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Women in science and technology

Creating sustainable careers

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Foreword

A recession can be taken as an opportunity: a time to make changes in management practices. Managers must identify what has to be changed and then decide how to implement the changes.

This report provides an indication of possible changes: to attract and retain women – and men – in science and technology, an essential driver of our knowledge-based economy.

The Women in Science and Technology Group was created in 2003, and initially called the Women in Industrial Research Working Group. The change in the name indicates an enlargement of focus: academic institutions and research centres became part of the picture. And this extension corresponded to a real need: the leaky pipeline – the gradual loss of researchers over time – starts at the beginning of a scientific career, in the university lecture halls …

As management experts underlined recently, recessions provoke two diametrically opposite reactions: to become very risk-averse, or to invest for a brighter future. Experience tells us that rolling back anything that looks like change will not help us to get out of a recession. These are times when companies – and other research institutions – must focus on essential investments for their future. They need to modernise their internal structures and corporate cultures. Modernising implies a new management style and it also includes having a gender-aware management.

To stop the leaky pipeline and to provide a favourable and well balanced working environment is one way to invest for a brighter future. Providing talented researchers, both women and men, with the right environment to develop their innovativeness and creativity, will be one of the motors driving the next stage of economic progress.

Janez Potočnik

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Introduction

Pierre Bismuth ([1])

Eye Opener

I have now participated in several WIST rounds with leading companies and prestigious universities. Each session has increased my awareness as a Human Resources professional of gender issues in Science and Technology (S&T).

At the end of the last WIST session, we discussed our most serious concerns. Colloquially, we refer to them as the leaky pipe line (Figure 1) and the scissors (Figure 2). The so-called leaky pipe line describes the continuous exit of women from Science and Technology (S&T). The scissor image represents the different career tracks of men and women; a larger percentage of men than women reach the upper levels of academia and similarly for management. Unfortunately, they are accurate representations of gender diversity in S&T.

We all agreed at the end of the last WIST group that the status quo was unacceptable for S&T companies and universities. We know that women represent a competitive reservoir of talents, and that men and women share the same ambition to succeed in their professional and personal life. CEOs understand this, and therefore know that the status quo does not make business sense – it is a waste of efforts and motivation for all.

The obvious response is to improve – intelligently – the work life balance ("WLB") for both men and women, in line with their needs and work requirements. During our work sessions, we had experts and company representatives collect data, develop concepts and methodologies, and propose conclusions. Together, we looked at the effectiveness of WLB policies in leading companies and universities.

The results are an eye opener.

Flexible time is one of the classic examples of a WLB policy. But what the Corporate Leadership Council extensive survey and the subsequent researches show, is that if S&T companies and universities do not manage the relationship between flexible time, workload and career, it is not going to work. If we don't manage it, flexible time will become a negative factor for the career of those who use it – so far, mostly women. If we do not control workload, flexible time will not contribute to work life balance.

Our research also brings to light a more serious concern: the underlying culture in S&T companies and universities tends to marginalize those who use WLB policies. In other words, there is resistance to a healthy implementation of WLB policies. Ideally, these policies should address the needs of men and women at the time where personal life and work requirements conflict, typically when individuals start families. Too often it seems that we do not manage the transition into career breaks – or the transition back to work – with a sincere desire to protect the individual's career, or indeed the investment made by the company in that person's professional development. We are also concerned that WLB policies are not designed with the most promising, talented individuals in mind – the ones we want to keep. Instead, the high performers are encouraged to avoid these tracks. Again, business-wise, it does not make sense. WLB policies should be at the forefront of our efforts to retain our most talented employees.

Finally, we do have to keep working against the perception that S&T is a "man's world". The research on the images promoted by companies on men and women at work in S&T shows how much – sometimes with good intentions – we feed the clichés and stereotypes. The tendency is to show men deciding and on top of operations and women part of the working environment.

It is about time that we, as Human Resources managers, observe and experiment more seriously before implementing changes. It is also time to stop linking WLB policies to women, as if men were born immune to personal problems, or were unable to participate in what Suzan Lewis calls the "family sphere".

1 Global HR Advisor, Schlumberger

It is my sincere hope that all who read this report will be encouraged to treat work life balance policies as professionally as quality management or safety. It has become increasingly clear that the most competitive companies are the ones which can attract, motivate, and retain the best talents – globally. And the design and implementation of effective WLB policies will make the difference.

Figure 1

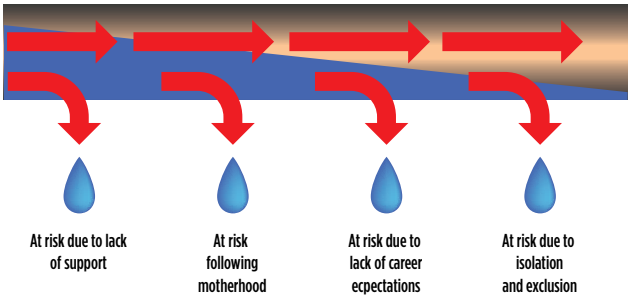
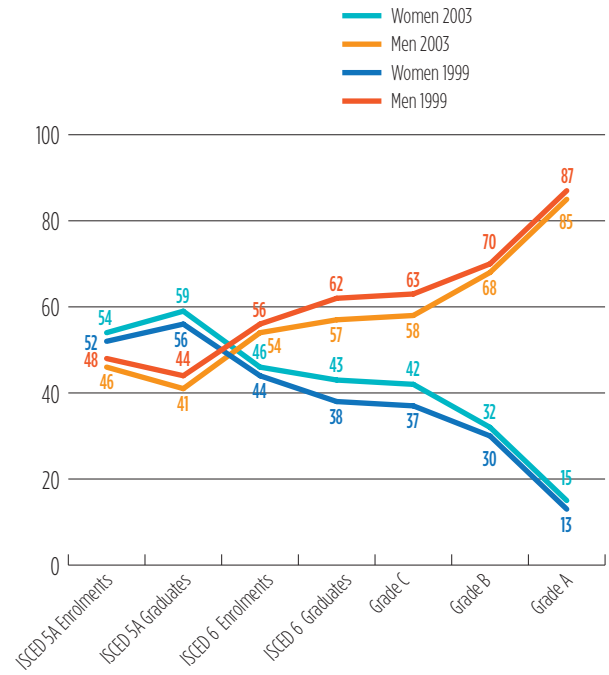


Figure 2 **Proportions of men and women in a typical academic career, students and academic staff EU-25, 1999-2003**



Source: Eurostat Education data; DG Research, WiS database seniority grades

Synthesis

Claartje Vinkenburg ([1]), Rapporteur

Introduction & objectives

Following a "Wake-Up call for European Industry" (EU DG Research, 2003), representatives from companies, experts from universities, and the EU DG Research joined forces in the working group Women in Science and Technology (WiST), in order to promote gender diversity in the field of science and technology. In 2006, the WiST working group presented its report entitled "Women in Science and Technology: a Business Perspective" (EU DG Research, 2006). Following the interest expressed by the participating companies, the European Commission decided to continue the WiST initiative for two more years. The WiST2 working group was thus established, giving more companies the opportunity to join the group, and at the same time expanding its scope to universities. Indeed, numerous studies including the report from the first WiST group showed that the "pipeline" for women in science and technology (S&T) starts to leak very early, in many cases before the professional career has even started. The collaboration with universities therefore is seen as crucial for increasing the potential of women in industrial research.

The objectives of the second WiST working group were:

- Reducing the leaky pipeline for women in science and technology;
- Building the business case for work-life balance.

To achieve these goals, the working group focused on the following issues:

- What can be done by universities and companies to reduce the leaky pipeline?
- Which policies and practices are effective in promoting gender diversity in science disciplines and in technical careers?
- Which policies and practices are effective in promoting work-life balance, especially for dual career couples?
- How do prevalent work-life practices relate to individual and organisational performance?
- How do work-life balance policies and practices affect the attraction and retention of talented employees?
- Is supporting employees' work-life balance a smart business strategy?
- What are best practices for achieving work-life balance and addressing the leaky pipeline?
- What is the relationship between such best practices and workplace culture?

Finally, the working group aimed to develop recommendations for:

- Changing corporate culture to embed best practices for achieving work-life balance;
- Promoting and improving the implementation and utilization of best practices.

In order to achieve these objectives, seven international experts were invited to address one or more of the issues above, by inviting the participation of companies and universities from the WiST2 group for data collection. In this synthesis the outcomes of the experts' research are discussed and integrated, thus shedding light on how to reduce the leaky pipeline and build the business case for work-life balance. Firstly, we give a brief description of the current situation. Secondly, we summarize the main findings from each of the experts' research projects. Finally, we integrate these findings and look for overarching conclusions, in order to come up with practical implications, and to decide on next steps. For a brief overview of relevant recent scientific research on gender diversity, reducing the leaky pipeline, and building the business case for work-life balance in general as well as specifically for S&T companies and universities, refer to the final section of this report.

Current situation

In the report on "Women in Science and Technology: A Business Perspective" (EU DG Research, 2006), it was clearly established that despite the steadily growing number of women with a scientific or technical university degree in most European countries, women are still under represented in science and technology (S&T) professions, be it in companies or universities. Moreover, a disproportionate number of women are leaving S&T in each consecutive career stage, a phenomenon that has often been described as a "leaky pipeline". While data are still being analyzed, the numbers soon to be reported in She Figures 2009 (forthcoming, EU DG Research) paint a picture

1 *VU University Amsterdam, Amsterdam Center for Career Research*
cvinkenburg@feweb.vu.nl

that does not show a large change since the 2006 WiST report. In addition to the leaky pipeline, the glass ceiling metaphor used to explain the absence of women at higher organisational levels has been effectively replaced by that of the labyrinth (Eagly & Carli, 2007), in showing how women in organisational careers encounter many obstacles along the way, not simply one transparent barrier right before the top.

Since 2006, there has been a significant increase in the attention in the media and public opinion about the lack of gender diversity in higher positions in the private and public sectors as well as academia across Europe. The Norwegian quota legislation requiring 40 % women on all boards became effective on January 1 2008 and has been widely discussed. Furthermore, two McKinsey reports entitled "Women Matter" (2007; 2008) have had a significant impact, adding to the growing body of evidence that gender diversity is positively related to organisational financial performance and innovation. Beyond financial gains, it is becomingly increasingly evident that promoting the labour force participation and careers of women is essential for sustainable economic growth in the light of an ageing population. In fact, a comparative study across Europe show that increased labour force participation of women does not hurt fertility rates: in countries where women work most, they also have more children (Daly, 2007).

As women (still) have the larger part in care responsibilities (United Nations, 2008), even in dual career couples, for many working women the utilization of work-life policies and arrangements offered by their employer is a means to effectively combine work and care. While many employers increasingly offer such policies, we do not really know how such initiatives relate to business performance (Kelly et al., 2008), or how the utilization of such arrangements affects individual career and family outcomes (van Engen, Vinkenburg, & Dikkers, 2009). Unfortunately, only limited knowledge exists about the impact of offering such policies on employee attraction and retention (Towers Perrin, 2006).

Finally, the current global financial crisis is bound to have an impact on the discussion about gender diversity and work-life balance, and may even result in pushing these issues off the strategic agenda. However, in some organisations, responding to the crisis may in fact present an opportunity to implement sustainable solutions that take into account irreversible demographic developments beyond short term gains. This report aims to shed light on the current state of the art in gender diversity and work-life balance in S&T in Europe, by combining expert views, empirical evidence, and best practices, which we hope will support sustainable solutions for combining career and care.

Summaries of expert reports

In this section we provide a short summary of each of the experts' reports of the research they carried out within the WiST2 framework. Many of the organisations participating in WiST2, slowly but surely, provided access to employee samples for data collection, as well as other sources including performance information and communication materials. For more details on the theoretical framework, please see the relevant section of this report. We believe the experts' reports represent an intriguing, multi-method, multidisciplinary, cross-culturally comparative collection of insights into the working lives of women (and men) in S&T. We anticipate that S&T companies will be able to use these findings to help identify and challenge the "leaky pipeline" within their own organisations and to commit to building a business case for work-life balance. In short – this report aims to support the achievement of sustainability in combining career and care.

The first expert report is from the Corporate Leadership Council, presented by **Warren Howlett.** Their survey study of a large scale, pan-European sample of S&T employees and HR representatives builds the so-called Employer Value Proposition (EVP). Work-life balance clearly is increasingly important for attracting and retaining employees. Interestingly, gender has a much smaller influence on the perceived importance of work-life balance practices than other factors such as geography or function. Further analyses show which work-life balance practices are specifically important to women in S&T compared to men and women in general, as well as differences between parents and non-parents. Flexible work schedules together with an appropriate workload tend to play a key role in determining employees' attraction and commitment. Next to clear guidelines and employee control, peer utilization is very important as it signals that the available work-life balance practices are not just "window dressing" but that utilization is in fact possible. The CLC findings highlight how employers can make sure that employees' awareness and consumption of their preferred work-life balance practices increases, in order to prevent turnover as well as becoming more attractive as an employer.

Laure Turner has investigated the business case of work-life balance, by matching CLC survey data on work-life balance practices to individual and project team performance data. The data suggest two underlying dimensions – the degree of work-life conflict, and the degree to which work-life balance is perceived as important. Groups of employees are found in each quadrant of the resulting 2 x 2 model, with high performers over-represented in the work-life balance conflict / not important group (which may mean that they have decided or were forced to focus on performance and income at the cost of balance), and high potentials mainly in the conflict/important and thus "frustrated" group. HR and line managers should try to prevent "frustrated" high potentials from dropping out, and "unbalanced" high performers from burning out. Furthermore, HR may need to screen the performance review system, as it may (implicitly) penalize those who use work-life practices to achieve balance.

Suzan Lewis has studied the integration of professional and personal life among employees (women and men) from research and development departments. A dual agenda lens sheds light

on the complexities involved in achieving gender equity as well as workplace efficiency. The interview data are clustered around themes such as flexibility and availability, assumptions about mothers and fathers compared to non-parents with respect to these themes, and consequences for daily interactions and careers following from these assumptions. By addressing these underlying, often "gendered" assumptions and their consequences, systemic change can be facilitated and experimental interventions can be designed to promote the further integration of work and home, as well enhance performance. Suzan Lewis provides suggestions based on her findings for implementing change and improving efficiency, such as reducing the length of meetings and moving meetings to an earlier hour, from which everyone, not only parents, will benefit.

Clem Herman has conducted interviews on women's experiences with career breaks (mainly for maternity leave) and their consequences for careers. The why, how, and especially the (short and long term) career effects of taking this break are discussed in detail with these women. There is a still an unwritten assumption within many company cultures that taking maternity leave or a career break is a deviation from the traditional (male) model of continuous full time employment – this stereotype is deeply rooted even though it does not reflect the reality of S&T workforces any more. Following their career break or maternity leave, many women perceive that they need to sacrifice career potential and progression in order to reconcile working and family life. This is usually expressed as a personal choice rather than seen as an external or systemic problem. Managing maternity leave is generally well organised – however the experience of returning often depends on the type of work being done and timing of the break. Keeping in touch during the break is one strategy used to help ease the return process, but not universal. Work life balance policies (including parental leave, flexible working and reduced working hours) can have the unintended consequence of reinforcing gender stereotyping within the workplace if it is only mothers/female carers who make use of these and not fathers or male carers. However the availability of remote working seems to be popular and beneficial for working parents. Similarly a workplace nursery gives a symbolic message of support for parents of both genders within the company. Using this information described by Clem Herman, companies will be able to improve the retention and advancement of those women who plan to go on, are on, or have taken career breaks.

Sara Connolly & Stefan Fuchs addressed the question whether current career structures allow universities to attract and to retain their best talents. To answer the question of how prevalent working arrangements influence gender diversity and which of the measures that aim to address work-life imbalance are most successful in promoting greater gender diversity, they analyse unique data collected at a prestigious technical university in Europe. The focus is on what universities can do to stem any loss of talent through the leaky pipeline. Sara Connolly and Stefan Fuchs take a look at the employment choices of men and women in science, and analyse relevant academic practices in relation to work-life balance. They take into account the specifics of science careers, and take into consideration the specific needs of couples and parents. This approach is quantitative, thus providing complementary evidence to the qualitative studies undertaken by Clem Herman and Suzan Lewis. Based on their findings, they suggest possible routes for universities in reducing the leaky pipeline for women in academia in general and S&T in particular, by offering tenure tracks with the possibility to "stop the clock" during maternity or parental leave, by enhancing flexibility and emphasizing alternatives to the "long hours culture", and by making performance appraisal and promotion systems more transparent and standardized. Finally, Connolly and Fuchs address potential negative and positive consequences of the financial crisis for women's careers in academia.

We end the collection of experts' reports with the contribution from **Christine Wächter**, which is about how language and images, mainly found on the internet sites of companies as well as brochures and annual reports, (de)construct S&T as a male domain. Many of these images essentially reflect and thus reproduce asymmetry, exclusion, numerical underrepresentation, and gender stereotypes, by showing women as support staff and men as engineers in the field, and by relating work-family issues only to women. The words and pictures not only reflect but also influence our own ideas of what S&T looks like and who participates in what role. Clearly, those that are underrepresented or represented only in a submissive role will feel excluded and invisible, and will easily be discouraged to apply or tempted to leave. Improving the degree of symmetry, inclusiveness and counter-stereotypical nature of such images and representations may go a long way in trying to reduce the leaky pipeline. Christine Wächter gives clear recommendations to companies on good and not-so-good practices, as well as theoretical background for such recommendations. The way you look at your own company's representations of men and women at work will never be the same!

Conclusion

The experts' reports, taken together and individually, shed light on the original issues put forward by the WiST2 working group in trying to enhance gender diversity in science and technology, namely how to reduce the leaky pipeline and how to build a business case for work-life balance. There are, of course, no simple answers to these questions, and meeting the challenges inherent to gender and work-life balance issues is further complicated by the current global financial crisis. For those S&T companies that continue to take "diversity and inclusion" seriously, and that have resolved to keep these issues on the agenda despite the short-term need for cost cutting, there are a number of take home lessons that emerge from this report.

- Contemporary and future employees value work-life balance, and are expected to continue to do so in the future. Especially for dual career couples with young children, flexibility (in terms of timing and location of work) and an appropriate workload are in high demand.

- Offering work-life balance practices is not enough – the organisational culture (as evidenced in the communication about these practices, but especially in terms of the behavior of supervisors and peers) must be truly supportive of the utilization of these policies. If the message is negative ("you will have to work extremely long hours and put in face-time in order to get promoted"), or mixed ("of course you can work from home, as long as I can expect you to come in at short notice"), many will not utilize what is on offer, and those who do, are likely to fear the consequences.

- Central to organisational cultures in relation to gender diversity and WLB practices are our (often implicit, mostly incompatible) notions of the "ideal worker" and the "ideal mother". These normative beliefs are heavily influenced by cross-culturally similar gender stereotypes and relate to the "separate spheres" of home (i.e. care, children) and work (i.e. career). While many of us consider such norms extremely resistant to change, the good news is these spheres in reality increasingly overlap and are no longer defined by one gender. Research in fact shows that ideology will follow policy (Sjöberg, 2004): in countries that implemented family policies towards the support of a dual-earner family, normative beliefs progressively shift away from traditional roles.

So, what can be done?

- S&T companies need to keep on creating, promoting, and supporting custom-made WLB practices that fit the individual's needs and preferences, that match the strategic HR agenda of the organisation, and that are aligned with the national context in terms of legislation.
- Employers can project their vision of the "ideal" diverse and inclusive organisation by paying extra attention to the images and language on their website and in corporate brochures.
- Employers can protect their high performers and high potentials from burning out and/or eventually opting out by re-examining the nature of the performance appraisal process and making sure the utilization of WLB practices is not penalized unnecessarily or disproportionally.
- Employers can better manage transitions ("off- and on-ramps") for those who take career breaks, and make sure that career trajectories take such career breaks or reduced hours into account. Well-managed, career breaks can bolster loyalty and performance; if not, they can be demoralizing, demobilizing, and demotivating.
- Efficiency can be rewarded and improved in many ways, by rescheduling and shortening meetings, and by focusing on *output* rather than long hours made for the sake of long hours, from which not only the WLB of parents will benefit.
- Companies can bolster the skills needed by employees (especially dual career couples) to combine work and care responsibilities effectively, which will help develop the home and work sphere at the same time. Such skill building will not only benefit from but also assist in further challenging the "normalized" underlying gendered assumptions about these spheres. One way to do so is to focus on work-life enrichment rather than conflict or interference (Greenhaus & Powell, 2009).

The WiST2 working group has been a unique opportunity to bridge the commonly experienced gap between HR research and practice (Cascio & Aguinis, 2008; Rynes, Colbert, & Brown, 2002). The companies who participated in WiST2 not only opened their doors for experts to collect data, but also showed, through their continuous commitment and sharing of experiences and best practices, that their gender diversity and WLB policies would be "evidence based" and built on clear research findings. Using an extensive dissemination strategy, what was developed here will be communicated throughout the EU, in S&T companies, at universities, and among HR and Diversity practitioners. In order to make sure that this communication between S&T companies, universities, experts, and the EU DG Research will continue beyond WiST2, we will look for innovative ways such as an on-line community or network of practitioners in order to provide a platform for and support communication between parties involved in WiST2. By these means, we can help create sustainability in combining career and care, which is of critical importance to HR and diversity practice in S&T companies.

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Expert Reports

Driving Attraction and Commitment with a Work-Life Proposition

Special Focus on Science and Technology Employees

Corporate Leadership Council (1)

Introduction

Earlier research by the Corporate Leadership Council has established that work-life balance is prioritized by candidates and employees relative to other attributes of the organization. This study enables organizations to identify how to build a Work-Life Proposition that drives improved candidate attraction and employee commitment returns for the organization.

This research supports organizations in the following objectives:

- to quantify the business case for an effective Work-Life Proposition;
- to identify what types of work-life practices are most important for candidates and employees in science and technology;
- to determine how important it is for employees to be aware of and consume the work-life practices of the organization;
- to determine how to best improve science and technology employee awareness and consumption of work-life practices.

This study is organized into three parts. Part I provides organizations with a quantitative business case for building and effectively managing a Work-Life Proposition. It quantifies the relative importance of work-life balance for employees in Europe and in particular for science and technology employees. It identifies three key quantifiable benefits (improved attraction, higher discretionary effort, and increased retention) of effectively delivering a Work-Life Proposition. Finally, this section defines three key root causes of Work-Life Proposition delivery failure (inaccurate prioritization, low awareness, and low consumption) that organizations must overcome.

Part II of this study enables organizations to identify what types of work-life practices are most important for candidates. It defines the handful of work-life practices related to workload management, namely Flexible Work Schedule, Appropriate Workload, and Predictable Working Hours, that deliver the majority of attraction benefits for the organization. It then enables organizations to identify when and how to customize their work-life propositions for different talent segments. Finally, this section compares the work-life priorities of European science and technology employees with other employees in Europe, highlighting key differences in preferences.

Part III focuses on quantifying the importance of employee awareness and consumption of the Work-Life Proposition and identifying how to most effectively improve employee awareness and consumption. It quantifies the impact of increasing employee awareness and consumption of the Work-Life Proposition on employee commitment. It then identifies the key drivers of awareness and commitment and where the greatest opportunities are for improvement.

Methodology and Data

The Council's Employee Survey Instrument

The majority of data presented in this study was collected using an existing employee survey instrument, The Corporate Leadership Council's Employment Value Proposition Survey, which was first used in 2006. This survey was expanded to include new sections on the Work-Life Proposition and was conducted again during the spring of 2008, with more than 34,000 European respondents from 35 different organizations completing the survey.

Employment Value Proposition

The first part of the Council's survey examines 38 organizational attributes (e.g. Work-Life Balance, Location, Development Opportunities) that make up the Employment Value Proposition (EVP). The EVP is the set of attributes that candidates and employees perceive as the value they gain through employment in the organization. A detailed discussion and analysis of the EVP can be found in the Council's 2006 study, *Attracting and Retaining Critical Talent Segments*.

Work-Life Proposition

The second and larger part of the survey examines the Work-Life Proposition (WLP), which is the set of 32 work-life practices (e.g. Flexible Work Schedule, Remote Work Sites, Onsite Childcare) that candidates and employees perceive as the value they gain through employment in the organization.

(1) Warren Howlett, Research Director, Corporate Leadership Council howlettw@executiveboard.com

HR Executive Survey

In addition to the main survey instrument, the Council conducted a short survey in 2008 of HR executives at the 35 participating organizations to analyze their organization's work-life investments and their perceptions of employee satisfaction levels with the work-life practices offered by their organizations. Nineteen HR executives from different organizations took part in the survey.

Developing the List of 32 Work-Life Practices

To develop an actionable list of work-life practices, Council staff reviewed a variety of sources to identify potential work-life offerings. These sources included company Web sites and recruiting literature, work-life action group resources and Web sites, business press articles, consultant literature, academic and business research, and interviews with more than 80 different organizations. A master list of more than 150 work-life offerings was compiled and evaluated for similarity, distinctiveness, universality, and overall ratability, leading to the consolidated list of 32 work-life practices grouped into six categories: Work Time, Work Location, Family, Development, Services, and Health. A full breakdown of the definitions of individual work-life practices can be found in the appendix.

Work-Life Categories and Definitions

Work-Life Category	Definition
Work Time	Enabling employees to manage the time spent working for the organization
Work Location	Managing the physical location of employee work
Family	Supporting the family and other dependent responsibilities of employees
Development	Offering opportunities for the personal development of employees (not including traditional training programs)
Services	Providing financial, retail, and other services for employees
Health	Supporting and maintaining the health of the workforce

Analytical Techniques

This research makes use of a number of analytical techniques, chiefly Q-Sort methodology and linear regression. The Q-Sort technique is a tool for measuring attitudes and preferences. It uses a forced-choice method, where respondents must rank a series of items in a pool. Typically a respondent is presented with a set of statements or options and is asked to rank-order them, either in groups or on an individual-item basis, an operation referred to as "Q sorting." Applying a Q-Sort methodology to the WLP, the Council asked survey respondents to rank 32 different work-life practices. These work-life rankings were then subject to analysis.

Linear regression is used to calculate the strength of the relationship between a dependent and independent variable(s) while controlling other factors, such as employee age, organizational tenure, industry, function, and education. Linear regression was used to test multiple hypotheses in the research. As an example, linear regression was used to analyze how the effectiveness of delivery of the WLP (the independent variable) impacts employee commitment (the dependent variable).

Part I: Building the Business Case for a Work-Life Proposition

In an environment of increasing cost pressure, work-life investments should be supported by a clear business case and a call for action. This section of the research supports organizations with answering the following questions related to building a business case for a WLP:

- How important is work-life balance for driving candidate attraction and employee commitment?
- What are the benefits of effective delivery of an organization's WLP and the costs of delivery failure?
- What are the root causes of WLP delivery failure that organizations must overcome?

The Importance of Work-Life Balance

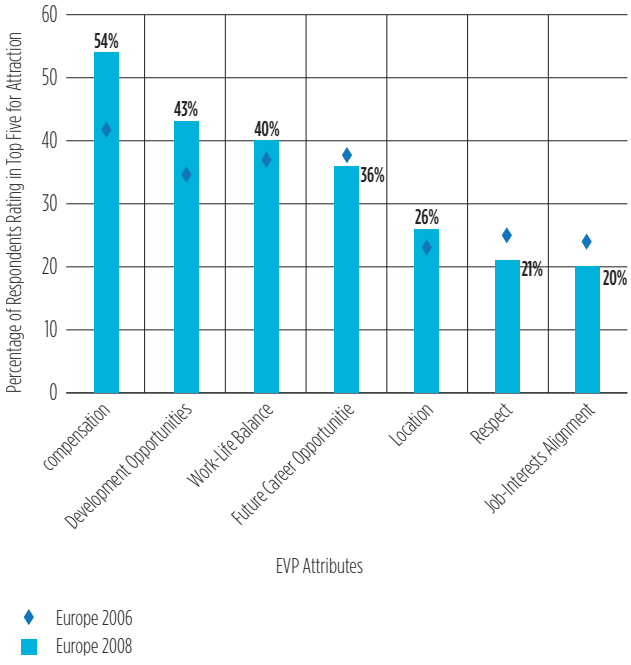
When the Council first ran its survey on the 38 organizational attributes that make up the Employment Value Proposition in 2006, Work-Life Balance emerged as the fourth most important driver of candidate attraction in Europe and also as an important driver of employee commitment.

The Council ran its survey on the Employment Value Proposition for a second time in Europe in the first half of 2008. As can be seen in Figure 1.0 on the next page, while the top drivers of attraction from 2006 are all important in 2008, only some attributes have increased in importance.

Work-Life Balance, which was ranked fourth of 38 attributes in 2006, is identified as the third most important driver of attraction for European employees in 2008. Indeed, as shown in Figure 1.0, the percentage of European respondents rating Work-Life Balance in the top five most important attributes for considering a potential employer increased from 31% in 2006 to 40% in 2008.

While a notable driver of employee commitment, Work-Life Balance is not as important for commitment as it is for attraction. However, it has increased slightly in significance for commitment in Europe since 2006. The maximum positive impact on commitment of improving the delivery of Work-Life Balance increased from 25% in 2006 to 30% in 2008.

Figure 1.0 **Respondents Rating Attribute in Top Five for Attraction**



Source: Employment Value Proposition and Work-Life Survey 2008; Corporate Leadership Council research.

The Importance of Work-Life Balance for Science and Technology Employees

Work-Life Balance is key for the attraction of science and technology candidates. In fact, science and technology employees assign slightly more importance to Work-Life Balance than other European employees. Fully 44% of all science and technology employees and 52% of women in science and technology rate Work-Life Balance in the top five organizational attributes most important for assessing a potential employer, compared to 40% for all European employees overall.

Work-Life Balance is also important across different science and technology talent segments in Europe. After Compensation, it is ranked second in importance for attraction of engineering, IT, and R&D employees. Contrary to some popular perceptions, high-potential employees in science and technology do care about work-life balance. High potentials in science and technology in fact place slightly more importance on Work-Life Balance (47%) than other science and technology employees (44%).

WLP in Context

While Work-Life Balance is a key organizational attribute for driving candidate attraction and employee commitment, organizations will always struggle to control the overall work-life balance of their employees. Work-Life Balance is the extent to which employees are able to balance their work and personal interests. Although the organization usually has a high degree of control over employees' work, it typically has very little control over the personal interests of employees and the related demands that are placed upon them.

This research focuses on the elements of employees' work-life that the organization does control, namely the set of work-life practices that organizations offer to their employees. We call this set of work-life practices the organization's Work-Life Proposition.

WLP Defined
The set of work-life practices that the labor market and employees perceive as the value they gain through employment in the organization.

Three Benefits of an Effective WLP

In assessing the impact of an effective WLP, the Council has identified three key benefits related to candidate attraction, employee effort levels, and retention. Combined, these three benefits offer a compelling case for an effectively managed WLP.

Benefit #1: Improved Attraction

Organizations that effectively manage their WLP increase their attractiveness and therefore the breadth of their available candidate pool. Analyzing activity levels of respondents before they joined their current organization reveals that organizations that effectively manage their WLP are able to better access passive candidates and increase the size of their total talent pool by 4%.

Benefit #2: Higher Discretionary Effort

Effectively managing the WLP drives higher levels of employee effort levels at work. Examining the discretionary effort levels of employees with less than three months of tenure reveals that excellent WLP delivery can yield a workforce where 29% of new hires display the highest levels of discretionary effort. By contrast, organizations with poor WLP delivery typically have less than 2% of new hires displaying high levels of discretionary effort.

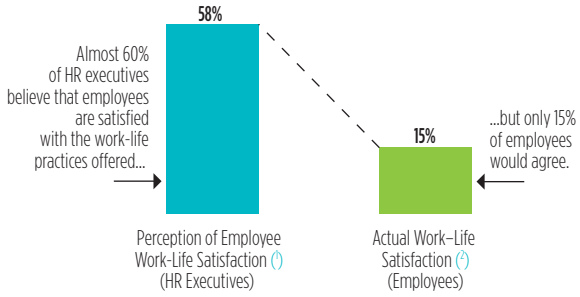
Benefit #3: Increased Retention

Effective management of the WLP drives increased levels of employee retention in new hires. Assessing employee intent to stay with the organization for employees with less than three months of tenure reveals that excellent WLP delivery can produce a workforce where 93% of new hires have the highest level of intent to stay. Meanwhile, organizations with poor delivery of the WLP typically have only 56% of new hires displaying the highest levels of intent to stay with the organization.

Cost of WLP Delivery Failure

The strength of the business case for an effective WLP is matched only by the consistency with which employees rate their employers as ineffective in delivering the right work-life practices. This dissatisfaction will come as a surprise to many HR executives.

Figure 1.1 **HR Executive Perception of Employee Work-Life Practices Satisfaction and Actual Employee Satisfaction with Work-Life Practices**
Percentage of European Respondents



1 Percentage of senior HR executives that "agree" or "strongly agree" that employees are satisfied with the work-life practices offered by the organization.
2 Percentage of employees that "agree" or "strongly agree" that they are satisfied with the work-life practices of the organization.

Source: Corporate Leadership Council research.

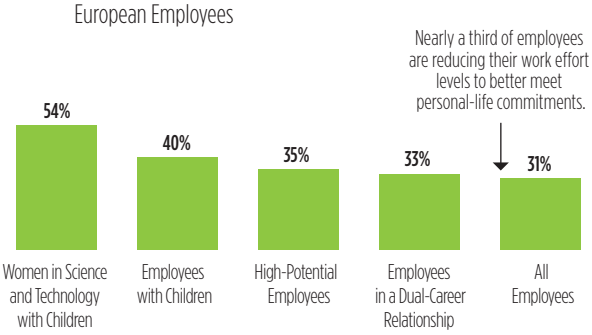
We find in Figure 1.1 that while almost 60% of HR executives perceive employees as satisfied with the work-life practices of the organization, only 15% of employees are actually satisfied with the work-life practices offered by organizations.

Employee dissatisfaction with the WLP has consequences. As demonstrated earlier, employees with low WLP satisfaction are less likely to put forth extra effort and more likely to leave. As shown in Figure 1.2, a little more than 30% of employees in Europe are reducing their effort levels at work to better meet commitments in their personal lives. For women in science and technology with young children, the proportion reducing their work effort to better meet personal-life commitments is even higher at 54%.

Root Causes of Poor WLP Delivery

While an effective WLP demonstrates compelling benefits, most organizations struggle to effectively design and deliver an effective WLP. Put simply, in spite of increased attention on work-life programs, organizations have struggled to maximize the returns from their work-life investments. Applying root-cause problem analysis, the Council built and tested a root-cause tree for the overall organizational problem of WLP investments failing to

Figure 1.2 **Percentage of Employees Reporting Reduced Levels of Effort at Work to Meet Personal-Life Commitments**
European Employees



generate acceptable returns for the organization. The Council has identified three key root-causes of the failure of organizations to maximize returns from work-life investments.

Root Cause #1:

Few organizations invest in employees' *preferred* work-life practices. Attempting to better meet the work-life preferences of employees and candidates, organizations are continuously modifying the work-life practices they offer. We find that of the HR executives surveyed, almost half (47%) indicated that they had increased their organization's portfolio of work-life practices available in the past 12 months. However, few companies are prioritizing the work-life practices that matter most to employees.

Analyzing the percentage of informed employees who agree or strongly agree that the work-life practices they want are available at their organization, we find that only around a quarter of informed employees report that their organization offers work-life practices that align with their preferences. These findings lead to a clear question: Which work-life practices do employees and candidates prioritize?

Root Cause #2:

There is low employee awareness of the work-life practices offered by the organization. In spite of increased attention on work-life issues, this research finds that science and technology employees are relatively unaware of the organization's WLP. Across all the work-life categories, less than one-third of science and technology employees, on average, are aware of the work-life practices offered by organizations. This finding leads to a clear question: How can organizations most effectively increase employee awareness of the work-life practices that matter most?

Root Cause #3:

There is low consumption of work-life practices. Examining how frequently science and technology respondents use the work-life practices available at their organization, we find that more than half of the science and technology respondents in our survey indicated that they had never used a work-life practice offered by their organization. Subsequent conversations with participating organizations confirmed that they had also

identified low consumption levels within their organizations. This finding leads to a clear question: How can organizations most effectively optimize employee consumption of the work-life practices that matter most?

Summary of Part I

Work-Life Balance Is Increasingly Important – Work-Life Balance has significantly increased in importance for attraction and commitment since 2006. It is now the third most important organizational attribute for attraction.

Effective WLP Management Increases Attraction, Performance, and Retention – Effectively building and managing a WLP enables organizations to increase their total talent pool by 4%, improve new-hire discretionary effort levels by 27%, and improve intent to stay by 37%.

Many Employees Are Reducing Effort at Work to Better Meet Personal Commitments – Employees are much less satisfied with the work-life practices offered than HR executives perceive, and more than 30% of employees are reducing their effort levels at work to better meet personal commitments.

Three Root Causes of Poor Work-Life Returns – The Council has identified three root-causes of poor work-life returns for the organization:

- work-life investments are not targeted on the work-life practices that will deliver the highest returns for the organization;
- few employees are aware of the work-life practices offered by the organization and, in particular, the work-life practices that deliver the best returns for the organization;
- very few employees use the work-life practices offered by the organization.

Part II: Identifying Work-Life Drivers of Attraction

We have already identified the WLP as an important driver of attraction outcomes. This section of the research enables organizations to answer the following questions:

- Which work-life practices are most important and least important for driving attraction?
- When and how should organizations customize their WLP for different talent segments?
- How do the attraction preferences of science and technology candidates compare with other European candidates?

Attraction Preferences

Figure 2.0 on the following page presents the WLP preferences of candidates in Europe. Each bar represents the percentage of European respondents who identified a work-life practice within their top five most important for assessing a potential employer. This chart offers new evidence of what candidates most (and least) desire in a WLP.

The Top Drivers of Attraction—Flexible Work Schedule, Appropriate Workload, and Predictable Working Hours

When considering a potential employer, candidates across Europe heavily prioritize three dimensions of workload management – Flexible Work Schedule, Appropriate Workload, and Predictable Working Hours – with a notable emphasis on the first two elements of this set of dimensions. Indeed, candidates select Flexible Work Schedule and Appropriate Workload nearly twice as often as the next-highest-ranked work-life practice. This finding demonstrates that the most powerful WLPs will orientate around "workload management," not simply "benefits offerings." Put another way, candidates seek WLPs that *empower them to effectively manage work schedules* rather than simply offer them an array of benefits.

Attributes That Do Not Drive Attraction

Many tangible work-life practices, such as Fitness Services, are assigned a relatively low level of importance by candidates. This does not mean these practices cannot have a positive impact on attraction, but rather that they are relatively less important than other practices.

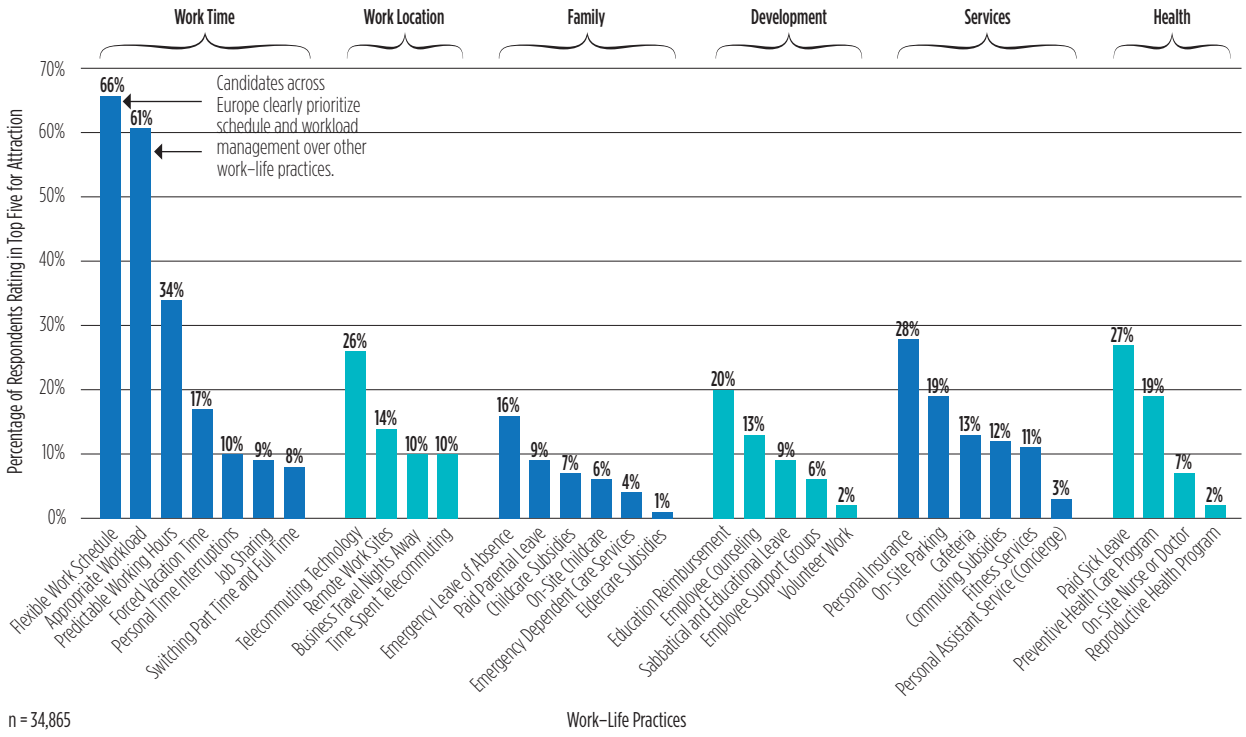
Using the Data to Develop a WLP Strategy

To build a work-life offering that is competitive in the labor market, organizations must prioritize WLP investments on workload management tactics. The importance of Flexible Work Schedule and Appropriate Workload also has ramifications for how the WLP is communicated to the labor market. Organizations typically communicate a comprehensive list of work-life practices to candidates; however, the importance of workload management suggests that the content of communications should emphasize the workload management tactics available to employees.

WLP Segmentation

A key challenge facing organizations is to build a WLP that is attractive across talent segments. To effectively manage a WLP across segments, organizations must identify which segments demonstrate unique preferences (and which do not). To this end, the Council examined the amount of variation in Work-Life preferences driven by a variety of demographic segments. This is achieved by applying a forward stepwise regression methodology on the dataset of 34,865 European respondents to identify how much of the variation in work-life preferences can be explained

Figure 2.0 **Percentage of Respondents Rating Work-Life Practice in Top Five Most Important for Attraction**
Employees in Europe



Source: Work-Life Proposition Survey 2008; Corporate Leadership Council research.

by different demographic segments. In Figure 2.1 the Council identifies the impact of seven common talent segments within the total population: geography, function, age, parenthood, industry, level, and gender.

Geography Explains Most Variation in WLP Preferences

Geography accounts for the vast majority of variation in work-life preferences, accounting for 65% of the variation seen in the 34,865 respondents surveyed in Europe. Put simply, most of the differences in work-life preferences are a function of geography. Practically, this means that organizations considering the construction of customized WLPs should start with geography; other segments (e.g. function, level) will tend not to require much customization. Organizations working in multiple geographies must consider whether their target labor pools require a customized WLP.

Gender Accounts for Very Little Variation in WLP Preferences

Although conventional wisdom states that men and women have different work-life preferences, Council research finds that relatively few differences exist. That is not to say that there are no differences in preferences by gender; rather, gender differences are small and especially small when compared to geographic differences. Testing for the importance of gender interactions with each of the other demographic segments, the Council also finds that the interaction of two demographics (one being gender) does not explain more variation in WLP preferences than the sum of the variation explained by the individual demographic segments.

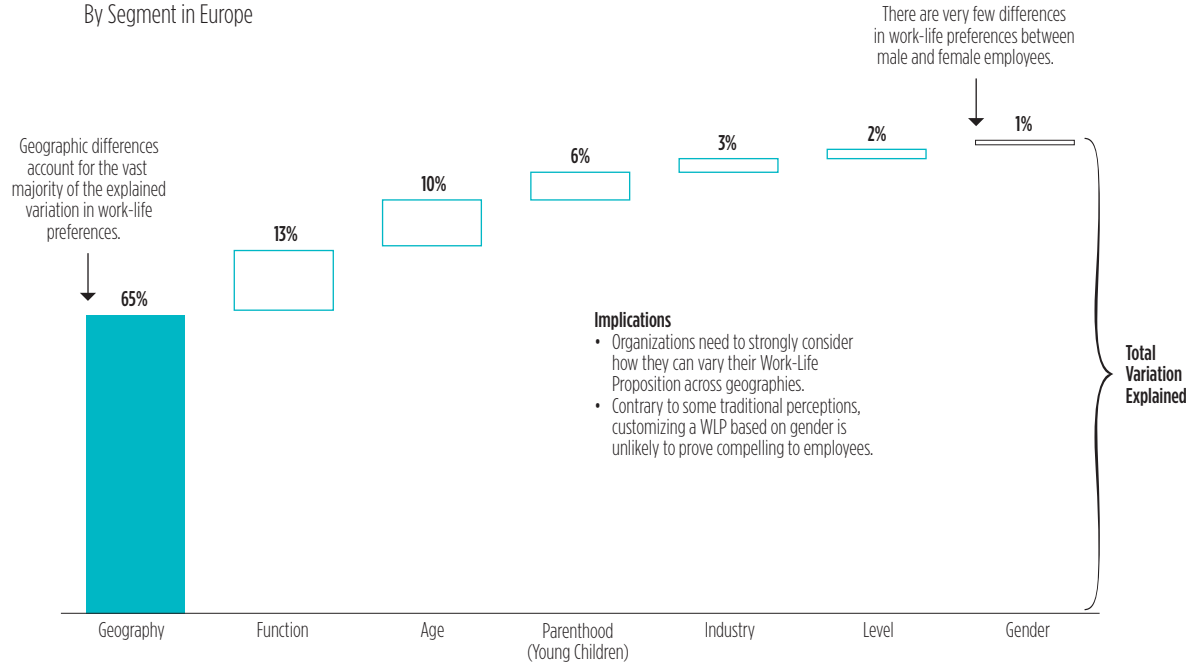
Highly Similar Work-Life Preferences Across Gender

Although gender accounts for very little variation in the work-life preferences of candidates, there are still some small differences, as demonstrated by Figure 2.2. The graphic displays the top 10 work-life preferences of women, comparing the strength of each preference across gender. The most significant differences occur for Personal Insurance, which is relatively more important for men, and Switching Part Time and Full Time, which is significantly more important for women.

The implications for organizations of the remarkably similar work-life preferences of men and women are significant. Contrary to some traditional beliefs, there is little evidence to support "wholesale customization" of work-life practices by gender. Any effort to customize WLPs by gender should be narrow, targeted, and conducted with caution.

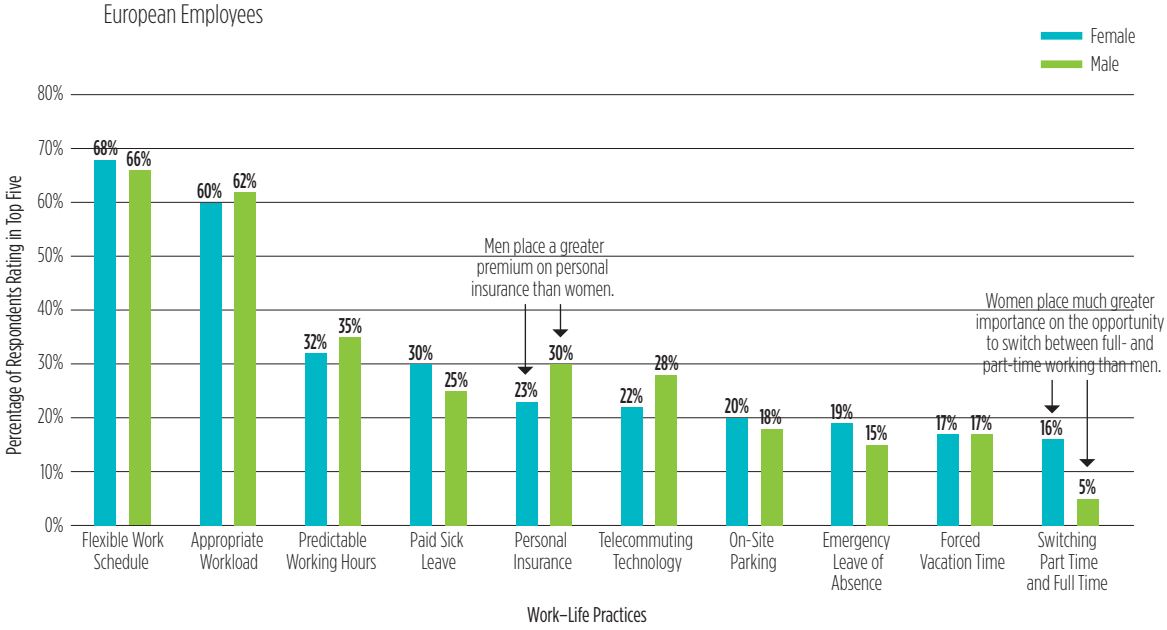
Differences by Parenthood

Figure 2.1 **Percentage of Variance in WLP Preferences Explained**
By Segment in Europe



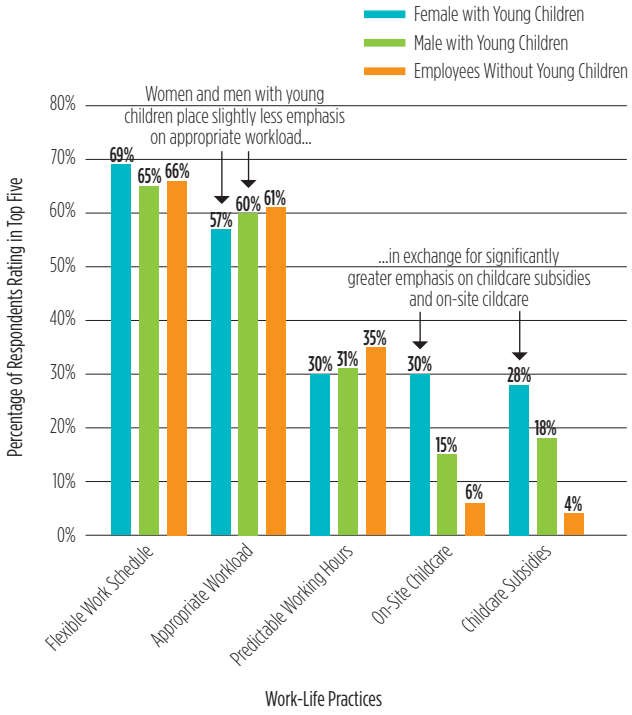
Source: Corporate Leadership Council research.

Figure 2.2 **Percentage of Respondents Rating Work-Life Practice in Top Five Most Important for Assessing Potential Employers**
European Employees



Source: Corporate Leadership Council research.

Figure 2.3 **Percentage of Respondents Rating Work-Life Practice in Top Five Most Important for Assessing Potential Employers**
European Employees with Young Children

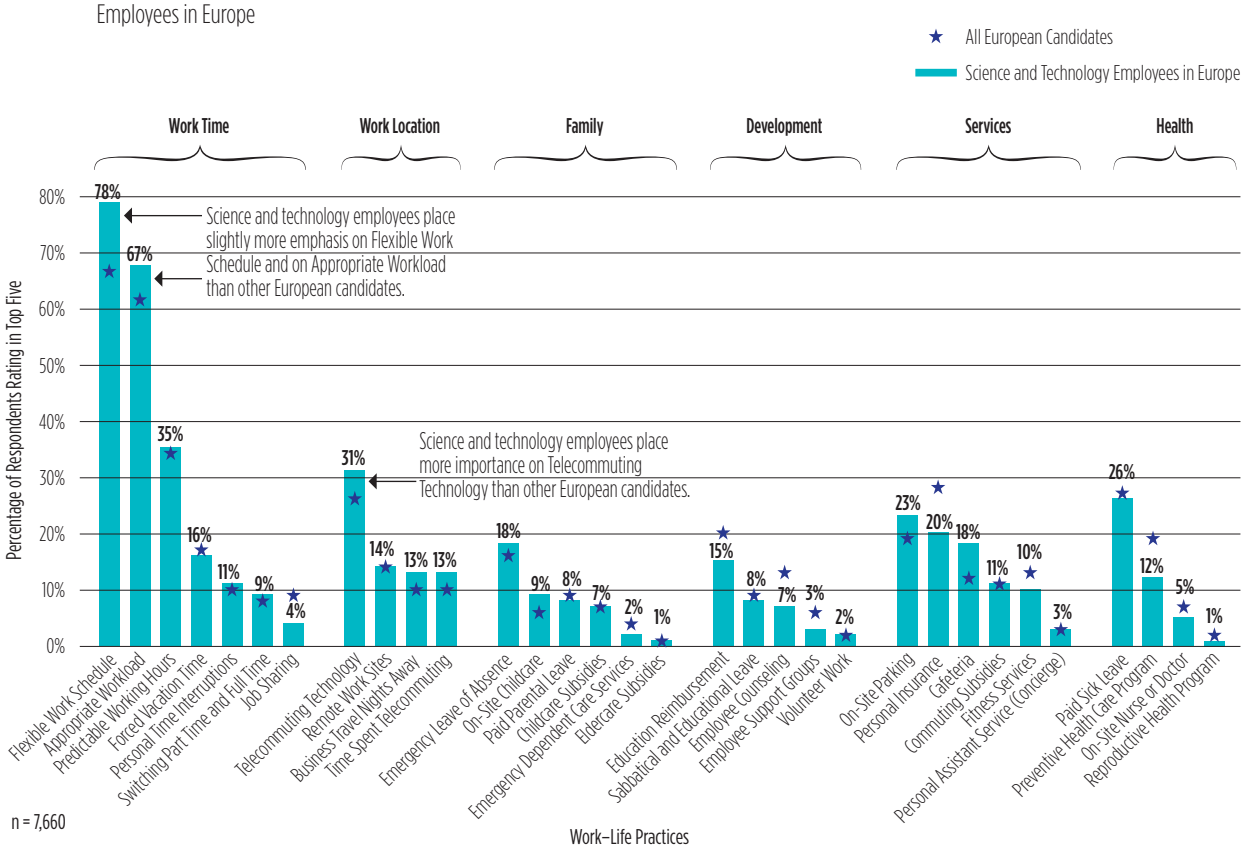


While gender explains relatively little of the variation in the work-life preferences of candidates, as shown earlier in Figure 2.1, Parenthood is relatively more important for explaining WLP preferences, accounting for 6% of the explained variation in WLP preferences.

Dominance of Workload Management and Childcare for Parents

In Figure 2.3 we find that as with nearly all other segments, parents with young children prioritize workload management tactics. That said, women and men with young children place slightly less emphasis on Appropriate Workload and Predictable Working Hours than individuals without young children. In turn, employees with young children unsurprisingly place far more importance on Childcare Subsidies and On-Site Childcare than employees without young children. While men with young children place significant importance on these childcare practices, women with young children assign greater emphasis on them.

Figure 2.4 **Percentage of Respondents Rating Work-Life Practice in Top Five Most Important for Assessing Potential Employers**
Employees in Europe



Source: Work-Life Proposition Survey 2008; Corporate Leadership Council research.

Geography Accounts for Most Variation in Preferences Within Work-Life Categories

As well as being the key driver of variation in the overall WLP, geography was also the key driver of variation of preferences within five of the six work-life categories: Work Time, Work Location, Development, Services, and Health. In fact, the proportion of variation explained by each demographic segment was very similar to the proportion of variance explained for the overall WLP.

Parenthood is as Important as Geography for Explaining Family Preferences

In contrast to the other work-life categories, parenthood is a key driver of the variation in preferences for the Family category of work-life practices. In fact, we find across the seven talent segments examined, that parenthood, which accounts for 38 % of the explained variation, is almost as important as geography, which explains 39 % of the variation in Family work-life preferences. More detail on the impact of the seven talent segments can be found in Figure 4.0 in the appendix.

Science and Technology Respondents Demonstrate Similar Work-Life Preferences

The work-life preferences of science and technology candidates are very similar to those of other European candidates as demonstrated in Figure 2.4. Figure 2.4 shows the percentage of European science and technology respondents who identified a work-life practice within their top five most important for assessing a potential employer. Science and technology candidates do place slightly more emphasis on Flexible Work Schedule and Appropriate Workload than other European candidates.

The attraction preferences of women in science and technology are shown in Figure 4.1 in the appendix. In addition to the premium that women in science and technology place on Flexible Work Schedule and Appropriate Workload relative to other European candidates, they also place a premium on the opportunity to switch between part-time and full-time work. Given the similarity of work-life preferences between science and technology candidates and other employee groups, there is no strong imperative for the organization to create a separate WLP for science and technology candidates.

Summary of Part II

Workload Management Key for Attraction – Across the 32 work-life practices that make up the Work-Life Proposition, just a handful of workload management tactics – Flexible Work Schedule, Appropriate Workload, and Predictable Working Hours – deliver the vast majority of attraction returns for the organization.

Geography Explains Most Differences in WLP Preferences – Geography accounts for the majority of variation in the work-life preferences of candidates. Geographic differences matter much more than variation by function, age, parenthood, industry, level, or gender.

Very Similar WLP Preferences for Men and Women – The work-life preferences of men and women are remarkably similar.

Similar WLP Preferences for Men and Women with Children – Men and women with children have similar work-life priorities, although women do place greater emphasis on Childcare Subsidies and On-Site Childcare than men.

Science and Technology Employees Have Similar Preferences to Other Employees – Science and technology employees share similar work-life priorities with other employees. That said, science and technology employees place slightly more emphasis on a Flexible Work Schedule and Appropriate Workload. In addition, women in science and technology also place a premium on the opportunity to switch between part-time and full-time employment.

Part III: Driving Commitment Through Awareness and Consumption of the Work-Life Proposition

The previous section revealed the work-life practices that candidates and employees prioritize. In this section, the Council analyzes *how important it is that employees are aware of the WLP and consume the work-life practices offered*. This section enables organizations to answer the following questions:

- How does awareness and consumption of the WLP impact commitment?
- What are the key drivers of awareness and consumption?
- How effectively are the drivers of awareness and consumption delivered, and where are the opportunities for improvement?

Awareness and Consumption Drive WLP Delivery

As depicted in the far left of Figure 3.0 below, the Council measured employee awareness and consumption levels of the individual work-life practices offered by the organization. These awareness and consumption levels were then examined using multivariate linear regression against the level of WLP delivery effectiveness. Examining these relationships enabled the Council to determine if and how much raising levels of awareness and consumption of different work-life practices would impact employee perceptions of WLP delivery effectiveness.

Work-Life Proposition Delivery Effectiveness Impacts Employee Commitment

In the final stage of the analysis, the Council analyzed the relationship between WLP delivery effectiveness and employee commitment.

In summary, this analysis enabled the Council to answer two core questions: Does awareness and consumption of the WLP impact employee perceptions of WLP delivery effectiveness? Does WLP delivery effectiveness have an impact on employee commitment?

Impact of WLP Awareness

Analyzing the relationship between employee awareness of the WLP and employee perceptions of WLP delivery effectiveness, this research finds that increasing employees' overall awareness of the WLP has a maximum impact on WLP delivery effectiveness of 35 %. In other words, increasing employee awareness of the WLP from "very unaware" to "very aware" holds the potential to increase employee perceptions of WLP delivery effectiveness by up to 35 %. The more employees become aware of the organization's WLP, the more satisfied they become with the delivery of the WLP.

Impact of WLP Consumption

Examining the relationship between employee consumption of the WLP and employee perceptions of WLP delivery effectiveness, this study finds that increasing employees' overall consumption of the WLP has a maximum impact on WLP delivery effectiveness of 29%. In other words, enhancing consumption of the WLP from "I never use this" to "I always use this" holds the potential to increase employee perceptions of WLP delivery effectiveness.

Figure 3.0 **Council Work-Life Proposition Delivery Effectiveness Model**

Source: Corporate Leadership Council research.

Driving Higher Levels of Commitment

This research finds that improving employee perceptions of WLP delivery effectiveness impacts employee commitment. The maximum impact that changing employee perceptions of WLP delivery effectiveness can have on employee commitment is 29%. In other words, improving employee perceptions of WLP delivery effectiveness holds the potential to increase employee commitment. Importantly, this data demonstrates that employee perceptions of WLP delivery effectiveness matter.

WLP Awareness and Consumption Drivers for Science and Technology Employees

To identify how organizations can best drive awareness, the Council used linear regression to test 17 potential drivers of awareness across four categories: Communication, Promotion, Ease of Implementation, and Visibility of Utilization. To identify how organizations can best drive consumption, the Council used linear regression to test 25 drivers of consumption across six categories. (Note: The eight additional drivers of consumption are categorized into two groups: Accessibility and Alignment. The two new categories test the extent to which employees have access to the work-life practices they want to consume, and the extent to which the design of the WLP is aligned with the job, performance evaluation, careers, workload management, and development opportunities).

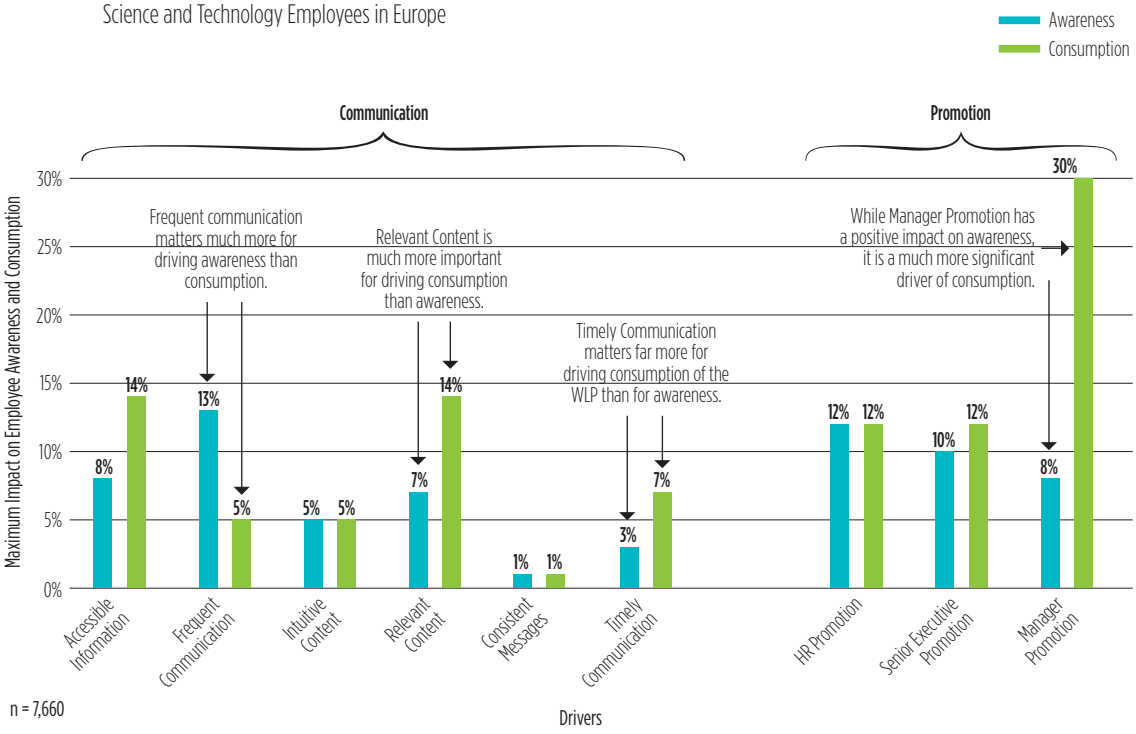
Driver Categories and Definitions

Driver Category	Definition
Accessibility	Enabling employee access to the WLP
Alignment	Aligning the WLP with the working environment
Communication	Communicating the WLP to employees
Ease of Implementation	Managing the implementation of the WLP
Promotion	Driving WLP promotion in the organization
Visibility of Utilization	Supporting the visibility of WLP utilization

Communication Drivers of Awareness and Consumption for Science and Technology Employees

Most organizations invest in communications about the work-life practices they offer to candidates and employees. However, communications activities have different levels of impact on awareness and consumption as shown in Figure 3.1. For example, Relevant Content and Timely Communication are much more important for driving consumption than they are for driving awareness. To maximize the impact of communications on WLP consumption, HR must ensure that the content of communications is relevant and timely to support employee work-life decisions.

Figure 3.1 **Impact on Work-Life Proposition Awareness and Consumption**
Science and Technology Employees in Europe



Source: Corporate Leadership Council research.

Promotion Drivers of Awareness and Consumption for Science and Technology Employees

Figure 3.1 shows that while HR Promotion has a significant impact on awareness and consumption, Senior Executive Promotion and Manager Promotion have a greater impact on consumption than awareness. In particular, the difference between the impact of Manager Promotion on awareness (8%) and consumption (30%) is especially noteworthy. Organizations can use the three promotion levers to raise WLP awareness and consumption, but must prioritize attention on Manager Promotion to maximize WLP consumption.

Ease of Implementation for Science and Technology Employees

In Figure 3.2 we find that Employee Control of Practices and Implementation Guidelines are far more important for driving consumption than awareness. HR must enable employee control of the work-life practices offered by the organization and provide clear guidelines for managers and employees on how to implement work-life practices.

Visibility of Utilization for Science and Technology Employees

Employee awareness of the work-life practices of the organization increases when colleagues are already using those work-life practices. We find in Figure 3.2 that Peer Utilization is a key driver of awareness but also has a very significant impact on employees' consumption of the WLP. Notably, Peer Utilization has much greater impact than either Manager Utilization or Senior Executive Utilization; this finding demonstrates that employees are far more likely to follow the work-life consumption patterns of peers than those of superiors.

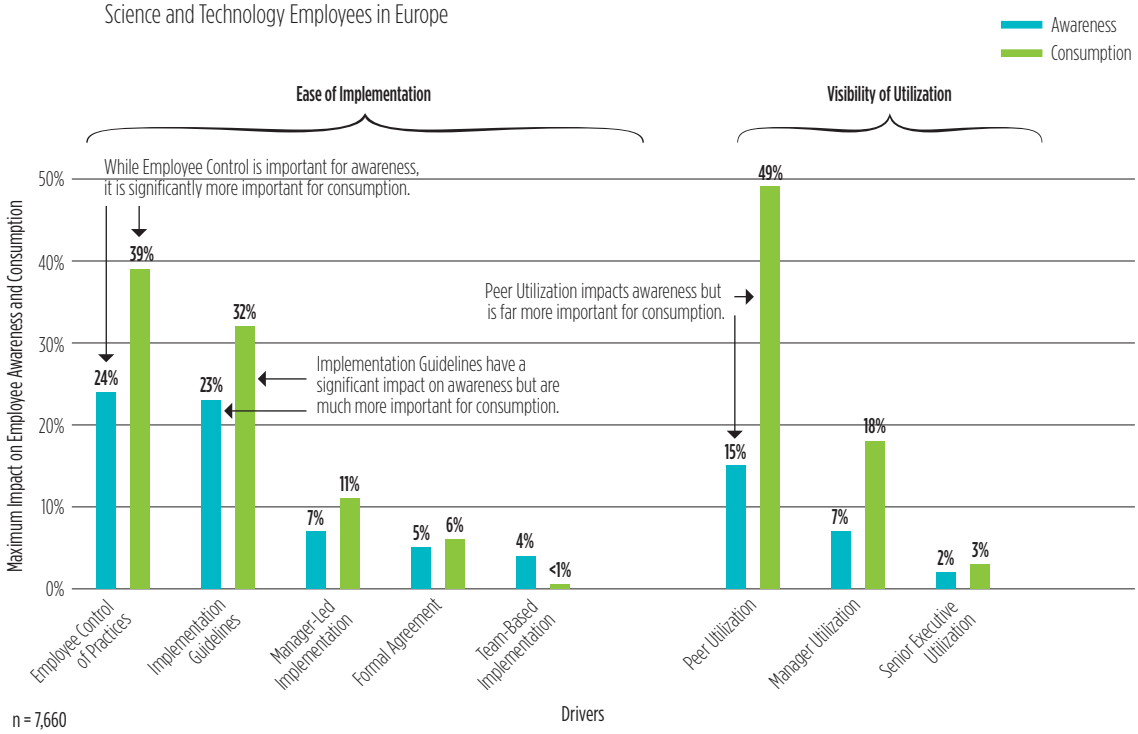
Awareness and Consumption Implications for Science and Technology Employees

In summary: the most powerful drivers of science and technology employee awareness are also the most significant drivers of consumption. Indeed, the impact of these key drivers tends to be much greater on consumption. In one sense, this is good news: investments in awareness building will almost always translate into higher consumption levels. This "double effect" on awareness and consumption, in turn, has a positive impact on employee commitment. That said, organizations attempting to increase only awareness should proceed with caution when leveraging any of the key drivers, since any resulting increase in awareness will probably be accompanied by an even greater increase in consumption. While consumption will increase commitment, it will also increase the cost of many work-life practices. Where cost of consumption is a concern, organizations may wish to limit their awareness-building efforts.

Accessibility of the WLP for Science and Technology Employees

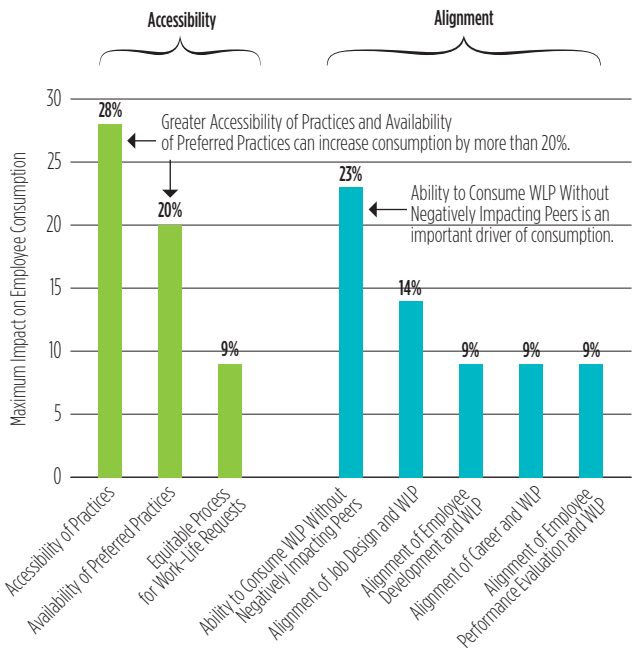
The Accessibility drivers examined were not relevant for awareness of the WLP, but as shown in Figure 3.3, are important for increasing consumption. In particular, increasing employee

Figure 3.2 **Impact on Work-Life Proposition Awareness and Consumption**
Science and Technology Employees in Europe



Source: Corporate Leadership Council research.

Figure 3.3 **Impact on Work-Life Proposition Consumption**
Science and Technology Employees in Europe



n = 7,660

Corporate Leadership Council research.

access to work-life practices (Accessibility of Practices) and ensuring that the organization offers the work-life practices employees prefer (Availability of Preferred Practices) have a notable impact on consumption.

Alignment of the WLP for Science and Technology Employees

The Council identified a handful of drivers related to the alignment of work-life practices that, while not being relevant for WLP awareness, have a significant impact on consumption. Figure 3.3 demonstrates that the most important Alignment driver is the extent to which consumption of work-life practices impacts an individual's peers. HR must enable managers and employees to effectively manage how an individual employee's consumption of a work-life practice impacts the workload of colleagues and their ability to use work-life practices.

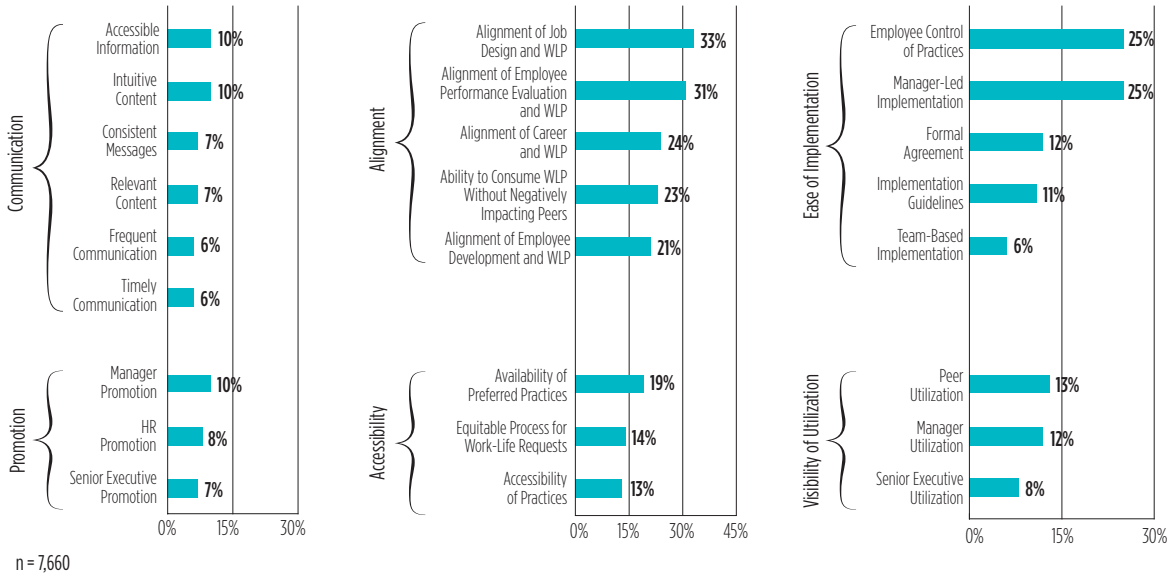
Very Low Effectiveness for Communication and Promotion

Figure 3.4 shows that science and technology employees believe that organizations have a strikingly low level of effectiveness at communicating and promoting the WLP. Indeed, less than 11% of science and technology employees rate their organizations as effective at communication and promotion. The tactics within these categories represent significant opportunities for improvement.

Accessibility and Alignment Delivery

Science and technology employees rate their organizations as slightly more effective at designing work-life practices for Alignment and Accessibility. While the scores here are still quite low, they are universally better than the scores provided for Communication and Promotion. This contrast suggests that organizations are better at designing work-life practices than they are at marketing them. Prior to undertaking major redesign efforts, most organizations should first aim to better communicate and promote their current work-life practices.

Figure 3.4 **Percentage of Respondents Rating the Organization as Effective**
Science and Technology Employees in Europe



n = 7,660

Source: Corporate Leadership Council research.

Ease of Implementation and Visibility of Utilization Delivery

Across all the Ease of Implementation and Visibility of Utilization drivers, organizations have a low level of effectiveness, as perceived by science and technology employees. Within these two categories, organizations are most effective at enabling Employee Control of Practices and supporting Manager-Led Implementation. Organizations are least effective at enabling Team-Based Implementation.

Prioritizing Awareness-Building Tactics

As organizations seek to improve their effectiveness at driving awareness of work-life practices, they should focus on enhancing tactics that are poorly deployed, but hold substantial potential for increasing awareness. Combining an analysis of the level of organizational effectiveness for each driver and the maximum impact on employee awareness, we find that organizations have a relatively low level of effectiveness for most drivers of awareness, but the majority of these are not very significant drivers of awareness. Of more concern is the low level of organizational effectiveness for Implementation Guidelines and Peer Utilization, which both have a significant impact on employee awareness of the WLP. This finding suggests that most organizations should prioritize improvement efforts on Implementation Guidelines and Peer Utilization: drivers that have the greatest impact on employee awareness but notably low levels of effectiveness.

Prioritizing Consumption-Driving Tactics

As organizations seek to improve their effectiveness at driving consumption, they should focus on enhancing tactics that are poorly deployed but hold substantial potential for improving consumption. Combining an analysis of the level of organizational effectiveness for each driver and the maximum impact on employee consumption, we find that there are a number of drivers that have a strong impact on employee consumption, but have a relatively low level of effectiveness. Of note are Peer Utilization, Implementation Guidelines, and Manager Promotion, which all have a high impact on consumption but are poorly deployed by nearly all organizations. Organizations must prioritize investments on these high-impact, poorly deployed drivers.

Summary of Part III

Awareness and Consumption Drive WLP Delivery Effectiveness – Increasing employee awareness and consumption of the WLP enhances employee perceptions of work-life practices delivery by the organization, which impacts the level of employee commitment to the organization.

Awareness Is Slightly More Important Than Consumption – Employees don't necessarily have to use work-life practices for them to generate positive returns for the organization. Awareness of the work-life practices of the organization is a driver of WLP delivery effectiveness. In fact, awareness of the WLP is slightly more important than consumption for driving perceptions of WLP delivery effectiveness.

Peer Utilization, Implementation Guidelines, and Employee Control Are Key for Driving WLP Awareness and Consumption – Peer Utilization, Implementation Guidelines, and Employee Control of Practices are the most important drivers of awareness but have an even more significant impact on consumption. Just increasing Peer Utilization of work-life practices can increase employee consumption of the WLP by up to 49%.

Accessibility and Alignment is Important for Driving Consumption – Accessibility and Alignment of work-life practices have a strong impact on WLP consumption by employees.

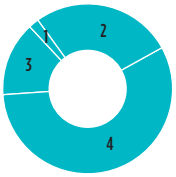
Peer Utilization and Implementation Guidelines: High Impact but Poorly Delivered – Across all the drivers of awareness and consumption, Peer Utilization and Implementation Guidelines have a relatively high impact on awareness and consumption but a low level of organizational effectiveness. Organizations must prioritize additional effort on these two drivers to increase employee awareness and consumption of work-life practices.

Appendix: Demographics

European Dataset

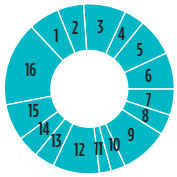
European Dataset

Organizational Level, Function, and Geography of Survey Participants



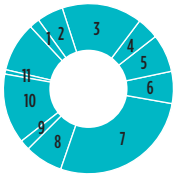
Level

1 Executive **2%**
2 Junior **27%**
3 Senior **14%**
4 Mid **57%**



Function

1 Operations **6%**
2 Administrative **5%**
3 IT/Systems **8%**
4 Customer Service/Call Center **4%**
5 Finance/Accounting **7%**
6 Sales **7%**
7 Engineering/Design **5%**
8 HR/Education/Training **4%**
9 Technical **9%**
10 Retail **3%**
11 Corporate **2%**
12 R&D **9%**
13 Quality Control/Assurance **4%**
14 Marketing/Market Research **4%**
15 Manufacturing/Supply Chain Logistics **7%**
16 Other **16%**



Geography

1 Ireland **2%**
2 Switzerland **5%**
3 United Kingdom **15%**
4 Sweden **2%**
5 Belgium **4%**
6 Netherlands **7%**
7 Portugal **2%**
8 Italy **6%**
9 France **27%**
10 Germany **7%**
11 Poland **2%**
12 Spain **13%**
13 Finland **1%**
14 Other **7%**

Company Size, Age, and Gender of Survey Participants

Compagny Size

1 Less Than $3 Billion **14%**
2 $3 Billion – 10 Billion **23%**
3 $10 Billion – 20 Billion **20%**
4 $20 Billion or More **43%**

Age

1 18-29 **13%**
2 30-39 **35%**
3 40-49 **31%**
4 50-65 **21%**

Gender

1 Male **71%**
2 Female **29%**

Appendix: Participants

With Special Thanks

Appendix: Definitions of Work-Life Practices

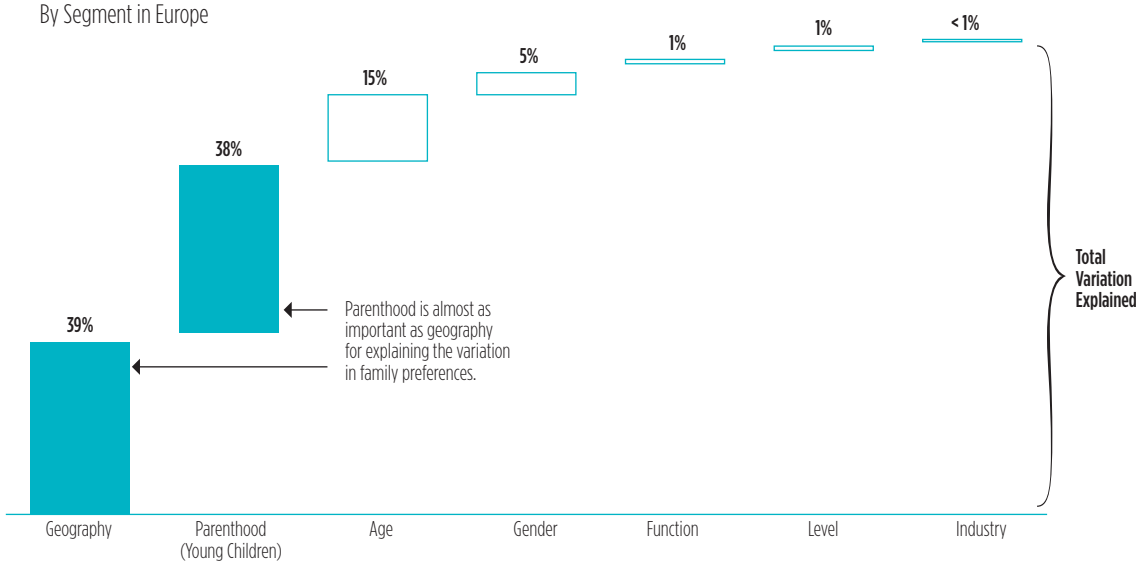
Work-Life Practice Name	Definition
Appropriate Workload	The extent to which employees are able to complete their work during a standard working week
Business Travel Nights Away	The number of nights away from home required by the job
Cafeteria	The quality of the organization's on-site cafeteria food services available to employees
Childcare Subsidies	The level of reimbursement received by employees for childcare costs
Commuting Subsidies	The level of subsidies received by employees toward the cost of travel to the workplace
Education Reimbursement	The level of reimbursement received by employees for their education costs and for their children's education costs
Eldercare Subsidies	The level of reimbursement received by employees for eldercare costs
Emergency Dependent Care Services	Whether or not employees have access to short-term emergency care services for dependents
Emergency Leave of Absence	Whether or not employees can take leave of absence for personal emergencies
Employee Counseling	Employee access to counseling service to resolve personal and work-related problems
Employee Support Groups	Whether or not employees have access to employee support groups (e.g., caregiver) to exchange experiences, advice, and practical insights
Fitness Services	The quality of the organization's fitness services available to employees
Flexible Work Schedule	The extent to which employees can select the days and number of hours they work
Forced Vacation Time	The minimum amount of holiday or vacation time that employees are required to use
Job Sharing	Whether or not part-time employees can share the work and responsibilities of one full-time position
On-Site Childcare	Whether the organization provides on-site childcare services
On-Site Nurse or Doctor	Whether or not employees have access to a nurse or doctor in the workplace
On-Site Parking	The extent to which employees have access to on-site car or vehicle parking facilities
Paid Parental Leave	The amount of paid parental leave provided by the organization
Paid Sick Leave	The amount of paid sick leave provided by the organization
Personal Assistant Service (Concierge)	Whether employees have access to dedicated assistance for personal administrative tasks and errands
Personal Insurance	The comprehensiveness of personal insurance (e.g., legal, travel, home) cover for employees
Personal Time Interruptions	The frequency of work-related interruptions during non-work time
Predictable Working Hours	The extent to which employees have visibility into their working hours
Preventive Health Care Program	Whether employees have access to preventative health screening and examination
Remote Work Sites	Access to alternative work sites to support telecommuters
Reproductive Health Program	Whether employees have access to dedicated reproductive health information, consulting, and services
Sabbatical and Educational Leave	The amount of time employees can take off for sabbatical leave
Switching Part Time and Full Time	The extent to which employees can move between full-time and part-time work
Telecommuting Technology	Extent to which the organization enables employees to connect remotely with the workplace
Time Spent Telecommuting	Time spent working in a location other than the workplace
Volunteer Work	Whether employees can undertake volunteer work during regular work hours

Appendix: Definitions of Awareness and Consumption Drivers

Driver Name	Definition
Accessibility of Practices*	The level of employee access to work-life practices
Accessible Information	The level of employee access to information about work-life practices
Alignment of Career and WLP*	The extent to which career opportunities are compatible with the WLP
Alignment of Employee Development and WLP*	The extent to which development opportunities are compatible with the WLP
Alignment of Employee Performance Evaluation and WLP*	The extent to which performance evaluation is aligned with the WLP
Alignment of Job Design and WLP*	The compatibility of the job design with consumption of work-life practices
Availability of Preferred Practices*	The extent to which the organization offers the practices employees want to use
Consistent Messages	Whether or not information about work-life practices is communicated consistently
Employee Control of Practices	The level of employee control over the work-life practices offered
Equitable Process for Work-Life Requests*	Whether or not the process for considering work-life requests is fair and equitable
Formal Agreement	Whether or not employees have a formal agreement in place for using work-life practices
Frequent Communication	The frequency of communications about work-life practices
HR Promotion	Whether or not HR promotes employee use of work-life practices
Ability to Consume WLP Without Negatively Impacting Peers*	The ability of employees to consume the WLP without negatively impacting peers
Implementation Guidelines	Whether or not the organization provides clear guidelines for work-life practices implementation
Intuitive Content	The extent to which the content of work-life communications is easy to understand
Manager-Led Implementation	Whether or not work-life practices implementation is driven by the manager
Manager Promotion	Whether or not managers promote employee use of work-life practices
Manager Utilization	The extent to which managers use work-life practices
Peer Utilization	The extent to which peers use work-life practices
Relevant Content	The relevance of the content in work-life communications
Senior Executive Promotion	Whether or not senior executives promote employee use of work-life practices
Senior Executive Utilization	The extent to which senior executives use work-life practices
Team-Based Implementation	Whether or not work-life practices implementation is driven by a team-based discussion
Timely Communication	Whether information about work-life practices is communicated at the right time to inform employee decisions

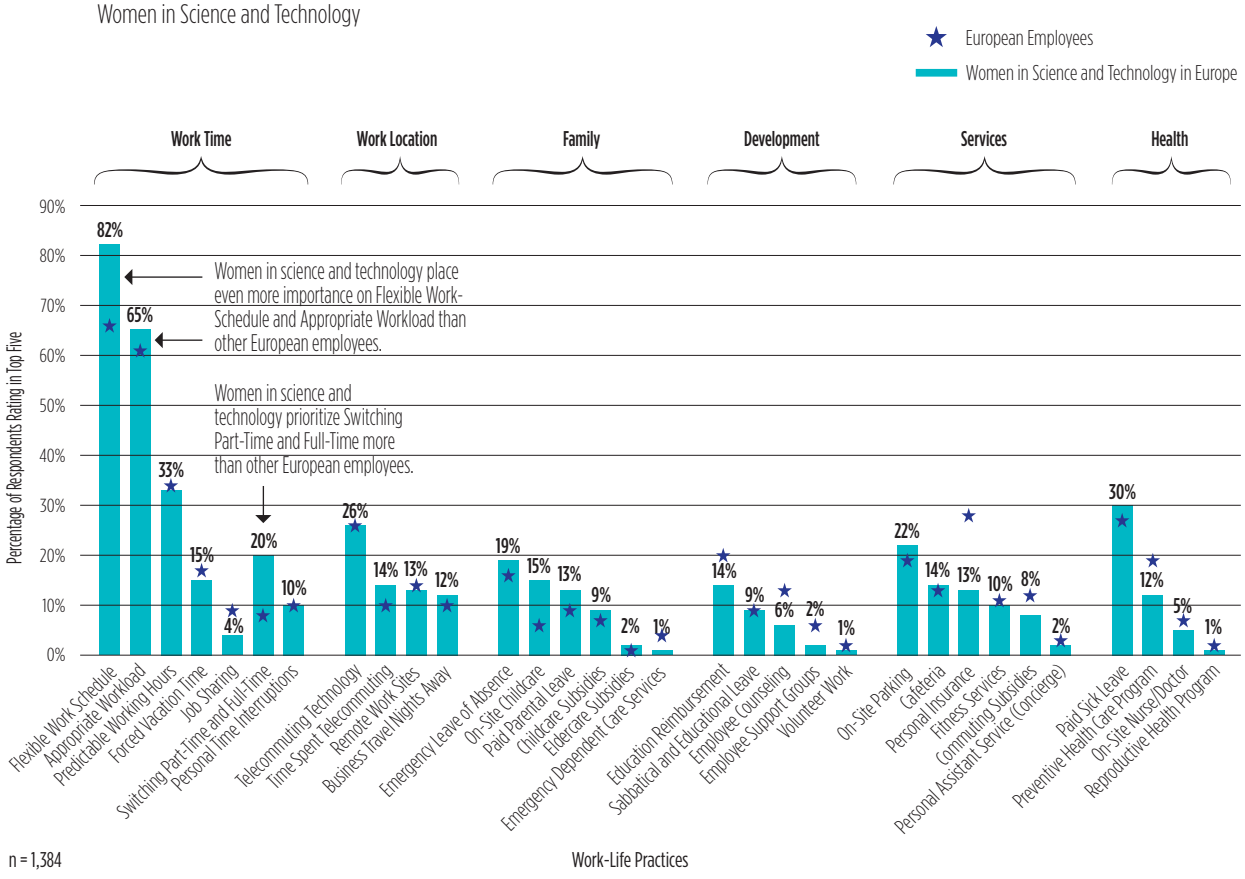
** Driver is relevant for WLP consumption but not for WLP awareness.*

Figure 4.0 **Percentage of Variance in Family Preferences Explained**
By Segment in Europe



Source: Corporate Leadership Council research.

Figure 4.1 **Percentage of Respondents Rating Work-Life Attribute in Top Five Most Important for Assessing Potential Employers**
Women in Science and Technology



Work-life balance and performance

Laure Turner (1)

Introduction

Companies are devoting increasing resources to the implementation of work-life balance practices, in order to attract and retain their employees, especially in management positions. The Corporate Leadership Council (CLC) study presented earlier in this report shows the importance of the work-life proposition of companies to secure their pool of talents (2). However, the direct link between companies' performance and the level of work-life balance achieved in the organization has seldom been studied, to our knowledge. Bloom and Van Reenen (2006) pioneered this line of research, collecting extensive data on management and work-life balance practices in about 700 medium-sized firms in the USA, France, Germany and the UK. Their paper shows in particular that the positive correlation of firm productivity with the availability of work-life balance practices in an organization is not robust: it arises only because availability of work-life balance practices is strongly related to good management.

The originality of our research is to work on a disaggregated scale assessing the relationship between employees work-life balance and employees' performance. Using employees' performance data (evaluations) and the CLC Employees Survey on work-life balance drivers of commitment, this research builds both performance and work-life balance indicators, studies how they are related, and in particular when are high performance and high work-life balance combined.

Work-life balance (WLB) is assessed through the perceived importance of, satisfaction with, and utilization of work-life balance practices, as well as through the degree of conflict between work and family life. Results take into account both the accessibility of the work-life balance practices in the organization and the attitude of top management and peers with regards to the consumption of work-life balance practices. The country of residence, gender, age, family situation, educational and job levels are accounted for as well. Because ratings of individual performance may be affected or even biased by the employee's consumption of work-like balance practices, a second analysis looking at project performance is included. It sheds light on the relation between projects' performance and the work-life balance of the individuals working on the projects.

Data and methodology

This study draws on three sets of data: data on employees' answers to the CLC Survey, data on individual performance, and data on industrial project performance and work-life balance in teams.

The first dataset contains the individuals' answers to the CLC Survey about how they perceive and consume work-life balance practices. The answers analyzed relate to a set of questions about the perceived importance of WLB, the utilization of WLB practices, conflict, the attitude of top management toward WLB consumption, the accessibility of WLB practices, and the neutrality of it in regard to performance evaluation criteria (see Annex, Table A.1).

This employees' dataset was merged with a second dataset on individual performance ratings. Individual performance ratings are highly confidential and sensitive data. The advantage of using those data is to connect WLB directly to performance at the same individual level. One company agreed to provide employees' ratings, which represent 2 758 employees, disseminated worldwide. The performance indicator averages the performance rating of the employees over the last three years (see Annex, Table A.2). The dataset also contains information on which employees are selected as "high potentials" by the company. We focus on those employees in the following. They represent 10 % of the sample.

In order to clarify the relationship between WLB and performance, we categorized the employees into groups, and then studied the performance of those groups. Multiple Correspondence Analysis was used to analyze the relationships of several WLB variables (perception of importance, conflict, satisfaction with, …), and identify the main dimensions according to which the sample was partitioned. This method allowed the

1 *ENSAE (École Nationale de la Statistique et de l'Administration Économique), Paris, France, laure.turner@ensae.fr*
This work benefited from the Corporate Leadership Council Survey. This publication does not reflect the position of ENSAE but only the author's view. We also thank the HR departments of the two companies that participated in this study.

2 *The Council surveyed more than 50 000 employees from 35 different organizations across 20 industries.*

constitution of four groups in which employees were the most "similar" across the dimensions identified, and the most "different" from the employees of the other groups.

To study WLB in relation to project performance, we collected project evaluations and related the projects' performance to the level of work-life balance reached in the teams working on the projects. The advantage of analyzing data at the project level is to provide a correction in the case where the employees' rating would be impacted by the employees' consumption of work-life balance. One company, different from the one previously mentioned, participated in this study at the project level. The project performance measure in this company was the projects' rating given by the client. If this measure was not available, performance was measured by the delay of delivery, the cost of the project, as well as by the average per team of the employees' bonuses. These measures were available from 2004 to 2006 (see Annex, Table A.2). The company had the request that, for time saving reasons, the study reached about 200 employees and consumed as little as possible of the employees' time (something like 10 minutes). On this basis, we selected all the high and low performance projects in 2006, which represented 22 projects and 278 persons ([3]). A short questionnaire was sent to those 278 employees, with questions similar to the ones in the CLC Survey for the sake of comparability, and concerning the perception of the WLB importance, the utilization of WLB practices, and the degree of conflict. There were 121 respondents (47 % of the surveyed employees). Finally the dataset contains the employees' answers to this questionnaire and the performance of the projects on which they worked (i.e. 145 observations). This dataset allowed exploring by category of project (high performance/low performance) the WLB of the employees who have worked on it ([4]). The team synergies contributing to project performance are not accounted for in this descriptive work.

The next section presents the results, first for the link between WLB and individual performance, and second for the relation between WLB and project performance.

Results

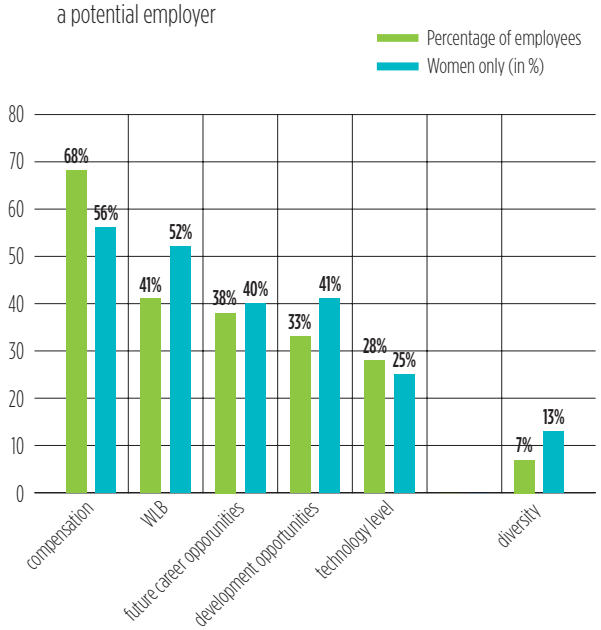
Work-life balance and individual performance

The employees studied show similar interest and consumption of work-life balance practices behavior as in the full sample of 50 000 employees analyzed in the CLC study. The first section emphasizes the main descriptive statistics concerning their WLB profiles, the second section relates the WLB profiles to individual performance, and the third section is a discussion of the results.

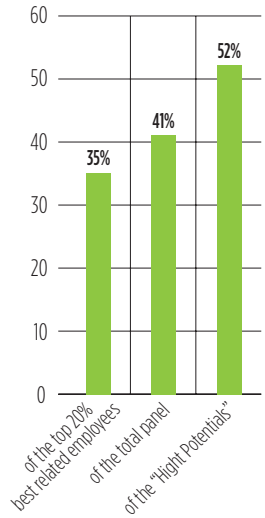
3 About 2/3 of the projects have a high performance, and 1/3 a low performance.

4 Of course, it would have been better if we could have surveyed the employees as extensively as done by the CLC Survey. Due to the size constraint on the questionnaire, only few questions could be asked, selected on the basis of the results of the study at the individual level.

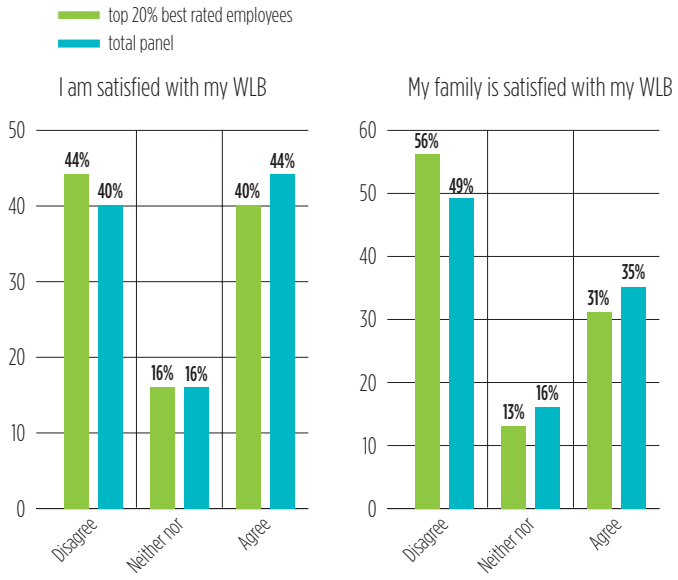
Graph 1 **Work-life balance as a driver of attraction**
the 5/38 most important characteristics when considering a potential employer



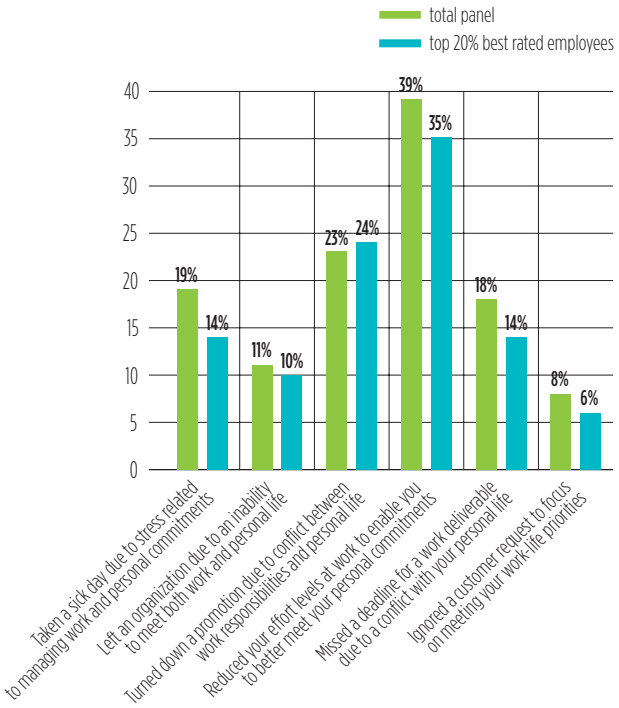
Graph 2 **Perceived importance of Work-life balance and Performance**
Consider WLB as one of the 5/38 most important characteristic when considering a potential employer



Graph 3 **Satisfaction with work-life balance and Performance**



Graph 4 **Conflict between personal and work-life, and Performance**
Trade-offs work/personal life



Work-life Balance profiles

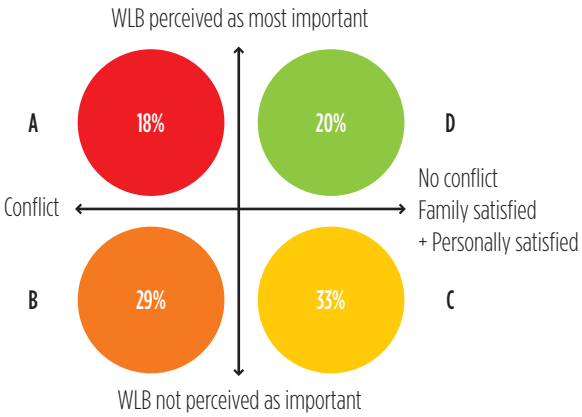
First, about 40 % of the employees perceive WLB as important, in the sense that they consider that WLB is a major driver of attraction when looking for a potential employer. WLB is ranked second after the compensation criteria. Interestingly, men value WLB as women do, even though slightly less. They also value compensation slightly more than women do (Graph 1). However, the top 20 % best rated employees do not perceive WLB as important as the rest of the sample. But, the "high potentials", 40 % of which are amongst the best rated employees and the others closely behind, show a strong preference for WLB compared to the total panel (Graph 2).

Secondly, the level of conflict between personal development at work and private commitments is quite high. The answers to a set of questions related to conflict were analyzed (see Annex, Table A.1). Up to 40 % of the sample for instance already had to reduce effort levels at work to better meet their personal commitments. And only 30 % of the employees agree that their personal development at work rarely conflicts with their work-life priorities. Also, the greater the conflict, especially from the family point of view, the lower is personal satisfaction with WLB.
The difference in answers between the total panel and the best-rated employees is not clear-cut, even though the best performers seem to experience more conflict (Graph 3) ([5]). However, they are also less likely to reduce work commitment in order to meet personal commitments (Graph 4).

Multiple Correspondence Analysis was used to analyze the relationships of the several WLB variables, and identify the main dimensions according to which the sample can be partitioned. The results are presented on Graph 5. The results show that employees cluster according to two main dimensions: the degree of work-life conflict and the degree to which work-life balance is perceived as important. The level of conflict appears to be principally defined by a negative answer to two questions ([6]): "your

5 *The young generation of the "high potentials" expresses the same kind of pattern as the best-rated employees.*

Graph 5 **Graph 5 : Four WLB group profiles**



personal development at work rarely conflicts with your work-life priorities", "the work-life practices that you utilize rarely conflict with the design of your job". We therefore find four groups:

A. A group of employees (18%) who perceive WLB as important and who experience a high level of conflict.
B. A group of employees (29%) who do not perceive WLB as important and who experience a high level of conflict.
C. A group of employees (33%) who do not perceive WLB as important, who do not experience conflict and are satisfied with their WLB.
D. A group of employees (20%) who perceive WLB as important, who do not experience conflict and are satisfied with their WLB.

Groups A to D can be sorted in an ascending way on a WLB scale, group A having the lowest level of WLB and group D the highest. The next section relates this classification to the individual performance.

The Work-life balance - Performance relation

Turning to the individual performance of the members of the four groups of WLB described above sheds light on the link between WLB and performance.

In Graph 6, performance is plotted against WLB. From this graph it is clear that the top 20% of best-rated employees is over-represented compared to the others in the group who experience conflict but do not perceive WLB as important. As WLB increases, the concentration of high performers decreases. Also, best performers tend to be in group B and C not feeling that WLB is important whether or not they do have conflict.

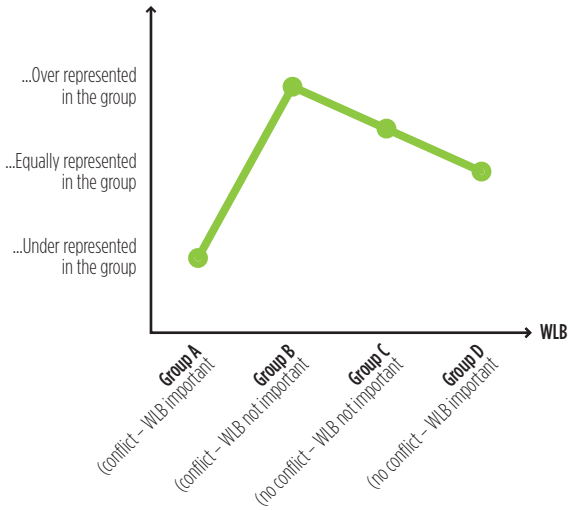
Noticeably, high performers are under-represented in group A which experiences both conflict and perceives WLB as important, a group most challenged from the WLB point of view. However, in this group A, there are relatively more "high potentials" than in the other groups, which makes this group of employees an important one to take into consideration (Graph 7).

Discussion

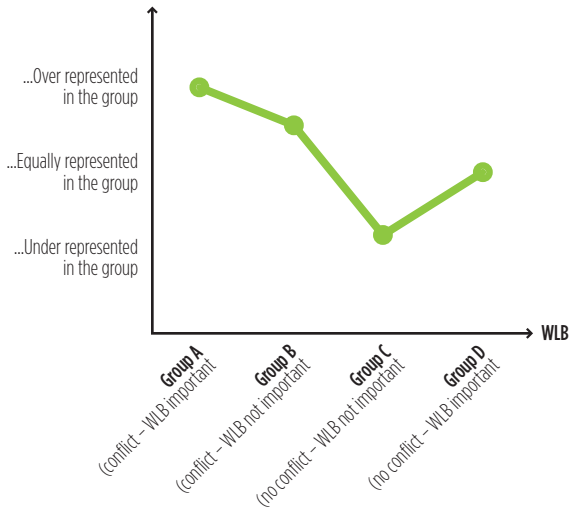
The group B of high performers – low WLB shows the following characteristics (Table 1): the employees mainly belong to age category 35-39 and 50-54 years; there are about as many women in this group as on average in the sample; the employees are less likely to have children than do those in the other groups (66% have at least one child, against 77% for group A where the WLB is the worst), and less are married (76% against about 80% in the other groups); as in the other groups, about 50% have a working partner. In most contrast with the other groups, up to 46% of them declare that their partner's work is less or much less important than theirs ([7]). The employees in this group also have not much control over their workload or over their business travel schedule. About 60% of them share the idea that to get ahead in the organization they have to work overtime on a regular basis, and that showing commitment is prioritizing work over personal life. On three points – importance of partner's work, perception of the need for career advancement to work overtime on a regular basis and perception that commitment is prioritizing work over personal life – this group distinguishes itself the most from group D who has the highest WLB. Group D is also younger (30-34 mainly), and contains more women (19% as compared to 13% in the sample).

6 Answers are in the form agree/disagree on a 7 level scale.
7 Distinguishing by gender makes no significant difference.

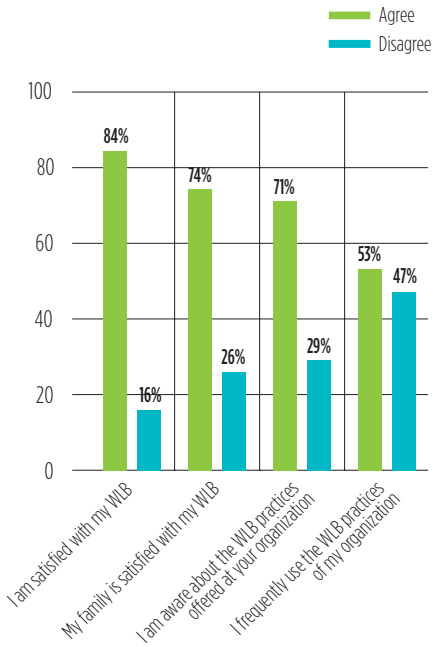
Graph 6 **Position of the performers with regards to WLB and conflicts**



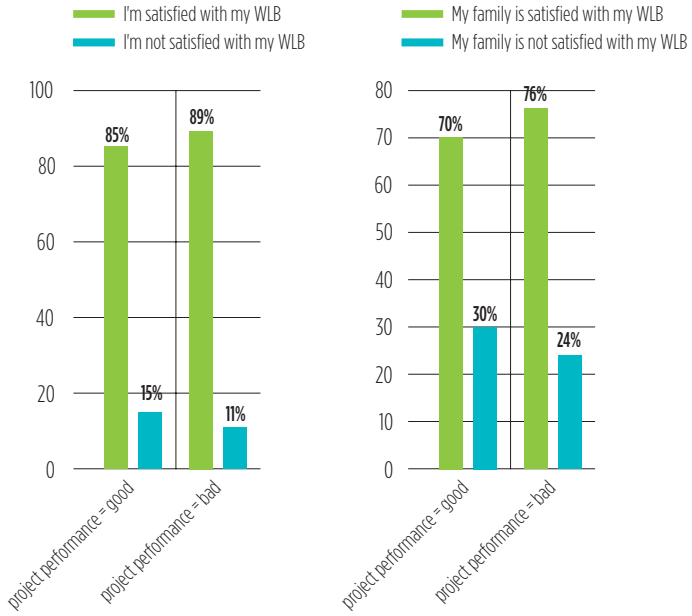
Graph 7 **Subset of performers with potential. Position with regards to WLB and conflicts**



Graph 8 **Work-life balance in the second company studied**



Graph 9 **Satisfaction with work-life balance and Project Performance**
(145 observations)



Group A shows a similar pattern than group B, except that in some ways the employees of group A seem to bear more "constraints". Predominantly aged 35-39, they are the ones who are more likely to have children in the sample (77 % do), and they have the poorest control over both their work schedule and their workload as compared to the other groups.

Interestingly, group C, which is the one who compares best in terms of performance to group B, is characterized on the contrary by the highest level of control, be it over their work schedule, over their job design, over their workload, over their business travel schedule, or over the WLB practices that they use. This group is more senior (50-54 predominantly), and contains less women (9 %). In terms of references – about the need for career advancement to work overtime on a regular basis and to prioritize work over personal life – they show proximity to group D.

In conclusion, a way to interpret those results is that the high performers, having low WLB (group B), are at risk in the sense that the frontier is tiny with group A where personal constraints are more stringent, the control over work schedule and workload more loose, and the conflict higher: group A has a lower performance. However, the results also suggest that the provision of tailored WLB practices might allow group B to get closer to group C on the WLB scale, keeping a comparable performance: group C has a good control over its job attributes and over the WLB practices used.

The next part turns to the project performance, and looks at how it relates to the WLB in teams.

Work-life balance and collective performance

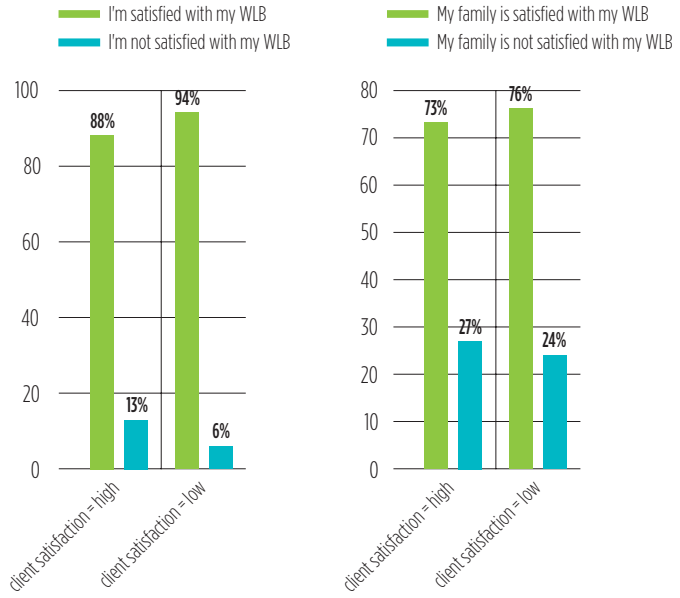
The employees surveyed in relation to the projects show a different pattern as regard to WLB, specific to the company in which they work. The first section describes their WLB profiles and relates to project performance to the employees' WLB.

Work-life balance in teams and project performance

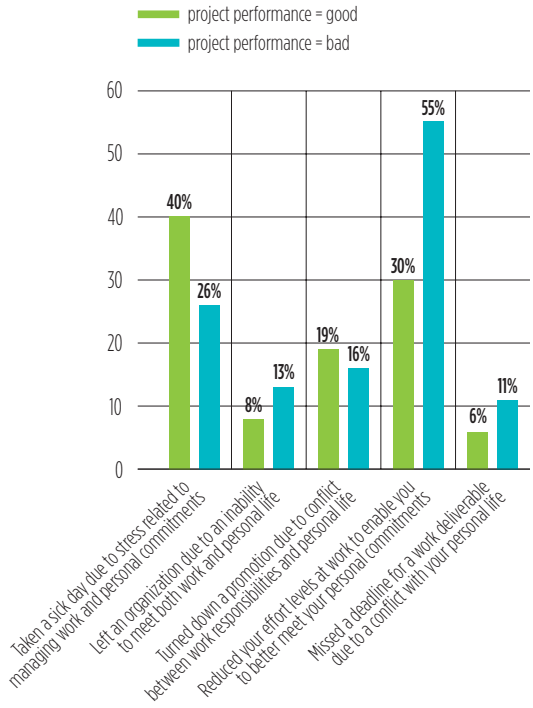
The company surveyed appears to have a very high level of WLB amongst its employees, as compared to the general sample described in the CLC study. As a matter of fact, 84 % of the employees surveyed are satisfied with their WLB, which is more than twice the figure obtained for the first company described previously. Moreover, 71 % of the employees are aware of the WLB practices available in the company, and 53 % of them use these practices frequently (Graph 8). The perception of the importance of WLB is much higher too in this sample, since about 60 % of the surveyed employees consider it as one of the five main drivers of attraction to a potential employer (against about 40 % in the general sample). This specific pattern should be kept in mind when looking at project performance in relation to the WLB of the respondents having worked on the projects.

The employees working on high and on low performance projects equally perceive WLB as important. And employees are evenly satisfied with their WLB whatever the project performance, the ones on low performance projects slightly more. However, the family of the employees having worked on high rated projects is less satisfied of the WLB of their relative than the family of the employees having worked on low performance

Graph 10 **Satisfaction with work-life balance and Client satisfaction**
(65 observations)



Graph 11 **Conflict and project performance**



projects (Graph 9). Moreover, focusing only on the client level of satisfaction as the indicator of the performance of the projects, the lower the client satisfaction, the higher the personal and family satisfaction about WLB (Graph 10).

Interestingly, the "low performance" group is the one which utilizes less the WLB practices of the organization, whereas it was the contrary previously. Here, lower performance is not related to a higher level of WLB consumption. Moreover, looking more deeply at the conflict variables, we get a picture that contrasts and complements the one obtained previously. Graph 11 shows, by performance of the projects, the responses of the employees to some situations of conflict between their personal and work commitments. It appears that people on low performance projects solve the conflict much more by reducing their effort at work to meet personal commitments than the employees on high rated projects, whereas on the contrary, individuals on high rated projects are more likely to take a sick day due to stress related to managing both work and personal commitments than the employees on low projects. This picture is the same when focusing on the client satisfaction measure.

For the exercise of comparing the results on collective and individual performance, we group the individuals surveyed according to the quadrant used previously (defined by the conflict/perception dimensions). The classification into groups was constituted on a different sample in the previous part and therefore does not completely fit these data ([8]), nevertheless it is useful for comparison purposes. The relationship is similar to the one obtained for the concentration of best-rated employees in relation to WLB. Good projects are less often observed for the worst level of WLB (group A), and more for an intermediate level of WLB (group B). It also shows that satisfactory collective performance is compatible with the high level of WLB (group B, knowing the specificity of the sample of having high WLB).

Discussion

The first result conveyed by the previous descriptive statistics is that the employees on high performance projects seem to rather work until they have to take a sick day leave related to stress than reduce their effort level at work to meet their personal commitments. It is the reverse for the employees having worked on low performance projects. Even though the employees surveyed are not "at risk" in the sense that they all report a high level of WLB, the result confirms the importance of the WLB practices to help the employees to meet their personal and work goals and to manage a good performance. In this case, the possibility of using emergency leave of absence is related to collective performance.

The second result is a confirmation at the project level that performance is not achieved for the lowest level of WLB, and more for an intermediate level of WLB.

Conclusion

The results suggest that performance is associated with an intermediary level of WLB. When work-life balance is perceived as important but cannot be reached in the organization, performance is lower. Interestingly, among the still high performers in this latter group, we predominantly find "high potentials".

8 *In particular, there is no employee fitting the 'no conflict – WLB not important' group.*

Our findings suggest that a driver to sustain the performance of high potentials and high performers is to give employees control over their work schedule, their workload, and over the work-life balance practices that they use. The results also suggest that project performance would benefit from such measures.

This paper presented an approach – relating employees' WLB to employees' performance – which can allow companies to monitor the effectiveness of WLB policies for their high performers and high potentials. In order to take the study and the methodology further, performance data from more companies would be needed. Protocols can be established for data collection and for sharing data across firms at a level of aggregation ensuring statistical relevance and confidentiality.

Reference

Bloom N. and Van Reenen J., 2006, "Management practices, work-life balance, and productivity: a review of some recent evidence", Oxford Review of Economic Policy, Vol. 22, No. 4.

Table 1: Main characteristics of the WLB groups

	Group A **conflict / WLB perceived as important**	Group B **conflict / WLB not perceived as important**	Group C **no conflict / WLB not perceived as important**	Group D **no conflict / WLB perceived as important**
Average employed-level	mid-level management mid-level individual contributor	mid-level management mid-level individual contributor	mid-level management mid-level individual contributor	mid-level management mid-level individual contributor
Age most represented	**35 - 39**	**35 – 39** and **50 - 54**	**50 - 54** (and slightly less 35 – 39, 40 – 44, 45 – 49)	**30 – 34** and 35 – 39
% of women (average in the sample: 13%)	15 %	12 %	**9 %**	**19 %**
% of employees having at least one child (average in the sample: 71 %)	**77 %**	**66 %**	70 %	74 %
% of employees having spouse work outside the home (average in the sample: 51 %)	55 %	48 %	49 %	55 %
% of married (average in the sample: 80 %)	80 %	**76 %**	82 %	82 %
% of employees saying partner's career is more important than theirs (average in the sample 7 %)	8 %	**3 %**	6 %	**11 %**
% of employees saying partner's career is equally important than theirs (average in the sample: 49 %)	52 %	48 %	55 %	45 %
% of employees saying partner's career is less/much less important than theirs (average in the sample: 39 %)	37 %	**46 %**	42 %	**28 %**
% of employees agreeing that to get ahead in the organization, employees are expected to work overtime on a regular basis	**62 %**	**61 %**	47 %	**41 %**
% of employees agreeing that showing commitment is prioritizing work over personal life	56 %	**60 %**	51 %	**45 %**
% of employees saying they have control over ... the design of their job	66 %	70 %	**75 %**	**56 %**
... their work schedule	**58 %**	63 %	**81 %**	76 %
... their workload	**31 %**	44 %	**58 %**	52 %
... their business travel schedule	39 %	**31 %**	**55 %**	53 %
... the WLB practices used	55 %	55 %	**71 %**	67 %
% of employees frequently using the work-life practices of their organization	36 %	35 %	39 %	**48 %**

Annex

Table A.1: Questions of the CLC Survey analyzed in this study

Category	Questions analyzed
Perceived importance of WLB	Choose "Work-life balance" at the question "What are the 5/38 most important characteristics when considering a potential employer". Choose WLB practices at the question "The 5/32 most important characteristics when considering a potential employer".
Utilization of WLB practices	"I frequently use the WLB practices of my organization" (agree/disagree type of answers), WLB Practices used
Conflict	"Are you satisfied with your WLB", "Is your family satisfied with your work-life balance", "Does your personal development at work rarely conflicts with your work-life priorities", "Do the work-life practices that you utilize rarely conflict with the design of your job", "Have you ever taken a sick day due to stress related to managing work and personal commitments", "Left an organization due to an inability to meet both work and personal life", "Turned down a promotion due to conflict between work responsibilities and personal life", "Reduced your effort levels at work to enable you to better meet your personal commitments", "Missed a deadline for a work deliverable due to a conflict with your personal life", "Ignored a customer request to focus on meeting your work-life priorities", "In this organization, employees are expected to put their job before their private life when necessary".
Control (agree/disagree type of answers)	"I have a high level of control over overtime hours worked", "I have a high level of control over my work schedule", "I have a high level of control over the work-life practices that I use".
Attitude of the management toward WLB consumption (agree/disagree type of answers)	"The organization provides a good level of WLB", "My manager frequently uses the work-life practices offered by my organization", "Senior executives at my organization promote participation in work-life practices offered by my organization", "My manager promote participation in work-life practices offered by my organization", "My HR department promote participation in work-life practices offered by my organization", "To get ahead in the organization, employees are expected to work overtime on a regular basis", "In this organization, employees are expected to put their job before their private life when necessary", "In order to be taken seriously in this organization, employees should work long days and be available at all time", "Effective actions in advancing your career in the organization" (work long hours, prioritize work over personal life, don't take leave of absence, don't take parental leave, etc.).
Accessibility	"The work-life practices I want to use are available at my organization", "The work-life practices of my organization are easily accessible to employees".
Neutrality	"The work-life practices that I use rarely conflict with the performance evaluation criteria for my job".

Table A.2: Definition of the individual and collective performance measures

Individual evaluation Company n°1 (2758 employees)	**Performance measure**
– Individual rating in the form of an appreciation A - B - C - D – High potentials detection	– We identified the "best rated employees" as the employees having received only As and at most one B over the last 3 years. They represent 18 % of the panel. – The "High Potentials" represent 10 % of the panel. 40 % of them belong to the "best rated employees" group.
Team/project evaluations Company n°2 (22 projects, 121 respondents)	**Performance measure**
– Satisfaction of the client (note from 1 to 4) – Real costs of the projects < anticipated costs – No delay in delivery of priority deliverables – Research bonuses averaged per project over all the team members (not only the respondents): rank 1(low bonus, 25 % of the sample) to 4 (high bonus, 25 % of the sample)	High performance – if Client satisfaction = 4 – or if the 3 other evaluations are indicating performance (meet the anticipated costs, no delay, bonus level = 4) Low performance – if client satisfaction = 1 – or if the 3 other evaluations are indicating low performance (do not meet the anticipated costs, delay, bonus level = 1)

Flexible working policies, gender and culture change

Suzan Lewis ([1]) ([2])

Introduction

Flexible working arrangements and other "work-life balance" policies are often regarded as a means for enhancing retention of women in SET and minimising the leaky pipeline. However, policies alone are not sufficient to bring about real changes (Lewis, 1997; Rapoport, Bailyn, Fletcher and Pruitt, 2002). It is increasingly recognised that the most difficult barriers to break down in SET workplaces relate to organisational culture, including stereotypes and unwritten rules that can make it difficult for women to "fit in" and prosper (Miller, 2004).

This paper draws on theory of gendered organisations and sense of entitlement theory (see theoretical overview section) and uses a "dual agenda" lens to examine everyday working practices, their underlying assumptions and intended and unintended consequences for gender equity and workplace effectiveness. The focus is on Research and Development departments, where there are a relatively high proportion of women scientists, in two SET organisations.

The overall objectives of the project reported here are:

1. to explore assumptions and unwritten rules embedded in workplace cultures and everyday working practices within SET organisations;
2. to understand how these assumptions and unwritten rules operate and with what consequences;
3. to identify elements of promising practices to meet the dual agenda of gender equity and workplace effectiveness as a basis for future learning and development.

Methodology and research process

The study adopted a research strategy based on the initial phases of Collaborative Interactive Action Research (CIAR) (Rapoport et al, 2002). CIAR is a process of mutual enquiry that yields new ways of thinking about issues within organisations. This involves a number of stages: establishing case study organisations; establishing collaboration within the companies and a work unit to participate in the research; data gathering and analysis; reflection on the analysis. The final phase of collaboration, beyond the scope of this project, would be to develop innovative solutions and the development, piloting and evaluation of interventions to bring about change.

The criteria for selection of organisations were: an awareness of issues faced by the women and also men in SET, especially in relation to "work-life balance"; and the existence of a number of policies and practices designed to support and promote the careers of women in SET. It was important that the cases were "leading edge" companies in order to highlight emerging processes of moving beyond policies to identify deeper level changes needed to meet the dual agenda of gender equity and workplace effectiveness, as well as current barriers in terms of unwritten rules, values and structures. Beyond these criteria the two cases were self selected. Both were SET companies, located in France. Overall 35 interviews were carried out of whom 24 were with women and 11 with men. In one organisation 17 members of one Research and Development team participated, while in the other 13 participants were in R and D, 3 in marketing, and 2 in HR.

Data gathering involved interviews focusing on working practices (how the work gets done), how people are valued, notions of success, working relationships and what it is like to work there for women and for men. Interview participants were encouraged to explore the assumptions or unwritten rules that underpinned working practices as well as possible consequences.

Interviews were conducted in English where possible, but with a translator present to assist when needed. Some were conducted in French because the interviewee were less comfortable talking in English. All interviews were taped, transcribed verbatim and where necessary translated into English. The data were analysed using a gender and dual agenda lens to develop a thematic grid. The analysis focused on identifying dominant working practices, the assumptions underpinning them and their impact on women's (and men's) careers and workplace effectiveness. Examples of positive practices that meet the dual agenda of gender equity and workplace effectiveness were also identified.

1 I acknowledge the valuable assistance of Dr Anne Humbert with the interviews and analysis.

2 Middlesex University

The French Context

The French context is important for these case studies. The French welfare state is based on the 'working mother model' and there exists a whole range of measures to support working parents (Fagnani and Math, 2008). France leads the European Union in the provision of childcare and benefits aimed at reducing child care costs for families (Gornick and Meyers, 2003, Fagnani and Math, 2008). Thus childcare was not an issue for the interview participants. There are also highly developed parental leave policies. In this context France has the highest fertility rates within the European Union. Many of those interviewed had three children. Nevertheless, despite gender-neutral discourse and some effort to encourage fathers to be more involved in family life, women continue to bear the main responsibilities for work in the home (Fagnani and Math, 2008). Moreover most children attend school only four days a week; many schools close on Wednesdays, so mothers often work a four day week.

The legally prescribed 35 hour work week in France provides some opportunities for flexible working arrangements, although companies now have the right to renegotiate working hours. Generally employees who work more than 35 hours can usually take extra time off, although not all do so. Managers in particular in both the companies, regarded this as largely irrelevant.

"The 35-hours law ? It's not for managers. We don't count our hours of working. We can leave early from work if we have a problem, but we have to work more if we need to in a day".
Women scientist

Findings

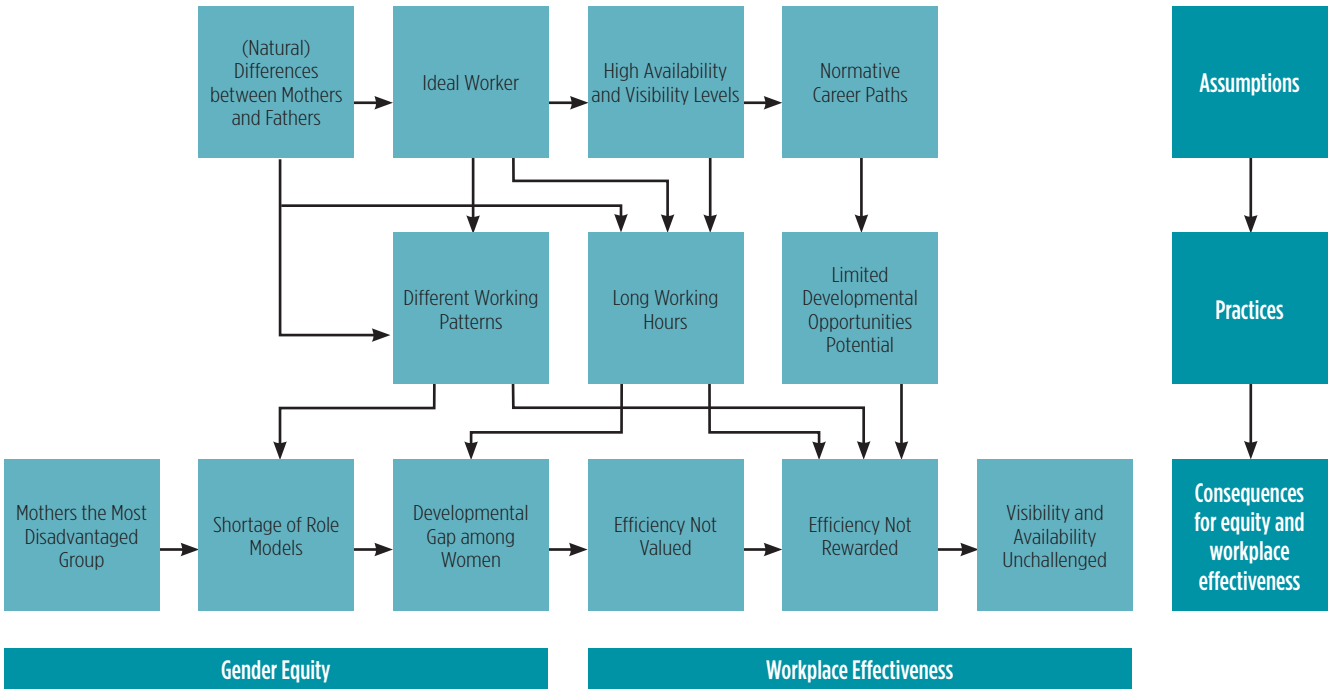
We represent the findings in Figure 1. This outlines a model of the process whereby everyday working practices are underpinned by gendered assumptions and have negative consequences for gender equity and workplace effectiveness.

Workplace practices

Figure 1 depicts three related areas of workplace practices which emerged as pivotal to an understanding of women's (and men's) experiences in the two workplaces. They relate to: flexible working arrangements which result in some different working patterns of women and men; long working hours, especially in management; and unclear and often limited career opportunities, especially for women. Each of these is described below, followed by an analysis of the assumptions and unwritten rules which underpin them and the consequences of these practices for both gender equity and workplace effectiveness.

A major characteristic of both cases was the high level of reported flexibility. In one of the companies there was a strong commitment to valuing diversity and to enabling women with family commitments to combine work and family in productive ways. The atmosphere, in R and D in particular, could be described as very women friendly. The atmosphere was also described as woman friendly or mother friendly in the R and D Department in the other company although it was reported that other departments were much more male dominated and

Figure 1.



less "family friendly". The work of scientists in R and D lends itself better than other departments to flexible working.

Many of the women scientists whom we interviewed in both companies, and a few of the men, worked a 4 day week, largely because of the school closures on Wednesdays, a common practice in France. The reduction in time was not usually associated with a reduction in workload. Rather, work was condensed into fewer days and resulted in some intensification or invisibility of work, for example work performed at home. However, the structures were rather different in the two contexts. In one of the companies women we interviewed reported that their salary was cut by one fifth. Many said they actually worked longer than the four days, took work home, and even came in on their day off if it was deemed to be necessary. However, there was no sense of entitlement among these women to continue to be paid a full salary for doing a full workload in a shorter time (what might be conceptualised elsewhere as a compressed work week).

The costs of working a reduced hour's week were somewhat less in the other company where a collective agreement allowed for a 32 hour week, that is just 3 hours less than full time, but this could be spread over 4 days. Extra payment was also provided to bring pension contributions up to 35 hours. The additional pay arrangement applied for a specified period of years, although it was still possible to work a 32 hour week after this, but without the extra pension contributions. Again workload was not necessarily reduced.

Where the financial cost of working four days was less men as well as women worked reduced hours, although more women than men used it for childcare (usually taking a Wednesday off) and more men than women used it for other reasons – usually taking a Friday, for a three day weekend.

In the department we have about 45 % women and 55 % men. And I think that 80 % of the population is at work 4 days a week…But some men have other activities like they teach in schools or sometimes we have people also doing politics… It's not always for the children. Women manager

It's practical for mothers to have their Wednesdays off to take care of their children.
Interviewer: And what about fathers?
Ah France is still a chauvinist country!
Man, engineer working 32 hours, but not because of childcare

Nevertheless the normalisation of this way of working made it easier for younger men, who wanted to be involved in childcare to do so, thus may potentially enhance gender equity in the long term.

I think especially very young men, 30 years old for example who had babies in the last two or three years…ask us in the interview if they can keep their Wednesday…I think that there is a change in the men. Woman manager

Although there was a general discourse of gender neutral flexibility and family friendliness in both companies, this co-existed with a second working practice, namely, expectations of long working hours in some jobs, especially at more senior levels. This was associated with heavy workloads, and/or for showing commitment.

I don't think you have to stay until late in the evening to do everything you have to do. It's rather in the culture, to leave from work late in order to be seen! Woman scientist

I'm paid for 32 hours…I work a lot more…But as a manager… you don't have schedules. Woman manager

One practice that exacerbated expectations of long hours and conflicted with the discourse of family friendliness was that of holding long meetings, often running on for a longer time than some of the interviewees felt was necessary, or held in the evenings and therefore difficult for those with childcare commitments.

I think (meetings are) long! Some very precise points could be discussed in half an hour…I think we discuss many things apart from the main topic. Woman scientist

In the team where working four days was more common they adapted by not scheduling meetings on Wednesdays and Fridays, but more senior managers, particularly those without childcare responsibilities were less aware of the need to change.

The bosses don't hesitate to put meetings at 5 or 6 in the afternoon, it doesn't matter, and you have to be there!… I think it could be different if our directors had to save time.
Woman manager

Similarly other related practices are often inefficient, but not challenged.

And a lot of people spend a lot of time waiting for their bosses because they are in meetings and therefore unavailable. And you can't take any decisions without first asking your boss.
Man scientist

The conflicting practices of flexibility and family friendliness for mothers on the one hand and expectations of long working hours for more developmental jobs on the other hand, feed into the third set of everyday practices concerning promotion and development. Criteria for being given interesting, developmental work and for advancement are often informal and not always perceived to be clear or explicit (except for lower status technician jobs). Thus there were often unclear and and/or limited opportunities especially for the women scientists.

Hence women remain disadvantaged although both companies are making good strides in reducing this. Some women were able to progress in their careers, up to a point, in both organisations, including being promoted to management while working a 4 day week. Both also had the same problems.

In one company the number of women in management was growing considerably but, as in most organisations remained proportionately lower than the number of women staff. In the other, in the specific R and D team interviewed, there were more women than men in management and this was beginning to make a difference to culture and practice. However, there were three promotional routes in this company, (project, management and expertise) and while the number of women advancing by the first two routes was growing, many fewer women advanced via the expertise group. This may be related to the requirement to publish which also involves networking with academics in universities, and is likely to be particularly time intensive. An understanding of, and challenging the working practices discussed above and the underlying assumptions discussed in the next section may help to progress women's advancement in SET. The next section considers the underlying assumptions and the consequences of these practices.

Assumptions, working practices and consequences for the dual agenda of gender equity and workplace effectiveness

Analysis of the data revealed a number of gendered assumptions – that is assumptions based on the ideology of separate spheres (see theoretical overview section). These assumptions underpinned the taken-for-granted working practices discussed above, which, in turn, impacted on both gender equity and workplace effectiveness as illustrated in Figure 1.

At the most basic, the differential take up of the 4 day week by women and men is underpinned by assumptions about motherhood and assumptions about ideal workers. The ideal worker assumptions lead to an overvaluing of availability and visibility which underpins expectations of long working hours especially for those in developmental jobs and an undervaluing of those (mostly women) who work less, or condense their work into less time. Finally these parts of the process feed into further assumptions about normative and valued career paths. In each of these steps there are negative consequences for gender equity and workplace effectiveness, which accumulate to disadvantage women.

Different patterns of working among women and men: assumptions and consequences.

Underpinning the take up of the 4 day week by women only among those interviewed in one company and by men and women, but for different reasons in the other, lie taken-for-granted assumptions about mothers, fathers, ideal workers and choices.

It is assumed that mothers are the main carers, are often less inclined to prioritise work and that their incomes are less important than those of fathers. At the same time it is widely assumed that ideal committed workers work full time and often long hours and always prioritise their jobs. Thus mothers, by definition are not expected to be ideal workers and men are discouraged from reducing working time for childcare. The view is that women can be ideal employees, especially if they do not have children, but as in many other organisations, the women, especially those with children, feel they first have to prove themselves.

In my position, I proved myself so I'm OK now, but it was hard. It was harder for me as a woman. Woman scientist, manager

Women with children are seen as being less able to commit themselves, while men with children, no. I think it's beginning to change though. Woman engineer

In the company where both men and women use the 32 hour provision and the income penalty is lower, there is still a view among some managers that this arrangement is most valuable for mothers, and indeed even for women who may become mothers in the future. One woman without children was surprised to be told by management that it was a good idea to work 32 hours as she may have children one day and would find the arrangement useful.

A further assumption is that women with children freely choose to work less and by implication, to be "non ideal" workers by not conforming to the male model of work. It is assumed to some extent in both companies, that mothers have to choose between sacrificing time for family and sacrificing pay. Earnings are viewed as less important to mothers, whose partners, it is assumed, will be the main providers. The idea that mothers could both have time for family and accomplish a full week's workload in less time with full time pay is rarely considered. This is not viewed as in any way discriminatory, but as giving women choices to opt out of "ideal" careers to be what is widely perceived as good mothers.

However, to have the capacity to make real choices women and men) must have the capability to make alternative choices (Lewis and Guilliani, 2005). They choose from what is available. Those interviewed do not have the capability to, for example, choose to compress their work into four days for full pay, to work four days with a reduced workload for reduced pay or to work five shorter days. The choices women and men make are constrained by both the workplace context and the wider ideological context in which women are viewed as more responsible for family than men. However, the assumptions that people make free choices obscures these contexts and justifies the gendered processes whereby women earn less and may be marginalised. Some men also talked about the 32 hour week as a choice, but here it was a lifestyle choice, not constrained by the need to conform to the ideal of a being a good parent.

One impact of the ideal worker norm is that mothers themselves often assume that they are lucky to be able to "deviate" from the male norm. Thus despite the loss of pay associated with condensing work into four days they regard this very favourably.

In my opinion we have this luxury, this chance – (the company) gives us this freedom [to work four fifths], which is good.
Woman scientist

All the women using a 4 day week articulated their decision as a "choice". Nevertheless they were aware that they were "buying" this flexibility (see Lewis, Brannen and Nilsen, in press). In effect, these women were working more efficiently, but nevertheless took a pay cut because they were not usually available on the fifth day, as discussed by the women scientist quoted below.

…I work at home on Monday or Tuesday, when the children are asleep, I finish my work at home because I have to leave in the evening. In fact I think it's good to have this flexibility…I can leave early in the evening and finish what I didn't do at home.
Interviewer: But you pay for that, in terms of salary?
Yes. Woman scientist

Most of those working a four day week also recognised that they worked more efficiently and intensively.

In my opinion and I have discussed that with a lot of friends, I'm much more organised since I work four days. It's straight to the point : when I arrive I know exactly what to do and I have the feeling that I don't waste my time.
Woman scientist

Yes, I'm not available on Fridays. But I have my phone. And my computer. And if needed I can do something, send a document, answer a call, or something. But most of the time my Friday is off, it's time for me. The counterpart is that during other days, I work and I never rest! Woman manager

This year we have a very tight schedule and we manage to do it in 32 hours, everybody. So if we had 35 hours maybe our schedule wouldn't be that tight. Maybe. But we do it anyway.
Woman engineer

In many ways therefore this is a win-win solution, benefiting the company and providing "choices" for the mothers. The women interviewed reported that they felt this was a sacrifice worth making, although they were aware that they were paying a price,. It seems that many of the managers also recognised that this may be a good deal for the organisation.

I asked for my Wednesdays, because it's easy in France, I asked my boss…and she said "I'm glad you asked because you're going to be paid 20 % less but will do the same job!"
Woman scientist

These assumptions and associated practices impact on both gender equity and workplace effectiveness. In both cases the four day week schemes contributed to high levels of retention of women. Many participants said that they would not look for jobs elsewhere because they feared that they would find another job with so much flexibility. In some cases however this may hold women back in their careers, especially if they are not provided with developmental opportunities in their jobs. The phenomenon has been described previously as "golden handcuffs", whereby women are tied to their company by virtue of highly supportive policies, but pay a price for this, particularly in developmental terms. Some women feel trapped and thus the talents of some of these women scientists are not optimally developed.

For me and for many of my female friends, we won't that easily look for a job in another company because we have this flexibility, we have this comfort…Sometimes I think I should go somewhere else but I don't know what I will find in other companies, if there will be this flexibility. Woman scientist

Moreover women have limited role models in senior posts and men have no role models of senior men adapting work for family. There are some examples of women in relatively senior positions in both case studies, which send out very positive messages. Nevertheless the interviewees felt there was a need for much more visibility of women at higher levels of management and particularly of men involved in family.

We need more women also at higher levels. If you have in a board of directors only one or two women…We need both women and men in the organisation. Everybody thinks it would be the right thing to do but in practice it's more difficult.
Woman scientist

But even…if men said that they also have a life outside work, that could also be a good thing…I know that some men value the fact that they have a life after work. Men don't talk about it easily. But if they did, they would be role models too. I'm sure that men also like to have children and a family. If they shared it more…but it's harder for men to be able to say that.
Woman engineer

Finally , although mothers who compress their work into 4 days a week are more organised, flexible and motivated, much of their work becomes invisible. This may also be career limiting, reinforcing gendered division of labour in the family and workplace.

Long working hours especially in managerial jobs: assumptions and consequences

Underpinning the practice of long working hours in developmental jobs are assumptions about availability and visibility that stem from ideal worker assumptions. Although not explicitly or even consciously articulated, the unwritten rules are that valued employers should be available and visible at all times, which creates difficulties for women with young children (and for fathers who want to be involved in childcare). This availability is often conceptualised in terms of "investing" time.

It mostly depends on the time you…invest in your job.
Woman scientist

I took two weeks less (maternity leave) because I was not very comfortable…three months represents nothing in research, we just had to organise differently. But I think I would have been affected by my boss's opinion if I was not visible.
Woman scientist

As visibility is valued for its own sake, the 4 day week tends to be viewed as an accommodation. Hence the greater efficiency of those who condense their work into work 4 days is obscured. Moreover some availability is valued more than other forms. In both companies women reported that being available at work in the evening is valued more than being available early in the morning. This is highly gendered as many women use flexibility to come into work earlier and leave early to collect children from school.

There is also an implicit assumption in both companies that flexibility is mainly for workers at lower levels and a taken for granted view that there are no alternative ways of organising work at management level. This implicitly views flexibility as undermining effectiveness, although it is clear that flexibility can increase efficiency and availability, including at management level.

…In my function, you sometimes have a question from a director or a customer that you have to answer, in two days and you have to. Also, I always work at home at night, when the children are in bed, I take my computer and I read my messages. I read my e-mail. So I think it's possible for me to keep that job because I can find some time to work outside the office and I can also sometimes be outside the office for my family and as I manage to do everything, there is no problem.
Woman manager, officially working 32 hours

The consequences of assumptions about the need to be constantly available and visible are that many women with children limit their aspirations, at least in the short term. Some women, including those working a 4 day week, are advancing into management in both companies but others find the time and availability demands involved daunting. This has implications for gender equity and talent management.

If I were ready to get more involved and work longer, I could (advance)…But if you also want to take care of your personal life it's more difficult.
What if you're a father?
Then you should have a good wife! Woman scientist

I think women are afraid to ask for responsibilities, because they know it will be difficult for them…, to be completely available from 8am to 8pm, everyday…, especially when you have children. When you don't have children it's not that difficult.
Woman manager

Another consequence of assumptions about ideal workers and availability is that time inefficient practices such as long, inefficient and inconveniently timed meetings are not challenged. For example long meetings which eat into working time and evening meetings which mothers of young children find difficult to attend not only undermine gender equity but are also often inefficient. Questioning the ideal of constant availability may lead to a restructuring of meetings and a rethinking of other ineffective practices, to address the dual agenda. However as long as it is assumed that all good employees can spend time attending these, there is little incentive to change in ways that could benefit everyone. Work intensifies, for example, because of burdensome administrative tasks or the proliferation of email. If it is assumed that employees do not need time for family there will be less sense of urgency to look at different ways of doing things.

Availability may be needed in some jobs, where cover is needed, although this can often be achieved in other ways. However assumptions about the value of availability and visibility spreads to a range of jobs where it is not actually necessary, as found in many other studies (e.g. Lewis, 1997; 2001). Visibility, availability (and possibly inefficiency) are thus often rewarded more than effective workload management and efficiency.

Subsequently, rewards and promotions may be made for the wrong reasons and this impacts on career development for women and men, as discussed below.

Unclear promotion criteria and limited opportunities for women: assumptions and consequences

Promotion and career development practices that disadvantage women are also influenced by assumptions about mothers, fathers and ideal workers, and the overvaluing of availability and visibility. They result in a number of further assumptions in these organisations that advantage men more than women.

The main assumption, stemming from the ideal worker norm, is that there is only one, ideal career development trajectory-following the traditional male model. However, not all women, nor indeed, all the men interviewed wanted advancement in the traditional sense. Many were happy with the level they had attained. Nevertheless, all wanted interesting and developmental work and to be valued for doing a good job.

However, stemming from the assumptions about mothers, it is often assumed that as women want flexibility and time to be with children they do not also want or need development or advancement. Hence developmental opportunities can be limited for those working in non normative ways. For example, some women said that they had been provided with opportunities for specialisation while working a shorter week, but while it was assumed that this was always a good thing, some felt this limited their developmental opportunities.

Management consider that you're a specialist in your area and that it would be difficult for you to work in a different field. This is what they call added value. If you change your job you have to start learning new things. In my opinion it's not impossible, it just requires the people and the company to accept that you sometimes need to learn. Woman scientist

In both cases there were perceived to be some problems relating to promotions. In one interviewees perceived limited opportunities for sideways developmental opportunities. In the other, an assumption that engineers must be mobile created difficulties for some women. This requirement relates to the notion of the ideal worker who does not need to accommodate their career for family reasons. It is based on the need to get a variety of experience but several of those interviewed discussed alternative ways that this could be achieved.

Promotions criteria that are not always clear, especially for higher level positions can be related to assumptions about availability and visibility. It appears to be assumed that the right people will be visible and put themselves forward for consideration – or will be noticed and encouraged to apply by their managers. Again this may disadvantage women. For example, more of the men than the women interviewed understood the "rules of the game" based on visibility.

To get promoted, I think you have to meet other people and to talk with them, about opportunities. I met about 30 people, just to see what the different job opportunities were and talk about them to Human Resources.
Male scientist as advised by his male boss

Many of the women with whom we spoke were reluctant to make themselves visible or push to be noticed, even if they knew that these were the rules of the game and therefore are disadvantaged by these informal rules.

Last year my group (achieved something special), so they congratulated us, told us we did a good job but nothing more! I didn't get a bonus, nothing. I was surprised; I had worked a lot… I've never asked (for a bonus for myself). I think that if I work well I don't need to ask, it's normal to get something.
Woman scientist

For me, no (I wouldn't ask for a bonus). But my husband would. I think it's different; it's easier if you're a man.
Woman scientist

Of course we cannot assume this gender difference is organisation wide. Some women and some men react differently, but it might nevertheless benefit some women if the rules of the game were explicit to all, and justified.

The focus on availability and visibility, and subsequent lack of recognition of the greater efficiency of those who managed their workloads in a shorter time and for less pay could also reduce promotional opportunities.

In both companies a 4 day week is perceived to be incompatible with higher levels of management.

I'm at the first level of management in the R&D division; it's still possible to be on 32 hours. At higher levels it's not, it's too difficult. Woman manager

As visibility and networking are thought to be crucial for promotion this suggests a further implicit assumption that visible networking skills are more important at senior levels than other communication skills and less visible support skills.

Again the consequences of these assumptions undermine both gender equity and workplace effectiveness. However they are rarely challenged because of the taken for granted nature of assumptions and unwritten rules. Consequently those with the potential to make good senior managers but do not market themselves well may be overlooked, undermining talent management. Moreover if networking skills are more visible than other interpersonal skills and more likely to be rewarded by promotion – this may have broader implications for the communication skills of management.

In one of the companies the management are aware of the talent management implications of assumptions about an ideal career and have adapted by changing the procedures concerning the identification of staff who are labelled "high potentials". Traditionally it was assumed that those with high potential would be apparent by the age of 30, but now the age range has been extended to around 40, to enable the company to pick up on women/mothers who have not followed the traditional "male" career pattern. However the assumption is that only women take care of children and this has not yet been applied to men actively involved in childcare. Assumptions about the roles of mothers and fathers remain strong.

In sum, gendered assumptions, albeit played out in somewhat different ways in the two organisations, undermined gender equity and effective talent management, but also perpetuated ineffective everyday working practices. There are nevertheless signs that some of these issues are beginning to be addressed and of emergent promising practices to meet the dual agenda of gender equity and workplace effectiveness, in both organisations.

Promising practices to meet the dual agenda

Normalising a condensed work week

The 32 hour collective agreement is effective in countering the ideal of constant availability in the workplace because it is so widely used and normalised. It is potentially good for gender equity, especially as it makes it possible for men as well as women to work and care and good for workplace performance as it enhances efficiency. However, there is still some loss of income associated with reduction in availability but not in workload, and it is still used differently by men and women. Moreover, senior managers are still expected to work longer hours.

Identification of "high potentials"

The practice of extending the time frame for women to be identified as high potentials addresses the dual agenda. The next step towards real gender equity would be to also provide this extended trajectory to fathers involved in childcare.

Focusing on work output rather than time input

Interviewees in both cases agree that quality and quantity of work are the most important criterion for good workers although at present the emphasis on output or input depends largely on individual line managers. Some also recognise that a focus on output can enhance effectiveness.

The new generation doesn't want to work a lot, and that is shocking, but it means they want to work more efficiently. We waste a lot of time in meetings that lead nowhere, we talk and talk and waste our time, just because bosses have time, they leave very late and they don't care if you have to leave early. But we could be more efficient in meetings and make them shorter. Man scientist

I like the company, because they respect your private life. The best example in my team: there is a woman who has two children and she has to leave at 7pm and that's not bothering anyone. Because it's integrated and I would say it's a way to make us all work more efficiently. Everybody knows she has to leave at 7 so we're just adapting to this rule, and it's also useful for my personal life because I don't want to leave work at 10pm, …I'd like to have even more mothers. In my team, I noticed it changed the way I worked. Having more situations like that could be a good thing. Man, marketing

I think our department is quite different from the others, because it is the first time in the life of [the company] R&D that two women are at the head of the department…and a lot of men take some time for the family and for personal activities. And it's not a problem for us. We prefer to look at the results of the job and not at the time spent at the workplace. What is important is the result. Woman manager

Reorganising meetings

Often meetings are not organised on days when staff are not working. This does not always apply at more senior levels but managers who are aware of family constraints find no difficulty in organising meetings accordingly.

[My manager] avoids setting meetings up on Fridays for me. And I avoid meetings for my group on Wednesdays, because I know the constraints. Woman manager

Time wasting activities that could be cut- small changes

Recognition of the importance of productivity and effectiveness rather than just availability helps to think about small changes that could meet the dual agenda, or about dilemmas which need to be addressed.

Sometimes we repeat two or three times the same things because we don't take the time to wait for a meeting with everybody and to say it just one time… Woman manager

People come into my office sometimes at 6 o'clock in the evening because they don't have any children, and they come because all the meetings of the day are finished, and begin to explain … what they've done in the day, in fact it's not necessary, I don't need this information …it's difficult because for me it is also important to always have my door open to let people come into my office and discuss with me… We have to find a compromise between being open to the people and keep some barriers in order to be efficient. It's a little change, but we can work on that. Woman manager

Discussion and Conclusions

Despite changes in families and the labour force there remains a prevailing assumption that work and family are separate gendered spheres. Though not necessarily consciously recognised and articulated, this is reflected in workplace practices and cultures, which are based on the assumption that ideal workers can be constantly available and visible at the workplace. The ideology of motherhood on the other hand leads to an expectation that mothers of young children will not be able to be constantly available, which inherently conflicts with the ideal worker model. Even in these two organisations that are highly supportive of women scientists, and in R and D which lends itself to flexibility more than some other areas of SET, unwritten rules about availability and visibility obscure the commitment and greater efficiency of those who condense their work into four days and take a pay cut. Moreover, the high visibility of senior staff working long hours sends a message that these jobs cannot easily be combined with having time for children and consequently many mothers reduce their aspirations. This perpetuates gender inequities and can lead to the under development of human resources. The assumptions about the

ideal worker with no restrictions on their time also undermines workplace effectiveness as the need to examine inefficient, time wasting practices is not recognised. There are emerging examples in both cases of promising practices, formal and informal, that challenge assumptions currently undermining the dual agenda of gender equity and workplace effectiveness. Building on these initiatives could contribute towards wider change.

Recommendations

- Flexible working arrangements such as a four day week are good for retention, but if the aim is to go beyond retention to promoting the careers of women scientists the value of flexible working arrangements as a productivity and efficiency tool needs to be recognised.
- Flexible working arrangements that enable employees to work a four day week without losing substantial pay are more likely to be taken up both by men and women, and become normalised. This can contribute to a change in culture that enables fathers and mothers to balance work and family and sustain productivity.
- Recognise that those who can manage their work in a shorter time are more efficient, rather than only valuing those who are more visible for longer (but often less efficient).
- Recognise that scientists who wish to work flexibly or reduced hours still need opportunities to learn and develop and to advance or make horizontal moves.
- Value employees' non work time and question the ideal of the constantly visible worker.
- Schedule essential meetings during the standard working day, avoiding a day when some staff are not at work, and then organise these meetings efficiently to get through the work in hand without taking up unnecessary time.
- Ensure that promotion criteria are clear. If visibility, availability or mobility are criteria, be clear that this is justifiable and consider innovative alternatives.
- Challenge subtle messages that more senior scientists need to work long hours and highlight as role models senior women and men working efficiently and having clear work and family boundaries.
- Recognise that high potential may emerge at different ages as scientists, both women and men follow diverse life course and career trajectories.
- Recognise, publicise and reward working practices that meet the dual agenda of gender equity and workplace effectiveness.

It is questionable how far the kinds of changes envisaged here can be driven by HR alone. They involve going beyond policies to challenge gendered assumptions and changing working cultures and practice. For this to occur it is essential to engage with management at all levels, as well as collaboration and problem solving within in work teams. This sort of change involves long term thinking, innovations and experimentation (See Rapoport et al, 2002; Lewis and Cooper, 2005). Is this feasible in the current economic context? A knee jerk reaction may be no. But given the need to enhance efficiency, and develop all human resources for talent management and competitive edge in the long term, it is arguably more important than ever for forward looking organisations.

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"It's not the break that's the problem": women SET professionals and career breaks in European companies

Clem Herman (1)

Introduction

This report is focused on what companies can do to support women returning to work after a career break and to continue to progress their careers. Clearly company specific work life balance policies have a significant role to play but it is important to recognise the wide range of other factors within a broader cultural context. The decisions that women make at the time of maternity including whether or not to work part time on returning to work, can often determine what options they might have at a later stage in their careers. Yet these crucial decisions are not made in isolation but are strongly influenced by gendered cultural assumptions both inside and outside of the workplace. As well as company policies these include national legal frameworks, availability of care networks, work status, as well as personal preferences (Tomlinson 2006).

Welfare policies and legal entitlements are distinctive to each country - as such they are both informed by, as well as actively responsible for shaping, socio-cultural norms. Work status, including relationships with managers and colleagues can have a significant effect on the implementation of company policies. There is a wide variation in the availability of 'care networks', which may include a partner, extended family members as well as paid childcare provision or indeed facilities provided by the company itself. Beliefs about gender roles (gender scripts) and sense of entitlement also influence career motivation and ambition (see Fig 1).

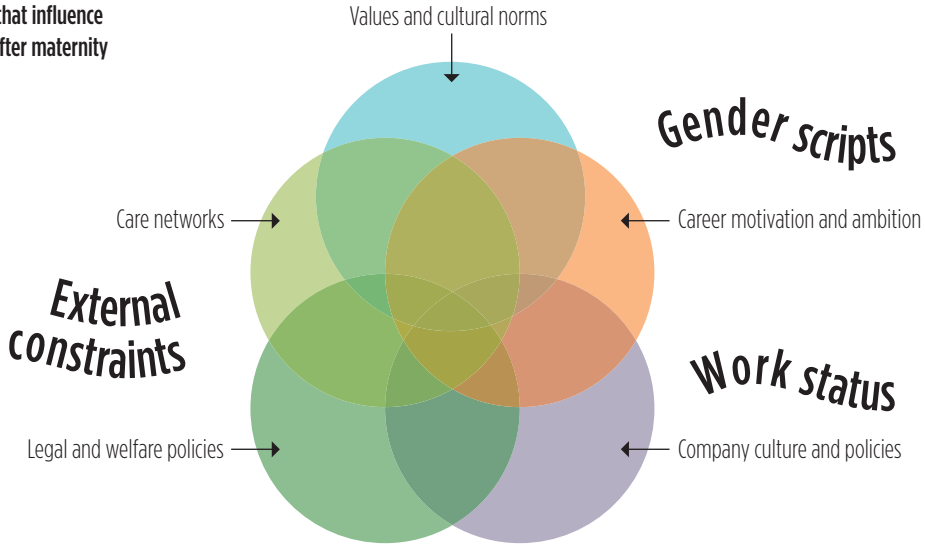
Research questions

- What is the real and long term impact of career breaks for professional women in SET?
- What are the unwritten rules and assumptions inhibiting women's progression within SET companies following a career break?
- What measures can be taken to support women to achieve the work life balance they want?

Methodology

This research into the impact of career breaks on progression of women in SET is based on 28 qualitative interviews with women professional engineers, scientists and technologists. These participants were identified by companies participating in the project who were asked to suggest women for interview – so the sample

Figure 1 **Intersecting factors that influence career progression after maternity**



(1) The Open University UK

does not include women who took leave and did not return. All but 3 of them have taken career breaks for maternity – the exceptions were one who had an extended period of sick leave, another who took time out for personal study unrelated to her work and a third who took leave to care for elderly parents. The majority returned directly to the same or similar jobs in the same companies after their (relatively short) period of leave. The sample spanned 6 EU countries (Italy, Germany, France, Netherlands, UK and Estonia) and included two individuals based outside Europe, (Russia and Canada). The average age was 39 – the youngest was 33 and the oldest 55.

Using a biographical narrative approach the study has explored the impact of social and cultural factors as well as workplace cultures in formulating the career trajectories of women professionals in these fields. Interviews were conducted using semi structured interview schedule – participants were asked to talk about their careers or working lives within the context of other aspects of their personal and domestic lives forming a narrative or chronological account. Such an approach offers the potential to contextualise experiences of women whose work-life stories are interwoven with social and political meanings. Comparing the experiences of women who have lived their lives and developed their careers in a range of countries offers a lens through which to understand the complex interplay of personal and public discourses which determine the impact of career breaks on progression and development. Interview transcripts were analysed with Atlas-ti using a grounded theory approach. This means that ideas and themes emerged during analysis of the data rather than using preset categories.

Results

SET industries – working in a male environment

The majority of the women were educated to post graduate level in scientific or technical subject areas – they had experienced being in a minority during Higher Education (usually there were less than 20% female students in their subject area, sometimes they were the only one). This experience of being in a minority continued into employment as they entered work in some of the most male dominated global industries including energy and IT companies. For most of the younger women this was something they just coped with and had presented no particular problems – they loved their jobs and enjoyed the technical challenges, travel, and range of opportunities presented by their careers. Several of the older women however spoke about their early experiences of isolation and intimidation often working as the only woman in a totally male environment

"I was the first female of a technical background, at least a graduate with a technical background. … It was quite tough, and lonely.. I think people were just struggling with how to cope and like I was supposed to work shifts for a month and there were no women's facilities and the guys were all struggling with how they should do it. They had to find a way to work. It wasn't easy, like when I had to go to management meeting and I was sitting there with forty-five guys, you feel very exposed".

43 year old Process Engineering Manager

Career breaks

Most of the previous research about career breaks focuses on women who have taken substantial number of years out of paid work and have lost ties with their previous employers. Thus the difficulties identified among women returning to employment after a career break include finding suitable and affordable childcare, and often overcoming loss of confidence and self esteem. (Shaw 1999, IOP 2004, Tomlinson 2005, Panteli, 2006). For women SET professionals there are particular issues over and above these generic problems, many of which were identified by the Maximising Returns report commissioned by the UK government (People, Science & Policy 2002). These include the loss of professional networks, location and mobility issues (usually lack of mobility options), out of date skills and knowledge and the absence of part time or flexible work in their particular sector.

Women in this study differ from previous studies of returners in two respects. Firstly they had taken short breaks. The average length of break was 6 months (the longest was just 2 years and shortest 3 months) so the issues relating to loss of skills and confidence were not as acute as those experienced by those on longer career breaks. Secondly all of them had returned to the same employer after their break, therefore they were not seeking new employment with all of the associated difficulties that this entails. However even after a short break, there were significant issues that emerged for many of the women, often associated not just with the break but also with subsequent part time working on their return.

Length of career break

The length of the career breaks was generally short with most taking just the statutory entitlement, or in some cases a slightly extended period that was offered by their company. Some also took additional holiday or other 'saved' leave days to extend their period of time before returning.

However there was an acknowledgement that a short break meant an increase in stress and pressure at the time of return. During early months women were often exhausted because of lack of sleep, breast feeding, and general adjustment to being a parent, so it made a big difference if their colleagues and managers were sympathetic and accommodating at this stage. Thus a maternity leave period of 4 months could in reality have a longer impact, with up to 3 or more months to adjust back in to full scale working.

Reasons cited for returning included strong career motivation, financial necessity, and wanting to do something for themselves other than being a mother. However there was also a tangible

fear of missing out on work and promotion opportunities that prompted some to return earlier than they would have wished.

Impact on career progression

Interviewees were specifically asked if they felt their period of absence had impacted on their own career progression. Several women talked about how promotion had been missed or delayed as a result of their career break – for example:

"I could have had a promotion but when you're 7 months pregnant it's very difficult – even though you have a good CV you have to say you must wait 6 months before you get a job. So I missed the opportunity when I was pregnant and I had to wait for 3 years. It's difficult to say, no-one will tell me it's because you were pregnant".. 39 year old Research Manager

However this was not universal - several of the women also mentioned positive impacts of taking breaks, specifically providing the opportunity for change that continuous employment would not have offered, for example:

"The maternity leave was important and helped me to understand that I needed to change the job. It always seemed like something was going to happen – perhaps a new project or something but the period of leave helped me realise that nothing was actually going to happen!"
42 year old Geophysicist

Maternity cover

In many of the companies work is organised on a project basis so the timing of the break was quite important. For those that were able to do so, stopping at the end of a project and then starting a new one when they came back meant that they minimised the impact of being away and did not have to delegate work to other colleagues in their absence.

"Well my first career break was, I think, in a way quite an ideal one because it was just in between jobs. So I stopped a job and I managed to arrange, before I left, the next job. So I took a break for four and a half months or so. It wasn't an extremely long period. I don't think it had a big impact as it was just between two jobs". 33 year old Chemical Engineer

However for those who did have other staff take over their work there were also benefits. Having someone cover maternity leave was actually a way of acknowledging status and importance of their role and it also meant the work continued in their absence.

"I had someone actually replace me and so I think that's...well if you don't get replaced then in all likelihood when you get back in that difficult period you inherit a train wreck because all the stuff that should have been happening in these few months hasn't happened and there's almost no way to bring it back to success". 45 year old Senior Manager

Keeping in Touch

Contact during maternity or career breaks can make an enormous difference to the process of returning.

"People sort of forget about you, it's not the right way to say it but it's how it tends to happen a little bit. What we've been doing with people who go off on maternity leave for instance and take an extended leave like that, we try to find someone to stay connected with them who just talks to them every few months or whatever they want just to make sure that we know when they're ready to come back, that there's something going on". 47 year old Senior Manager

Many of the women did keep in touch during leave and this ranged from casual social visits to the workplace to meet with colleagues and introduce them to the baby, through occasional phone calls with their line manager or boss and checking emails, to much more intense involvement in the day to day work in the case of a small number of generally more senior women.

"I stayed at home five months and in those months I more or less continued to be in contact with the office because it was not field work and I had to manage people so it was easy to keep contact by phone and email and after I delivered I used to drop into the office so I never really lost the progress of the things I left.. Everything continued as normal and when I went back I already knew where things were and coming back was nothing because I was always sharing decisions and people were helping me". 38 year old Project Manager

Returning to work

The main issues facing women coming back after extended career breaks which were identified earlier (the loss of professional networks, location and mobility issues, out of date skills and knowledge and the absence of part time or flexible work in their particular sector) are not generally a problem after short periods of leave. However there are a number of themes that regularly appeared in the interview accounts.

- Importance of support networks
- Assumptions made by colleagues/ managers that women would not be able to cope with challenging work and therefore not giving them opportunities
- Not getting your old job back
- Coping with sleepless nights and breast-feeding
- Adjusting back to a professional identity from being primarily focused on caring for a young baby
- Conflicts and power struggles with colleagues

Most importantly the availability of support was of immense significance, and several women were adamant that they could not have returned successfully without this. One respondent described how lack of support had been be disastrous for one of her colleagues.

" …It's really … related to your environment, your own situation at home. ..It is the circumstances, your husband, it's the company, it's so many sections that would influence and make it very personal. That's why some women really struggle to make success by themselves. I know one of the very ambitious women working here worked part-time but her husband was not willing to do anything at home, cleaning or whatever. No time to pick up the kids from the kindergarten in the afternoon. She almost went mad after six or eight months. She stopped, she couldn't handle it. It was too much. And of course if you have no support from home, that counts for men as well if they're around, if you have no support it is impossible to develop a career". 42 year old Senior Manager

Supportive networks are clearly important for management of work and family responsibilities. The attitudes and behaviour of line managers and colleagues was also crucial to whether a returner was able to step back smoothly into her career:

"when my baby was four months old I started working again and it was not so easy because I was a senior reservoir engineer and in that period some of my colleagues who were also senior reservoir engineers became leaders. So I lost one year of my job and career and then I tried to recover this … but at the beginning it was not so easy because my boss at this period… said "She has a baby who is 4 months and if it gets sick she will not be able to work so we should not give her a job with responsibility." 46 year old Reservoir Engineer

While most returned to their previous posts this was not always the case:

"I left for a few months which was my legal entitlement, and when I came back I had nothing to do. Of course when I left somebody took my job so when I came back the project was stopped while I was off, and it took one or two months before they could get me another job….I had a few things to do but also it was very tense, you had groups, between those groups there were some tensions – […]. So I decided to change [employer]. I stayed less than a year".
39 year old Research Manager

And while the loss of confidence expressed by long term career break women in previous studies was not usually as acute, there were still difficulties in adjusting back to the work role, especially for those with management responsibility. And the transition from full time motherhood to professional employee includes physical as well as psychological adjustment:

"It's only natural that after nine months there's going to be a period of readjustment. Obviously I had some leave cover arranged and of course after a period of nine months everybody would go to that person for advice. So it was quite difficult for me to take control again. Psychologically it was quite difficult to operate at a professional level with not a huge amount of sleep or at least a lot less sleep than I was used to doing. Yeah, it was challenging on many levels. Coming back to work full-time, trying to make myself presentable after a period of nine months not wearing very appealing clothes... trying to get myself switched on".
33 year old Environmental Safety Advisor

Another issue faced by some women was 'office politics' – colleagues who had taken advantage of their absence to try and gain career advantage in a highly competitive industry sector.

"When I came back from this maternity leave somebody else did my job. And certainly in the beginning, and I was working three days, all the interesting projects and all the interesting work he kept for himself and all the interesting meetings were planned when I was not there. So it was really obvious that this person … wanted to develop his own career a little bit faster and, I would say, over the back of some people".
42 year old Senior Manager

The importance of a coherent institutional response was stressed by one woman – she herself had quite a positive experience but talked about other colleagues who had found returning to work a tough experience.

"I do speak to others who found it very, very hard when they came back and they'd lost their confidence and there should be a sort of recognition that your first few months back you're bedding back into the organisation. I don't know how you can manage that in a sensitive manner if you've given that person's work away to somebody else but there needs to be recognition that they've been in quite a big change and you actually get more from people when they come back by talking to them about what they need to better do in their job rather than just saying OK this is what we need you to deliver. There's a dialogue that needs to happen and I think that dialogue is missing".
32 year old Quality Assurance Engineer

The same woman later spoke of how important the support she got from her managers and colleagues was, which contributed to a sense of being valued by the company.

"I realised that they were quite pleased with me and if they had wanted to get rid of me they probably wouldn't have given me all this support… It also means that you feel valuable to the company if they want to make all these investments. It also means you feel just like an employee, you don't feel like an exotic species or whatever".

Working life after a career break

One of the strategies that a large number of women adopted in order to achieve work life balance following maternity leave was to working fewer hours. The impact of working part time or reduced availability after maternity leave was so closely connected to the career break itself, that the consequences are not easily distinguishable. Among those who returned to full time hours after maternity, their availability was often reduced and they were no longer able to stay late in the office

or spontaneously travel abroad to meetings. Many of the women went to great lengths to ensure that they could meet their work commitments, but there were often assumptions made about their reduced availability made by well meaning managers. They became regarded in the same way as 'part-time' workers, with reduced status and diminished career potential.

Part time working

One interviewee felt that colleagues treated her differently as a mother and regarded her as less productive (i.e. a part timer) even though she was in fact working on a full time contract:

"A lot of women with babies are not working full time so I was considered as not working full time – I **WAS** working full time but I was a mother so I couldn't get the job I wanted. They considered that I wasn't working full time".
39 year old Research Manager

Visibility was perceived to be compromised by part time working. Certain types of work (project leadership for example) are assumed to require a full time position and the work offered to part timers is usually less demanding and less visible.

Part time working was often regarded negatively by management – one manager advised a returner to save up her annual leave and use this to work reduced hours, so that officially she was still working full time. For others there was the recognition that double standards applied. While the company was happy to offer part time working this was considered problematic and not normalised within the organisation:

"The official line is that being part time shouldn't be a problem but in fact the cultural practice is that it is a problem – the reality is not like this!" 35 year old Mechanical Engineer

Cultural differences in attitudes to part time working vary considerably between countries. In the Netherlands and Germany for example it is very uncommon for mothers to work full time and there is strong social pressure to reduce hours after returning from maternity leave.

In France, school closure on Wednesdays is cited by most of the women as their reason for part time working (see Lewis's report). However this presents many of the women in this study with internal conflicts between their roles as mothers and workers. By contrast, in Eastern Europe there is very little tradition of part time working – despite the drastic reduction in public childcare provision, the legacy of communist gender policies has left a culture of full-time working for women without the 'guilt' that many Western European women feel about delegating their childcare to others. Similarly in Italy it is quite rare to work part time and most women return to full time jobs.

Part time working hours are regarded differently for men and women – men are more likely to work part time in some countries rather than others but even in these countries it is more likely that women work shorter part time hours than their partners. For example in the Netherlands it is acceptable and even perhaps admirable for men to work 80% or 90% – however to go down to 3 days (60%) is considered to be going against perceived gender roles i.e. it is gender incongruent behaviour.

Whether they were on full or part time contracts, there was an expectation for many of the respondents that they would work over and above their contracted hours, especially among more senior women:

"Well, I admit when I was working part-time, on my day off I was working a number of hours anyway, and working in the evenings. I was always a hard worker, I still am. I work long days, I would say at least ten hours a day".
42 year old Senior Manager

However those working part time also demonstrated greater efficiency in their working hours:

"And what I saw was that people admired me a lot because they couldn't understand how I could cope with the work and the kids. And I think that it also had like a positive effect on my career progression because people were quite surprised with what I was still able to do in three days a week. And also I became more effective, more selective, not attending meetings where my presence was not really necessary. So I think it helped me to get promotions".
43 year old Process Engineering Manager

Flexible working

The availability of working flexible hours varied between companies and also within companies, so that even if the company had a policy for flexible work it was not automatic and could end up being at the discretion of the line manager.

"The company has a policy HR wise that it encourages flexible working practices but in reality most managers in the company are men who are over the age of 45 who've got wives who have been stay at home mums and for whatever reason they often struggle with flexible working, … it all depends on who your manager is and the way you approach it – if you wait to be offered flexible working it simply won't happen".
32 year old Quality Assurance Engineer

The availability of remote working from home also differed between companies and countries. Where it was available this was greatly appreciated especially as a strategy for coping when a child was ill. For example:

"My husband travels quite a lot as well so what I'd do is work about three hours during the day and then work from 6 till 10 at night when [my son] had gone to bed and that's how I made up my hours. Nowadays he's not ill nearly as much – he's only missed one day at nursery since Xmas this year – he's

just like a normal little boy now – but if he's ill I can still work flexibly". 32 year old Quality Assurance Engineer

Gender roles in the domestic sphere

Despite their high level qualifications and potential for career success, gender role expectations within the domestic sphere are still an important influence on career decision making for most of the women interviewed. There are indications that traditional gender roles have become more blurred in many of the partnerships in this study, although this varied considerably between countries.

Sharing some of the childcare with a partner was very common, but most women still took main responsibility for childcare, so even if both partners worked part time, the women tended to work less hours than their partners. Even where both partners worked full time, women tended to take the main responsibility for childcare with partners taking a 'supporting' role:

"He helps me a lot. In the morning he practically feeds her, dresses her up and does everything. I wake up early and come to the office at 8. I leave everything ready for her – milk, yoghurt and things for the nursery. And bags for all the dresses and everything ready on the bed. He has to help her and then he usually goes to work after. He works in the centre of [town] – he has the same timing as me but he needs 50 minutes to arrive home and he arrives at half past 8 or 9 in the evening. I have to prepare the soup or the meal for [my daughter] and him. It is a long day and we usually go to bed at half past 9, dead!" 38 year old Project Manager

There were one or two exceptions of couples who had reversed roles completely with the male partner taking extended leave and primary responsibility for childcare, but these women saw themselves as unusual and were considered to be exceptional role models and pioneers by their colleagues.

"When our daughter was born I stayed at home the first 7 months and [my partner] I took over and stayed at home for 14 months and after that he went back to 30 hours a week […] It's still unusual - there are some men who do this but they don't make much noise about it". 35 year old Mechanical Engineer

Availability of wider care networks also had a huge impact on successful return to work. Many of the women had strong support for childcare from extended family members, especially grandparents.

"I have a lot of help from their grandparents and I take them to school in the morning but after school the grandparents will often pick them up – my mother and my partner's parents. I have support from the children's grandparents and my partner ... I travel much more than him but when I went abroad to Norway he got parental leave and came with me for half the year and then my mother came for the other half."
42 year old Geophysicist

Gendered cultures in the workplace

There is a still an unwritten assumption within workplace culture that taking maternity leave is a deviation from the traditional (male) model of continuous full time employment and this stereotype is deeply rooted especially within SET industries in which women are still in a minority:

"…There are few women, 2 or 3 % who are in management roles, there are so few that I know them all by name! They are all an exception to the rule.[…] I think it's a cultural thing. The whole industry is for real men and I think that it is possible to change but I don't think this company wants it to change".
42 year old Geophysicist

There was a perception that companies continue to assume the model of an ideal worker as a male employee with stay at home (or part time) wife:

"I think a lot of it's because the guys who are the managers here, they've generally moved around with the company and they have stay at home wives and they have the expectation that when you have children you will want to become that type of person - and they apply, what we all do we all apply our models to other people. But unfortunately the world's changed a bit and when they had their children 20 years ago women didn't return to work as much, it's just a different world these days".
. 32 year old Quality Assurance Engineer

All of the companies involved have extensive equality and diversity policies, some of them very high profile indeed, but evidence suggests that these are not always taken up or implemented to the best advantage of women who may need them.

Promotion and career progression

In many cases line managers acted as interpreters of policies and were seen as gatekeepers to promotion and progression, either helping or hindering the process. In one company this was quite pronounced and the promotion process lacked transparency and was considered to be totally at the discretion of the manager. This was perceived by some as a potential source of gender bias:

"The only solution is transparency – if there is a position that is free then everyone must be informed and be able to apply and then someone must be chosen because they are the best. At the moment everything is personal and private. They call you and ask you if you are interested – this is the case everywhere. If I wanted a promotion I would have to wait and ask – there is no official way. Transparency is the only real solution, this way they will choose a person, not their gender".
42 year old Geophysicist

The study found evidence of indirect discrimination against women in the promotion process. Where internal vacancies are not advertised as part time, some women were discouraged from applying as they feared they would be at a disadvantage.

Most of the women have had very conventional career paths moving straight from school to university to study some kind of engineering or scientific discipline and then straight into the company they still work for. Within SET companies there are both technical and managerial career routes and for those reaching mid or high level scientific and technical roles (male of female) there is often nowhere further to climb on the career ladder. There are opportunities to move from technical/ scientific roles to management but this entails giving up on technical identity which some women are reluctant to do, having struggled to assert their presence in a male dominated field. With such considerable investment in the technical identity there is perhaps less incentive to leave this behind, which is what is required for a move into senior management (Faulkner 2007, Simard 2008).

Moreover in some companies, the opportunity to move out of technical careers and into a managerial role is limited to a particular stage in career progression (usually in early to mid thirties) and not possible at a later age. This once again assumes a male career model as decisions about promotion into management happen at precisely the time when many women are either taking breaks or have slowed down their career in order to raise a family. This is a general phenomenon but particularly marked in SET companies that have a dual career trajectory system (technical and managerial).

Success criteria

Among respondents in the interviews, success was felt to be achievable but this required being available as well as visible both of which were difficult for women who were working part time or had caring responsibilities. It was no good just doing your work well, what created success was networking with the right people and getting your work known about in the company. Moreover you would need to be tough and very determined to reach higher levels of management, something many of the women were clear they were not prepared to do. Overwhelmingly women who succeed do so because they work according to the 'male model'. They work hard at being visible at work and available for 'missions' or work abroad.

One issue identified was the perception that women on maternity leave are not productive and are a drain on the productivity of the group, especially if their time must be accounted for against project budgets. So for example:

"My boss phones me up and says […] why is that you haven't written up any time against projects' 'Listen, I've been on maternity leave' 'Yes of course of course'. So even though he has been closely involved and is very understanding he also had to make the mental switch".

35 year old Senior Well Engineer

Mobility

The norm within many global companies, especially in the energy and IT sectors, is of being available for travel and this availability for travel is significant in career progression and promotion. Perceptions of colleagues about availability include the need to 'prove' competence and commitment. The more ambitious of the women had succeeded in showing their availability, going to great lengths to ensure that they could take up positions abroad. However for some there was a sense of resignation that their 'choice' would result in a slowing down of career progression:

"I mean it's a choice; it's what I've chosen to do. I've chosen to have a family and therefore I don't particularly want to travel much so I'm already constraining myself in terms of what I can do".

36 year old Thermal Conversion Technologist

Most of the companies in the study have some dual career policy but this is in practice very difficult as for senior posts there are often very few available options in overseas postings. Although there were examples of 'trailing husbands' who accompanied women abroad, this was not frequently the case – especially after maternity women increasingly allowed a partner's career to accelerate while their own was put on hold for a while.

Lack of senior women

The lack of senior women as role models was cited by many of the women as a barrier to their own progression. The message was clear, that there was a choice to be made between career and family life.

"I think what I miss a bit is a lack of role models in my position. It seems like every time you go to some kind of women's event or networking event they have speakers, but I think most of the high level women in [this company] either have a husband who doesn't work and takes care of the family and follows them around or they don't have a family. Very few role models of women with a family and very few who have dual careers".

36 year old Thermal Conversion Technologist

Discussion points and conclusions

There is a still an unwritten assumption within many company cultures that taking maternity leave or a career break is a deviation from the traditional (male) model of continuous full time employment. Although there is some variation in the norms and expectations of gender roles after maternity within different European cultures, combined with other structural factors these reinforce a particular view of mothers and their careers. Workplace cultures even in global companies are in turn shaped and reinforced by social, political and cultural factors in each country.

Following their career break or maternity leave, many women perceive that they need to sacrifice career potential and progression in order to reconcile working and family life. This is usually expressed as a personal choice rather than seen as an external or systemic problem. For some there was a worrying tendency towards self limiting beliefs – they did not have a sense of entitlement to both a career and family life and therefore expressed this in terms of personal choice and passive acceptance Decisions made at time of maternity can be critical in determining future career progression. For example returning to work part time after maternity can be detrimental to career progression, or at least result in slowing down of progression. However there are signs this is changing among younger women and, in departments where there are a critical mass of women working part time, there are some who are ambitious to progress. There were also examples of older women who had succeeded despite periods of part time work even though they are still perceived within the company as pioneers and role models rather than 'normal'.

Short breaks for maternity leave do not have the same consequences for women's employment potential that extended career breaks have been shown to do. However, the impact of working part time after taking maternity leave is so closely linked to the period of leave itself, that the consequences are not easily distinguishable. Even among those who return to full time hours after maternity, their availability is usually reduced either for travel or for extra work on top of contracted hours, or there is an expectation from colleagues that this will be the case. How this change is viewed by managers and colleagues can impact on career progression opportunities.

Managing maternity leave is generally well organised – however the experience of returning often depends on the type of work being done and timing of the break. Keeping in touch during the break is one strategy used to help ease the return process, but not universal. In the UK there is a legal entitlement for so called Keeping in Touch days "Employees on maternity or adoption leave can agree to work for their employee for a maximum of ten days during their maternity or adoption leave. Work can include training, or anything else that helps the employee keep in touch with the workplace. The work must be agreed by both parties, and the employer does not have the right to demand that an employee undertakes any work"(1). The benefit of this is that they continued to see themselves primarily still as workers rather than just being 'mothers' and the transition back to work can be made more smoothly.

Work life balance policies (including parental leave, flexible working and reduced working hours) can have the unintended consequence of reinforcing gender stereotyping within the workplace if it is only mothers/female carers who make use of these and not fathers or male carers. However the availability of remote working/working from home is hugely popular and beneficial for working parents. Similarly a workplace nursery gives a symbolic message of support for parents of both genders within the company.

The period immediately after maternity leave is a danger time for women who may slow down or dropout of careers altogether and so companies need to ensure that they offer positive support at this time. This is not a sign of reduced commitment, but realistically it may not be possible for returners to resume the same level and pace of work and this should not be penalised. Although they are highly committed to their careers, professional women in SET usually rely on a complex set of support networks to maintain their work life balance. If these fail or if they feel too undervalued by the company, these women are at risk of leaving or halting their careers.

Recommendations
What can companies do or do better?

This section includes a number of practical recommendations that companies can implement to affect change. These are not necessarily new – companies have been developing and implementing policies in these areas for many years. A number of companies particularly in the financial and legal sectors have developed some excellent policies to support women to 'Off Ramp" and "On Ramp" their careers (see for example Hewlett 2007). However within SET companies, the implementation of so-called work-life policies often lags behind other businesses. Such policies are still seen as women's issues and professional women are still in a minority in these sectors – the challenge is to tackle and change behaviours and practices that continue to reinforce the traditional (male) model of continuous full time employment.

Policies are not enough in themselves. It is crucial to challenge myths and stereotypes throughout the organisation by offering training and awareness-raising, especially for managers. As gatekeepers and interpreters of company policy, the attitudes and actions of line managers can be critical in the successful return and progression of women after maternity breaks.

Monitor the implementation of work life policies

- Companies should make sure that there is parity in the way policies are implemented and that everyone has the same chance to benefit from WLB measures – leaving too much to the discretion of the line manager means that inequalities can emerge and resentments build up.

- Line managers should routinely undergo training and be given support in the implementation of policies. They should then be monitored as part of their own appraisals about how they have handled maternity leave (for example by 360 degree appraisals that include confidential testimonies from returners about how their leave and return has been managed).

1 *http://www.ecu.ac.uk/law/Gender-legislation-keeping-in-touch*

Develop specific policy of support for returners

- Avoid making assumptions about a woman's availability or reduced capacity following a career break. Maintain ongoing dialogue and discussion to establish what women want and are able to do. This requires an open and flexible attitude from managers.

- Implement a structured system of 'Keeping in Touch' during maternity leave. Ensure women on maternity leave are consulted and informed about opportunities and changes that are taking place.

Support childcare

- Provision of a workplace nursery should be considered – although not all employees would choose this form of childcare, it gives a strong symbolic message of company involvement in the overall 'care network'. This could also include a crèche for emergencies when childcare arrangements break down, or the parent is ill.

- Provide childcare support (financial and practical) for employees who are required to work abroad. Enough advance notice of travel should be given to employees to be able to make appropriate arrangements.

Flexibility

- Enable parents to work from home if a child is sick.

- Ensure important meetings and networking events are held during core office hours where possible.

Career planning

- Encourage women to actively plan their careers – this includes planning pre and post maternity breaks, but also as a long term strategy to support and motivate women and retain their ambition.

- Introduce a mentoring scheme to raise ambitions.

- Companies should monitor pay rises and progression after women return from maternity for a number of years to really assess impact.

Role models

- As well as senior women acting as role models, identify men who have taken career breaks or work part time so that it is no longer seen as only a women's issue.

Promotion and progression

- Create transparency and fairness in promotion: Review promotion criteria to ensure that part time workers are equally eligible for promotion and posts are advertised with a part time option.

- Career breaks and periods of part time working can mean that women miss out on the traditional points when talented employees are selected for fast track or management jobs (usually in their early 30s). Remove any formal or informal age barriers to enable women whose careers have slowed down due to a career break to be considered at a later stage.

- Availability for travel is an important factor in career progression in many global SET companies. However this should not be considered to be an automatic requirement for a successful career. Alternative methods of communication (video and telephone conferencing) should be used where possible.

Normalise maternity leave/ career breaks within organisational structures

- Review internal financial procedures to ensure that they do not penalize a department in which someone has taken maternity leave or a career break.

- Encourage more men to take career breaks either to do family care work or for other personal development.

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Analysing the Leaky Pipeline in Academia ([1])

Sara Connolly ([2]) and Stefan Fuchs ([3])

Abstract

This report considers the question of whether current career structures allow universities to attract and to retain their best talents. To answer the question of how prevalent working arrangements influence gender diversity and which of the measures that aim to address work-life imbalance are most successful in promoting greater gender diversity, we analyse unique data collected at a prestigious technical university in Europe for the WIST 2 working group. The focus is on what universities can do to stem any loss of talent through the leaky pipeline. We take a look at the employment choices of men and women, analyse relevant industrial and academic practices in relation to work-life balance. We take into account the specifics of careers in SET in academe, and take into consideration the specific needs of couples and parents.

Our approach is quantitative, thus providing complementary evidence to the qualitative studies undertaken by Clem Herman and Suzan Lewis. The results from this survey also help to identify areas of best practice.

Introduction

The situation of women in science today is perhaps best described by "allowed in but not to fully partake of science" (Etzkowitz et al., 2008: 405). Despite their expanded participation and the widespread institutionalisation of gender equality programmes in the last three decades, women's advancement is slow. Of particular concern is the situation in science, engineering and technology (SET), where both female students and scientists continue to be a minority.

Why are there so few women at the top in science and why is their advancement so slow? Why do women disproportionately drop from the pipeline if – like most studies show – there are little or no differences between men and women regarding career relevant personal characteristics?

The career profile in many universities is flat with very small proportions reaching the very highest grades. Scientific quality and productivity determine a successful career in science. However, the 'typical' career continues to mirror, privilege, and finally reward the life patterns of men – who historically could rely on a traditional support structure at home to engage in long hours of research activity. Female academics are significantly more likely than their male counterparts to live alone or – a more recent development – to be part of a dual career couple. Women in science have fewer children than men. Even in dual career couples, female scientists were found to be primarily responsible for domestic responsibilities. Women also account for the majority of part-time employees. A considerable proportion of younger female and male academics find the relationship between home and work in science unsatisfactory and unhealthy (Sturges & Guest, 2006). Unlike male scientists, female scientists anticipated having to decide between career and family already at early stages in their career (see e.g. Fuchs et al., 2001; Lind 2008). Working in science and engineering also means working in a markedly hierarchical environment predominantly populated by men. It is an environment where a tendency to reproduce existing structures in selection and recruitment procedures prevails. Most women find that during long periods of qualification female colleagues and role models are scarce. This minority or 'token' position (Kanter 1977) makes women especially visible and prone to stereotyping and discrimination.

How scientists manage to reconcile domestic and family (and other) responsibilities has long been considered a purely private matter by academic employers. Women's attrition from science was explained by 'choice' or 'deficit'. Academic and scientific organisations were either unaware or blind regarding their own contribution to gender inequality (for case studies in science see for example Massachusetts Institute of Technology 1999; Wimbauer 1999; Matthies et al., 2001; Fuchs et al., 2001; Stebut 2003). Today persistent gender inequalities together with expected shortages of skilled workers in SET have made it an imperative to attract and retain female talent in both public and private organisations (see e.g. Greenblatt, 2002; Drew & Murtaugh, 2005; Lewis & Campbell 2008, Brough et al., 2008).

1 *The authors gratefully acknowledge the members of the EU WIST 2 group who made this research possible. We thank Claartje Vinkenburg and Pierre Bismuth for helpful comments on earlier versions of this report.*

2 *Sara Connolly – School of Economics at University of East Anglia, Norwich, UK – sara.Connolly@uea.ac.uk*

3 *Stefan Fuchs – Institute for Employment Research (IAB) Nuremberg, Germany – stefan.fuchs@ab.de*

This research considers the question of whether current career structures allow universities to attract and to retain their best talents. To answer the questions of how prevalent working arrangements influence gender diversity and which of the measures that aim to address work-life imbalance are most successful in promoting greater gender diversity, we analyse unique data collected at a prestigious technical university in Europe for the WIST 2 working group. The data includes information on the administrative and academic staff. The focus is on what universities can do to stem any lost of talent through the leaky pipeline. We take a look at the employment choices of men and women, analyse relevant industrial and academic practices in relation to work-life balance. We take into account the nature of careers in SET in academe, and take into consideration the specific needs of dual career couples. In particular the focus of this research is on two crucial dimensions of the leaky pipeline in academic SET:

- Attraction – the reasons why women in SET choose their employment, thus offering insight about what can be done to tap and enlarge the pool of female potential.

- Retention – career ambitions, achievement and progression from the perspective of female scientists and professionals in SET, thus offering insight about what is necessary to develop women's careers in SET and keeping them there.

Data collection

Our approach in this study is quantitative, thus providing valuable complementary evidence to the qualitative studies undertaken by Clem Herman and Suzan Lewis. We have designed an online survey based on the Athena Survey of Science Engineering and Technology (ASSET) surveys – which were run in the UK in 2003, 2004 and 2006 ([4]). The data analysed in the following were obtained from a prestigious European university. To gather a unique set of data, University A granted access to all academic and administrative employees. The online survey link was distributed via email with a response rate of 10 %.

Data description

University A is a prestigious European university offering a wide range of study opportunities with a focus on SET. The total number of students across departments is approximately 27 000, and the proportion of female students is 35.2 % which is not atypical for a technical university. In engineering female students account for only 21 %, with even lower proportions in electrical engineering (7 %), machine construction (10 %) and information sciences (13 %). In the sciences, the proportion of female students is higher with 40 % but varies between the disciplines – only 20 % in physics but 40 % in mathematics and chemistry.

The total number of employees at University A is over 7 000, including student assistants. Among the personnel, there are roughly 2 300 academics and 2 000 persons working in the administration. In recent years the proportion of female academics employed at University A has increased slightly and is currently about 13 % among professors and 28 % among the other research and teaching personnel with considerable variation between departments. In administration, the proportion female is around 58 %. Of the employees that answered the WIST 2 survey (270 academics, 132 in administration), the administrative personnel are underrepresented, academics overrepresented (Figure 1).

Regarding the proportion female among groups of employees at University A, we find that considerably more women answered our survey – probably because the header of the survey was "Women in Science and Technology" and these issues were considered more relevant by female than by male university employees.

4 *These were undertaken as part of the Athena Project launched in 1999 with the aim of advancing the position of women in science. It works with UK universities, research organisations and professional bodies in Science, Engineering and Technology.*

Figure 1 **Proportion Faculty and Proportion Female at University A and in WIST2 Sample.**

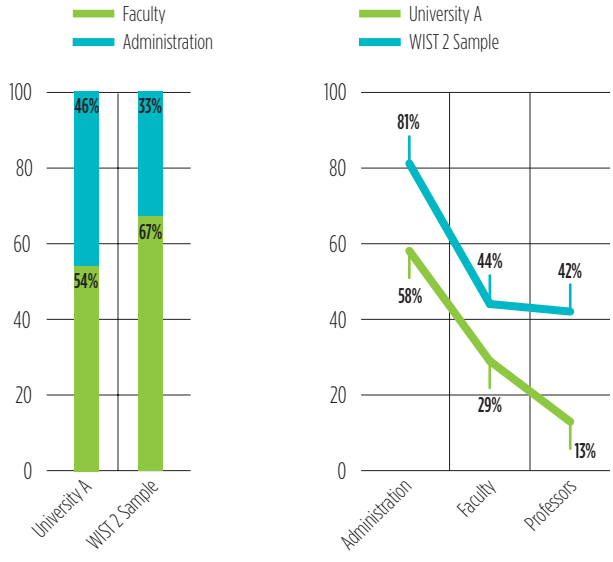
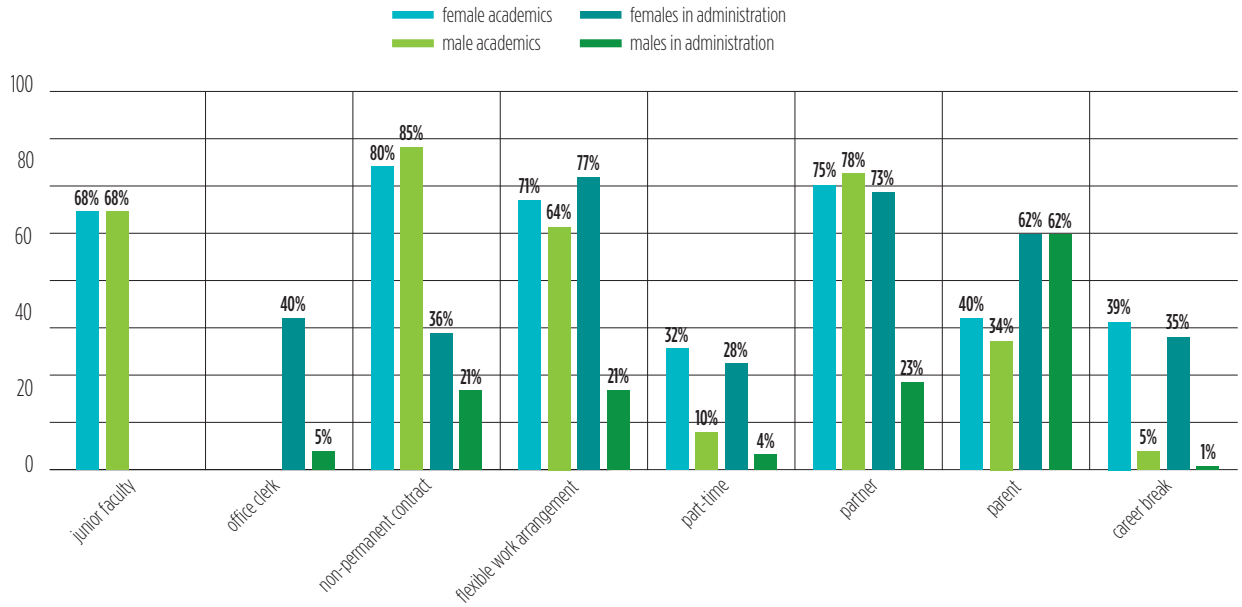


Figure 2 **Demographics of Academics at University A**
Figures are percentages of overall sample and do not sum up to 100%



Sample description

In this section, we describe the sample of academic and administrative staff in the WIST 2 survey in more detail. Figure 2 shows the proportions of staff across various dimensions and it is obvious that the majority of male and female academics are very similar regarding their position (junior faculty), working contract (non-permanent), work arrangements (flexible), and family status (partner, parent). Two significant gender differences in the academic sample are also obvious: Although equal proportions of male and female academics are parents, considerably more women work part-time and have taken a career break – mostly for maternity leave, and for half of the female academics these career breaks have been for longer than one year.

Most female academics in the sample have a partner or a spouse who works full-time. Male academics are more likely to have a partner who is in part-time employment, on a career break or engaged in full-time domestic responsibilities (not shown). Differences between men and women are more pronounced in the administrative staff sample, often reflecting the fact that women are disproportionately represented in the lower ranks of the administration (office clerk) and among those with a flexible work arrangement or who work part-time. The proportion of parents is equal among male and female administrative staff but higher than among academics. Amongst the administrative staff, considerably more women than men have taken a career break – again mostly for maternity leave.

Fixed term employment is an important feature of scientific employment at universities, particularly amongst early career researchers. Therefore, it is not surprising to find that academic staffs are more likely to be employed on fixed term contracts, reflecting their younger age. The majority of the administrative staff is employed on permanent contracts.

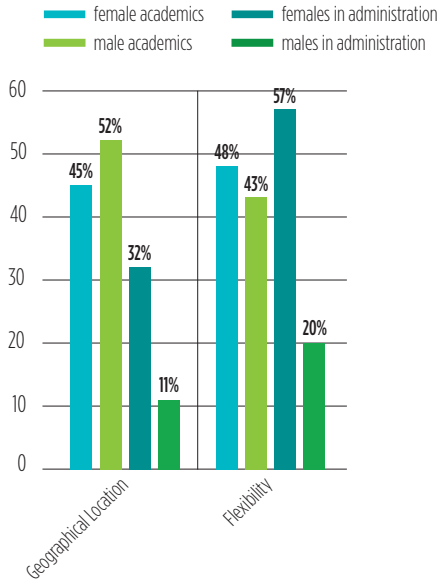
Results

Geographical location and flexible working

To all employees of University A, the employer's geographical location was the most important single factor in their choice of employment (Figure 3). While there are no differences between male and female academics, these are considerable between men and women in the university administration. ([5])

While family reasons and work-life balance issues were of minor concern to all respondents, among what are important working conditions the top reason is flexibility of working hours – a very important dimension of work-life balance related policies and practices. At a first glance, addressing 'flexibility' in an academic context may seem odd because there is little that is not flexible. At the same time, flexibility is a prerequisite for the relentless and uninterrupted research activity expected from academics and scientists. In the WIST 2 survey, we use a narrow definition of flexibility when we look at hours worked and the content of work contracts. A much wider definition of flexibility is used in the survey when we address careers and career structures in academe, where flexibility extends to issues such as deviance from the ideal linear career path or possibilities to come back after a career break. The scheduling and timely completion of meetings is a related issue which is also often identified in discussions of flexibility at work.

Figure 3 **Geographical Location, Flexibility**
Figures are percentages of overall sample and do not sum up to 100%



Female and male academics alike consider flexibility of working hours of importance, but more women than men in the administration do so. The predominant flexible work arrangement is annualised or compressed hours. Around half of the academics report working from home. We find that men more typically report working at home in the evenings or at the weekend. Women are more likely to work 1 or 2 days at home during the working week.

It is interesting to note that the issues associated with reconciling work and family were considered more important by the administrative than by the academic personnel. While women generally found a family-friendly workplace more important than men, with 40 percentage points the difference was especially marked among employees in the administration of University A (women: 50 %, men: 10 %; not shown). This finding lends support to the notion that at University A, there are two worlds of work – the academic one, where flexibility is important but inherent to the task, and the world of the administration, where women are crowded at the bottom of the hierarchy. To most women in the administration, balancing family and work life is crucial because most managerial and administrative functions are done at the desk and often require continuous presence at the workplace.

Generally speaking there are a range of factors which individuals identify which contribute towards successful career outcomes. There are those which we might identify with the individual, such as hard-work, luck and support from family. Of these, hard work is most frequently identified as a main contributory factor towards successful career outcomes. There are also a range of institutional factors such as flexible working, success of the employer, working on high profile projects, willingness to travel. Of these, the availability of flexible working is once again an importance factor and is identified as a key factor in terms of contributing most towards a successful career. Finally, there are a set of workplace cultural factors which are considered to be of importance such as support form managers or visibility. The key factors identified by all employees with a good work-life balance are flexibility in working hours and awareness of work-life balance issues amongst senior managers. Women working in University A valued enhanced parental leave and predictability of the meetings schedule.

Career Breaks

We have already highlighted the 'either-or' nature of decisions between career and family in science. At University A, most academics who have taken a career break had more years of professional experience and also spent most of their careers with their current employer. While only 13 % of all academic staff report having been promoted by their current employer, interestingly 17 % of the female academics who have taken career breaks have been promoted which suggests that taking a career break is more feasible or more acceptable once you have achieved a certain level of seniority and have survived the early selection barriers in the field. Women who decide to have a career break – mostly for maternity leave and for half of the sample for more than one year – also find that their employment is more secure when compared to other women in the sample.

When planning their career break, 40 % report that their boss and/or colleagues were supportive of their plans. Around one-third of the women who have taken a career break report that their supervisor kept contact. After the career break, 70 % returned to the same job, 15 % to a different job but at the same level. Worryingly, 20 % report that having taken a career break has harmed their career. All respondents were also asked about which factors were likely to be most helpful in easing the transition back to work after a career break. There was clear agreement that flexible working and the guarantee of the same job when returning after the career break are key factors – particularly amongst women who also identified the availability of other care support, and building up from part to full time work and training as factors helping in the transition back to work.

Female academics in the WIST 2 sample who report having considered but not taken a career break (16 %) offer explanations that underline the 'either-or' nature of the decision, its tight coupling to becoming a mother, and the anticipation that the decision is potentially harmful to career advancement (see Box 1).

5 Virtually no one had taken up his or her employment because of partners' choices (2-3 %; not shown).

Box 1: Reasons why women in science did not take a career break

- Money
- Insecurity
  - "No permanent post"
  - "Chain of non-permanent contracts for years"
  - "Project work with no possible replacement"
  - "Re-entry not safe or guaranteed"
- Career preference
  - "Career is too important to waste time"
  - "I like research and teaching and work is attractive"
  - "Career is great and fun – regarding family it is either or "
  - "Career doesn't allow a break"
  - "Career was more important, now it is too late"
- "Stupidity"

(Source: WIST 2 university survey; selected answers to open-ended question)

Given the very different nature of academic and administrative employment, in the following sections, we concentrate upon the factors which have an influence on the choice of academic employment in SET. In particular, we consider two crucial dimensions of the leaky pipeline for scientists in SET:

- Attraction – The reasons why women in SET choose their employment, thus offering insight about what can be done to tap and enlarge the pool of female potential in SET.
- Retention – Career ambitions, achievement and progression from the perspective of female scientists and professionals in SET, thus offering insight about what is necessary to develop women's careers in SET and keeping them there.

Attraction - factors which influence career choice

We identify three dimensions of employment which matter for academic scientists – academic freedom and issues related to it (a), working conditions (b), and personal / quality of life issues (c) – and controlled for a variety of factors in a series of logistic regressions.

We find that intellectual dimensions of an academic job – academic freedom, area of research, intellectual challenge and autonomy – were particularly important factors for those in the most senior positions and also for those on fixed-term contracts. Those who regularly work from home are more likely to indicate that they value the academic freedom and intellectual challenge of their academic career. Unsurprisingly, those who value autonomy and quality of life dimensions of their job are employed on contracts which allow for flexible working. Women are more likely to value academic freedom and working conditions. Finally those who work part-time are more likely to have taken quality of life issues into account when making their career choice.

Figure 4 **Key factors influencing choice of career in academe?**
Evaluated probabilities – controlling for age, grade and contract

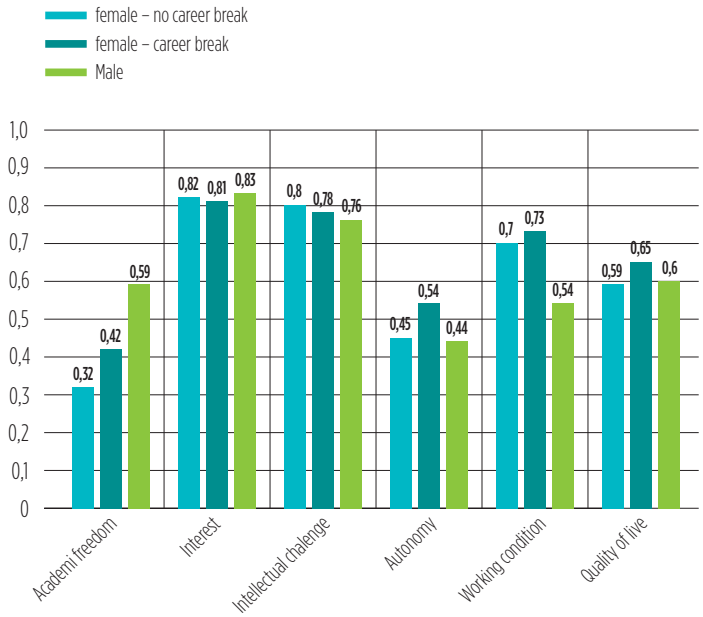
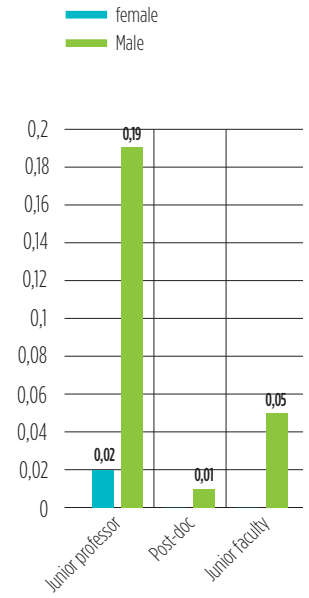


Figure 5 **Expectation of becoming a senior academic**
Evaluated probability of becomeing a senior academic

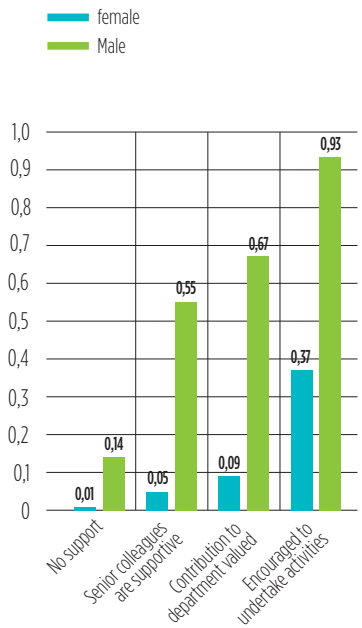


One advantage of undertaking a multivariate analysis is that it is possible to examine the likelihood of an outcome whilst controlling for a range of factors. We now compare the probability of particular dimensions of employment being important for men, women who have and women who have not taken a career break. All other things being equal, (that is being the same age, at the same grade and employed on the same contract) we find that women are less likely than men to choose an academic career due to academic freedom – though they are equally likely to choose a career due to interest or intellectual challenge. Women are more likely to choose an academic career on the basis of working conditions or autonomy – this is particularly true for women who have taken a career break. Finally, women who have taken a career break are more likely to indicate that quality of life issues are an important dimension in their choice of an academic career.

Retention - Career attainment and ambition of scientists

If scientists, particularly women who have taken career breaks, find that their career has stalled or if their ambitions are diminished as a consequence of the difficulties in managing work and family responsibilities, this may cause them to leave academe but stay in SET or to completely leave the field. We consider this issue by examining the responses to questions posed about expectations and ambitions. Here we analyse career aspirations by considering whether faculty at University A expect to become a senior academic and whether the respondents indicate that they have achieved their ambitions.

Figure 6 **Achieved career ambition**
Probabilities - controlling for age, grade, contract



In the WIST 2 university sample, only a very small proportion, even amongst professors, expects to become a senior academic and of those who responded, 68 % claim to have achieved their career ambitions within academe. We consider the impact of a range of factors upon whether an employee expects to reach the 'top', that is become a senior academic (Figure 5). We control for individual demographics – gender, age, family status and domestic responsibilities; position; type of work contract; and whether the employee has taken a career break. Those who are already employed as junior professors are more likely to indicate that they expect to become a senior academic – but those employed in junior faculty or in post-doctoral positions report very low (but possibly realistic) expectations of becoming a senior academic. Once again, comparing like with like (same age, same grade, same contract) we find a significant gender differential nonetheless, women are much less likely to expect to reach the 'top'.

In considering whether scientists have achieved their ambitions (Figure 6), we also include some indicators of research performance – number of publications and degree of engagement with the national or international research community – and some variables which indicate the workplace culture – support from senior colleagues, encouragement to apply for promotion and so on. We find that when we take into account gender, age, type of employment contract, grade at which the scientist is currently employed and whether the scientist has worked part-time or taken a career break, that female scientists and parents of young children (aged under 6) are less likely to have achieved their ambitions. Those in more junior positions – post-docs or junior faculty - are less likely to report that they have achieved their ambitions. We find that those who report benefiting from a supportive work environment were much more likely to have achieved there ambitions. Having controlled for the range of demographic and work based factors, we find that women are much less likely to have achieved their ambitions.

Retention – Risks of Leaks from the Pipeline

A key concern in this report is to identify risk factors which may result in the loss of talent through the leaky pipeline. We therefore consider three indicators of potential leaks and analyse whether academics expect:

- to leave their current employer (31 %);
- to remain in academe, their current sector of employment (74 %);
- to remain in SET (95 %)[6].

Turning to the first of these, the factors associated with expecting to leave employment at University A. Our results here capture quite strongly some of the key features of research

6 *We do not present a model for this due to the very limited in-sample variation in the response to this question.*

careers for young scientists. Those on fixed-term or other non-permanent contracts or in more junior positions are much more likely to expect to leave their current employer – obviously reflecting the uncertain nature of their employment at University A or the slim chances of getting further ahead with the same employer. We also find that those who might be described as having successful research careers – who have a presence on the national or international research stage, presenting papers or giving plenary sessions – are more mobile, more likely to receive outside offers and hence more likely to expect to leave employment at University A. Finally, those who report that their senior colleagues are supportive or that their contract allows for flexible working are more likely to expect to remain working at University A.

Our final set of results appears to reinforce those obtained in the earlier models. Some of the factors associated with as yet unfulfilled ambition, also make it more likely that scientists expect to remain in academe. For instance female scientists, parents of young children (aged <6), those who have presented papers at national or international conferences are more likely to expect to remain in academe. We also find that some of the factors associated with expecting to leave the current employer – those on fixed-term contracts or in more junior positions – are more likely to expect to leave academe. We illustrate this by contrasting the evaluated probabilities of young scientists either leaving the University or leaving academe. We see that those on fixed contracts which do not allow for flexible working are more likely to expect to leave their current employer or academe. Interestingly, women are more likely to expect to stay with their current employer and in academe.

Figure 7 **Expectation of changing employer or leaving academe**
Probabilities - controlling for age, grade, contract

Conclusions

This research tracks the question of whether current career structures and organizational efforts allow universities to attract and to retain their best talents. To answer this question, we analyze unique data collected at a prestigious technical university in Europe for the WIST 2 working group. The focus is on what universities can do to stem any loss of talent through the leaky pipeline.

Tenure Track

In choosing an academic career, we find that work-life balance and intellectual benefits of academic employment are clearly attractive to all respondents. However, we also find that working conditions are generally of more importance to women than to men and particularly so to women who have taken a career break. Looking at the attractiveness of careers in science from a female academic's perspective, flexibility and working conditions are not going without saying, especially with regards to balancing the conflicting demands of work and family, and regardless of whether these demands are fact or anticipated. These findings show that synchronizing the timing of career and family at a time of fierce competition remains a challenge particularly to women in science. The importance of security of employment in this context points at the fact that the situation is amplified by, for example, non-permanent contracts, part-time work, and low pay. Beyond a family-friendly infrastructure and support in reconciling work and family, possible remedies academic employers can address are:

- the allocation of tenure track positions to junior and post-doc faculty, allowing the development of long-term career perspectives by extending the dissertation and tenure clock;
- the provision of replacement funds if women (and men) go on leave to reduce the costs of turnover and to prevent gender bias in hiring in non-permanent projects.

Flexibility

Regarding the attraction of male and female talent we find that the employer's geographical location and the availability of flexible work arrangements are the two single most important factors in the choice of employment of male and female academics alike. While it is debatable if flexible work arrangements and work-life balance policies are important in academe beyond what academic employment offers by default, most issues addressed by the respondents in the survey concern issues of work and family. We found a general disbelief among both male and female academics that taking a leave would not harm one's career. Career breaks at University A were also taken predominantly by women and almost exclusively for maternity leave. Against this background, we may conclude that, first, policies to support the balancing of work and family are important but also have a potential to amplify existing gender inequalities.

Second, academic employers can address a variety of issues to show that they care for a female-friendly hence progressive work environment beyond a culture of 'long hours', for example:

- schedule meetings at times favorable to part-time faculty and those who work from home; begin and end on time;
- raise awareness among academic supervisors and professors for the negative effect of a 'long hour culture' on the perception of academic careers, in particular on those whose employment conditions are insecure or who have to balance domestic and professional demands;
- actively promote sabbaticals and other available flexible work arrangements in addition to work-family policies;
- advise the hiring of female student helps and assistants to trigger a positive bottom up effect from their presence on male departmental cultures.

Standardization of assessment

In the WIST 2 survey, we asked male and female academics if they expect to become a senior academic. We found women are much less likely to do so than their male counterparts. Female academics were also found to be less likely to have achieved their career ambitions – with a supportive work environment playing a significant role in the process. It is also evident that female academics were not to the same extent encouraged to undertake career relevant activities and less likely to receive support than their male colleagues. In combination with our analyses of what contributes to the risk of attrition from the pipeline – insecure employment conditions, vague career prospects, lower levels of support, shortages in international exposure and lower publication records – female academics appear to be less well equipped for the competition, and they are particularly at risk regarding outside options. At the same time, we found women scientists to be more likely than their male counterparts to expect to stay with their current employer and in academe. If we consider that mobility is a requisite in building a career in academia, and if we acknowledge that in the academic system small differences turn large in the competition, we see no contradiction here. Rather we think that these results point at the fact that the cooling out of female academics starts early, i.e. before they even finish their PhD. The challenge to academic employers, then, is to reduce the dependency on informal exchange and casual evaluation that eventually results in the disappearance of female scientists from both the academic pipeline and employment in SET. To prevent cooling out of young scientists and to retain female talent in particular, we recommend:

- The inauguration and documentation of regular status talks to institutionalize early feedback on performance, transmit information on what is expected for advancement (e.g. conference exposure, where to publish and how much), as well as assessing career opportunities outside academe.

Attraction and retention of female talent in a time of crisis

Regarding the grim financial and labor market perspectives in the current crisis, the wells may run dry for costly programs aimed at the attraction and retention of female talent, e.g. regarding the hiring of dual career couples or expensive mentoring programs. Female academics in particular may suffer from the change in macroeconomic conditions in two respects. First, if the employment conditions and salaries in private sector SET deteriorate, working in the public sector and a career in academia may become an increasingly attractive option to men. Since women's inroads in academic SET were partly paved by male flight, the trend might as well be reverse again. Second, if (additional) funding from private sources stays away, this will probably hit the most vulnerable groups of academic employees first, among them the non-permanent and female part-time staff.

The current financial crisis might also play out in favor of universities. Most of the female academics at University A have already survived a series of barriers of selection and are ambitious to make a career in science. For quite a while now, universities have been competing for this female talent with companies in the private sector and seemed to fall short because of budget cuts, a worsening image of academic careers, and little progress regarding women's advancement. At the same time, budgets and efforts of human resource management increased considerably regarding gender equality and diversity. Viewed from this angle, the current crisis offers universities and public sector employers a rare occasion to catch up and seriously invest in the attraction of female talent and the sustained retention of the female talent present.

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Appendix

Tables 1-4 provide further details of the results of estimated models wich are used to evaluate the probabilities which are depicted in Figure 4-7

Table 1: Career Choice	Did any of the following factors influence your choice of career in academe?					
	Academic freedom	Interest	Intellectual challenge	Autonomy	Working conditions	Quality of life
Female	-1.11**	-0.06	0.25	0.05	0.68**	-0.04
Fixed term contract	0.96**	0.82**	0.75	0.49	-0.22	-0.60
Other type of contract	0.49	0.41	0.54	0.73	-0.49	-0.55
Professor	1.56**	0.39	1.63**	0.46	0.38	0.74
Junior faculty	-0.47	0.40	0.09	-0.45	-0.07	0.29
Age	0.09	0.14	0.04	0.15	0.02	-0.12
Age squared	0.00	0.00	0.00	0.00	0.00	0.00
Works part-time	0.13	-0.60**	-0.29	-0.19	0.35	0.73**
Has taken a career break	0.43	-0.10	-0.13	0.36	0.14	0.25
Does your contract allow for flexible working?	0.15	0.01	-0.26	0.61**	0.17	0.67**
Do you regularly work from home?	0.46**	0.10	0.55**	0.16	0.09	-0.37
Constant	-2.33	-2.54	-0.61	-4.04	-0.12	3.26

Exp(B); *p< .05; **p< .01; ***p< .001

Table 2: Probabilities to expect to become a senior academic		
Expect to become a senior academic	B	S.E.
Female	-2.33	1.62
Fixed term contract	7.24	1.97
Other type of contract	5.58	1.96
Professor	3.76	1.58
Junior faculty	2.14	1.42
Has a partner/spouse	2.96	1.32
Has care responsibilities	2.41	1.56
Constant	-5.18	1.44

Table 3: Probability to have achieved career ambitions		
Achieved career ambitions	B	S.E.
Female	-3.06	1.57
Fixed term contract	3.51	2.27
Other type of contract	-1.73	1.94
Professor	8.83	3.06
Junior faculty	3.35	1.47
Has worked part-time	1.23	1.23
Has taken a career break	0.37	1.86
Age in years	-0.22	0.10
Senior colleagues are supportive	2.04	1.21
Contribution to department valued	2.53	1.27
Integrated within department	-1.14	1.22
Opportunity to participate	1.35	0.98
Encouraged to undertake activities	4.36	1.76
Successes in my work are celebrated	1.19	1.46
Been promoted by current employer	1.26	1.68
Currently work part-time	6.80	2.56
Has exposure at national/international conferences	-1.12	1.32
Has no sole authored publications	-3.21	2.45
Has no lead authored publications	0.06	1.55
Has no joint authored publications	-1.75	1.70
Has a partner	0.42	1.07
Not a parent	-4.69	2.34
Has children < 6	-5.63	2.40
Has children 6-16	-4.14	2.14
Does your contract allow for flexible working?	1.72	1.16
Do you regularly work from home?	1.69	1.09
Constant	5.31	5.12

Table 4: Analysing the Leaky Pipeline				
The Leaky Pipeline in Academe	Change current employer		Stay in academe	
	B	S.E.	B	S.E.
Female	-0.14	0.47	1.23	0.68
Fixed term contract	5.09	1.56	-6.50	2.22
Other type of contract	5.33	1.58	-6.03	2.16
Professor	-2.80	1.25	23.25	6137.83
Junior faculty	0.25	0.49	-0.96	0.69
Has worked part-time	0.14	0.55	1.30	0.73
Has taken a career break	0.10	0.70	-2.16	1.09
Age in years	0.09	0.04	0.00	0.05
Senior colleagues are supportive	-0.91	0.51	0.97	0.69
Contribution to department valued	0.29	0.52	-1.05	0.63
Integrated within department	0.47	0.61	-0.70	0.85
Opportunity to participate	0.19	0.45	0.26	0.59
Encouraged to undertake activities	-0.31	0.47	0.88	0.64
Successes in my work are celebrated	-0.38	0.51	0.29	0.70
Been promoted by current employer	0.14	0.73	0.06	1.01
Currently work part-time	-0.73	0.69	1.12	0.77
Has exposure at national/international conferences	0.41	0.48	1.27	0.66
Has no sole authored publications	0.02	0.56	0.44	0.81
Has no lead authored publications	0.02	0.63	-0.51	0.94
Has no joint authored publications	-1.23	0.64	1.33	0.90
Has a partner	-0.10	0.51	-0.44	0.73
Not a parent	0.19	0.85	2.45	1.41
Has children < 6	-0.40	0.94	3.61	1.57
Has children 6-16	-0.86	1.22	21.32	7788.19
Does your contract allow for flexible working?	-0.79	0.44	-0.27	0.61
Do you regularly work from home?	-0.13	0.44	-0.65	0.63
Constant	-7.45	2.89	3.61	3.66

Challenging Cultures of Engineering – How words, concepts, and images (de)construct engineering as a male domain

Christine Wächter ([1])

Introduction

Words, concepts, and images influence our understandings and perceptions – of people, their roles as engineers or as actors in the engineering world. They also influence our ways of perceiving engineering and technologies in general. The core question of the analysis is: "What images of technologies, the work of engineering and of the engineers themselves do companies and universities communicate?"

One aim is to show good practice examples of companies and universities that communicate inclusivity rather than exclusivity employ and make visible a diverse work force and appeal to diverse customers and innovators.

Theoretical Background

William A. Wulf, in 1998, then President of the National Academy of Engineering in the USA said in his speech on "Diversity in Engineering":

"Every time we approach an engineering problem with a pale, male design team, we may not find the best solution. We may not understand the design options or know how to evaluate the constraints; we may not even understand the full dimension of the problem".

For several years now the low number of women in science, engineering and technology (SET) has been of growing concern to industry and other actors and has lead to various research projects and a multitude of activities to inform, motivate and encourage young women to take up careers in SET (cf. Wächter 2009a). Clues to help answer questions like "Why are there so few women in science and engineering?" or "Why do not more girls go into science and engineering?" may also be found in what is communicated in the official narration of companies, universities, media and other relevant actors – the visual representations of technologies and engineering as masculine domains.

The languages we speak, their words, concepts and images have profound effects on our understandings and perceptions. They also contribute in a like manner to shaping our behaviour and thereby the physical world in which we live and work. Language reflects and at the same time has the capacity to shape or construct our perceived realities. Dale Spender (1980:119) states that "Reality is constructed and sustained primarily through talk. Those who control the talk are also able to control reality". She quotes Edward Sapir and Benjamin Lee Whorf who pointed out that it is "language which determines the limits of our world, which constructs our reality" (ibid. 139). For example, the German language employs a generic masculine form which has a normative function. Ninety-nine female engineers plus one male engineer in German plural are commonly referred to as "Einhundert Ingenieure": One hundred male engineers. When you look up the term "Ingenieur" (German for male engineer) in Clip Art, the result you get includes pictures of 10 men (two as part of a male pair), one woman, and one mixed pair. When you look for "Ingenieurin" (German for female engineer), the result says, "No entries found" ("Keine Einträge gefunden"). This illustrates the "male-as-norm syndrome" that apparently makes women invisible (Wilson 1992).

Stahlberg & Sczesny (2001) have proved in their experiments with German texts that women are not included in the generic masculine form. Texts written in generic masculinity make both men and women less often think of women as the persons referred to. Neutral wording and balanced use of male and female versions result in considering both women and men. Confronted with texts using the generic masculine form (e.g. "Studenten"), the test subjects predominantly thought of male students. Confronted with gender inclusive "Binnen-I"-language (like in "StudentInnen" where a capital "I" is used within the noun to include "Studenten" and "Studentinnen"), the test subjects thought even more of women than in neutral ("Studierende") and male-female-balanced ("Studenten und Studentinnen") texts. Those results are valid for both female and male test subjects.

The linguistic reproduction of gender stereotypes is less apparent in other languages such as English, but can yet be manifested in the personal pronouns used for supposedly gender neutral nouns referring to "doctor" and "nurse", "barber" and "hairdresser", "pilot" and "flight attendant", "engineer" and "secretary". In 1850,

(1) *University of Klagenfurt; IFZ-Interuniversity Research Centre for Technology, Work and Culture, Graz. waechter@ifz.tugraz.at*

it was legally insisted in an Act of the British Parliament that "he" stood for "she". In French, for example, a group of nine women and a dog is referred to with the masculine plural pronoun "ils". This generic masculine form dominates, it is exclusionary and it renders any other gender, in written and spoken language invisible. Fiona Wilson (1992:886) summarizes that

"Psycholinguistic research has challenged the view that English speakers interpret the male pronouns and generic man as words that refer to both males and females. Technical writers are aware of the need to avoid the generic use of male pronouns and man and have produced guidelines for doing so" (Christian, 1986; Veigan, 1989; Hall & Nelson, 1990).

Wilson (1992:901) sees language, technology, gender and power as an "example of how men do dominance. Metaphors, particularly those associated with science and technology, can also help reinforce patriarchy at work. "… Women are almost rendered invisible by the world of science and technology". Dale Spender's research also confirms that generic masculine forms make women linguistically invisible – and, one could add, inaudible.

"Through the introduction of *he/man*, males are able to take another step in ensuring that in the thought and reality of our society it is the males who become the foreground while females become the blurred and often indecipherable background. He/man makes males linguistically visible and females linguistically invisible. It promotes male imagery in everyday life at the expense of female imagery so that it seems reasonable to assume the world is male until proven otherwise. It reinforces the belief of the dominant group, that they, males, are the universal, the central, important category so that even those who are not members of the dominant group learn to accept this reality. It predisposes us to see more male in the world we inhabit, so that we can, for example, project male images on to our past and allow females to go unnoticed; we can construct our theories of the past, including evolutionary ones, formulating explanations that are consistent only with male experience…

He/man also makes women outsiders, and not just metaphorically. Through the use of *he/man* women cannot take their existence for granted: they must constantly seek confirmation that they are included in the human species." (Spender 1980:157).

Especially for the field of science and engineering, where women are widely underrepresented still, it is of special importance to make women actors audible and visible as experts, lay experts, involved parties – by using non-sexist and non-discriminatory language and images.

Steven Lubar (1998:8) in his article "Men/Women/Production/Consumption" stresses the power of words: "His and hers: simple words that describe enormously elaborate constellations of ideas. When we say the word his – that is, when we talk about masculinity – we bring to mind a related set of notions, ideologies, materials, cultures, even colours. The same occurs when we say hers." Lubar already hints at the phenomenon of "co-construction of gender and technology". "Not only did cultural ideas about masculinity help shape the course of the industrial revolution and industrialization shape ideas of masculinity but the two together shaped the very definition of technology. Technology, we all too easily assume, is what men do." (Lubar 1998:18)

As Judy Wajcman in her classic "Feminism confronts Technology" (1991:149) clearly showed,

"Technology is more than a set of physical objects or artefacts. It also fundamentally embodies a culture or set of social relations made up of certain sorts of knowledge, beliefs, desires and practices. Treating technology as a culture has enabled us to see the way in which technology is expressive of masculinity and how, in turn, men characteristically view themselves in relation to these machines."

Margaret Low Benston in her paper "Women's Voices/Men's Voices: Technology as Language" (1992:34) observes that "Much equipment tends to be gender-typed. There are machines and tools 'suitable' for men – saws, trucks, wrenches, guns and forklifts, for example – and those 'suitable' for women – vacuum cleaners, typewriters and food processors." And she refers to David Dickson who in 1974 already pointed out that technology can serve as a "language" of social action. According to Faulkner (2001:84) "Some artefacts do manifest the interests of (some) men in a material way, most are gendered by association, symbolically rather than materially, and many are not obviously gendered at all."

When one is confronted with advertisements, gender roles are often hidden in subtle double-messages and the sexist structures are not immediately visible at first sight. Men often are portrayed as sporty, athletic and showing risky behaviour. Women no longer wear corsets but the corset is in their mind: what counts are looks and appearance, women need to be sexy and available. They are often used as eye catchers, to spice up and get attention.

Alwin Fill (2007:141) determines five linguistic mechanisms to create tension and suspense in the relation of text and picture:

- ekphrasis: text describes a non-present picture (e.g. John Keats "Ode on a Grecian Urn");
- repetition: text and picture give the same information in their own "symbolic language" (e.g. The slogan of the Austrian Airlines "Like a smile in the sky" is repeated in the image of a smiling cloud.);
- addition: text and picture complement one another, offer additional information;
- contradiction: text and picture are contradictory (e.g. Magritte's painting "Ceci n'est pas une pipe");
- irrelevance: text and picture are (seemingly) in no relation at all.

As Fill points out, the lack of relationship or the lack of relevance creates tension and suspense that helps to express an additional message on a meta level. In the case of irrelevance, the observer is looking for some relationship between text and picture and this search creates tension and suspense. The use of this technique is another way of trying to gain attention.

Methodology

In this study, by means of document and media analysis, a) Websites and b) print material (job advertisements, PowerPoint presentations, folders, brochures, flyers, posters, company magazines, calendars, internal magazines, annual reports, sustainability reports) used in several organisations to address scientists/engineers were analysed.

Results of the analysis provide an insight into what kinds of images of SET are communicated not only in the main but also in activities directed specifically towards women. On this basis recommendations for gender inclusive internal and external communication were developed.

The framework for analysing comprises the following questions:

- What clichés, assumptions, stereotypes are reproduced?
- What messages are conveyed through pictures, photos, graphs?
- Who and what is shown and how (technologies, people, contexts)?
- What metaphors and slogans can be found?
- What is presented, what is not?
- Is the diversity of our world represented and covered? What aspects get left out?
- What do the companies want to communicate? Is it authentic or is it only lip service?
- What "good practice" can be identified?

Overall work plan

- Collection of data material: Universities and companies were asked to provide material; universities were asked to select one specific degree course/department to be analysed
- Elaboration of framework for analysis, development of Guidelines
- Test Analyses
- Revision of Guidelines
- Analysis of the material
- Interpretation and team reflection
- Report and recommendations
- Interpretation and team reflection
- Report and recommendations.

The Website analysis was carried out by Katharina Stelzer, a graduate from pedagogy who has written her master thesis on a historical content-analysis of the representation of boys and girls in picture books from 19th to 21st century; currently she is doing her master in Gender Studies at the University of Graz. Analysis and critique of images of SET and SET professions in the pictures and videos was done, referring to iconographic and iconological approaches used in art, film and photo analysis (cf. Craig 1992, Chandler 1998, Ebeling et al. 2006:307f., Kopp-Schmidt 2004, Lang 1982, Messaris 1997, Millum 1975, Mulvey 1989, Streeter et al. 2007). Using a hermeneutic approach (cf. Rittelmeyer/Parmentier 2001), content and form of visual representations were analysed and interpreted with the theoretical background and in the context of "gender in SET" on the basis of subjective associations and perceptions of the analyser (cf. Mayring 1988).

In addition to discussing her interpretations with me, she also applied a second step of triangulating by presenting and discussing her outcomes in the seminar "Engineer Education and Gender". Ten master students (nine women, one man) from Social Sciences, Humanities and Computer Science gave feedback and critical remarks, some of which were integrated into the final analysis. In the seminar, some scenes from pictures or video sequences taken from the companies' websites were not only discussed theoretically but were also put on stage practically. First the respective scene was acted out as shown in the picture with the male student playing the male part. The students froze the situation and described how they experienced the pose, interaction, hierarchy, etc. For some pictures the roles then were reversed and the male student posed as a female person, the female student as the male person, again freezing and describing how they felt. In a final step the "actors" compared the two situations – a comparison which seems to agree with the original interpretations of the contracted graduate.

Website Analysis

A comprehensive analysis of 17 Websites, focussing on links related to "Career" and "About us" as well as on issues of "Diversity" and "Work-Life Balance"was carried out. The sample includes 14 companies (Air Liquide, Bosch Group, The Dow Chemical Company, EDF, Eni, Fraunhofer Gesellschaft, Gaz de France (before it became GdF-Suez), L'Oréal, Schlumberger Ltd., SHELL, Thomson, TOTAL, United Technologies Corporation, Xerox) and three universities (Budapest University of Technology and Economics, ETH Zürich, RWTH Aachen).

Document Analysis

Seven of the above mentioned companies (Air Liquide, Bosch Group, The Dow Chemical Company, Eni, Gaz de France, Schlumberger Ltd.) and two universities (ETH Zürich, RWTH Aachen) provided further material for a detailed document analysis.

An in-depth analysis was comprised for each of those organisations and the results and detailed recommendations for improvement were summarized for them in individual confidential reports.

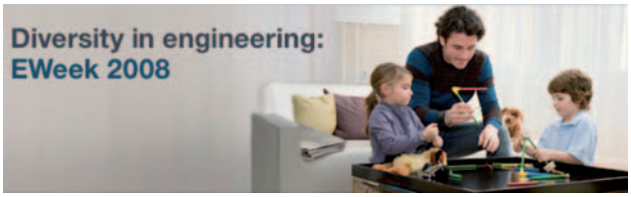
Since not all pictures originally included in the report are available for printing*, some of the written interpretations cannot be illustrated in the way the author wished and intended.

Results

Analysis of Picture-Text Relationship

The following pages present some results of the document and website analyses. First we look at some examples that illustrate the above mentioned mechanisms of creating tension and suspense.

Addition: text and picture complement one another, offer additional information



An example of positive additional information that works against reproducing gender stereotypes are those pictures found on two websites on the reconciliation of work and family life. The additional message is, "This topic is also of concern for our male employees. We not only see our female employees responsible for family affairs." This is the only example that was found where the additional information is not reinforcing stereotypical messages as the following examples will demonstrate.

The next example shows the use of "addition" in a stereotypical fashion. In the first case of the next two picture series under the heading "What we offer you" we see men only illustrating the topics "further development" and "various interesting tasks". However, to illustrate "good working atmosphere" a woman is included in the picture watching a man working at the computer. This juxtaposition strongly suggests that the woman's physical presence alone is contribution enough in creating a "good … atmosphere" thus reducing her to a secondary function in the place where the work gets done similar to that of an air conditioner.

* *We apologize for the bad resolution of some pictures due to the non-availability of the originals.*

"Was wir Ihnen bieten / what we offer you"

Vielseitige und interessante Aufgaben/ Various interesting tasks

Gutes Betriebsklima/ Good working atmosphere

Weiterentwicklung/ further development

In the second case, we find a similar gendered representation: "team spirit" and "customer orientation" show men only, however, when it comes to "frankness", a woman gets included. The question remains, "Why do we not see women in the 'male only' topics?"

"Was wir Ihnen bieten / what we offer you"

Teamgeist / team spirit

Kundenorientierung / customer oriented

Offenheit / frankness

Other examples show women to illustrate support, caring and communication units like Healthcare, IT and HR, whereas Customer relations, Production and Security/Quality are portrayed as male only domains. Contrary to the women in those pictures, the men are not shown alone and do not look at the camera and smile. They interact with maps, mobiles, colleagues or suppliers.

This illustration shows men playing water sports. The text "We believe in working hard and playing hard." reinforces the message, "We male engineers are tough guys."

Furthermore the "fun factor" is addressed, "It looks like fun." Sport activities, not only in SET, are an arena for male bonding that use subtle exclusion mechanisms towards women ("A male basketball team is simply only for men").

Another example comes from a folder addressing postgraduates. One full-page picture shows two elevators, in one there are two men and one woman and one of the men is holding the lift for a third man who is approaching; in the second elevator there are two women and one man. All are in business outfits, are young and attractive. When you flip open this page, however, you find the two elevators again, this time young men are inside, looking at us, their arms folded self-assertively in front of their chests. Above it we read, "This is what we are looking for". The additional message being: "We are looking for

young energetic men." Substitute the "men-only elevator" with women only and consider the implications of the change.

Unser Anspruch. Ihr Profil. What we expect and how you qualify.
Das erwarten wir von Ihnen. This is what we are looking for.

Most of the pictures in another examined brochure are gender balanced and show some ethnic diversity. But, in the section "How to apply", there are only two young men in the picture, subtly signalling, however unintentionally, the message: "Young men, apply for a job with us". If, instead of two men, two women were in the scene the additional information would be quite different.

So bewerben Sie sich /How to apply

In one flyer on "Amazing Opportunities", we find two contrary examples for additional information. "About us" is illustrated with gender-wise balanced pictures of a man and a woman in lab coats working in a laboratory and a man and a woman with helmets discussing over a plan. "About you", however, shows a gender bias: two men in blue overalls with helmet and protective spectacles are shown on site at a refinery, two young women in business suits are shown in an office.

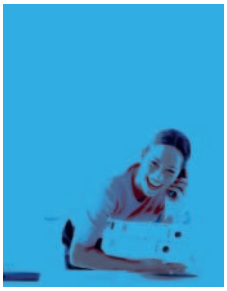
Illustrations in sections focussing on "work-life balance" and the reconciliation of job and private/family life are almost always illustrated with women. Although the text may be gender neutral, the juxtaposition to the image of a woman is strongly suggestive of the stereotypical idea that these are "women's concerns."

Flexible Solutions for Work Life Effectiveness
Work and personal life are not competing priorities at "XY" because we offer flexible options to help our people effectively manage work and personal commitments. Our people are achieving their professional potential without sacrificing their responsibilities and interests outside the work.

The last example comes from a company magazine. On the back cover page, three innovative teams are shown with the members' full names given: two teams of three persons are male only, one team of six shows five men and one woman. In the "Innovation" section inside the magazine, three men are shown and a small picture shows the head of a blond woman sleeping soundly. In addition, all quotes come from men. It is difficult not to assume that innovation is a male domain.

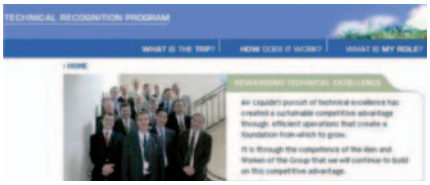
Contradiction: text and picture are contradictory

Some of the above presented examples of addition may fit into the category of contradiction as well. But the following two examples illustrate this strategy very clearly.



The first example is from a brochure that addresses women working at this company and potential female employees. It is a blend between a brochure and a folder and contains five extra leaflets addressing specific topics. The pictures show assertive, competent women and gender specific language is used (unlike other material by this company), even by the CEO: "Mitarbeiterinnen und Mitarbeiter", "Frauen und Männer", "Absolventinnen", etc. The picture on the front cover is very interesting: It shows a young woman in a pink T-shirt laughing heartily, talking on the phone, bent over the desk and trying to prevent three white binders from gliding off her arm/hand. Questions like "Is she a secretary?" "What is so funny?" "Are the binders too heavy for her?" "Can she not do one thing at a time?" come to mind. What is intended with this illustration, openly and subconsciously? "Women are good (or not so good) at multi-tasking?" "To work here is fun? Challenging?" Or is it hidden advertising for the company that produces the binders that she is holding? Many interpretations are left open for the viewers.

The second example shows an entirely male world, at least in the picture. The only representation of women is in the text: "the competence of the Men and Women of the Group".



Irrelevance: text and picture are in no relation at all

It is not uncommon to see advertisement where a woman's (naked or semi-naked) body is used to sell completely unrelated products; such irrelevance can also be found in brochures promoting technology. Question: What does technology have to do with a naked young woman?

Analysis of Representations of Masculinities and Femininities

The document and website analyses give some evidence of gendered representations of masculinities and femininities in the fields of SET. Though one cannot completely generalize, some tendencies for some sectors are obvious. In general, the pictures could show a more diverse (age, ethnicity, gender, disabilities) work force, especially women engineers (with helmets, technical equipment, in the field) need to be made more visible.

Good practice companies in their programs and their communication try to overcome stereotypes. In such material, women are also shown with technical equipment, in overalls, with helmets and protective spectacles, and in the field – showing women talking about technology and men talking about family issues and how they enjoy interacting with people. There are also few special websites for Women in SET featuring remarkable women. However, some hidden gender bias in illustrations, even in the material of good practice companies, can be found; e.g. regarding illustrating training situations with mainly women or representing "tough guys at sport" themes. Some of their pictures still reproduce the cliché that men work outside, on boards, women inside in administration and (customer) support. However, in their material, women are more and more shown as professionals and not just as pretty faces, and men smile a lot.

The oil and gas exploration and production business is highly gendered, where the stereotype of hegemonic masculinity constructs men as the "tough guys", "lone fighters" or "buddies". All too often men are shown in empowered active positions, they are of various age groups and often involved in discussions, concentrating on their professional tasks. Men are engineers and handle customer relations (purchasing). They are shown in board meetings, on site, in professional outfits, as engineers, car racers, and tough sportsmen. Men are presented as managers, electricians, on board of tankers or on the harbour, on platforms, with pipelines, in deserts, as "lone heroes" or in groups with other men. They are "technical specialists", "experts", "Technical Career Ladder-members". In the laboratory men can more often be found in a group with women. Women-only groups are hardly ever shown, men-only groups much more frequently.

Women are often presented as young, good looking, attractive, looking or smiling at the camera, carefully listening to the "interesting words" of (older = more experienced) men. Women work in customer service, technical support or give a presentation, are on the phone, in the office, sit in the corner at a meeting. They are more often shown indoors, in support roles, in training situations, in intimate embrace with another woman (men are never shown embracing another man), in sexy or emotional poses. Women are also shown in traditional roles as customers, mother, girlfriend, teacher, school girls, or working in the Interior Design [!] department. They are visible as users in health care, in information and communications departments and in Human Resources. Women can be found under headings like "Further Education" or "Flexible Working Hours", male engineers under headings like "Careers" or "What we expect".

The following pages will show some examples grouped by type of representation.

Typical representations of men

- Men as "lone heroes", "fighters', "buddies", "experts", working with tools, and in the field








- Men as managers, board members, presenting their "point of view", being interviewed

- Male as the norm – This is a recurring theme, even in good-practice company material.



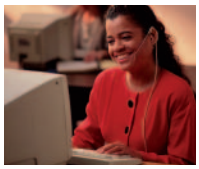

Atypical representations of men

- Men as fathers, (domestic) care-takers – This is a minority theme and has not yet reached mainstream status.

Typical representations of women

- Women hidden in the back – Sometimes pictures show women hidden in the back, not visible at the first glance on the picture. Or the homepage shows solely men and only when you click on the suggested hyperlink a woman comes into the picture. Does this not send a clear message?
- Women as users, consumers, (domestic) care-takers
- Women working indoors, as secretaries, contact and clerical persons



Atypical representations of women

- Empowered women, working outdoors, with technical equipment, in professional outfits and poses like men on parental leave, this is a minority theme and has not yet reached mainstream status.




Asymmetry

Women and men are often represented in an asymmetrical fashion, for example the woman as the passive and the man as the active. The gendered representations on the front pages of two reports analysed give evidence of this, linking notions like "environmentally friendly" or "sustainable" to women and "big business" and "power and action" to men. The front cover of a sustainable development report shows a woman from behind looking up a huge wind turbine that dominates the page. The image of the woman is half cut off and given less than 1/8 of the page. In her hand she holds something like a binder or some kind paper work. She wears a white blouse and a white helmet which corresponds to the whiteness of the turbine (a phallic symbol?) and the blue sky. We do not know who she is or what her profession is. She might as well be a visitor who for safety reasons has to put on the helmet. Her role is observation. Key symbols: clean (white), renewable energy (wind), caring for the future (woman). On the contrary, a company's annual report (business) gives an illustration of a masculine domain: the tanker and the engineer/worker in the harbour and on board. No white colour here except for the name of the company on a tanker. The man wears blue overalls/jacket, a green helmet, protective spectacles and yellow gloves and he talks into a walkie-talkie. He is shot from the front, looks competent and confident and right at the viewer. He is almost in the centre and takes up half of the picture. His is in an active position. Key symbols: big business (tanker), action and competency (outfit and pose).

A picture entitled "Off-shore friendship" shows two women in intimate embrace, wearing yellow helmets and sunglasses, with their backs to the sea. They are laughing into the camera. We cannot see their eyes because of the dark sun glasses. The function of this picture seems to be to liven up the seriousness of the business and brings emotion to the topic. Asymmetry comes in since men are never shown in such intimate poses

This picture shows men on an oil platform posing in the "tough guys" stereotype. It must be acknowledged, though, that it is no longer on the company's website.

In a brochure informing students about degree courses two pictures illustrating "Agrarwissenschaften" and "Biologie" show two people studying "nature": the young man wears a white lab coat and gloves and inspects a caterpillar on a leaf using tweezers; the young woman is in the field, in the sun, with a summer top, looking at a flower: one possible interpretation: "men do serious studies in the laboratory, women studying biology just walk around and look at pretty flowers." In this brochure you can also find a woman in a summer top looking out of the picture and smiling at us and a man, also looking out of the picture and smiling at us, but he wears a lab coat and protective spectacles.

The next two cases illustrate how the same category in a company magazine, each using half a page, can become asymmetrical and gendered depending on which gender the person portrayed is attributed to. Most obvious is the fact that he is an "expert" whereas she is introduced with her name only.

The portrait of the male person is introduced with "A day with… a Technical Career Ladder Expert". It gives an insight into what a day of a group manager for welding in this company's Japanese branch may look like. Text and pictures support the impression that it is "a man's world".

The portrait of the female person is named "A day with… Robyn Duhe". So she is not represented as a technical expert but we get to know her name. It gives an insight into what a plant manager's day in USA may look like. Notable is that all five engineers she meets in "one-to-one annual performance evaluation meetings" are men and that all the pictures illustrating her day show her interacting with men only. This can leave readers with the impression, that though the plant manager is a woman, engineering still is a male domain.

Language

Asymmetrical representation can also manifest itself in the language used. The English material analysed in general uses gender sensitive forms, referring to persons of unknown or unspecified gender as "he or she" or "he/she". One German company, however, insists on using the masculine generative form, a practice that is considered to be overtly sexist and discriminatory. This is surprising, disappointing and unsatisfactory since this company in the last couple of years has been actively involved in several activities to increase the proportion of women in their engineering work force. A short paragraph in the beginning of their brochures tries feebly to justify this practice by suggesting that it makes it easier to read if women are not made visible linguistically: "*Zur besseren Lesbarkeit verwenden wir im Text dieser Broschüre männliche Bezeichnungen. Die Aussagen beziehen sich selbstverständlich auf Frauen und Männer gleichermaßen*." The English version reads, "*For reasons of convenience, the text of this brochure may have a masculine linguistic bias. Naturally, however, all statements refer to both men and women*." They cannot be bothered, in other words.

A text that uses male, female or neutral formulations where it is appropriate is not difficult to read. What may be challenging in the beginning, after decades and centuries of "male as norm" wording and thinking, is to change this sexist way of putting the male as the norm and create texts that give an appropriate view of reality, namely making male and female actors visible and use neutral wording in cases where gender is not so important. To use only the masculine form is unacceptable for a company that is trying to address women. "Better readability" can come across as a lame excuse for not really wanting to think about the issue and it can be seen as a sign for a "we don't want to change" attitude. The added paragraph makes it worse. It uses a rhetorical trick that does not work, as many linguistic and psychological research experiments have shown. The hidden message is: "Women are not worth mentioning, at least not for us!"

Symmetry

This well-balanced illustration shows a young woman and a middle-aged man of different skin colour, both wearing white helmets, business outfit and smiling at us confidently, self-assertively and directly.

More examples for symmetrical representations are given in the "Recommendations".

Conclusion

How we use words, concepts and images of the languages we speak, has definite effects on our understandings and perceptions, our behaviour and consequently our social and physical environment in which we live and work. This is mainly due to the fact that language reflects but likewise shapes and constructs our perceived realities (Spender 1980).

External and internal communication of companies and universities still too often reflects a masculine image of the engineering and technology fields. Since language affects our perceptions of people, it also influences how we perceive engineering and technologies in general, the roles of engineers and of other actors in the engineering world, and in particular of women engineers in research.

Especially in such an overwhelmingly masculine domain as engineering and technology research it is of special importance to make women actors audible and visible – as experts, lay experts, involved parties– by using non-sexist and non-discriminatory language and images (Wächter 2009b) in internal and external communications, by better promoting and spotlighting, through picture and word, the actuality of the competencies, commitments and contributions of women.

Companies and governmental institutions as equal opportunity employers value, consider and communicate internally and externally gender diversity and inclusiveness as part of their corporate or institutional identity and culture. They are able to tap the large and innovative talent pool that is made accessible by gender mainstreaming, through the competent use of the power of words and presentation of images, the same expertise used in the promotion and selling of their products and/or services. They communicate to their audience inclusivity rather than exclusivity.

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Recommendations

If companies want to reach out to more women to establish a more gender balanced work force in all fields of their enterprise, websites and print material are important means to address external and internal audiences (cf. Thaler/Wächter 2007). Communicate inclusivity, offer information and send empowering messages to women who are interested in SET professions: to do this it is important to make empowered women visible in both the pictures and in the language used. Special attention has to be paid to (mostly) unintentional, hidden stereotypical representations of male and female employees. The following are recommendations to help ensure a more gender inclusive representation and communication.

General

- Especially in fields where women engineers are underrepresented make their visibility common place, not only in special, infrequent gender editions.
- Show a balanced number of women and men to illustrate that you value diversity and are aiming for equal opportunities among your work force.
- Show gender diverse sport activities and show women in sport activities as well.
- Show a diverse workforce: gender, age, ethnicity, minorities, disabilities in empowered positions at work and do not reproduce clichés of the "poor victim".

- Extend gender sensitivity training to all your employees, management included.
- Also address and show fathers when you talk about child care, family and reconciling it with work life.
- Present re-entry not as a women's issue but as a topic also of concern for male employees.

Language

- Show that you value and appreciate diversity by making your female employees visible, also linguistically.
- Use gender appropriate wording – not only when you write about "Sekretärinnen".
- Use (male/female) and "he or she", "him or her" in all job announcements to bring gender diversity to the readers' minds.
- Insist that your communications and PR staff gets training in gender appropriate writing.
- Learn, explain, teach and train staff (management included) the reasons why using gender specific language is important.
- If you use Latin words make sure there is no hidden gender bias. Male form: alumnus, plural: alumni. Female form: alumna, plural: alumnae.

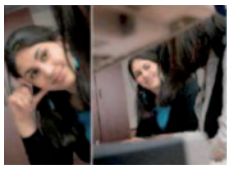
Statistics and Graphics

- Include data on the composition of your work force at all levels: gender, age, ethnicity, minorities, and disabilities.
- Disaggregate statistical data and show percentages for male and female groups.
- Show gender disaggregated data also for employment type (full/part time), employment contract (permanent/temporary).
- Avoid stereotypes in words, images, icons and graphics.

Perspectives and Poses

Using gender sensitive illustrations does not mean counting heads or strictly showing a man, a woman, a man… but paying attention to the following aspects:

- place women and men equally and symmetrically;
- do not represent women as appendages;
- if there are only a few women in a group picture, make them more visible by placing them in the front and centre of the picture;
- make sure not to reproduce stereotypes concerning style of clothing, poses, technical equipment, environment, and do not show women in "emotional poses", as "sexy women" and men as "serious workers", as "tough guys";
- if you use bottom-up perspectives, use them for women *and* men;

- avoid top-down perspectives, if you use them use them for women and men, but this practice is not recommended – straight on is preferable.

Contents and Contexts

- Ensure symmetry;
- Show women and men
  - in symmetrical empowered positions;
  - in similar situations, outfits, poses on all pictures;
  - looking, smiling, laughing at the viewer;
  - in the office and in meetings and in training situations;
  - in the field, on the platform, on the oil rig.





Remi, Project Engineer, Oslo, Norway
Bachelor in Engineering Cybernetic/Automation
"I really enjoy interacting with so many interesting people."


Mari, Senior Electrical Engineering, Oslo, Norway
Master of Science in Electrical Engineering
"It was the technology that attracted me."

- Do not show women nor men in stereotypical or depreciatory ways:
  - Do not emphasize women's bodies;
  - Do not show only men
    - in portraits or as the boss;
    - in public functions, positions.
  - Do not show women
    - only in the office, on the phone, at the computer;
    - as responsible for house work and children;
    - simply as users and customers only;
    - erotic, sexual poses and outfits;
    - as the passive person.
- Show empowered women and men equally.
  - Show men as secretaries, cleaners, assistants… as well.
  - Show women
    - as engineers, managers, trainers, competent leaders… as well;
    - as experts, technical specialists, technical-ladder-leaders members;
    - work on site as well, interacting with technical equipment, machines, tools, wearing helmets, protective spectacles, gloves…



- Find more images of women in non-traditional fields in the website www.iwitts.com/html/html/master_gallery.html [29.3.2007]

Additional recommendations for Universities

- Use pictures that show female and male students/researchers to illustrate degree courses.
- If you show male professors/assistants, also show female professors/assistants.
- Show more women than your statistical data might suggest;
- For degree courses with majority female students show men as well.

- For degree courses with majority male students show women as well.
- Show ethnic and age diversity (international and older students/researchers).

Language and Statistics

- Use gender sensitive language throughout, do not put women in brackets, do not use masculine generative forms.
- Use "Schülerinnen und Schüler" or "SchülerInnen"
  "Studienanfängerinnen und -anfänger" or "StudienanfängerInnen"
  "Mitarbeiterinnen und Mitarbeiter" or "MitarbeiterInnen"
  "Dozentinnen und Dozenten" or "DozentInnen"
  "Professorinnen und Professoren" (if you have more than one female professor)
  "Absolventinnen und Absolventen" or "AbsolventInnen"
  "FH-AbsolventInnen"
  "Neuinskribierende" or "Neueingeschriebene"
  "WissenschaftlerInnen", "GeisteswissenschaftlerInnen",
  "Ingenieur- und NaturwissenschaftlerInnen"
- Show gender disaggregated data.
- Split general data into data for males and females:
  "X Professorinnen und X Professoren"
  "X Dozentinnen und X Dozenten"
  "X Abvolventinnen und X Absolventen"
  "X FH-Absolventinnen und X FH-Absolventen
  "X Neueinschreiberinnen und X Neueinschreiber"
  "X Mitarbeiterinnen und X Mitarbeiter"

Additional recommendations specifically aimed at engendering websites

1. Show biographies, in text and pictures or/and in film, to make successful women and men engineers and researchers in your company equally visible. Ask women and men likewise about work and private/family life and how they reconcile those aspects.

2. Use gender sensitive language in your job descriptions and give examples of all gender.

3. Give information about specific programs for women, like mentoring programs, career planning seminars, welcome events for beginners, and point out that training schemes are open to male and female employees likewise, to emphasize that women are welcome in your company.

4. Providing information about career paths, further training and specific programs on offer that support the careers of your female employees shows that you value diversity and also that you are interested in addressing SET women as potential employees.

5. Pictures of female and male interns and students send a message to young women that they are welcome to participate in taster programs or do an internship in your company. Also give information about your participation in special events like "Girls' Day" and the like.

6. Show female role models and make women visible who have won awards or accolades for their SET accomplishments.

Josef von Fraunhofer prize

Fraunhofer:
Hugo Geiger Prize

7. Emphasize any measures and programs that facilitate Gender Mainstreaming, Diversity and the reconciliation of work life and private life for all your employees. Represent them as important pillars of your organizational philosophy and culture.

8. Give information about care support (child care, elder care, care for dependent others) and show men on parental leave as well.

9. In your videos make sure that SET women also have active parts. If you show private lives show female and male employees, not only women.

10. The link "About us" should show women and men in order to underscore that the company culture is gender inclusive and values female employees as well.

11. Under "Contact" do not show only a woman since this stresses the cliché of women as secretaries and phone operators.

Appendix

Company	Access	Web adress
Air Liquide	29.2.2008	www.airliquide.com/
Bosch Group	29.2.2008	www.bosch.com/content/language2/html/index.htm www.bosch.de/start/content/language1/html/867.htm
The Dow Chemical Company	13.2.2008	www.dow.com/
EDF	7.3.2008	www.edf.fr/259i/Homefr.html www.edf.fr/92053i/Home-fr/Meta-Plan/EDF-Group.html
Eni	18.2.2008	www.eni.it/en_IT/home.page
Fraunhofer Gesellschaft	8.3.2008	www.fraunhofer.de/index.jsp
Gaz de France (before it became GdF-Suez)	18.2.2008	www.gazdefrance.com/EN/public/page.php?iddossier=1310
L'Oréal	17.2.2008	www.loreal.com/_en/_ww/index.aspx
Schlumberger	22.2.2008	www.slb.com/
SHELL	11.3.2008	www.shell.com/
Thomson	11.3.2008	www.thomson.net/GlobalEnglish/Pages/default.aspx
TOTAL	9.3.2008	www.total.com/
United Technologies Corporation	23.2.2008	http://careers.utc.com/diversity.asp; www.utc.com/index.htm
Xerox	14.2.2008	www.xerox.com/go/xrx/template/013.jsp?Xcntry=AUT&Xlang=de_AT

University	Access	Web address
ETH Zürich	3.3.2008	www.mavt.ethz.ch/ www.mavt.ethz.ch/outreach/index www.mavt.ethz.ch/outreach/berufsbilder www.mavt.ethz.ch/outreach/mittelschuelerinnentage www.mavt.ethz.ch/outreach/infotagematuranden www.mavt.ethz.ch/outreach/engineeringweek
RWTH Aachen	2.3.2008	www.rwth-aachen.de/go/id/hi/ www.fst.rwth-aachen.de/ www.zlw-ima.rwth-aachen.de/mitarbeiter/mitarbeiter.php?id=37 www.maschinenbau.rwth-aachen.de/de/home.html www.wzl.rwth-aachen.de/de/index.htm www.innovation.nrw.de/veranstaltungen/termine/88.html www.zlw-ima.rwth-aachen.de/produktdb/produktdb.php? aktion=produktlinie&id=1&PHPSESSID=025b5cbeb6c25790adb8dfea6cac815c#prod
Budapest University of Tehnology and Economics (BME)	2.3.2008	http://sz7.iaeste.hu/eng/ http://sz7.iaeste.hu/eng/?page_id=2 www.ara.bme.hu/english/ http://vmt.ch.bme.hu/english.html http://portal.bme.hu/langs/en/Documents/bmefacts4.aspx http://portal.bme.hu/langs/en/Documents/bme225anniversary.aspx www.energia.bme.hu/konfers2007/kezdolap_eng.html www.mit.bme.hu/eng/research/chaos/index.html

Theoretical overview

Theoretical overview

Claartje Vinkenburg, Clem Herman, Suzan Lewis, & Stefan Fuchs

In this section we provde a brief theorical overview as background for the experts' research and analysis. We describe earlier empirical research and conceptual work related to reducing the leaky pipeline for women in S&T, as well as building the business case for work-life balance, the two main objectives for the WiST2 working group.

Reducing the leaky pipeline

It is widely acknowledged that there are a number of intersecting factors contributing to the so-called "leaky pipeline" for women in Science, Engineering and Technology occupations which begins in the education system and continues into employment (Blickenstaff, 2005; Phipps, 2008). Once in employment, there are a number of key attrition points, most notably after maternity and at mid-career level, when women either leave or fail to achieve the career progression experienced by their male colleagues (Hewlett et al., 2008; Simard, 2008). Moreover, increasing the recruitment, retention and advancement of women in S&T has now become widely recognised as a crucial business issue, which requires a multi-pronged approach. There are no quick fixes to such a long standing challenge and while links with education, mentoring schemes, the encouragement of role models, succession planning and related schemes are all important, there is now a greater emphasis on uncovering and challenging aspects of organisational cultures that continue to perpetuate inequalities despite good intentions and a plethora of so-called work-life balance policies (Lee, Alemany & Faulkner, 2007).

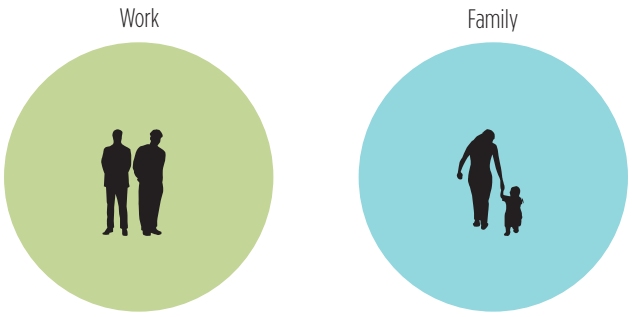
Expectations of professional career development typically assume a linear trajectory of uninterrupted employment, based on the traditional model of male 'breadwinner'. While this model is increasingly atypical, many aspects of organisational cultures, especially in male dominated sectors, still operate with these assumptions in mind. Merely enhancing diversity of groups does not in itself necessarily enhance performance. It is also necessary to create the right conditions to leverage the potential advantages of diversity (Kochan et al., 2003), and there is now increasing interest in examining the cultural issues that contribute to the persistence of gender inequalities in S&T, recognising that changes in legislation or policies alone are not sufficient to change underlying gendered practices and cultural norms, whether this is in industry or within the scientific research community.

Many women in S&T at some point take a career break (e.g. maternity leave, parental leave, care leave, sabbatical, etc.), in order to handle work/family trade-offs. While this is an effective short-term strategy for many, taking a career break is a deviation from the traditional model described above. Assumptions influenced by gender stereotyping shape and influence decision making by women professionals and their managers at this crucial time and can have implications for career progression and development. Most research about career breaks within S&T occupations tends to focus on women who have taken several years out of paid work and who are seeking to return to a different employer (Herman & Ellen, 2004; Herman, 2006; Institute Of Physics, 2004; Panteli 2006; People Science and Policy Ltd and Institute for Employment Research University of Warwick, 2002; Shaw et al., 1999; Tomlinson et al., 2005) with little attention paid to those who return from short periods of maternity leave. Yet the decisions that women make at the time of maternity, including whether or not to work part time on returning to work, can often determine what options they might have at a later stage in their careers. These crucial decisions are not made in isolation but are influenced by the social, political, cultural and economic situations in which women are located, and include for example their work status, the availability of care networks, national welfare policies as well as personal ambitions and preferences (Tomlinson, 2006).

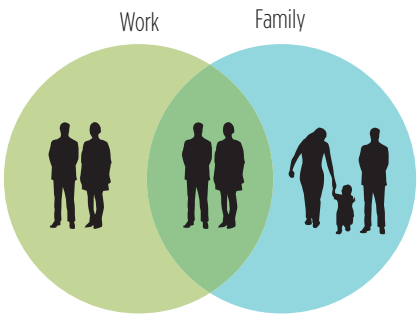
Most "work-life" initiatives remain at the level of formal policies. Less attention is paid to ways in which policies are implemented and the need for culture change to support implementation. Yet it is increasingly recognised that the most difficult barriers to break down in S&T workplaces relate to organisational culture, including stereotypes and unwritten rules that can make it difficult for women to "fit in" to and prosper (Miller, 2004). An important aspect of organisational culture relates to the deeply entrenched assumptions about men and women, and ideal workers. There is accumulating evidence from all occupational sectors that formal policies alone, without attention to deep seated organisational values and rules, tend to have limited impact (Hyman, Baldry, Scholarios, & Bunzel, 2003; Lewis, 2001; Lewis & Smithson, 2006; Rapoport, Bailyn, Fletcher, & Pruitt, 2002). Consequently there is a widespread implementation gap between policy and actual practice across Europe and beyond (Gambles, Lewis & Rapoport, 2006; Lewis & Cooper, 2005; Lewis & Smithson, 2006). In particular, even if flexible or work-life policies are articulated as policies for men and women, they are often assumed to apply only to women, who by implication are regarded as deviating from the prevailing model of "ideal" employees (Bailyn, 2006) and/or because women – and mothers in particular – are considered needing support for their domestic commitments (Connell, 2005).

Formal policies that aim to enable individual women to manage their employment and personal lives, but do not challenge assumptions about how most people in the organisation "should" work in order to be productive, can at best make changes around the margins (Lewis, 1997; 2001). They leave unchallenged basic organisational culture, especially the gendered assumptions and unwritten rules which underpin take-for-granted aspects of everyday working practices. These practices and related assumptions were usually appropriate at an earlier time, for example when workforces were largely male and men had the back-up of full time homemakers. However, perpetuating these practices and assumptions inappropriately can not only undermine opportunities for men and women to integrate work and family life in satisfying ways, hence sustaining gender inequities, but can also undermine workplace effectiveness and productivity (Bailyn, 2006; Rapoport et al., 2002).

Counterproductive, gendered assumptions about ideal workers can be explained in terms of theory of gendered organisations (Acker, 1990; Bailyn, 2006; Britton, 2000; Gambles et al., 2006; Rapoport et al., 2002; Swanberg, 2004). This theory contends that women's secondary position in the labour market in many contexts can be attributed to the gendered nature of organisations. That is to say, it is not due to overt discrimination or to women's characteristics or patterns of labour market participation per se, but to the unintended effects of daily working practices and assumptions that can appear to be gender neutral but are grounded in a male model of work. These everyday working practices and the assumptions on which they are based can be traced to the ideology of separate, gendered spheres, that is, the public sphere of work as a man's world and the private sphere of the family as women's domain and



Separate Spheres Ideology



responsibility (Bailyn, 2006; Haas & Hwang, 2007; Rapoport et al., 2002). This separation of family and working life that began with industrialisation, produced gendered structures that are remarkably resilient despite changing gender roles and relationships (Crompton, Lewis, & Lyonette, 2007).

In the context of the separate spheres ideology organisational structures tend to be built around a cultural picture of the ideal worker as someone who can work as though they have no social or caring obligations outside work – a male model of work. This affects how commitment is defined and competences are valued (Lewis, 1997; Rapoport et al., 2002; Rees & Garnsey, 2003; Swanberg, 2004). Commitment is widely constructed in terms of work primacy, such that time to spend at work is unlimited, and the demands of family, community and personal life are secondary. The myth of separate and gendered spheres also leads to the valuing of certain types of behaviour more than others. There is often an assumption that stereotypically masculine characteristics are necessary to be effective in the workplace. Thus traditionally masculine values and behaviours such as competitiveness and the ability to work long hours, come to be associated with the ideal worker, especially in the field of S&T (Miller, 2004) while more traditionally feminine characteristics and skills such as interpersonal skills and collaboration are often undervalued in workplace settings. Ideas of competence thus become conflated with hegemonic masculinity (Bailyn, 2006). That is, assumptions about competence are so linked with the idealized images of men and masculinity that it makes it difficult for women's achievements to be recognized unless women work in masculine ways, (Bailyn, 2006; Rapoport et al., 2002; Rees & Garnsey, 2003). These expectations are deeply embedded in workplace structures. The deconstruction of structures and cultural norms at work and their underlying assumptions is a first step in analysing a workplace using a gender theory lens.

Separate spheres ideology and gendered organisations help to produce and reinforce gendered components of individual identity (Acker, 1990; Lewis, 1991). Although both women and men increasingly achieve their sense of identity from both the public sphere of work and the private sphere of family, the concept of the ideal worker who always puts work before family as well as social representations of the ideal mother make it more difficult for men to modify work for family and for women with young children to conform to both organisational assumptions about ideal workers and societal definition of ideal mothers (Lewis, 1991).

This, in turn, is related to beliefs about what is fair and equitable and therefore the outcomes that women and men feel entitled to expect in the workplace (and other contexts); that is sense of entitlement (Lewis & Smithson, 2001; Major, 1989). Sense of entitlement is theorised as developing through processes of social comparison, whereby individuals consider what they put into and get out of a situation (for example putting in long working hours and getting out advancement) and determine whether this is fair in comparison with what they perceive to be

other people's ratios of inputs and outputs (Lewis & Smithson, 2001; Major, 1989). It is also influenced by what is perceived to be normative and feasible. Cultural norms such as that of the ideal, committed worker who can spend unlimited time at the workplace, impact on what is viewed as normative and ideal; and hence on sense of entitlement to be rewarded for some workplace behaviours (such as working long hours) more than others (working efficiently and spending less time at the workplace) (Lewis & Smithson, 2001). Gendered experiences have a significant influence on what is perceived as normative, appropriate and feasible. Women tend to feel more entitled than men to take up family friendly provisions. However they do not necessarily feel entitled to rewards such as promotion or even interesting work if they do so because of the normative ideal of the full time worker. Thus the development and consequences of gendered sense of entitlement reinforces gendered organisational processes whereby women and men may have different expectations and be differentially rewarded.

Gendered organisational theory has been developed and taken forward in a very practical way by various authors (Bailyn, 2004; 2006; Bailyn & Harrington, 2004; Rapoport et al., 2002), who demonstrate that working practices that reproduce gender inequities can also undermine workplace effectiveness. Building on this insight they developed an action research process for changing workplace practices and assumptions to meet a dual agenda of gender equity and workplace effectiveness. The aim is for systemic change; that is changes in structures, cultures and practices, rather than more superficial policy development. This process, which they call collaborative interactive action research (CIAR), involves using a dual agenda lens to examine workplace practices, underlying (usually gendered) assumptions and their consequences, both intended and unintended. This approach has been used in a number of contexts to bring about positive organisational changes in working practices to make workplaces more equitable and effective (Bailyn, 2006; Lewis & Cooper, 2005; Rapoport et al., 2002). The importance of examining everyday working practices in specific workplace contexts rather than attempting to generalise about gendered practices more broadly is highlighted by this work. While the process of change can be generalised across organisations, the solutions developed by this process are context specific. This focus on specific workplace cases is a promising approach for examining potential routes to systemic change in S&T organisations that could begin to challenge gendered organisations.

Studies about women in S&T have tended to focus on particular industries such as IT or engineering and have been largely located in Western Europe, North America and Australia with only a few cross cultural studies. Yet gendered practices and cultural norms are clearly not homogenous and are located in specific temporal and spatial contexts – a cross-cultural analysis of S&T employment across the EU offers the potential to understand how technological or scientific career opportunities can be shaped by different contexts and offers the chance to share solutions and good practice. And within the broad spectrum of S&T industries there may be quite different gendered cultures. For example the oil/gas industry which is more male dominated may differ from pharmaceutical companies where there are more women scientists.

While a thorough, context specific analysis of gendered cultures and normalized assumptions may assist in generating ways to reduce the leaky pipeline, another albeit related approach is to build a so-called business case for work-life balance. This may result in taking the "forced choice" out of the challenge of combining work and family, and in making it evident that achieving and maintaining WLB literally pays off, for the employer and employee. This will be further explored in the next section.

Building The Business Case for Work-Life Balance

Research relating work-life balance to individual and organisational performance is surprisingly scarce, especially considering the massive uptake of work-family initiatives by contemporary employers. Kelly, Kossek, Hammer et al. (2008) provide an overview of scientific research on the effects of work-family initiatives on work-family conflict and business outcomes. While many employing organisations have adopted work-family policies, programs and benefits, their review shows there are few conclusive answers as to what the effects are of organisational work-family initiatives on work-family interaction (interference as well as enrichment) and other work-related outcomes. What is clear from this review is the crucial importance of the organisational culture – the more supportive supervisors and peers are, the more likely it is that the degree of work-home interference is reduced for employees who use work-life balance practices (Dikkers et al., 2004). A series of interesting studies has been published on the crucial role of the manager in creating a supportive and inclusive environment for those employees (often professionals) who have a reduced workload (Kossek & Lee, 2008; Lirio et al., 2008; Ryan & Kossek, 2008), resulting in lower turnover and more commitment.

Beyond reducing interference and turnover, using specific types of work-life balance practices may in fact have positive consequences for individual performance. Working Families and Cranfield University produced a report in 2008 on "Flexible Working and Performance" in the U.K., indicating for the most part a positive relationship between working flexibly (i.e. flexitime or remote working) and performance. While part time work clearly has negative consequences on career outcomes in terms of progression and salary (Román, 2006), it does appear to make for increased efficiency and productivity (Clifton & Shepard, 2004). This effect may disappear however when corrected for overall quality of management (Bloom & van Reenen, 2006). However, it is clear that the relationship between work-life balance and performance will vary, depending on the particular type of practice used as well as the criterion measure used for performance.

Lyness and Judiesch (2008) in an article entitled "Can a manager have a life and a career?" present a cross-national examination of the career advancement potential of managers related to their work-life balance. Using multiple self- and other ratings, they found that managers who were rated higher in work-life

balance were rated higher in career advancement potential than were managers who were rated lower in work-life balance. However, national gender egalitarianism moderated relationships. Work–life balance ratings were positively related to advancement potential ratings for women in high egalitarian cultures and men in low gender egalitarian cultures, but relationships were nonsignificant for men in high egalitarian cultures and women in low egalitarian cultures. We thus need to take not only organisational culture but also national culture as well as policies and legislation into account when trying to find the pay-off in work-life balance.

Building a business case for work-life balance by showing a consistent positive and preferably causal relationship between work-life balance and performance is thus not a simple matter. In fact, the degree to which it is possible to successfully achieve work-life balance as well as high performance depends on the ideal worker norm and organisational culture described above. In some organisations, despite a variety of work-home arrangements on offer, those who decide to use these policies will be penalized in terms of career progression. In other organisations, the consequences may differ for men and women – where working flexibly or part time may be much more normal for women than men. However, we increasingly see examples of organisations where the norm is no longer one of "chronic presenteeism" (Sheridan, 2004), where output is considered more important than the time and place where the work was done, and where very long hours, especially by young parents, are viewed as an early warning signal of possible burn out and drop out. Further research on the relationship between work-life balance and performance should definitely include examples from such organisations, which often make it onto the short-lists of "Great Places to Work" and "Best Employer for Working Parents".

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Company profiles

AIR LIQUIDE

With more than 40 000 employees in 75 countries, Air Liquide is the world leader in industrial and medical gases and related services. The Group offers innovative solutions based on constantly enhanced technologies and produces air gases (oxygen, nitrogen, argon, rare gases…), and many other gases including hydrogen.

The Group contributes to the manufacturing of many everyday products: bubbles in sparkling beverages, protective atmosphere for packed foods, oxygen for hospitals and home-care patients, ultra-pure gases for the semiconductor industry, hydrogen to desulfurize fuels.

Research and Development is a major component of innovation. It is divided among 8 research centres – in France, Germany, the United States and Japan and by "satellite teams" working directly at our customers' sites. Over 920 researchers of more than 25 nationalities make up a talent reservoir for the Group.

In a close and ongoing relationship with the most prestigious university research laboratories and academic research centres and working directly with key industrial partners, R&D's employees are continuously improving our gas production technologies, developing new applications and services and contributing to the entire Group with their technical expertise. A new patent application is filed each working day.

Diversity in all its forms

Convinced that diversity is a strategic business issue, and a source of creativity and dynamism, Air Liquide encourages it in all its forms: nationalities, skills, career paths, gender.
Through its diversity policy, the Group wishes to strengthen the position of women and allow them to get the most out of their personal and professional development.
In 2004, 77 % of Group employees were men. Senior Group management therefore decided to put diversity firmly in the spotlight, in the form of an action plan specifically aimed at women.

The efforts Air Liquide has introduced over the last several years are beginning to bear fruit: women represent 19 % of engineers and executives worldwide and in five years (2003 to 2007) the percentage of women engineers and managers hired in the Group went from 24 to 30 %. In 2007 France reached 39 % and several countries have already passed the Group's objective of 40 %. Finally, the percentage of women among junior engineers and managers was 46 % for the Group.

Gender balance at Air Liquide	No of women	Total	Percentage of women
Board	2	12	17%
Executive committee	1	10	10%
Management	3 000	10 000	33%
All employees	10 000	43 000	22%

Changing mindsets from the top down

The business case for gender diversity

Augustin de Roubin – Vice-President, HR – Air Liquide Group

In 2007, women made up roughly 6 % of all senior managers, recalls Augustin de Roubin, Vice-President of HR at Air Liquide. This top management group consists of around 250 people. Today, the proportion of women in this group has doubled to 12 %. The company is not going to stop there either. 'Our goal for 2008-2009 is to continue to increase the number of women in the top 250" says Augustin de Roubin.

Up from 2007, for the first time in the Group's history, nine women were appointed to manage subsidiaries (Chile/Finland/Lebanon/Switzerland/Belgium Large Industries/ Vitalaire GmbH/ Healthcare Australia / AL Santé France / Direction des Techniques Avancées).

Diversity comes under Augustin de Roubin's remit, a move designed to ensure it is taken seriously. When vacancies open up in the top 250, Augustin de Roubin makes sure there is at least one woman candidate to consider. 'If we cannot find that person internally, then we will look outside.'
In the framework of Air Liquide's policy to encourage the hiring and promotion of women, and to strengthen their place and responsibilities in the company, "**Awareness-raising and Exchange days on Gender diversity** were organised in France (400 managers), Japan, and Spain. It will be developed in other European countries.

This was aimed at the top 250 most senior people in the organization. But the goal is to train all of the managers. 'The programme was a great success,' Augustin de Roubin says, 'it tried to make managers understand the main differences [between men and women at work] and the main issues.' As for the future, Augustin de Roubin intends to keep the momentum going.

Work-life balance

In the meantime Air Liquide set up an action plan to promote work-life balance, to facilitate the day to day life for men and women, in order to harmonize careers and family life. Here are some actions:

CESU: In 2007, the monthly child premium for kids between 0-3 years of 60 EUR has been replaced by the "Chèque Emploi Service Universel" of 141 EUR net.

Pre & post maternity/adoption or parental leave interview: before departure for maternity /adoption or parental leave, each employee will have an interview with his/her manager and the human resources manager, in order to plan and specify the organisation of work, make sure needs and consideration are taken into account as well as to remind them, if necessary of employer and employee's rights during this period.

Another interview is carried out between the employee and the manager when he/she comes back to work.

Promotion Plan: An employee on maternity leave is maintained in the annual promotion plan review

Annual Performance Appraisal: An item on work life-balance has been added in the Annual Performance Appraisal form, to be discussed by manager and employee during this interview. And in day to day working life we try to avoid meetings in the early morning as well as in the late afternoon.

Air Liquide considers Diversity as "a performance factor" – therefore it is a strategic issue for our business.

BOSCH
Invented for life

The Bosch Group at a Glance

The Bosch Group is a leading global supplier of technology and services. According to preliminary figures, some 282,000 associates generated sales of roughly 45 billion euros in the areas of automotive and industrial technology, consumer goods, and building technology in fiscal 2008. The Bosch Group comprises Robert Bosch GmbH and its more than 300 subsidiaries and regional companies in over 60 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing, and sales network is the foundation for further growth. Each year, Bosch spends more than 3 billion euros for research and development, and applies for over 3,000 patents worldwide. With all its products and services, Bosch enhances the quality of life by providing solutions which are both innovative and beneficial. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation.

Additional information can be accessed at www.bosch.com

Equal opportunities in the Bosch Group

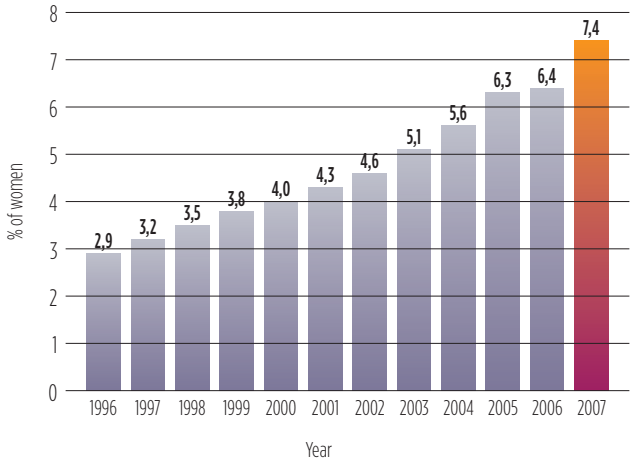
Equal opportunities are a relevant competitive advantage and contribute to secure the sustainability of our company. They address among others:

- perception of Bosch as an attractive working place;
- utilization of the potential of all employees at an optimum;
- diversity as an advantage in a competitive market;
- appreciation of the power of diverse cultural teams.

History of equal opportunities at the Bosch Group

In 1994, the board set the goal to increase the share of women in leadership positions. Since then several activities were started in different countries (e.g. in Germany establishment of a sustainable project group and steering committee "Equal Opportunities" as well as an independent women's network: women@bosch). In 2008 the first international executive women meeting took place, and from 2009 on target figures for women participation will be included in the HR balance score card. These activities show a sustainable positive effect over the years (fig. 1). The measures with regards to work-life balance address at the same time men and women.

Figure 1 **Women in leadership positions 1996-2007**



The overall percentage of women in the Robert Bosch GmbH lies around 21 % varying among business units as well as hierarchy levels.

Equal opportunities comprise:

- regarding cultural diversity as an asset and appreciate the value of our employees regardless of their age, gender, origin and religion;
- equal career advancement for women with the goal to increase the number of women in leading positions at all hierarchical levels;
- utilization of the offers of Work-Life-Balance programs of our company, equitable for men and women.

Our activities:

Recruitment of women:

- girls' day (www.girlsday.de) for school girls;
- recruiting seminars/workshops for young women with focus on technical professions as well as presence at and contact with universities;
- member of the German Association of Women Engineers and member of MINT;
- cyber mentoring: experienced technical female engineer of Bosch is mentor for a interested school girl.

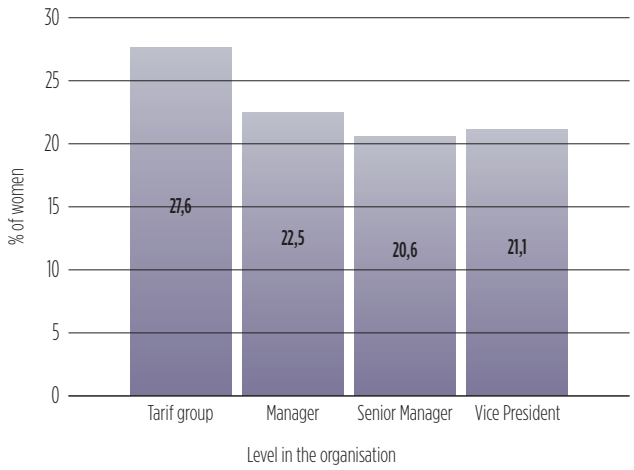
Career advancement of women:

- several mentoring / cross-mentoring programs for women, executive women and young women in technical and commercial apprenticeship;
- business women's program and coaching;
- network women@bosch;
- contact person for equal opportunities at various Bosch locations.

Work-life balance programs:

- Part-time and flex-time: supporting the acceptance of working part-time or flex-time within the company and offering different models with flexibility in both working duration and working place.
- Interview manual for parental leave and "keep-in-contact" programs for employees on parental leave.
- Child-care: location-oriented measures, cooperation with local municipalities, supporting parents initiatives, child care and camps during school holidays.
- Family activities: excursions for parents and kids on the weekend.
- Elder care: lectures on the topic of elder care and offering the service of a person, who supports our employees in the organisation of care measures.

Figure 2 **Female employees working in part-time**



Awards

- 2005 Federal Award "Family as success factor": Special Prize
- 2006 Victress Award: 1. Placement
- 2006 Baden-Württemberg Award "Corporate Equal Opportunities": 1. Placement

Statement from top management: Equal opportunity as a form of fairness

"Our success as a company hinges not least on our ability to actively exploit and develop the wide range of competence, experience, and talent of all our associates, both male and female. The advancement of women's careers is a key element of this ability, helping us as it does to increase our competitiveness and to strengthen our common identity in a culturally diverse company. It is our managers' task to promote women's careers and to create an environment in which collaboration on all levels is characterized by equality opportunity. In doing so, they contribute directly to the process of cultural change that has been set in motion by the Bosch values: equal opportunity is one manifestation of fairness, and is part of our corporate culture."

Mr. Fehrenbach, Chairman of the Board of Management

"We want to persuade well trained, highly qualified women to join our company, and we want to be an attractive employer for them. Whether male or female, our associates have many different needs and expectations of their employer. It is our goal to support the development of their potential, while also giving them the chance to achieve a meaningful work-life balance. Apart from consistently promoting associate development, we therefore work actively to allow the demands of family and career to be reconciled. In this context, our efforts to put child-care in place and our plentiful offers of flexible working hours are intended equally for associates of both genders, and are designed to enable both men and women to achieve a more varied and balanced life coupled with a high level of professional motivation."

Dr. Malchow, Director of Human Resources and Social Services

COMPTUUR Ltd

COMPTUUR Ltd. was established at the beginning of 1995. The company acts in the field of information systems (IS), covering the whole spectre.

The company has special handling methods in project management, system analysis and design and also for creating distributed databases, the open client-server and WWW-based solutions.

Most of the employees have experience conducting more than thirty different serious information systems development projects.

The company develops consulting, is engaged in product development (the products have client-server and/or Web-based solutions), does contract work (analysis, design) and mediates the ORACLE.

The company also carries out specialist training.

COMPTUUR Ltd. is a project based company and most of the workers are from Department of Informatics, Faculty of Information Technology of Tallinn University of Technology.

Women/Men ratio is 1:2. Max is 17 men and 8 women.

We have quite a flexible schedule for work-life balance and the right to work at home. This is especially good for families with little children.

The Dow Chemical Company

Building a Culture of Work Life Flexibility

Dow's Global Work Life Strategic Intent:
"Innovative Work Life practices are consistent with Dow's Mission, Vision and Values, and are essential to delivering our strategy. A supportive Work Life culture actively demonstrates Dow's respect for its people, and the time and talent they invest to make our company successful. Through innovative practices we will enable Dow to recruit the best people, develop their talents, inspire their ideas, and retain their skills and knowledge, while providing them time and resources to pursue personal goals, be with their families and support their communities."

Darlene MacKinnon, Director Diversity and Inclusion

Women in Science and Technology

Dow is a diversified chemical company that combines the power of science and technology with the "Human Element" to constantly improve what is essential to human progress. Because we know that the diversity of our employees gives us a distinct competitive advantage, our vision is to build a workforce that reflects the populations we recruit from in the places we do business today and tomorrow. Internally we focus on building an inclusive culture to enable every employee to flourish, grow, and contribute at their best. In this context women in Science and Technology are a key talent pool for Dow. In Europe, women account for 27 % of the Dow employee population, with 16 % of first level leaders being women.

The Importance of Work Life Flexibility

A key enabler of our Diversity & Inclusion strategy is Work Life Flexibility. Evolving technology, changing family structure, increasing globalization, an aging workforce and differing personal values redefine the workplace every day. A global employee survey identified Work Life Effectiveness and Flexibility as a top driver of employee engagement at Dow. External and internal data showed that a successful approach to work life flexibility would bring the following benefits:

- **Optimize productivity** – A flexible work culture has been proven to be a more productive work culture.
- **Enhance employee engagement** – Shown repeatedly to increase productivity.
- **Deliver results** – Employees who are satisfied with their working arrangements tend to outperform those who are unsatisfied with their arrangements.
- **Reduce stress** – Dependent care, commutes, personal development and other factors impact the level of stress for both male and female employees, which can reduce engagement and productivity.
- **Enhance recruitment and retention** – In an increasingly competitive job market, flexibility helps to enhance our ability to attract and retain highly qualified people.

Our Approach

Rather than focusing on programs and policies, our goal is to drive cultural change so that flexibility becomes an accepted option to enhance business results and personal and professional development. We therefore designed our approach according to the following criteria:

- **Business-based** to ensure that the exceptional business standards we set for ourselves can be preserved, while we also achieve our important personal goals.
- **Flexible** enough to adapt to complex individual and business needs around the world.
- **Structured** to provide a clear and consistent implementation process that ensures fairness and equity among employees and across businesses and functions.
- **Implemented locally** in coordination with business and functional requirements applied in the geographies with respect to national law and regulation.

The Offering

The offerings related to Work Life Flexibility at Dow are varied, providing a wide range of flexibility options to employees. They include a variety of Flexible Work Arrangements (FWA) as well as other key enablers of flexibility.

In keeping with country practices and law, offerings may vary by country. FWA typically available:

- *Informal flexibility:* Occasional, incident-driven, day-to-day flexibility in a full-time schedule.
- *Flex time:* Workday start and end times differ from the workgroup's standard, yet the same number of hours per day is maintained.
- *Part-time/less than full-time:* Working less than the standard country-specific work week, and getting compensated at a reduced level commensurate to hours worked.
- *Job Sharing:* Full-time position shared by two people, generally with both working less-than-full-time.
- *Telecommuting:* Working from a remote location one or more days a week.
- *Meeting-free flexibility:* Establishing blocks of time by workgroup, division or organization when no meetings are scheduled.
- *Leave programs:* Dow offers a variety of personal leave options to help employees manage important needs.

Flexibility Enablers

- *IT flexibility enablers:* A comprehensive IT structure which provides flexibility in where and when work is done.
- *Good Health for the Whole Self:* Dow sponsored health programs and a comprehensive intranet site providing further resources on a range of health related topics.
- *Networks:* The Women's Innovation Network (WIN) is one of six employee networks at Dow. Established in 1989, and with a global presence, WIN creates a forum for networking and a vehicle to foster a culture of inclusion, empowerment and Work Life Effectiveness.

The Implementation

Implementation of these offerings is supported by a communication and training program designed to increase awareness and use of the different options for flexibility. It includes:

- Flexibility workshops for leaders: Rolled out geographically at the onset of our initiative, the workshops were designed to gain people leader support and to equip them to successfully manage flexibility in their teams.
- An Intranet site dedicated to FWA describing the different options, models to get started and strategies for implementation for use by employees and their supervisors.
- An article series titled "Faces of Flexibility" shares success stories which highlight the different flexibility arrangements used by Dow employees globally.
- In keeping with the criterion of local implementation, various locations around the world develop their own communication and awareness initiatives.

The Results

Support

The results of our Global Employee Opinion and Action Survey show increases in positive responses to the statements relative to flexibility (European data):

- There is equal opportunity for people to have a successful career at Dow regardless of their differences or backgrounds (3% increase).
- The leader I report to enables flexible and innovative solutions to managing work and personal life (2% increase).
- Work related stress does not interfere with my ability to do my job well (5% increase).

Recognition

- In September 2008, Working Mother magazine named The Dow Chemical Company one of the 2008 Working Mother 100 Best Companies for the second consecutive year.
- In November 2008, Dow Benelux was among the Best Organizations for Working Parents in the Netherlands.

About Dow

With annual sales of $58 billion and 46 000 employees worldwide, Dow is a diversified chemical company that combines the power of science and technology with the "Human Element " to constantly improve what is essential to human progress. The Company delivers a broad range of products and services to customers in around 160 countries, connecting chemistry and innovation with the principles of sustainability to help provide everything from fresh water, food and pharmaceuticals to paints, packaging and personal care products. References to "Dow" or the "Company" mean The Dow Chemical Company and its consolidated subsidiaries unless otherwise expressly noted.

EDF Group

The EDF Group is a leading player in the European energy industry, active in all areas of the electricity value chain, from generation to trading, and increasingly active in the gas chain in Europe. Leader in the French electricity market, the Group also has solid positions in the United Kingdom, Germany and Italy.

In the electricity sector, it has the premier generation fleet and customer portfolio in Europe, and operates in strategically targeted areas in the rest of the world. The Group is also the leading network operator in Europe, giving it a sound business model evenly balanced between regulated and deregulated activities.

The vocation of EDF R&D is to contribute to improving performance among EDF Group operating units and to identify and prepare new growth drivers for the medium and long terms. The EDF R&D activities are mainly focused on generation, networks, energy efficiency and saving, power regulation and markets, simulation and information technologies.

EDF R&D has a committed policy of working with partners in France and Europe, especially the countries where the Group is active, as well as in other parts of the world.

EDF R&D key data

In 2008, the Staff is made up of
- 2 000 people of whom 30 % women
- 1 560 researchers and managers of whom 27 % women
- 200 PhD students of whom 34 % women

Key milestones on gender policy

- **1983**: The "Roudy" law (July 1983, the 13th ; OJ n°83 635) launches a debate about gender equality.
  The law provides that corporations of more than 50 employers shall present an annual gender assessment in terms of employment, training, recruitment, wages.

- **1999**: Agreement between EDF management and trade unions on working time reduction. Though not pertaining to gender equality, its enforcement influenced female recruitment in 1999 and 2000.
  That reached 37 % in 1999 and 41 % in 2000 at EDF R&D level, while it varied between 28 % and 44 % since 1983. In 2002 it decreased to 28 % . This rate is still higher than that of women in the areas where EDF recruits ("grandes écoles"; engineering schools ; scientific universities)

- **2004**: Agreement on 13th July, on gender equality.
  This agreement was deployed in all EDF entities. Signed for three years (renewable) it pertains to wages equality; employment and recruitment sex ratio; careers, training, working time, working conditions.
  Creation of a female managers' network in EDF

- **2005**: Diversity project deployment, including gender equality.

- **2006**: EDF R&D diversity policy Implementation.

- **2007**: Renewal of the existing agreement on gender equality (2008-2011).

- **2008**: EDF R&D gender action plan Implementation (2008-2011).

- **2009**: EDF R&D "Concierge Service".

Mission

Eni is an integrated energy company with operations in approximately 70 Countries. With a staff of 78,880 employees, Eni operates in the areas of oil and natural gas research, production, transport, transformation and marketing, as well as petrochemistry, engineering and construction.

Technological innovation is a Key element of Eni's Corporate strategy involving all phases of its manufacturing cycle in terms of existing hydrocarbon reserves, improved safety for the people who work in Eni plants and for the nearby communities, logistic chain efficiency and environmental compatibility, prevention environmental impact mitigation and recovery, promotion of new development opportunities in the countries where Eni operates.

Commitment for Sustainable Development

Eni is responding to the dynamics of global change by focusing on two key elements: its capacity to create confidence in the markets and amongst citizens and, at the same time, its intrinsic nature as an integrated energy company that is capable of operating in a sustainable manner with respect to all its stakeholders and overall society.

Sustainability is an integral part of Eni's history and culture and is the driving force behind the continuous improvement process which guarantees the Sustainability of results over time.

Eni has adopted a conceptual sustainability model: the valorisation, care for safety and health, and engagement of its people are the centre of it. Innovation, not only in technology, but also in management and partnerships, was identified to be one of the drivers to achieve sustainability objectives.

Corporate culture and Governance represent the framework for the model, that includes environment, climate change and energy efficiency.

A special role is reserved to relations, as long as the engagement of communities Eni operates in, custumers, suppliers and other public and private stakeholders is one of the fundamental values of Eni's business.

Since 2007 Eni is listed in the Dow Jones Sustainability Index and in the FTSE4Good Index. These indexes include the Companies that best perform in terms of sustainability. In 2008, the Dow Jones Sustainability Index selected Eni as global leader for the Oil & Gas sector.

The Value of Diversity

"...I have always believed that the secret to being a good manager is to be able to handle human resource diversity within the organization. An organization is weak if it is composed of people with the same cultural and social background. Diversity is a positive value. And Eni is rife with diversity."

Paolo Scaroni, Eni's CEO, interviewed by Angela Wilkinson

Eni is a "kaleidoscope" of diversities. Its nature of an international company and the integration of businesses gives rise to the constant comparison with a plurality of different cultures and skills, which the company is committed to improve at this best. New activities were initiated to make the international mobility on a global scale easier and to coordinate the systems of management of the international resources, while the spreading of tools continued in view of supporting the development of local resources.

Eni's Code of Ethics makes specific reference to the right of people to have the same job opportunities, in a climate of mutual respect for each person's dignity, honor and reputation, and the duty of all colleagues to respect diversity within the company.

As regards gender differences, in particular, Eni is committed to ensuring that there are no discrimination in hiring against women and in sustaining their professional development using systematic, formally structured assessment methodologies aimed at enhancing professional merit.

Employees by gender and professional category 2008

	Men		Women	
	Italy	Abroad	Italy	Abroad
Senior managers	1,298	227	119	14
Managers	7,968	2,938	1,706	448
Employees	14,538	12,896	5,463	4,171
Workers	8 ,350	18,401	38	305
Total	32,154	34,462	7,326	4,938

Eni had 78.880 employees in service in 2008. Against a 4% total increase in population compared to 2007, men increased by 3%, whilst there are 11% more women. The number of female senior managers rose by 24% against a rise in male senior managers of 3%.

Being able to rely on highly motivated people with advanced technical skills is key to the success of our business. Eni is committed to creating conditions in which people can fully develop their potential.
Valuing diversity, creating an inclusive work environment, providing opportunities to combine professional and private life, are some of Eni's commitments to its people.
To support these commitments, in the last two years the company has launched several employee survey initiatives to assess the needs and expectations of its staff with respect to their life in the workplace.
During 2007 and 2008, as part of a broader project for the upgrading of our sustainable development model which also included a climate analysis involving more than 38,000 employees, Eni developed two important "listening projects" aimed at internal stakeholders, in an effort to identify areas for improvement and to promote
employee engagement and widespread opportunities to apply individual skills: the Diversity project ("Diversity: Organizational structure, practice and culture") and the Welfare project.

The Diversity project was carried out in collaboration with the SDA Bocconi School of Management, that launched a network of companies engaging in the management of diversity-related issues. People of different age groups, gender, geographic origin and professional background were involved in this project through targeted interviews and focus groups.

Work–life balance and wellbeing of Eni's people

More interviews and focus groups were conducted as part of the Welfare project, and once the results of both initiatives were analyzed, the following programmes were developed:

- an action plan to support parenthood both in terms of information (legal framework, benefits for new parents, mother and baby health) and of organization (actions to support women during the optional extended maternity leave period and at the time of resuming work);
- new training programmes for women, to strengthen their personal and managerial skills, and for unit managers, to develop – among others – additional leadership skills focusing in particular on the value of diversity;
- "Nido Scuola Eni" project for the creation by 2010 of a child daycare facility for approximately 140 children aged 0 to 6 years within Eni's San Donato Milanese site. The primary objective is to provide excellence in child care, ensuring a child-centered approach and educational continuity between the two school services;
- a broader offer of summer camps in resorts for employees' children during summer months, and creation of summer camps in town;
- other time & money saving initiatives which may help in daily activities, such as laundry service, shopping service, or takeaway provided by the company's catering service.

Along with these practical initiatives in support of employees' daily working life, Eni also conducts ongoing monitoring programmes based on established indicators of diversity management in general, through our KPIs for the measurement of the company's sustainability performance.
Quantitative data related to employee presence and development are also used as indicators to direct Eni's internal processes in a perspective of fair and effective recognition and utilization of individual talents and specific skills.

The Fraunhofer-Gesellschaft

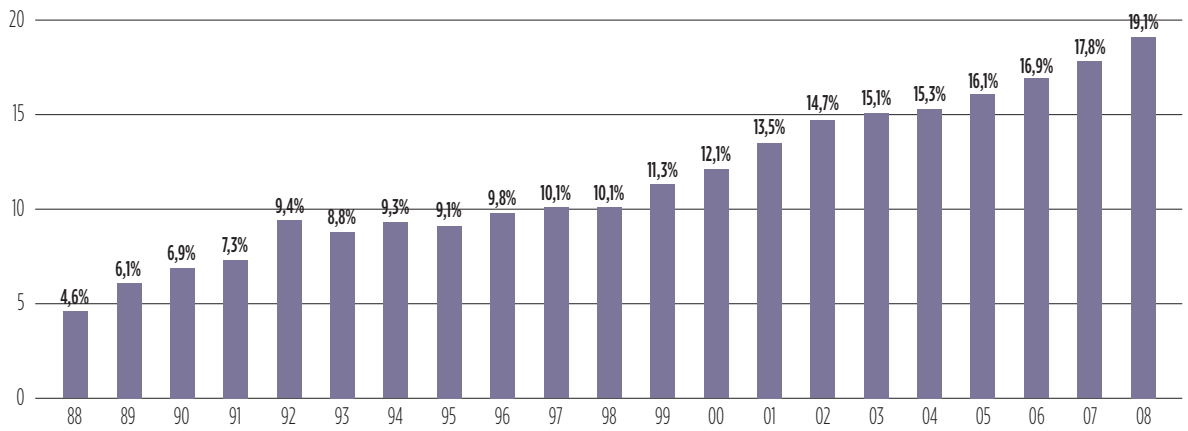
The Fraunhofer-Gesellschaft is a recognized non-profit organization which takes its name from Joseph von Fraunhofer (1787–1826), the illustrious Munich researcher, inventor and entrepreneur. Founded in 1949, the research organization undertakes applied research that drives economic development and serves the wider benefit of society. Its services are solicited by customers and contractual partners in industry, the service sector and public administration. The organization also accepts commissions from German federal and *Länder* ministries and government departments to participate in future-oriented research projects with the aim of finding innovative solutions to issues concerning the industrial economy and society in general.

At present, the Fraunhofer-Gesellschaft maintains more than 80 research units, including 56 Fraunhofer Institutes, at 40 different locations in Germany. The majority of the 13 000 staff are qualified scientists and engineers, who work with an annual research budget of 1.3 billion Euros. Affiliated research centers and representative offices in Europe, the USA and Asia provide contact with the regions of greatest importance to present and future scientific progress and economic development.

Figure 1 The TOP 10 Employers for the best 25% of German Students of Engineering and Sciences in 2007
(http://www.terrapersonal.de/media/pdf/Die_beliebtesten_Arbeitgeber_2007.pdf)

Ranking	Company	preferred by (%)
1	Fraunhofer-Gesellschaft	27,6
2	Max-Planck-Gesellschaft	26,9
3	BMW	19,3
4	Porsche	16,9
5	Audi	15,6
6	Siemens	15,6
7	Robert Bosch	13,0
8	EADS	13,0
9	Auswärtiges Amt	9,3
10	McKinsey	9,2

Figure 2 **Percentage of Women in the Scientific Staff**



As an employer, the Fraunhofer-Gesellschaft offers its staff the opportunity to develop the professional and personal skills that will allow them to take up positions of responsibility within their institute, in other scientific domains, in industry and in society. Students working at the Fraunhofer Institutes have excellent prospects of starting and developing a career in industry by virtue of the practical training and experience they have acquired. This is well known among students of engineering and science. Among the group of Germany's best students in that field Fraunhofer is the most interesting employer (Fig. 1).

Nevertheless, Fraunhofer still does not get as many women as it would like to have (Fig. 2). At the moment the percentage of women in research is around 19 %, also due to the small number of women studying engineering or sciences in Germany.

To access the talent pool the Fraunhofer-Gesellschaft offers especially enthusiastic and talented young people the opportunity to take part in the Fraunhofer Talent School. The only one of its kind in Germany, it hosts three weekends a year of intensive workshops on research and technology. In 2009 we will have more than 400 participants. The workshop's contents were devised by Fraunhofer scientists specifically for youth participants. Proof of the concept's success is the approx. 200 applications received from young people around the country. And: 50 % of applications and participants are women.

Other activities aim to attract more young families: so we often have a kindergarten at the campus or close by in cooperation with other partners, special programs during holidays or a lot of possibilities for teleworking. However, in our understanding gender mainstreaming does not only focus on HR-strategies but also includes the integration of gender aspects in research projects. Within Fraunhofer, special emphasis is put on the market relevance of gender aspects. Respective gender-sensitive market analysis instruments are therefore developed and tested. At the same time, the relevance of gender aspects from the point of view of the market is analysed through surveys.

The project "Gender Aspects in Research" funded by the Federal Ministry of Education and Research (BMBF) and pursued at the Fraunhofer was devoted to identifying and analysing concrete examples for gender aspects in promising future fields of research such as life sciences, transport and traffic, microelectronics and information and communication technology, surface and material sciences, production technology and work organisation, energy and environmental sciences. Futhermore, the project's target was to develop a suitable and transferable concept for the systematic integration of gender aspects in research organisations. One of the key factors for success was to establish best practices examples within the organization. The Fraunhofer-Gesellschaft will proceed to research "Gender and Diversity Aspects in Research" scientifically and, at the same time, will consider "diversity" in its human resource development programme targeted towards equal opportunities.

Prof. Marion Schick, Senior Vice President Personnel and Legal Department of the Fraunhofer-Gesellschaft:

"The most important challenge that I see for our research organization is to increase the number of female scientists. To encourage more women to participate in the development of leading-edge innovative technologies, it is crucial to establish a family-friendly working environment. It must be made easier for mothers and fathers to combine their scientific profession with family commitments. Organizational structures need to be modelled in a way that female and male scientists feel equally at ease and motivated to achieve their full working potential. Fraunhofer-Gesellschaft's "GenderChancen" project, supported by BMBF, will provide insight into how these gender-equivalent structures should be organized, supported and tested."

Schlumberger

Company profile

Schlumberger is the world's leading supplier of technology, integrated project management and information solutions to customers working in the oil and gas industry worldwide. Employing more than 87 000 people representing over 140 nationalities and working in approximately 80 countries, Schlumberger provides the industry's widest range of products and services from exploration through production. Schlumberger Limited has principal offices in Paris, Houston and The Hague and reported consolidated revenues of $27.16 billion in 2008.

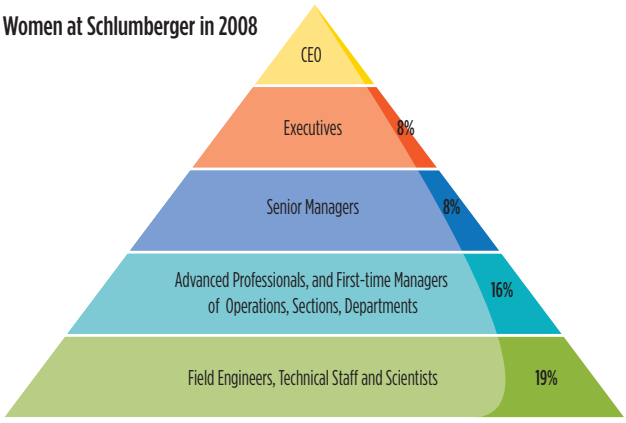
Workplace diversity

Cultural diversity has been a key focus at the company for over 40 years and gender diversity has been firmly on the Schlumberger corporate agenda for the last 15 years.

Currently, the company employs 14 000 women in total, 8 500 of them within the engineering and management staff. This represents 18 % of the company's workforce in 2008 compared to just 6 % in 1994.

This progress has been accomplished through the consistent direction and leadership of the company's top management team. "We believe no one nationality or gender has a monopoly on creativity and talent", says Schlumberger Chairman and Chief Executive Officer Andrew Gould. "The reason to bring the focus strongly onto gender was, and remains, business driven."

Women at Schlumberger in 2008



In 2008, women comprised 29 % of all field engineer recruits and more than 30 % of recruits within the Schlumberger research and engineering centers. Women from various areas of expertise have continued to advance within the company. Today women comprise 19 % of the non-management professionals and 8 % in the executive ranks.

"In Schlumberger, diversity is a fundamental principal and value. While we are truly diverse if you look at our nationalities, we still have the 'gender' dimension to master," notes Schlumberger Vice President of Personnel Catherine MacGregor.

Changing approaches to career management

To meet the needs and concerns of the changing workforce, Schlumberger listens to its employees, learns valuable lessons through experience, and works to adapt policies and take on initiatives that make Schlumberger an even better company to work for.

During 2007, the company conducted a survey of women working in the field environment. The results pointed out that there was opportunity to make some changes for the better, and subsequent actions have resulted in improved accommodations, introduction of coveralls designed especially for women, and increased organizational flexibility to accommodate a wider range of personal situations for career planning and placement.

The work/life balance and dual careers

Schlumberger has recently introduced updated global maternity, paternity, and adoption guidelines that provide more support to families. The company continues to work on addressing dual career challenges and works closely with the Permits Foundation, an international non-profit corporate initiative to promote access of work permits for accompanying spouses and partners of international staff. www.permitsfoundation.com

Role models for the next generation of women in science and technology

The Faculty for Future program was initiated by the Schlumberger Foundation in 2004 to support women scientists from developing and emerging economies in fulfilling their potential as researchers and teachers.

To date, the program has supported over 93 women from more than 33 countries in advanced graduate studies in science and engineering at top universities worldwide.

The Faculty for the Future fellows plan to return to their home countries at the end of their studies to continue their academic careers and research. As teachers, these outstanding women will contribute to the ultimate vision of the program which is attracting more women into science and technology careers.
www.foundation.slb.com/fftf

Shell

Shell operates in more than 110 countries and has 104 000 employees worldwide. It has six global business segments, in which Science, Engineering and Technology positions are critical for Shell's success:

- Downstream
- Exploration & Production
- Gas & Power
- Renewables & Hydrogen
- Trading
- Global Solutions.

Due to our global operations, the workforce that we draw from is more diverse than ever before, especially in the growth markets and regions where we operate. The average age of workers is rising, and the number of women in our workforce continues to increase. As employee value propositions and societal expectations continue to change, our future, sustained success depends on our ability to attract, motivate and retain this increasingly diverse pool of talent.

We underpin our efforts by targeted metrics that monitor progress and assure action takes place because we are an organisational culture where what's get measured gets done. One measure that we monitor on a global basis is the representation of women in senior leadership. Another is the diversity in the nationality of senior leadership. A third is our Diversity and Inclusion Indicator, which monitors inclusion across our work environment and comes from five questions within our annual People Survey.

As a company in the global energy business, Shell is a key player in the huge energy challenge currently facing the world. We estimate that, by the middle of this century, the world will need twice as much energy for half the CO_2, and we see it as our job to help deliver it – safely, responsibly and profitably. To help meet the world's future energy challenges, we have a clear strategy in place. We need to increase the efficiency of our operations, invest in new geographical heartlands and innovative technologies, and continue to develop low-CO_2 energy. To do this successfully, we need to be able to recruit the most talented people, against a background of increasingly hot competition for talent. We also need to continue to work effectively with governments and other key stakeholders – a group that will be constantly expanding as we move forward.

Finally, we need to incorporate into our strategies the changing demographics of the global working population.

Shell has a global target for the employment of women in senior roles of 20%. At year-end 2008, women held 13.6% of senior leadership positions. While we have made progress against this target since we began our D&I journey, there is still much to do.

Up to now, one of the key challenges in working towards our target has been that, within technical disciplines, female professionals are in short supply. We have made greater progress with respect to female representation in commercial areas. Shell is putting in place a number of positive actions to help us make further progress against our key target – by focusing on the recruitment, development and advancement of women.

Within Europe, Middle East, Africa and Russia, these measures include the appointment in March 2008 of a Recruitment Manager with a brief to take responsibility for female recruitment, co-coordinating Shell's efforts within the region to target suitably experienced female talent. This is an extension of previous, proactive efforts to reach female talent, and ask them to think about working for us. As a result, we are building a network of senior females with the technical skills we need, both those working in comparable industries and those in other sectors.

As part of this effort, the female recruitment co-coordinator works closely with Shell's businesses to find out their needs and to encourage the creation of 'Designate' roles as part of their succession planning. The co-coordinator works closely with the rest of our Recruitment organisation to ensure that our efforts to reach technically qualified female talent via channels that can be made gender-specific (such as head hunting), are matched by general attraction and recruitment efforts. This approach enables us to create diverse shortlists, which include well-qualified female candidates. In this way, we ensure we are truly inclusive in our approach to talent. In the end, however, we have to be clear that the best person for the job is the one who gets the job – regardless of gender or any other factor.

Hand in hand with our recruitment efforts, Shell also continues to focus on talent development and retention for the female colleagues within the organisation. In 2005, Shell initiated a study on the progression and retention of women in order to gain greater understanding of the barriers and develop recommendations to accelerate progress.

The study found that, while the recruitment figures for women were healthy, turnover among females tended to be higher. It also identified several factors at work here, including lack of senior female role models, women's commitment to family or personal responsibilities, stereotyping and preconceptions of women's roles and abilities, and a lack of visible and significant job assignments and mentoring.

Interventions recommended by the study included:

- Qualified women to be included wherever possible on shortlists for senior vacancies.
- Further support for women in their careers at Shell, including the establishment of women's networks and, where possible, the development of opportunities for flexible working.
- Measures to strengthen senior leadership accountability for progression and retention of women.

These key recommendations have now been embedded into our ways of working and our measures show that we are continuing to make progress towards our target on the progression of women.

Importance of Diversity and Inclusion

Shell first made a formal commitment to diversity and inclusion in 1997. At that time it set out its vision – for the Group to be widely perceived by both internal and external stakeholders as a company that values diversity, and as a company of choice for men and women of all ethno-cultural backgrounds.

From the start, the Group saw this commitment as crucial to business success. "The Group will benefit from diversity through better relationships with customers, suppliers, partners, employees, government and other stakeholders, with positive impact on the bottom line," it stated.

Ten years on, we have made considerable progress against that vision, but we understand that there is still a great deal to be done.

By linking and integrating our D&I values into the Group's priorities, as well as into key business and people processes, systems and practices, we help embed it into the culture of our company so that it becomes 'the way we do business'. This works in the following ways:

- Striving to integrate D&I into our mainstream business means translating our core values of honesty, integrity and respect for people into action. As we work towards this goal, it will help us achieve improved business performance.

- Embedded within the Shell People Standards are core components that support the creation of a work environment where differences are valued and everyone has an opportunity to develop to their full potential.

- D&I is a further elaboration of Shell's General Business Principles. In addition, it is a key enabler in the delivery of our business strategy of 'More upstream, more profitable downstream'.

- Annual D&I plans aim to embed D&I principles and practices into all aspects of our business activities and are an integral part of the Human Resources functional plan. We work to ensure that examples of excellence and best practice are shared, which contribute to sustained success and enhanced employee engagement.

Shell Chief Executive Jeroen van der Veer has written :
"The journey to embed diversity and inclusion into Shell will last for many years. We have already come some way, but there is more to do, and I would like to see us accelerate our progress. Diversity and Inclusion is, for me, how people from different backgrounds, different geographies and different cultures work together in an inclusive style that result in better teamwork. I am convinced that a diverse team is best placed to understand our environment and our stakeholders. In other words, if we are successful in implementing diversity and inclusion, we are stronger than the competition. What I also see is that the best people like to work for a company that is not only very serious about diversity and inclusion, but successful in its implementation. There is always more to do. So let's celebrate what we have done well in the past, but realise that everybody, including myself, can still do more. By integrating diversity and inclusion into the mainstream of our business, we can translate our core values of honesty, integrity and respect for people into action, and improve our global performance."

Work-life balance initiatives

To enable staff to manage their work life balance, Shell offers a number of policies including:

- Flexible working
- Breaks without pay
- Maternity leave
- Paternity Leave
- Adoption Leave
- Time off for dependents.

These policies are in line with the statutory rights for the respective countries. For example, in the UK, Shell's maternity policy explains your rights before and during pregnancy and after you have had your baby, the leave and benefits you will receive, and the procedures you need to follow.

The Maternity Policy is intended to:

- retain your skills and experience if you take Maternity Leave;
- give you an incentive to stay with Shell after Maternity Leave;
- continue to encourage your career development if you have childcare responsibilities;
- complement our other Diversity and Equal Opportunities policies and practices.

Tenaris

Company overview

Product range

Tenaris is a leading global manufacturer of seamless steel pipe products and provider of handling, stocking and distribution services. It is also a leading regional supplier of welded steel pipes for gas pipelines in North & South America.
Based on manufacturing facilities in four continents and a network of customer service centers in over 20 countries, Tenaris is serving four principal market segments: Oilfield Services, Pipeline Services, Process & Power Plant Services and Industrial & Automotive Services.

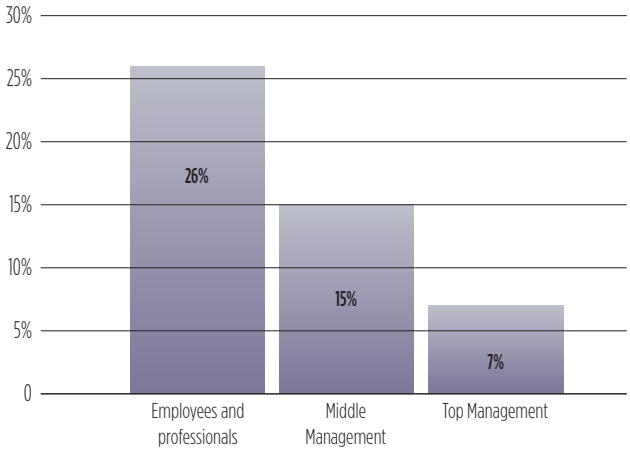
Strong Presence with both global and local reach

- Annual manufacturing capacity: 6,000,000 tons of steel pipes.
- Manufacturing facilities in 15 countries.
- Service and distribution network in 25 countries.
- Human capital: 22,500 employees.
- Annual net sales: US$ 12.1 billion (2008).
- Stock exchange listings: New York, Milan, Mexico, Buenos Aires.
- Intensive use of technology to design industry-leading products.
- Integrated R&D network: four dedicated research centers in Argentina, Italy, Japan and Mexico:
  – more than 200 scientists and engineers staffing the research facilities, nearly half holding Master or Doctoral degrees;
  – collaboration with selected external R&D laboratories, product testing centers and universities.

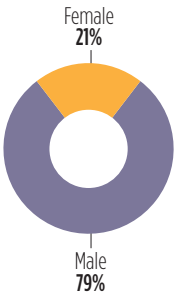
Gender diversity in Tenaris

Statistics

Female by category (only white collar)



By employee distribution (only white collar)



Management opinion on gender diversity issues

Company's objective is to improve Gender Diversity in Tenaris, including the entire Talent Supply Chain: attraction, retention, development and internal promotion of women.

In order to design specific initiatives/ measures in this sense, **a Gender Diversity Committee has been recently established, at global level, composed of members** from different functional areas / professional background and different regions.

Initiatives and policies related to work-life balance

Work-life balance has become a relevant aspect, which is why it has been treated as a separate subject in the global employee opinion survey our company has recently conducted. Results are currently under analysis and, based on employees' input, dedicated initiatives will be built.

A brief corporate profile

Total is the 4th largest petroleum company, and among the biggest integrated chemicals producers in the world with 97 000 employees in 130 countries.

The Group is active all along the petroleum chain, from the Upstream (oil and natural gas exploration, development and production as well as LNG) to the downstream (refining, marketing, trading and shipping of crude oil and refined products).

In the chemicals segment, Total manufactures both Base chemicals (petrochemicals and fertilizers) and Specialty Chemicals (processed rubber, resins, adhesives and metal-plating), and is preparing the future of energy by helping to develop renewable energies (wind power, solar energy, biomass) and alternative motor fuels.

Diversity in TOTAL

In 2003, the Group embarked on an extensive Diversity policy with a view to improving the representation of women and non French nationals amongst the high potentials, middle and top management. Feminisation comes with the many challenges generally faced in a masculine dominated industry like ours. The recognition and promotion of our local talents are also central to understanding the local political and economic challenges, as well as to securing our licence to operate in the various countries.

Diversity reflects three core values:

- competitiveness: broaden our scope of recruitment and advancement to better manage our global business interests, become more innovative and more creative;
- fairness: help each employee realise their full potential;
- legitimacy: respond to current expectations of employees and the company in matters of corporate social responsibilities.

Principal actions to promote diversity:

- Creation of a Diversity Council – The Diversity Council was created in May 2004, chaired by a member of the Executive committee. It is composed of twelve members, representing our core businesses (upstream, downstream and chemicals) as well as diverse ethnic and cultural backgrounds, genders, and occupational fields. The missions of the council are to act as a focal point on all diversity initiatives, to promote the Group's diversity policy across all its activities and geographical zones, to propose new actions and to establish and follow up diversity indicators. Monitoring the evolution of feminisation is indeed one of the main priorities of the Council.

- Signing of a global agreement on equal opportunities with our European unions. This agreement extends the gender diversity policy to all categories of employees (both managerial and non managerial staff).

- HR tools such as Career Committees for women, individual monitoring of high potentials, job succession plans etc.

- Communication tools such as a diversity kit, brochures, Intranet site dedicated to diversity.

- Training/sensitation sessions : on stereotypes, non-discrimination etc.

- Participation in studies related to feminisation at the French as well as international level.

Basic statistics on feminization global indicators (2008):

Recruitment of "cadres" (managers)	25 %
"cadres"	20 %
High potentials	18 %
Top Executives	10 %

Statement from Christophe de Margerie, CEO of TOTAL, on the importance of the issue of gender diversity:

"The subtle charms of our differences must not distract us from the underlying business imperative: our determination to promote the best talents, whether technological, operational or human. These, happily, are evenly distributed in our company, as in life, across both genders. To render this obvious to all will open the way to accepting – and then celebrating – all our different diversities."

Work-life balance

People are increasingly focused on their quality of life. Aside from economic and career considerations, there is growing demand for a "good quality of life" among well-educated people, who are now more reluctant to sacrifice their personal life for work and who are seeking a better balance between the two. It is worth noting that this trend is affecting not only the younger generation, but also more senior employees who did not feel this way in their youth. Corporations and employers are expected to take this demand into consideration and integrate it, like any other sociological trend, into their HR policies. Furthermore, work-life balance is also becoming a powerful recruitment and retention tool for international corporations, especially when dealing with the younger generations.

Work-life balance does not mean working less, and is certainly not meant to cause a decline in output. Instead, it strives to achieve a balance in the work process without compromising quality output.

TOTAL is working on this expectation and has considered several initiatives, primarily in the areas of domestic services and flexible working time.

- A dedicated extranet service, called "Only you". From the offices, one has the opportunity to manage some of the demands of everyday life e.g. shopping, child care opportunities…This website helps employees based in our Paris offices to find practical solutions.

- Availability of 3 "crèches" (day care) with a capacity of 108 beds for the children of our employees working at the Head office.

- A flextime agreement was signed in October 2005 between Total and the unions, applicable to employees working in France. The agreement covers three types of flexible working time –"personalized choice", "family reasons" and "end of career" – each with its own terms and regulations. These are designed to provide participating employees with arrangements compatible with their individual situation.

- Possibility for telecommuting in several entities/units.

- Total is one of the signatories of the Parenthood Charter, designed by the French government to encourage businesses to take their employees' family responsibilities into account more effectively. As a signatory, the Company has committed to deploying resources and systems that will help parents achieve a better work-life balance. The issue does not concern women alone. According to a study conducted in February 2008*, more than 80 % of managers who are fathers in France want to see tangible measures in the workplace and new managerial practices to combine career and parenthood. The Charter addresses these concerns with three key commitments:

  - Change mindsets about parenthood within companies, notably by raising awareness among Human Resources Directors and other managers.

  - Create a favourable environment for employees who are parents, particularly expecting mothers.

  - Ensure equal career opportunities for people with children.

TOYOTA

Toyota Motor Corporation is one of the world's leading automobile manufacturers, offering a range of models from small passenger vehicles to trucks. Globally Toyota today operates 53 manufacturing companies in 27 countries and regions excluding Japan, and markets vehicles in more than 170 countries, supported by a consolidated workforce of over 316 000 people.

Toyota has been operating in Europe since the early 1960s. In 2008, the Company sold 1 112 021 units in Europe. Since 1990, Toyota has invested over 7 billion EUR throughout Europe, and currently employs about 82 000 people, both directly and through retailer channels. The European headquarters are located in Brussels-Belgium and handles the wholesale marketing of Toyota and Lexus vehicles, Parts & Accessories, and manages Toyota's European Manufacturing and Engineering operations. Operations in Europe are supported by a network of 31 National Marketing and Sales Companies covering 56 countries, more than 3 000 sales outlets and nine manufacturing plants.

With regards to Research and Development, Toyota is continuing to focus its efforts on three key areas; Environment, Safety and Energy conservation. In particular, it has positioned Hybrid as a core technology that can contribute to resolving environmental issues and it remains committed to leading the advancement of such technologies. Consequently Toyota is enhancing its hybrid vehicle line up and engaging in research and development of plug-in hybrids.
Toyota is currently revising its entire engine and transmission line-up in Europe. This has seen the introduction of several new technologies that improve fuel efficiency and reduce CO_2 emissions, both for petrol and diesel engines. Already 9 Toyota models benefit from this new 'Toyota Optimal Drive'.
As part of its response to energy diversification, Toyota recently launched a Flex Fuel vehicle in Brazil i.e. a vehicle capable of running on fuel that consists of a percentage of bio-ethanol mixed with gasoline, or on bio-ethanol alone.

Generally Toyota continues to invest in the development of new, more fuel-efficient vehicles & technologies, dedicating world-wide nearly 6 billion EUR a year to R&D.

In Europe, Toyota has a very clear R&D mission :
- Plan, develop and produce attractive cars of superior quality that fulfil the European customers' needs.
- Develop new technologies.

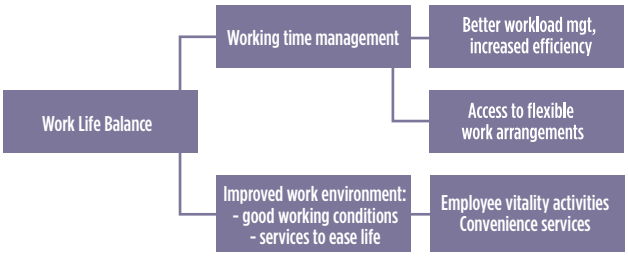
Established in 1987 in Zaventem, the Technical Centre is home to Toyota Europe's research and development, purchasing, and production engineering activities. Early in 2006, Toyota inaugurated the expanded Technical Centre.
The Centre currently represents a total investment of 140 million EUR.

Diversity is part of our values

The two main pillars of the Toyota Way are the quest for Continuous Improvement and Respect for People.
Diversity is part of respect.
It is clearly stated in our contribution towards sustainable development whereby we support equal employment opportunities, diversity and inclusion for our employees.
Toyota believes that an effective workplace is one that allows people of different ages, genders, ethnic groups and cultural backgrounds to work together as a team, with each individual reaching their full potential.
Our activities have lately focused more on gender diversity, as it is there that we face the biggest gap. With the support of the European Social Fund, the company worked in partnership with the Hasselt University not only to highlight the business case but also to understand which work life practice would best help and fit within our working culture. HR processes were reviewed and awareness workshops have taken place with our line managers within this project.

Work-life balance (WLB) Activities

Within TME, WLB revolves around two main pillars :



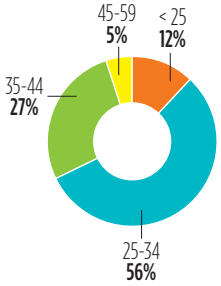
For each of these pillars, TME has decided to adopt tailor-made solutions. In the fact-finding phase, we worked closely with the Hasselt University on the development of a methodology aiming to assess which Work-Life practice could best suit both men & women. As a result, the following measures were adopted:

- better workload management notably through standardization of processes;
- promotion of a selected number of Work Life practices within the Company (ex. Part-time, Flexible Working Arrangements allowing by adapting working hours to workload and recuperate accordingly, extension of gliding hours, decrease of overtime etc..);
- employee vitality measures, such as the promotion of sports activities and team events;
- convenient services; such as dry cleaning, ironing etc. accessible in the office.

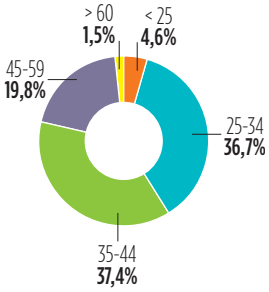
These measures were complemented by a corporate direction setting on WLB and an action plan promoting the access and effective use of flexible work arrangements (part time, parental leave etc.). In addition strong rules on overtime management have been introduced to better manage workload along side office standardization of repetitive tasks. The action plan fully takes into account the fact that WLB acts as a motivation driver and a contribution to enhanced operating efficiency highlighting the importance of role models.

Basic statistics in TME

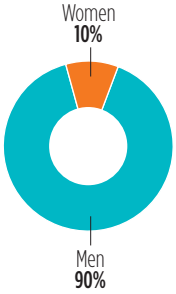
Workforce age breakdown
EMCs headcount breakdown/age



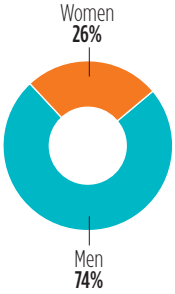
Workforce age breakdown
TME, NMSCs, TLS headcount breakdown/age



Headcount breakdown/gender
in EMCs European Manufacturing Companies
(Production)



Headcount breakdown/gender
in TME, NMSCs, TLS
(Office Environment)



TME= Toyota Motor Europe
EMC = European Manufacturing Companies
NMSCs = National Marketing & Sales Companies
TLS= Toyota Logistic Services

United Technologies

Company Overview

United Technologies Corporation (UTC), based in Hartford, Connecticut, USA, is a diversified company providing high technology products and services to the global aerospace and building industries. UTC operates in more than 40 countries with over 220 000 employees.

The inventive spirit of UTC founders served to launch not only several business units but also created industries. Willis Carrier invented air conditioning, thus starting the company that is still the world's leading seller of air conditioning 50 years later. Elisha Otis invented the modern safety elevator, allowing mankind to build upward and invent the modern city. And then, there's Igor Sikorsky's invention – the rotary winged aircraft, more commonly called the helicopter. There are equally compelling accomplishments and storied histories in Pratt & Whitney, Hamilton Sundstrand, Fire & Security and UTC Power.

United Technologies is a company with a business model fundamentally driven by innovation and a key element of innovation is a diverse culture, a culture in which all employees bring their unique expertise and experiences to that creative process. In order to deliver today's most advanced technologies, innovative thinking and disciplined research, UTC needs highly skilled workers in the fields of science, technology and engineering.

Female statistics:

Global

- executive representation: 16%.

U.S.

- managerial representation: 16%;
- professional exempt level representation: 24%.

Top management statement – Advancement of Women

"UTC truly exemplifies how workforce diversity enhances achievements in both our business and in our communities. The contributions and advancement of women is a critical business issue. It's not only an obvious one, but one that is essential to our future success. We are very proud of the great strides we have made over the years, but recognize that there is still a lot of runway ahead." – Dr. Michael McQuade, Chief Technology Officer, UTC.

Work Life

Underlying UTC's diversity strategy is the belief that to recruit and maintain a top-notch workforce, attention must be paid to supporting associates as they balance their work and personal responsibilities.

Flexible work arrangements (FWA) are one way to provide that support. UTC employees participate in a variety of flexible work schedules. These schedules have allowed United Technologies to retain valuable talent and, in many cases, have had an added benefit of increasing productivity and employee morale. These arrangements can include, and are not limited to: flex time, job sharing, part-time, compressed workweeks, remote work and telecommunication.

One of UTC's divisions Pratt & Whitney, defines their commitment to FWA this way, "We like to say Our Power Comes from Our People; our employees are our competitive advantage in a very competitive industry. Making sure this is a great place to work helps us attract and retain world-class talent. To that end, Pratt & Whitney is committed to providing ways for employees to meet the demands of their work and personal lives, while always providing the highest quality service to both internal and external customers." – Beth Amato, Vice President Human Resources, P&W.

Xerox Corporation (NYSE:XRX) is the world's leading document management technology and services enterprise. A $17.6 billion company, Xerox provides the document industry's broadest portfolio of offerings. Digital systems include color and black-and-white printing and publishing systems, digital presses and "book factories," multifunction devices, laser and solid ink network printers, copiers and fax machines. Xerox's services expertise is unmatched and includes helping businesses develop online document archives, analyzing how employees can most efficiently share documents and knowledge in the office, operating in-house print shops or mailrooms, and building Web-based processes for personalizing direct mail, invoices, brochures and more. Xerox also offers associated software, support and supplies such as toner, paper and ink. The company's operations are guided by customer-focused and employee-centered core values – such as environmental sustainability, citizenship, diversity and quality – augmented by a passion for innovation, speed and adaptability.

Diversity at Xerox

Xerox has a long history of fostering a diverse workforce. The company's commitment to an inclusive workplace is reflected in its professional development, training and support programs, including its partnerships with six independent employee caucus groups like The Women's Alliance and the Black Women's Leadership Council. In addition, Xerox was among the first to offer flexible work arrangements through the use of flex-time, job-sharing and telecommuting; child-care subsidies, domestic partner benefits, and other employee assistance programs.

In 2008, women made up 31 percent of Xerox's total U.S. work force of 34,127 and 31 % of Xerox senior executives are women. Four women serve on the Xerox board of directors, including Anne Mulcahy, Xerox chairman and chief executive officer, and Ursula Burns, president of Xerox. In R&D in Europe in 2009, women made up 27 % of the workforce and 29 % of management in research.

Xerox's commitment to women at all levels of employment is reflected in its many work/life benefits. The company offers various work arrangements to help employees balance their lives – such as flex time, job sharing and telecommuting – and benefits such as child-care subsidies, child-care counseling and referral, adoption assistance, first-time homebuyer's assistance, tuition reimbursement, domestic partner benefits, and other employee assistance programs.

"Diversity is about more than race and gender. It's about more than numbers. It's about inclusion. Diversity means creating an environment where all employees can grow to their fullest potential."

Anne M. Mulcahy, chairman and chief executive officer, Xerox Corporation

University profiles

Budapest University of Technology and Economics (BME)

The legal predecessor of Budapest University of Technology and Economics was founded in 1782, and it was the first institute in Europe to train engineers at university level. BME, as a prestigious Hungarian higher education institute is committed to differentiated, multilevel, high-standard education, founded on intensive basic training, research, development and innovation, and scientific qualification in technical and natural sciences and in certain fields of economic and social sciences. BME has eight faculties and 7 knowledge centers. The university has 23 000 students, among them more than 4 000 females. In the academic year 2006/2007 the university academic staff comprised 1 124 full-time employees, among them 222 women.

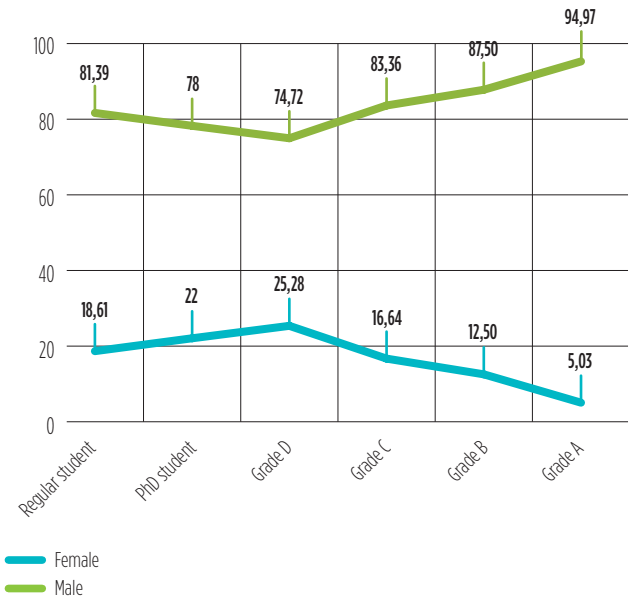
Women could study in the universities of Hungary since 1895 but women were forbidden to study at the faculties of law, engineering, veterinary medicine and economics. The democratic wave after 1945 meant a turning point in the situation: the democratic Hungarian parliament issued a law, creating equal opportunities for women to study at universities and colleges. As a result, with the exception of the military and theological colleges, all institutions of the higher education opened their doors to female students.

The technical faculties and Faculty of Natural Sciences employed altogether 1184 teachers and researchers in the academic year 2004/2005. Only 157 of them were women, which means a proportion of 13 % (without data of Faculty of Economics and Social Sciences). The available data supply doesn't contain information about the number of researchers by age groups.

There are two main platforms for decision-making at BME. The Senate (former Council of University) is the highest authority, it is the governing council of the whole university and has 4-7 members from each faculty. It had one female member on the Faculty of Transportation Engineering in 1999/2000 and in 2004/2005, one on the Faculty of Mechanical Engineering in 2004/2005 and one on the Faculty of Civil Engineering in 1999/2000 and in 2004/2005.

Decision-making at faculty level is executed by the Board of the Faculty, this determines the promotions as well. The decisions at faculty level are made by the Board of the Faculty, which also come to decision on appointments. We have insufficient data regarding the gender pattern of these Boards of Faculty, especially concerning the Faculties of Mechanical Engineering and Civil Engineering, and the academic year 1994/1995. In the

The leaky pipeline at BME



aggregate 12.5 % of the members were women in the academic year 1994/1995, 14 % in 1999/2000 and 15.4 % in 2004/2005.

There are very few women among heads of department as well, 2 out of 86 in 1994/1995, 4 out of 92 in 1999/2000 and 3 out of 77 in 2004/2005. In the academic year 2005/06 in total 6 out of 81 heads of departments were women – 7.4 %.

There have been no female heads of department at the Faculty of Natural Sciences, and the Faculty of Chemical Technology and Biotechnology until nowadays.

One woman dean has been appointed in the history of the university, who was Dean at the Faculty of Transportation Engineering from 1997 until 2006.

Hungarian universities are obliged by law to incorporate promoting equality in the annual personnel development plan or labour protection plan. BME did its own Plan for Equal Opportunities in 2005. In this plan there is only one statement about women: 'plan for equal opportunities applies to women also'. Implementation of concrete measures and their monitoring is missing.

In summary the main challenges BME faces in terms of gender mainstreaming issues are:

- there are not enough female scholars at BME;
- BME does not have a gender-sensitive evaluation system;
- under-representation of women at Board/Senior Level;
- male dominated funding bodies, academic committees, panels and other decision-making bodies;
- lack of work-life balance policies;
- ageing of academic and research staff (75 % of the female professors are over 60).

BME participated in the UNICAFE FP6 project (www.unicafe.ee), which provided a good opportunity to gather adequate statistical data about the current situation.

Eidgenössische Technische Hochschule Zürich
Swiss Federal institute of Technology Zurich

ETH Zurich is a science and technology university with an outstanding research record

ETH Zurich, the Swiss Federal Institute of Technology Zurich, is the study, research and work place of 18 000 people from 80 nations. Some 360 professors in 16 departments teach mainly in the engineering sciences, architecture, system-oriented sciences, mathematics and natural sciences areas. ETH Zurich is committed to providing its students with excellent specialist education and outstanding all-round leadership skills.
Twenty-one Nobel prize winners are connected with ETH Zurich. Maintaining and developing its top standing in international competition among top universities is an important task of ETH.

Research

At ETH Zurich teaching and research are closely linked. Equal standing is assigned to knowledge-oriented basic research and to problem-solving research. Both areas are dedicated to fulfilling the highest standards, and are long-term oriented. ETH Zurich is specially committed to the continuous development of that innovative potential within society and industry.

International links

As an institute of higher learning and research, ETH Zurich cultivates an international standing. It is aware that its scientific contribution has to be confirmed by the international research community. Thus ETH Zurich strongly supports international co-operation in all fields of research and education. As a long-term strategy, it also devotes special attention to structurally and economically underdeveloped countries.

Co-operation

ETH Zurich encourages partnerships and interdisciplinary co-operation among members of its community, with other educational and research institutions, with industry, and with the public administration, and it believes in keeping the public informed regarding these activities. The sustainable development of human society depends on our efforts both to create and support a strong and innovative economy.

ETH Zurich is an institution of the Swiss Confederation. Together with ETH Lausanne and four research institutes, it forms the federally directed, and to a major degree financed, ETH domain. The institutions of the ETH domain uphold their autonomy and identity on the basis of the ETH Federal Law and in the full awareness of their social, economic and cultural responsibility to the nation and its citizens.

http://www.ethz.ch

Gender action plan

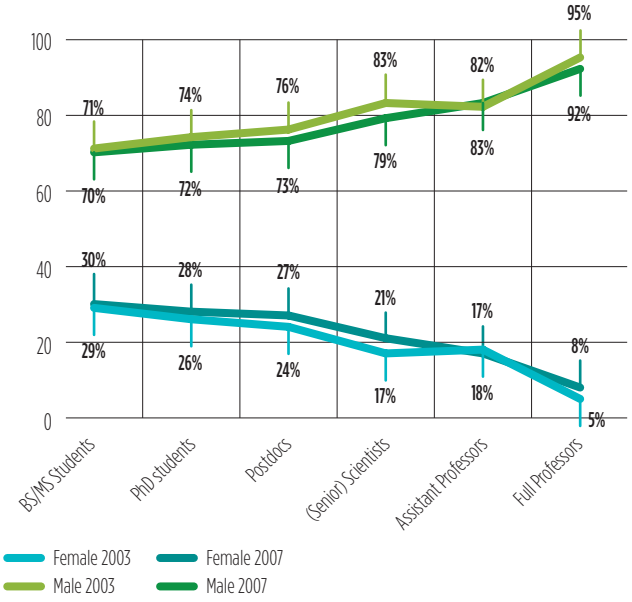
ETH Zurich has an Office of Equal Opportunities for Women and Men (EQUAL, http://www.equal.ethz.ch) that provides support and counselling to all ETH members in cases of gender-related problems, discrimination and sexual harassment in education and the workplace (for efforts to promote a respectful working environment, raise gender awareness and provide guidelines in case of problems, see http://www.respect.ethz.ch).

There are various programs offered by EQUAL to advance women's careers in science. Femtec provides career support for female students. Three programs support female postdocs, one of them is an international career-development program geared to support women on their academic career path (TANDEMplusIDEA for female scientists in science and engineering, a project financed by the EU 6th FP and run by the Equal Opportunities/Diversity Offices of the IDEA League universities ETH Zurich, Imperial College, RWTH Aachen, Delft). Moreover, EQUAL offers collegial coaching for female doctoral students, arranges mentors, and organizes role model events as well as networking events for female doctoral students, postdocs and faculty members. Some Departments run their own activities supporting women.

As far as the integration of family and career is concerned, ETH provides child care facilities available for ETH members. ETH's Dual Career Advice supports faculty's spouses/partners in their job search when relocating to Zurich (http://www.dca.ethz.ch).

EQUAL also provides input on equal opportunities and diversity issues to the ETH executive committee and governing bodies when it comes to developing ETH regulations, performance objectives etc.

The leaky pipeline at ETH Zurich
(students and staff as head headcount)



RWTH AACHEN UNIVERSITY

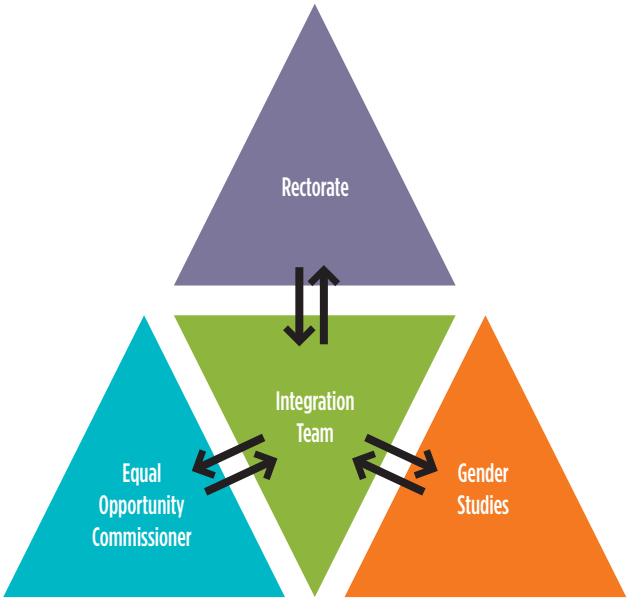
RWTH Aachen University with its 260 institutes in nine faculties, 407 professors and over 6 600 personnel is one of the leading Technical Universities in Europe and the major employer in the region of Aachen. 30 270 students, among them 10 113 women and over 5 500 international students from 130 countries, are enrolled in over 100 different programmes. RWTH Aachen University is famous for its excellent research and education in engineering and science, but it also offers a wide range of subjects in economics, humanities and medicine. Alumni from RWTH Aachen are in high demand on the job market; every fifth board member of German companies graduated here.

Teaching and research are characterised by an international, innovative and interdisciplinary approach with a strong focus on engineering sciences. A close cooperation with industry and user-oriented research has led to numerous developments, patents and licences. The innovative appeal of RWTH Aachen University is also visible in the high number of 1 250 start-ups in the Aachen region that have created about 30 000 new jobs. The university cooperates in the European network of the IDEA League, setting quality standards for research and education. The successful concept of RWTH Aachen University has been exported internationally through the establishment of spin-off universities in Thailand and Oman.

Within the Excellence Initiative of the German federal and state governments RWTH Aachen has been confirmed as one of the top universities in Germany in October 2007. The granting of three excellence clusters, one graduate school and the institutional strategy "RWTH 2020: Meeting Global Challenges" has given impulses to further strengthen science and research and to improve the university's international competitiveness. One important element of the concept is the measure "Mobilising People". It confirms internationalisation and a gender and diversity-oriented policy in science and administration as cross-university tasks. http://www.rwth-aachen.de

As the central stakeholder within the measure "Mobilising People" the university has established the department "Integration Team – Human Resources, Gender and Diversity Management" http://www.igad.rwth-aachen.de. Based at the rector's office and working at the interface between science and management, the department is responsible for the concept development of a coherent gender and diversity strategy in all areas of research, education and administration. Its main goal is to contribute to the establishment of equality and diversity as fundamental principles at all levels of decision-making. This groundbreaking concept acknowledges, appreciates and develops the potential of all individuals at every career stage and in every position, perceiving their diversity as a chance and potential for themselves and the university. Aspects of equality and diversity are seen not only as a question of justice, but also as a means to further improve the scientific output.

The Integration Team works in the areas of human resources and organisational development, work life balance, research and teaching. It is concerned with the attraction, retention and development of excellent diverse personnel, and involved in the improvement of the compatibility of work and private life. Among the introduced measures developed by the Integration Team and realised by different institutions are Starter Kits (training programmes) and Coaching for newly appointed professors, a Dual-Career-Service for scientists, and mentoring programmes for women on all levels of qualification. Furthermore, the Integration Team fosters a stronger consideration of gender and diversity aspects in research projects at all faculties. In its own studies, the team evaluates and analyses existing gender and diversity knowledge, competences and projects in all areas of the university. It identifies existing activities and develops innovative programmes to close the discovered gaps. Among the first

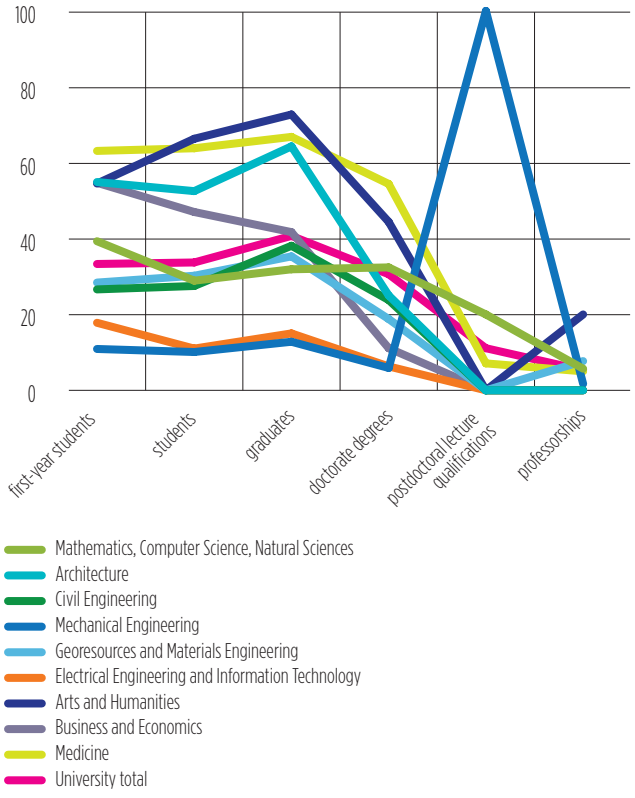


activities of the Integration Team was the development of an equality concept for RWTH Aachen, which has recently been awarded by a nationwide expert committee in the framework of the "Female Professorship Programme" by the German Federal Ministry of Education and Research. The concept comprises measures and target agreements that will make it possible to establish equal and sustainable structures at the university.

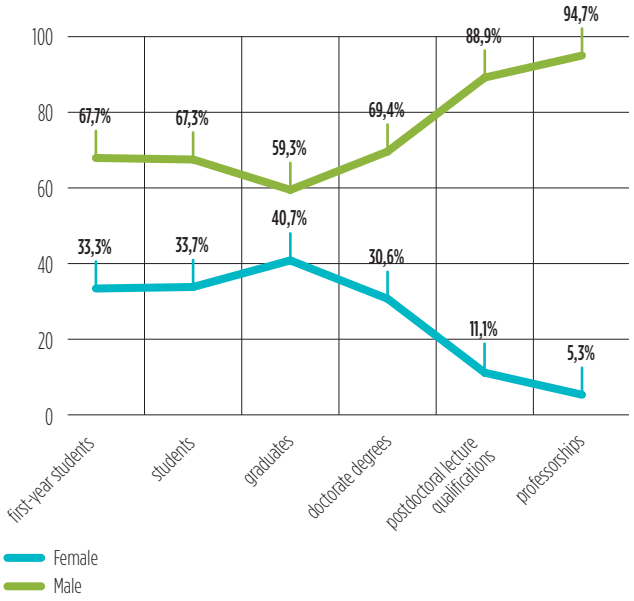
The Integration Team closely cooperates with the Equal Opportunity Commissioner of RWTH Aachen and the Chairs for Gender Studies. The importance of equality and diversity issues at RWTH Aachen University is also reflected in the establishment of a new Vice-Rectorate for Human Resources Management and Development. It is the first Vice-Rectorate held by a female professor and is concerned with the attraction and retention of staff, especially of excellent, international and diverse scientific personnel.

The adoption of a coherent gender and diversity policy is thus supported by all bodies of the university. First successes, like the increase of the percentage of female professors (from 4,6 % to 8,5 % since the start of the Excellence Initiative) through a proactive recruiting policy, will only serve as a stimulation and as a challenge for all involved.

Percentage of women according to status groups and faculties at RWTH Aachen University in 2007/ 08



Status groups in all faculties according to sex at RWTH Aachen University in 2007/ 08



Tallinn University of Technology

TUT is one of the largest universities in Estonia, providing interdisciplinary higher engineering education. It is also the main research centre of technical, social and economic sciences in Estonia. Engineers are prepared practically in all the engineering fields and industrial economics needed in Estonia. Innovation and technology policy are an important constituent part of contemporary education in the above areas. TTU has about 50 bilateral cooperation agreements with foreign universities. With about 14 000 students (of which 10% are postgraduate students) and 1200 employees (academic staff 780) TTU offers diploma, bachelor, master and doctorate programs. The academic part of the university is organised into 9 faculties, 30 departments, 3 centres of strategic competence. Seven institutions are affiliated to the university including colleges and R&D institutes. Participation in the EU and other international and research projects in TEMPUS, INCO, PHARE, LEONARDO, SOCRATES, NORDPLUS and VISBY and The 6th Framework, has grown into multilateral joint agreements with universities in many European countries. Vocational training tasks carried out at the university are an essential part of the overall development at every department.Each faculty, department or centre within Tallinn Technical University maintains a number of international research contacts and is involved in international scientific/educational projects in their respective subject areas. Information http://www.iro.ttu.ee

Short summary of the statistical data at TUT

The total number of personnel in engineering and technology in TUT has risen during 1994/1995…2004/2005 from 410 to 551; whereas the number of women in academic positions has nearly doubled during the period (from 79 to 141) and the number of men has increased by approximately a quarter (from 331 to 410). The faster increase of the number of women has resulted in a small change in gender distribution: from 19% female / 81% male employees in 1994/1995 to respectively 26% / 74% in 2004/2005. During the whole period, slightly more than half of the total staff has been aged 51 or more (51% in 2004/2005), the share of younger employees (under 40) has increased during the periods under investigation from 25% to 32% in parallel to a decrease of the middle age group (from 25% to 17%). In 2004/2005, the largest age and gender group was formed by men aged 51 or more (41% from total staff, 225 persons), the youngest group of men formed slightly more than a fifth of the total staff (22%, 123), and the medium aged group of men is 11% (62 persons) of the total staff. The age distribution among women was more equal: in 2004/2005 the youngest and oldest age group of women had similar sizes (both 53 persons, 10% of the total staff), 35 women belonged to the medium age group (6% of the total staff).

The share of staff with a PhD degree has decreased slightly during the period, from 71% to 67%, mainly because of the increased number of young employees with a master's degree. There were 11 members of the Academy of Sciences in 2004/2005, all of them men aged over 51. The share of men with PhD degrees is higher (73% of all male employees) than that of women (49%) in all age groups, however, the difference is decreasing for the younger generations – in the younger age group 42% of men and 36% of women have PhD degrees in comparison to the oldest age group where respectively 89% of male and 62% of female staff members have a PhD degree. In general, the share of employees with a master's degree is higher amongst women (33%) than amongst men (19%), the same holds for a bachelor degree (18%, men: 8%). In the fields of engineering and technology, the highest academic positions are mostly held by men. In 2004/2005, only 3% of all professors and 3% of all directors of an institute were women, and there were no women among deans and (vice)rectors. Before their forties, the women succeed in their academic career mostly up to the grade C position: 96% of the women in youngest age group had a grade C or D position, in case of men the same figure is 76%. Also in later years the career of a woman usually ends with the grade B position: the position is held by 37% of women in the age of 41-50, and 43% of women aged 51 and older. While 27% of all women had a grade B position in 2004/2005, the same figure for men was 43%; the grade A position was held by 2% of women and 21% of men. The small group of female professors were all 51 or older, whereas the same age group formed 70% of the male professors, 19% of male professors were 41-50 years and 10% were 40 or younger.

Likewise, in the decision making boards the share of women is marginal, partly reflecting the low numbers of women in leading academic and managerial positions as the latter forms the main basis for a membership in decision making boards. 94% of all board members are men; considering the total share of women and men among the staff, the male members form 11% of all

male employees and female board members form 2 % of all female employees thus the female employees are less represented in decision making boards than male employees. In 2004/2005 there were slight payment gaps in the average income of men and women. In positions A-C women in all represented age groups earned on average 97 % of the income of men. Only in position D where the women are more represented than men (except age group > 40), the income of women formed in average 103 % of the income level of men. The situation has not changed significantly since 1994/1995, when women in academic positions earned on average 95 % of the income level of men. However, in 1999/2000 the average income level of women was higher in most of the academic positions (in A, B, D: 106 % of men's income level), only in position C it was lower than men's average income (95 %). Although having lower academic positions, fewer PhD degrees and lower income level, women are comparably successful with men in international research. In 2004/2005, there was on average 1,88 international publications and 0,23 international project leads per woman. For men, the respective figures are 1,07 and 0,29. However, on a national level men have shown more results in research than women: 0,76 publications and 1,09 projects have been led by men, for women, the respective figures are 0,55 and 0,33.

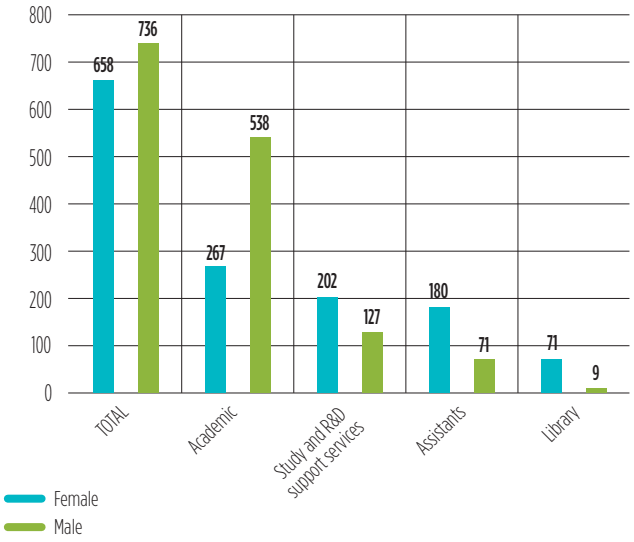
The state of the art

The current situation regarding the gender policy at the university involves the ageing of academic and research staff of the university, a small number of female researchers and professors at TUT. Women are mostly employed in teaching positions and have a small representation in decision-making bodies. The university does not currently have a work-life balance policy. university's the development strategy for 2006-2010 foresees the development of an internationally competitive personnel policy, in which the university aims at the following targets: – The number of research staff will grow at least 7 % in a year during the period of 2006-2010 – The university will guarantee its academic sustainability, a rational personnel structure, decrease the ageing of academic and research staff, incl. a worthy substitution for ageing professors and associated professors.

Promotion in science and at university Scientific career choices are limited by academic staff grades. According to the University regulation of the selection of academic personnel, all positions of teaching and research staff are filled for up to 5 years by public calls for application with equal conditions for all applicants. The positions of professors are established and removed on the proposal of a faculty council. The decision is made by TUT Council. The teaching staff can be selected or appointed to the positions of professor, associated professor, assistant, lecturer or teacher. Research staff can be selected or appointed to the positions of leading researcher, senior researcher or researcher. Professors and leading researchers are elected in the TUT Council, the rest of the teaching and research staff is elected by the faculty council. The dean is elected by the faculty council. Since the promotion decisions are mostly made in the faculty councils, there is no official data on promotion procedures inside the university.

Bodies and committees – women in decision-making positions The share of women in the decision making boards is marginal, partly reflecting the low numbers of women in leading academic and managerial positions as the latter forms the main basis for membership in decision making boards. University Council – University council consists of the rector, vice-rectors, faculty deans, heads of departments, directors of institutes, faculty representatives, and the members of the student union. There are currently 37 members in the university council, of which 4 are women. One female member of the council is the director of Kuressaare College of TUT, the remaining 3 members are the representatives of the student union. University Government – University government consists of the rector, vice-rectors and faculty deans. As all the members of the Rectorate and also the deans are men, the government with 16 members has no female members. Curatorial Board has 11 members, of which 1 is female. Academic committee has 12 members. The only female member of the committee is the representative of a student union. The development and budget committee has only male members. Research committee has 16 members, of which only one female (representative of a student union). Study committee has 15 members, among them 2 female members. The highest academic positions are mostly held by men. In 2004/2005, only 3% of all professors and 3 % of all heads of the departments were women, and there were no women among deans and (vice)rectors. The situation has not changed over the past 2 years. There are still no women among

the top administrative positions. All decisions on the faculty level are made by faculty councils. Faculty council is also the decision-making body for appointing, selecting and promoting personnel. All Faculty Deans are men. Out of 34 departments of the university's 8 faculties there are 3 female heads of departments.



European Commission

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Following the publication of "Wake-Up Call for European Industry" (EU DG Research, 2003), representatives from companies, universities, and the European Commission's DG Research joined forces in a working group – called Women in Science and Technology (WiST) – to promote gender diversity in the field of science and technology. The activities of this group concluded with the publication of the report "Women in Science and Technology: a Business Perspective" (EU DG Research, 2006). A number of companies expressed interest in continuing activities with gender experts and the European Commission, but with a focus on two new objectives: how to reduce the leaky pipeline for women in science and technology; and how to build a business case for work-life balance.

The WiST2 working group was thus established, giving more companies the opportunity to join the group, and at the same time expanding its scope to universities, which is where the leak begins in the "women in science and technology pipeline". This report is the result of the collaborative effort of the working group - it analyses the business case of the work life balance policies that have been adopted by companies in order to stop the leak.

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