project as part of a broader Science in Society program that aims to enhance the success of Europe's scientific workforce. "The European Commission thinks GenSET is great because it's a new voice from the scientific community for the scientific community," notes leader of the GenSET consortium, Elizabeth Pollitzer.

Over 100 European institutions have become partners to GenSET, including the London School of Economics, the Spanish National Research Council, and the European Science Foundation. Another is the University of Tromsø, Norway, which has become the first institution to fully adopt GenSET's guiding principles, coordinated by Curt Rice, pro rector of the university and a theoretical linguist who also specializes in scientific leadership. Each of the university's six participating faculty will be translating these principles into action, and will receive mentoring by GenSET during the process.

Getting commitment for change at the highest ranks is critical, according to Buitendijk, one of a panel of scientific experts. "We need deans and CEOs to understand the issues and then persuade those below them."

- **Royal Society of Edinburgh ¹¹¹**

The Royal Society of Edinburgh, with the involvement of the Chief Scientific Adviser for Scotland, is addressing the challenge of developing a cohesive and comprehensive strategy for Scotland to tackle the under-representation of women in science, technology, engineering and mathematics. The principal aims are to identify factors that appear to limit the proportion of women in the STEM workforce, and to seek to introduce measures that may increase the number who rise to senior positions in universities, institutes, public and professional bodies, business and industry.

¹¹⁰ <http://www.genderinscience.org/>

¹¹¹ <http://www.royalsoced.org.uk>

- **Royal Academy of Engineering**

Women are under-represented across other indicators of achievement, including Academy fellowship, but with a focus on improving diversity in recent years progress has been made. In 2006 less than 2% of fellows at the Royal Academy of Engineering were female. Since they began taking action to address the imbalance in 2007, every annual intake of fellows has been 10-15% female with the overall proportion now at 4% of the fellowship. They have also created the Diversity in Engineering Concordat currently signed by around 30 Professional Engineering Institutions aiming to get the profession taking action to improve diversity. Similarly at the Royal Society only 5% of fellows are women and since 2000, 10% of new fellows are women and since 2000, 10% of new fellows have been women. The Royal Society has introduced **Temporary Nominating Groups** seek out and support credible candidates for nomination across a number of underrepresented areas within the Fellowship, including women. It is a positive step forward. Concurrently, as the election process operates by nomination from existing Fellows, rather than by application, the reasons why candidates may not have been nominated for Fellowship through the traditional channels needs to be addressed. As part of their drive to champion diversity the Royal Society have in place measures to check that the speakers at conferences they host are appropriately diverse.

- **British Science Festival**

The UK is a world-leader in science and engineering and there are a number of initiatives and events to inspire and encourage more young people into these industries. The British Science Festival celebrates science, engineering and technology and this year was visited by Greg Clark Minister of State for Universities, Science and Cities.

Some other interesting best practices can be found in the USA.

- **National Science Foundation**

For the past 10 years, the U.S. National Science Foundation's ADVANCE program has supported universities across the United States by providing a broad portfolio of activities that support women scientists, including mentoring.

- **Princeton**

At Princeton faculty and staff who have children are eligible for up to \$5,000 per year for pre-school childcare support and maternity leave. Faculty can apply for travel support to conferences for dependents, and new faculty who are the primary parent responsible for childcare can have time off from teaching. Graduate students have parallel programs. And to encourage more women to apply for faculty positions, Princeton also has a policy extending tenure-track positions by an extra

year following the birth or adoption of a child—an approach now popular with other universities across the United States.

8.5 Recommendations

From the perspective of this study carried out by WITEC Secretariat, it is considered that the most important barriers for the promotion of women in scientific and technological degrees are in the areas of **academic training, education, teachers models and academic and professional guidance**. These aspects are closely related to childhood upbringing in families, so families should be involved to help breaking stereotypes and ensuring female students can choose scientific and technological subjects without “fear”.

As we could see in the conclusions in the section 8.3, the causes why women do not join scientific fields, especially technological fields, vary. But from our point of view, we consider that **the UK is working more actively than other European countries** in programs and actions that encourage young women in STEM. Our recommendations are focused in the following areas:

Role of Government

- As part of their commitment to gender issues the Government should be taking the lead on the gender agenda working to ensure that there are no intrinsic barriers to under-represented women progressing into and within Government and linked public bodies, particularly those associated with STEM where there is not a strong history of diversity in leadership.
- In addition to the existing laws, we recommend the evaluation of these laws and to look for indicators that can allow a convincing evaluation for the implementation of legislative measures as described. We draw particular attention to the fact that the proportion of women on boards of **AIM companies** are seriously lagging behind all listed companies; the softer regulatory regime as to gender diversity on AIM boards may well influence AIM companies boards being less committed to address the issue. It may be recommended to convince parties involved to extend the FTSE100 regime to include AIM companies.
- The Government should commit to adequate funding to support the ongoing work of the Equality Challenge Unit on the Athena SWAN Charter.
- Government should ensure that **any other initiatives and events** around STEM are designed and implemented with consideration given to how they can positively contribute towards the diversity in STEM agenda.

Role of Education Institutions

- All teachers through initial teacher training and continuing professional development (CPD) should be equipped to teach a diverse range of students. This training should explore issues around unconscious bias and addressing stereotypes, including STEM stereotypes, from primary level upwards.
- In addition to career advice, broad career education to increase young people's knowledge of and access to the range of different possible careers, including those in STEM, should be a requirement in schools from primary level upwards.
- All teachers should be supported in integrating science career awareness as part of teaching and learning by including training on careers education within initial teacher training and subject-specific or other CPD for teachers.
- The content and emphasis of the National Careers Service website should be urgently reviewed and amended with opportunities for input from STEM career specialists, particularly on the young people page and the content relating to STEM.
- Schools should monitor the STEM work experience opportunities offered to and taken up by their students by gender and then work to address the balance if necessary.
- Any messaging should aim to break down the 'masculine' STEM stereotype and the narrow male and female gender-stereotypes to focus on STEM being for everyone.
- School accountability measures should include an indicator of progression to and success at A-level and other post-16 qualifications by gender. Schools should then reflect on their own statistics and put in place whole-school measures to counter gender stereotyping.
- Unconscious bias training should be made mandatory for all members of grant-awarding boards and panels across all 7 Research Councils.

Role of Companies

- Companies should value the important contribution of women in S&T fields and bet on hiring women that could add value as professionals to the companies.
- Surveys and studies show that the quality of teamwork improves when women are included as opposed to teams that consist of men only. The difficulty that women have to break the glass ceiling and to reconcile professional and personal life should not be a barrier for women to access companies' boards and to be more visible for younger generations.

- In the UK, the situation is not as bad as it is in other European countries, but they have not reached equality yet, this is why companies need to make an effort to include in their corporate culture the values of equality and women's promotion.

Role of Media Communication

- Finally, the media play an important role in breaking stereotypes, since media have significant influence in the lives of boys and girls in school ages. Advertisements that still show women as an ornament promoting a car for example perpetuate the stereotypes and emphasize gender differences between girls and boys in a negative way

Profiles of project partners



9. Profiles of project partners

WITEC

WITEC was formed as a network in 1988 and after more than ten years of networking and project activities related to women and SET it established itself as a non-profit European association in May 2001. WITEC is a European association with 25 years of history of promoting studies and activities related to empowering women in the field of technology, science and engineering (SET).

AFAEMME

AFAEMME, Association of Organization of Mediterranean Businesswomen, is the unique coordinator of Mediterranean business and gender equality projects and a networking platform for women entrepreneurs from all over the Mediterranean. AFAEMME has already implemented various projects in the field of gender equality in decision-making positions. More specifically, between the most important projects we can find “Implementing gender policies in decision-making positions in SME’s” in 6 Spanish regions, “Promoting Women’s Empowerment and Leadership” in Barcelona, and “Increase of SME’s Productivity through the Application of Gender Policies in Decision-Making Posts” in Catalonia, Spain. AFAEMME has 13 years of expertise and counts with 32 national and international projects with the aim of boosting women entrepreneurship. Also, AFAEMME counts on its small but solid international projects team (Ms. Stella Mally and Ms. Giulia Fedele), with external experts, and with women entrepreneurs advisors and mentors (Ms. Esther de Frutos Gonzales and Ms. Beatriz Fernández-Tubau). Finally, AFAEMME counts on the expertise of Ms. Maria Helena de Felipe Lehtonen, its President, who was, together with Ms. Mirella Visser and Ms. Bola Olabisi, in the European Commission Network of Women on Boards.

The Centre for Inclusive Leadership

The Centre for Inclusive Leadership is a management consultancy company with a focus on advising companies and organizations on how to advance women to senior management positions and on boards. Its founder and managing director Mirella Visser is an internationally recognized expert, experienced international executive and non-executive board member and author of several books and articles on women and leadership. Parts of CFIL’s activities are carried out not-for-profit as a contribution to the cause of striving for a more gender balanced leadership in society.

The European Women Inventors and Innovators Network (EUWIIN)

EUWIIN was set up in 2006 and has had representation on various think tank groups in order to assist in the process of bridging the gap between women and men in decision-making over the years. One such affirmative action was the representation of the Director of EUWIIN, Bola Olabisi as an advisory member of the working group known as the European Commission Network to Promote Women in Decision-Making in Politics and the Economy. This was set up in 2008-2012 so that members of the group from various countries across Europe could suggest possible actions via the means of debate, exchange of information and the sharing of good practices including the identification of strategies that could help make progress on the issue. Furthermore, EUWIIN provided crucial information that contributed to intensive research under the DG Enterprise And Industry European Commission report “EVALUATION ON POLICY: PROMOTION OF WOMEN INNOVATORS AND ENTREPRENEURSHIP” submitted by the E E C (GHK, Technopolis) within the framework of ENTR/04/093-FC-Lot 1 Dated 25 July 2008.