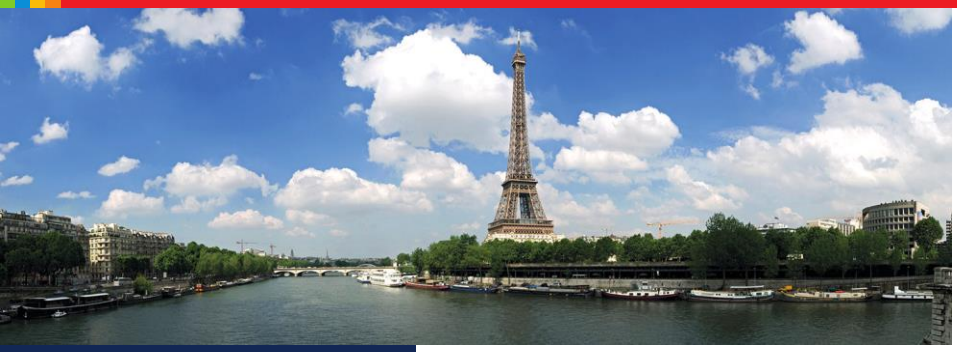
2012-2015 Triennium Work Reports



Delivering on Talent

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2012-2015 Triennium Work Report
Task Force 1, June 2015

Delivering on Talent

Produced by:
International Gas Union

While the global energy demand is bound to increase continuously over the coming decades, natural gas is expected to play an ever-growing role in the energy mix of the future. Within the gas industry itself however, there is mounting concern about potential shortages of qualified personnel in the future. The availability of adequate human resources is crucial for the gas industry achieving its future goal, and shortcomings in skills almost always must be compensated by supplementary capital expenditures.

The present report leverages on the professional knowledge and expertise of the 58 HR and gas specialists comprising Task Force 1. In constructing the observations and recommendations included in the report, we draw upon comprehensive data gathered from over a hundred fifty of the top energy companies and world class gas specialists.

Or aim is to assist the reader in constructing a more comprehensive idea on the current situation of HR in the gas industry. A special focus is dedicated to mapping out the key challenges to attracting youth and female professionals to the gas industry; and recommendations on how to the main obstacles should be overcome.

During the 2012-2015 triennium, TF1 had taken its research further by developing practical applications of the two focus points of the report, namely attracting youth and female professionals. Since two years now, TF1 has started a collaboration between the IGU and the prestigious UNESCO organization, aimed at encouraging the participation of women in engineering. Furthermore, during the WGC2015, TF1 is organizing a Youth Event, aimed at allowing 200 young people from all over the word to learn about and experience the gas industry first hand.

I would like to extend my sincere gratitude to all the companies for their dedicated participation, the interview participants for their time and openness. Finally I would like to thank all the TF1 members for their hard work and dedication throughout these past three years.

In hope that you will enjoy the read and become inspired by the report,

Agnès Grimont
Chair of Task Force 1

Executive Summary:

The coming three decades, are expected to bring about a significant increase in the global energy demand, originating especially from non-OECD counties. Leading energy bodies such as the reputable IEA predict that natural gas will play an ever increasing role in the future energy mix. Energy companies will need to continue to deliver natural gas safely, reliably and in a sustainable and secure manner. Equally important for them will be to ensure they conduct their activity in a responsible and open manner that is accepted by the general public. Meeting this increased demand, will require expanding exploration and production to new reservoirs, improving technology for capitalizing on unconventional gas resources, developing new Liquefied Gas (LNG) projects and promoting comprehensive and efficient regulatory frameworks.

People are crucial in delivering this future growth. From top executives setting the right strategies and policies, to entry level professionals implementing them, the appropriate talent and training are essential for ensuring the future development of the gas industry.

In 2009, Task Force 1 (TF1) was created by the International Gas Union to deliver an overview of the key issues impacting human capital in the gas industry and suggest improvements.

The 2015 'Delivering on Talent' report conducts a thorough analysis of the current HR situation in the gas industry and focuses on how gas companies can attract more youth and female professionals to their workforce. The report presents the most acute skill shortages, the best practices employed by companies to attract, develop and retain talent, and the positive reaction to these by gas professionals. The report offers advice for gas companies to attract talent more efficiently and for young professionals and female professionals on constructing a successful career in the gas industry. For a brief yet highly informative summary of the report, a time constrained reader is advised to visit the Conclusions and Recommendations section on pages 74 to 81. The more dedicated reader will find throughout the report, in depth information and comprehensive details referring to some of the most important issues shaping the human element of the gas industry.

During the 2012-2015 triennium, TF1 was sponsored by GDF SUEZ, Oman LNG, PTT, Qatargas and TOTAL. Six TF1 meetings and one workshop were hosted by Qatargas, Petronas, French Gas Association, Oman LNG, Gazprom and BDEW.

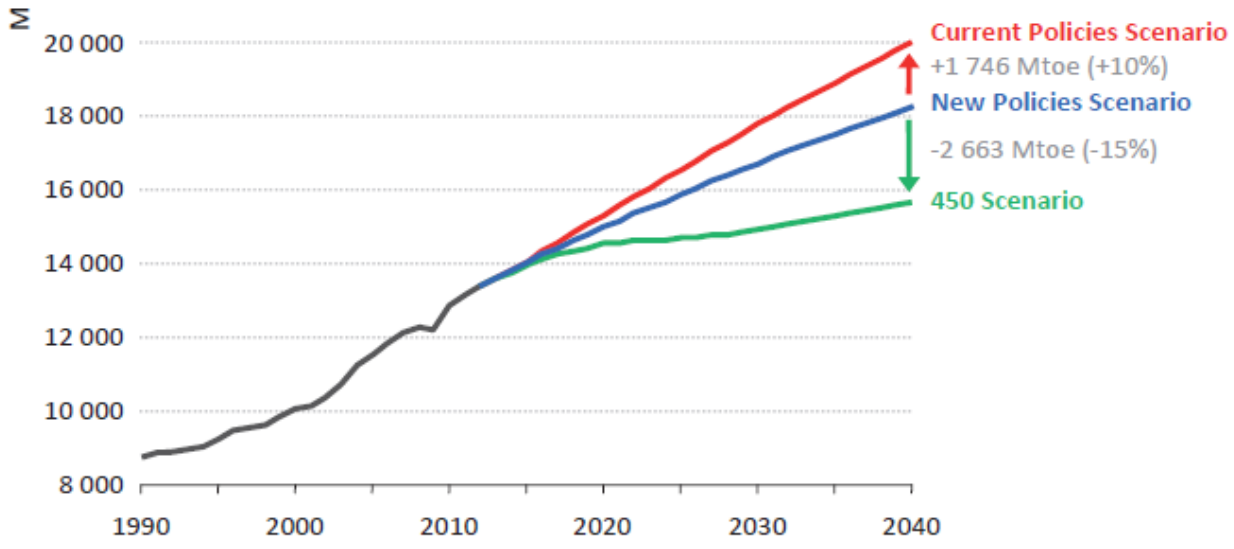
Table of Contents

Introduction

According to the International Energy Agency's (IEA) central scenario expressed in the World Energy Outlook 2014, the global demand for energy is expected to grow by 37% by 2040, at an average growth rate of 1.1%. The growth in energy demand moves away decisively from OECD countries towards the regions Africa, Asia, Latin America and the Middle East.

In WEO2014, the IEA estimate that natural gas will show a faster growth rate than any other fossil fuel, with global gas production following a nearly linear rise to 5.400 Bcm by 2040. Production is expected to grow in all regions except Europe, by 2030 placing natural gas as the leading fuel in the OECD energy mix. Almost 60% of the growth in supply is expected to originate from unconventional gas. While the increase in global LNG trade mitigates to a certain degree the risk of supply disruption, pricing natural gas at a level that is attractive to consumers and incentivizes large capital investments, remains a key issue to be resolved.

Figure 1.1 World Total Primary Energy Demand by Scenario



Source: IEA, World Energy Outlook 2014, pg. 55 © OECD/IEA, IEA Publishing, Licence: http://www.iea.org/t&c/termsandconditions/

In its World Energy Investment Outlook 2014, the IEA estimates that in 2013, over $1.600 billion were invested in order to cover the world energy demand and an additional $130 billion to improve energy efficiency. By 2035, it is estimated that the annual investment required to cover the global energy needs will rise steadily to $2.000 billion and the yearly investment in energy efficiency is expected to reach $550 billion. By 2035, expenses for the upstream oil and gas will increase by around 25% to over $850 billion per year. Natural gas is expected to account for most of the increase. North America is depicted as having the highest oil and gas investment requirements for the envisioned period of time.

The aggregate global investment amounts to over $48 trillion with approximately $40 trillion dedicated to energy supply and about $8 trillion to energy efficiency. More than half of the $40 trillion investment in energy supply will not be directed to meeting the growth in demand but to counterbalance decreasing oil & gas field production and replace aging assets.

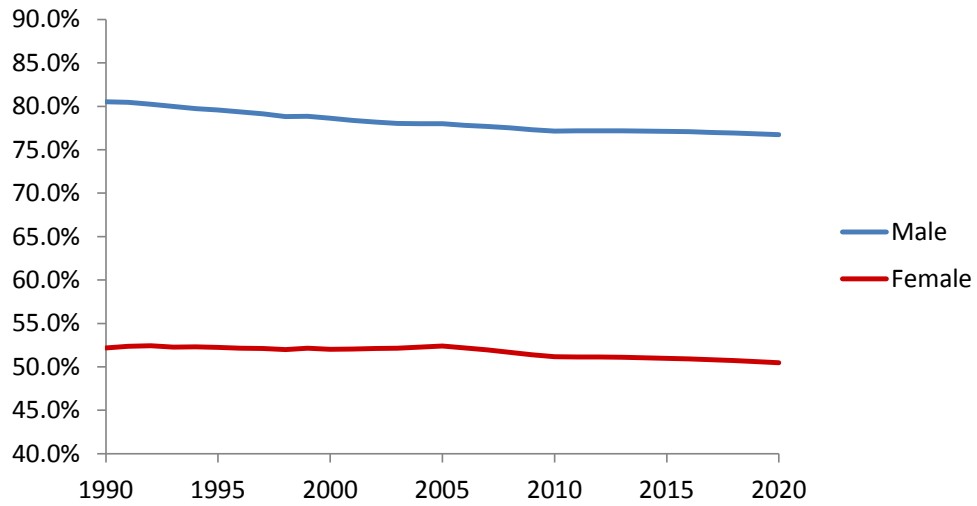
In order for the gas industry to meet expectations, the vast amounts of invested capital must be optimally directed and managed efficiently. Therefore, the gas industry must attract and develop the most competent people to bear the duty of delivering natural gas in a safe and reliable manner.

Society's expectation towards the environmental and social responsibility of energy companies is growing continuously. So does the influence of state authorities and regulators that govern the construction of policy. Not only will gas companies have to focus on meeting energy demand, they will also have to work much harder to maintain their license to operate. Gas professionals will have to be sufficiently prepared and competent to address challenges and provide solutions that are effective and socially acceptable.

In order to meet expectations and deliver on the future goals, the gas industry will have to entice a very talented and highly skilled workforce. The highest level of competence will be required from the highest level decision makers all the way to the most basic level of implementation. On the other hand, as competition for top talent is constantly increasing in the global labour market, the gas industry will be required to invest more effort in ensuring the availability of proficient human capital. Attracting new talent from the youth and female population segments is to play an important role in meeting the future HR requirements of the gas sector.

According to the United Nations (UN) and the International Labour Organization (IOL) women's participation in the global workforce has been, and is projected to remain, significantly below that of their male counterparts. Considerable resources could originate from the yet underused female workforce segment.

Figure 1.2 Projected Global Workforce Participation Rates (age 15 and above)



Source: ILO, Economically Active Population, Estimates and Projections 6th edition *(database accessed March 2015)* http://laborsta.ilo.org/applv8/data/EAPEP/eapep_E.html

Attracting new talent will thus be critical, as Simon Coton, Managing Director of NES Global Talent eloquently states: 'The global focus on attracting more women into the oil and gas industry is not just about creating a more diverse workforce, it is of vital importance if we are to continue to serve the world's growing energy needs.'

Acknowledgements

Report Sponsors

Task Force 1 acknowledges and expresses its deepest gratitude to its sponsors and collaborators.

Delivering on Talent report sponsors: GDF SUEZ, PTT, Qatargas.

UNESCO Workshop sponsors: GDF SUEZ, TOTAL, Oman LNG, Qatargas.

Youth Program sponsors: American Gas Association , Beijing Gas Group, GDF SUEZ, GRTgaz, GTI, MGA, TIGF, TOTAL.

The following companies and organizations sponsored TF1's regional workshops, secretarial work and meetings: Qatargas, Petronas, French Gas Association, Oman LNG, Gazprom and BDEW.

Research Methodology

Objectives of Task Force 1:

Task Force 1 was established by the IGU in 2009, with the principal aim of understanding the key issues impacting the attraction, development and retention of talent in the gas industry. TF1 Force is concerned with researching manpower issues in all areas of the gas value chain and throughout the major regions of the world.

During the 25th World Gas Conference organized in Kuala Lumpur in 2012, TF1 launched its first triennium report investigating the main aspects of a strategic approach to building human capital.

In 2015, at the 26th World Gas Conference held in Paris, TF1 launches its second triennium report presenting the results of its three years research project. Next to giving an overview of the current HR situation in the gas industry, this second report dedicates special attention to taping into underused talent pools, namely how the gas industry can attract more youth and female professionals to its workforce.

Throughout the 2012-2015 French Triennium, Task Force 1 assembled 58 HR specialists and gas professionals from various IGU members. A complete list of TF1 members is included under Appendix 1.

In order to construct a comprehensive report that is rich in information and offers a well-rounded perspective, the triennium work is comprised of a mix of complementary surveys, workshops and interviews, including:

- A 2013 HR survey mapping out a quantifiable snapshot of the present situation regarding the attraction, development and retention of talent by gas companies.
- Over 70 in-depth interviews with Senior & HR Executives, Young Professionals and Female Professionals from the gas industry in order to directly hear their own perspectives.
- A joint workshop organized in partnership with UNESCO including internationally renowned specialists to debate the role of women in engineering.

IGU HR Survey

In 2013, TF1 conducted its third global survey focusing on human resources in the gas industry. The survey takes a quantitative approach and aims to paint a snapshot of the main issues impacting the attraction, development and retention of talent within gas companies and establish key commonalities as well as specificities across various regions and industry segments. Special attention was dedicated to how gas companies can become more attractive for young talent and female professionals.

76 energy companies worldwide responded. The survey contained a total of 35 questions organized under 5 different sections:

Section A - Company Information and Demographics: This section aims to gather general information regarding the size, location and segments of the gas value chain where companies are active. Participating companies were grouped by the location of their headquarters into 5 geographical regions (The Americas, Asia & Oceania, Europe, The Middle East & Africa) as well

as by the number of employees into Small (<1000) , Medium-Sized (1.001-10.000) and Large (10.000<).

Section B – Attracting Talent: The second section surveys companies on the recruitment of talent. Which skills are found in the shortest supply; the most important elements in attracting youth, the efficiency of recruitment channels; and the main reasons mentioned by young people when refusing to join a gas company. The section continues with questions on the relationship between gas companies and Academia and the level of satisfaction with the present availability and preparation of STEM students. Companies are also asked about the main barriers that encumber international recruitment and the main reasons mentioned by expats when refusing a job offer from a gas company.

Section C – Female Workforce: The questions in this section revolve around the percentage of women among gas employees, what percentage of the total job applications received by gas companies come from women and how many, on average, are successful. Further questions inquire on gender equality objectives and the different types of programs used by gas companies to recognize and encourage their female employees.

Section D – Career Development: Companies are queried in this section of the survey, about succession plans, career ladders and individual development programs used in training employees. Furthermore, this section includes questions referring to how long it takes new gas employees to become autonomous in a new gas company and later on a leader in their gas-related field.

Section E – Retention: The last section of the survey inquires about the average attrition rates among male and female employees and, about the effectiveness of long term incentive plans used. Companies are also asked where departing employees go after leaving the company.

Talent Interviews

Throughout 2013 and 2014 TF1 conducted 74 in-depth interviews with Senior and HR executives, female professionals and youth working in the gas industry. The interviews take a qualitative approach and are intended to complement and elaborate in complexity on the data gathered by the HR survey.

Senior & HR Executives (32 participants) - These interviews ask leaders in industry for their opinions regarding the future of the gas sector and where they see their companies in 10 years. Executives are further asked what type of employees' gas companies need in order to achieve their future goals and what are the main obstacles these people have to overcome in order to become successful in the gas industry. Interviewees are finally asked to share their experience and to give one piece of advice for young professionals who seek to pursue a career in the gas industry.

Young Professionals (18 participants) – These interviews are directed at young professionals who have recently started their careers in the gas industry and who are willing to discuss their opinions on the industry thus far. The first questions in this section inquire the youth, after gaining a first look at the gas industry, do they feel they will be able to fulfill their career expectations within the gas sector. Furthermore, young professionals are asked to look back and, keeping in mind the requirements of gas companies, estimate how well universities prepared them for their current jobs. Interviewees are also asked to describe their likes and dislikes about their current positions, how satisfied are they with the available career development programs and what would they change if they could. Finally, young professionals

are asked to express their opinion on what the gas industry should do in order to become more attractive to youth.

Female Professionals (24) – These interviews asked women gas professionals if they feel they are able to fulfil their career expectations within the gas industry. Interview participants are also asked whether they feel that the gas industry is doing enough to encourage female professionals and what aspects can be improved in order to make gas companies a more attractive workplace for women. The interviews further inquired how female participation is expected to develop over the coming decade and what are the most important skills a female professional should develop in order to be promoted within the gas industry. Finally female professionals are asked to share one piece of career advice for other women who are seeking a career in the gas industry.

UNESCO Workshop[1]

To examine the socio-economic, cultural and educational challenges that women engineering students and professionals face and to devise recommendations for improving gender parity in engineering disciplines, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the International Gas Union (IGU) organized a Workshop on Women in Engineering in Africa and the Arab States. The Workshop consisted of two roundtables: 1) Enticing Young Women in STEM Education in Africa and 2) Identifying Best Practices for Attracting Women to Careers in Engineering in the Arab States. The roundtable participants included gender, education, engineering, science and technology experts from government, academic, and civil society institutions in Africa and in the Arab States.

The roundtable experts for Africa included:

- Ms. Maha Ayoub, Deputy Ambassador of Sudan to UNESCO, Sudan
- Ms. Anne Wangari Kirima-Muchoki, Chairperson, Kenya Investment Authority
- Dr. Tonya Blowers, Programme Coordinator, Organization for Women in Science in the Developing World
- Ms. Gretchen Kalonji, Assistant Director-General of Natural Sciences, UNESCO

The roundtable experts for the Arab States included:

- Dr. Laila Rashed Iskandar, Minister of State for Environmental Affairs, Egypt
- Dr. Amina Benkhadra, General Director, National Office of Hydrocarbons and Mines, Morocco
- Dr. Fareeha Zafar, Government College University, Pakistan
- Eng. Fadwa Abu Ghaida, President, Arab Women Engineers Committee, Federation of Arab Engineers

Summarized in Chapter 'UNESCO Workshop – Women in Engineering' of this report are the key challenges for women in engineering as identified at the UNESCO/IGU Workshop on Women in Engineering in Africa and the Arab States held on 10 December 2013. It also proposes recommendations to address these obstacles and increase the number of women engineering students and professionals.

This workshop was sponsored by TOTAL, GDF SUEZ, Oman LNG and Qatargas.

[1] UNESCO, Paris 2013

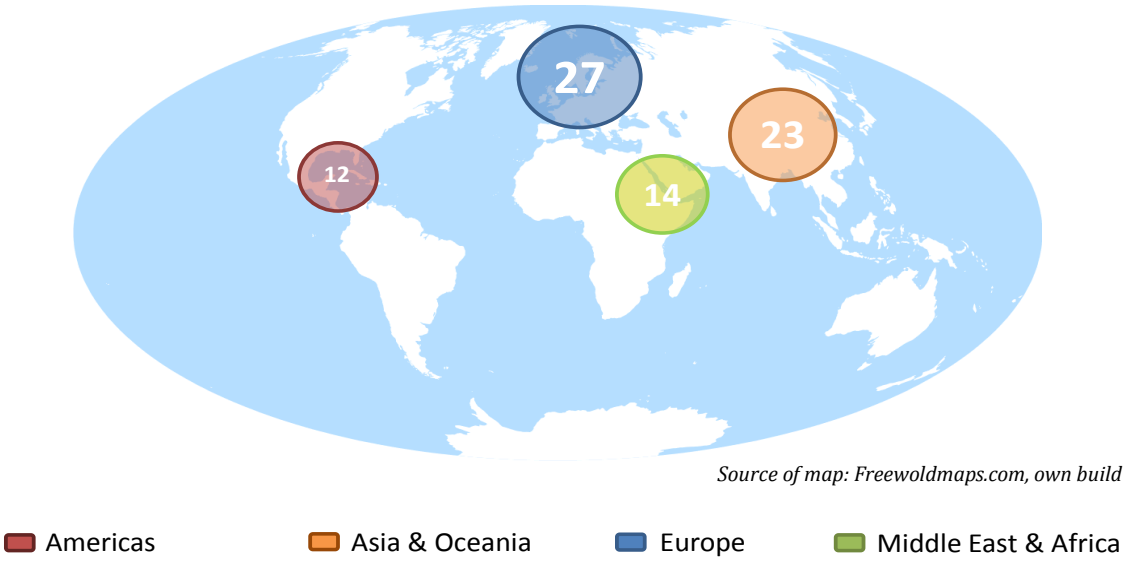
IGU Survey Results

Results – Participants to the Survey

To allow readers a comprehensive understanding of the results yielding from the 2013 IGU HR Survey, it is imperative to better appreciate the nature and type of companies taking part in the survey. With this in mind, the very first section of the Results chapter focuses on describing the participation in the survey.

Figure 3.1.1 shows that all regions of the globe are well represented by the participating companies in the HR survey. The highest number of replies (27) has been received from European companies while another 23 replies come from companies from Asia & Oceania. 14 companies from the Middle East and Africa have replied to this survey and 12 replies were received from companies headquartered in North and Latin America.

Figure 3.1.1 Global Distribution of the Participants to the IGU Survey



Source of map: Freewoldmaps.com, own build

As indicated in figure 3.1.2 below, all segments of the gas value chain are evenly represented by this survey, with a strong participation of downstream companies.

Almost half of the 76 respondents have their activity focused on one segment of the gas value chain, mostly Distribution. About 15% of participating companies are integrated companies activating in 6 or more segments of the value chain. The survey results also suggest that most LNG companies tend to also be involved in Marketing and Storage.

Figure 3.1.2 76 Participants to the IGU Survey According to Area of Activity

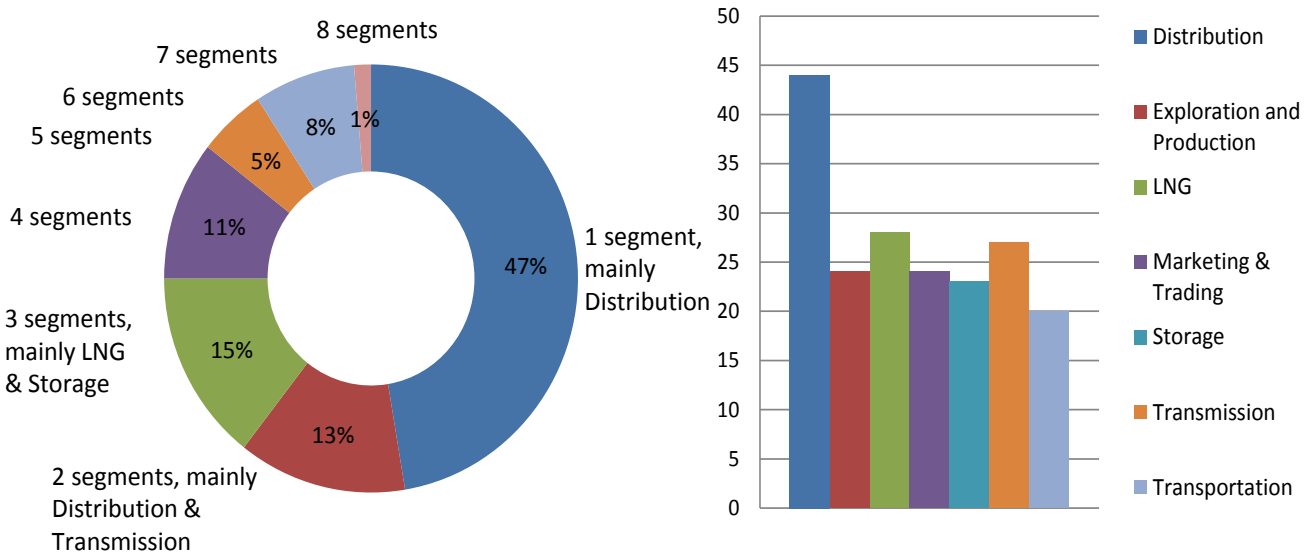
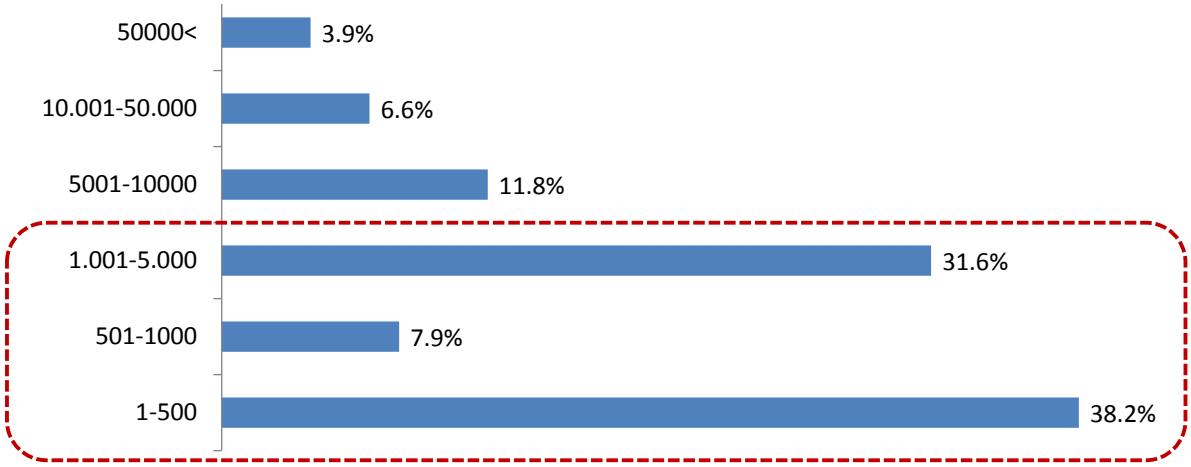


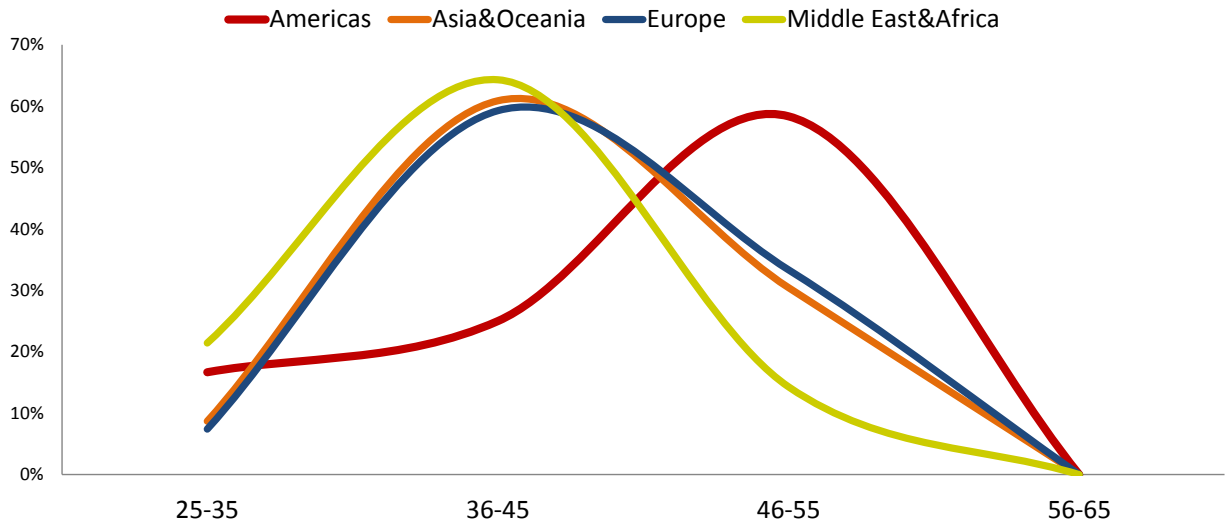
Figure 3.1.3 suggests that around 46% of responses came from small size companies, each numbering less than 1.000 employees. Another 43% originate from mid-size companies each employing between 1.001 and 10.000 people. The remaining 11% of responses come from large gas companies with over 10.000 people, some of them numbering their employees in the hundreds of thousands.

Figure 3.1.3 Participants to the IGU Survey According to Number of Employees



Results – Attracting Youth

Figure 3.2.1 Average Age of Workforce by Region

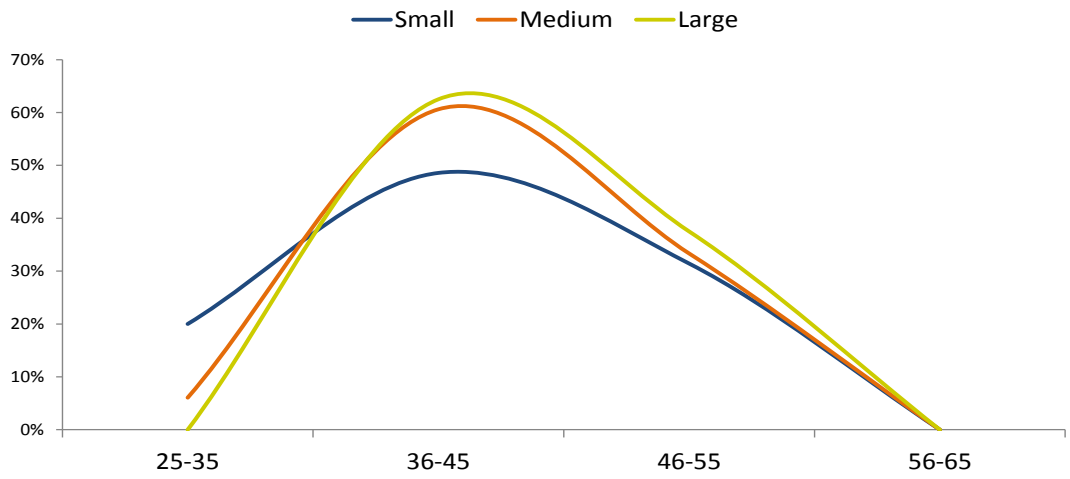


As shown in figure 3.2.1 companies in the M.E. & Africa region have the youngest workforce with over 20% of their employees being under 35 years old while less than 15% of their workforce is over 46. This data corroborates the findings expressed in the IGU TF1 Report 'Building Strategic Human Capital' launched in 2012 where the M.E. region was already depicted as having the youngest workforce with around 60% of the technical staff in this region being under 40.

Companies in Europe and Asia show a slightly more balanced age profile among their employees, of whom approximately 60% are between the ages of 35-45 year.

The companies with the oldest workforce in the gas industry are located mostly in the Americas. Here, almost 60% of gas employees are on average over 46 years old.

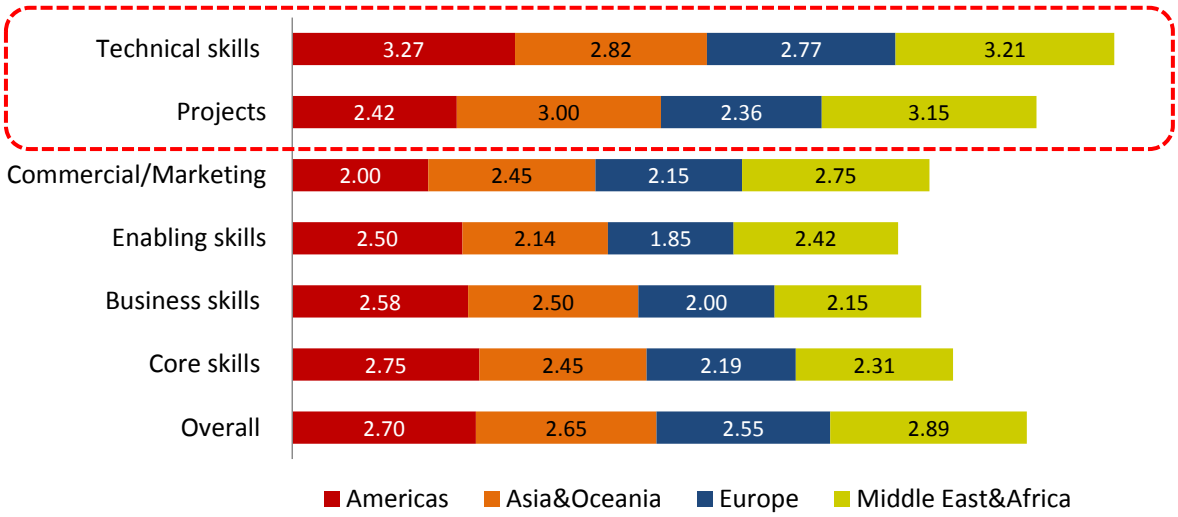
Figure 3.2.2 Average Age of Workforce by Company Size



Looking at age distribution across companies of different sizes, one may conclude that the bigger the company, the older their workforce is on average. Figure 3.2.2 shows that while small companies have about 20% of their employees between the ages of 25-35, only a small

percentage of the workforce working in mid-sized and large companies falls under this age group.

Figure 3.2.3 Shortages of Skills by Region
1 – no shortage; 5 - severe shortage



Technical and Projects skills are the hardest to find globally. Companies in Europe benefit from somewhat less of a shortage compared to other regions. Figure 3.2.3 depicts that the biggest overall skill shortage is felt by companies from the M.E. & African region.

Figure 3.2.4 Shortages of Skills by Company Size
1 – no shortage; 5 - severe shortage

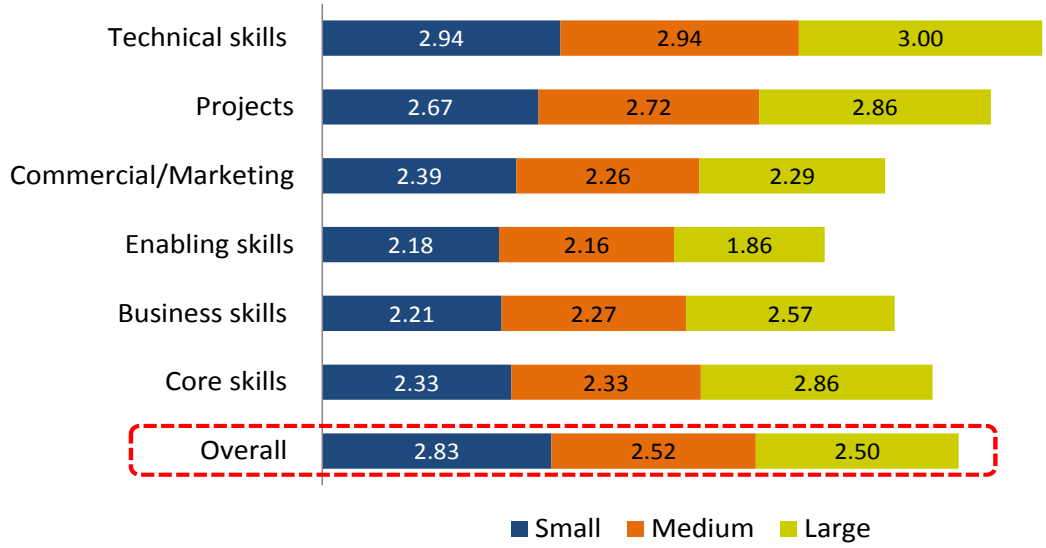
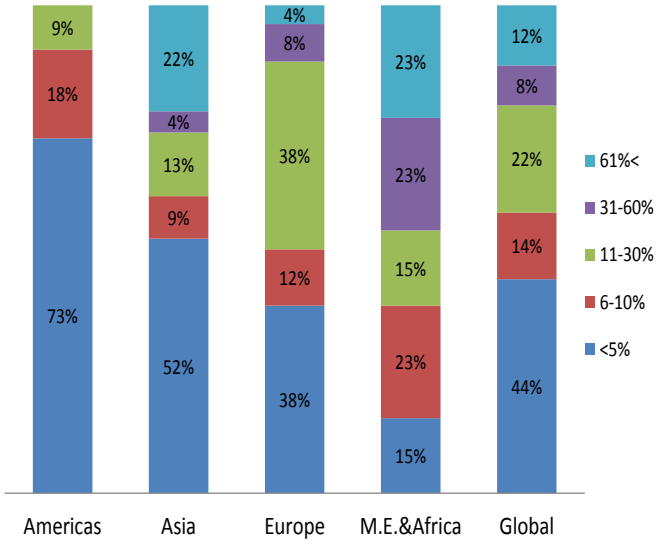


Figure 3.2.4 above suggests that small companies have a harder time overall in mitigating their skill shortage as compared to mid-size and large companies.

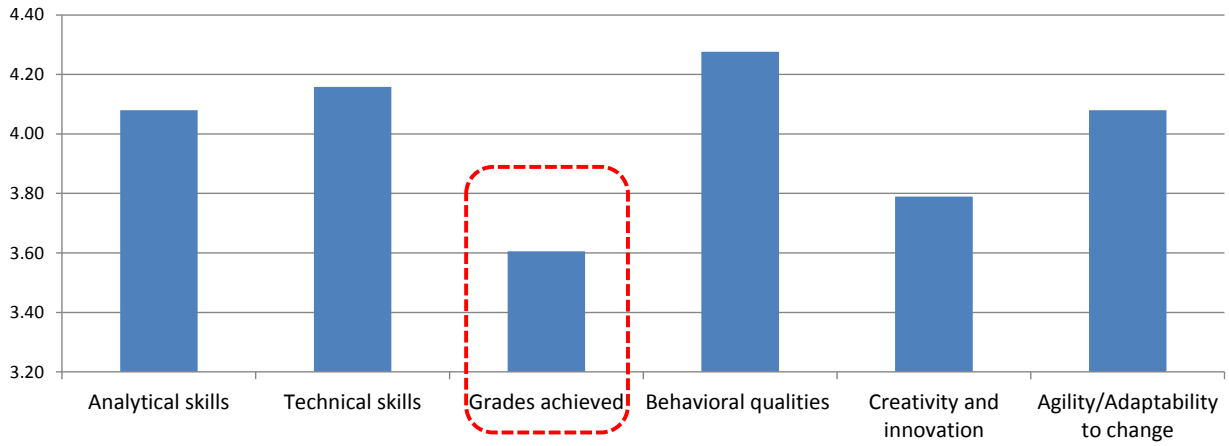
Figure 3.2.5 Percentage of New Graduates in Total New Hires over the Past 1 Year



Companies prefer to hire experienced professionals while new graduates represent a relatively small percentage in the number of total hires. In almost half the gas companies globally, new graduates hired represent less than 5% of total hires. Companies in the Americas hire on average the lowest percentage of new graduates, 73% of participating companies from this region say that graduates represent less than 5% of the new employees hired. The situation looks better in the M.E. & Africa region where half the responding companies say that new graduates make up over 30% in their total new hires.

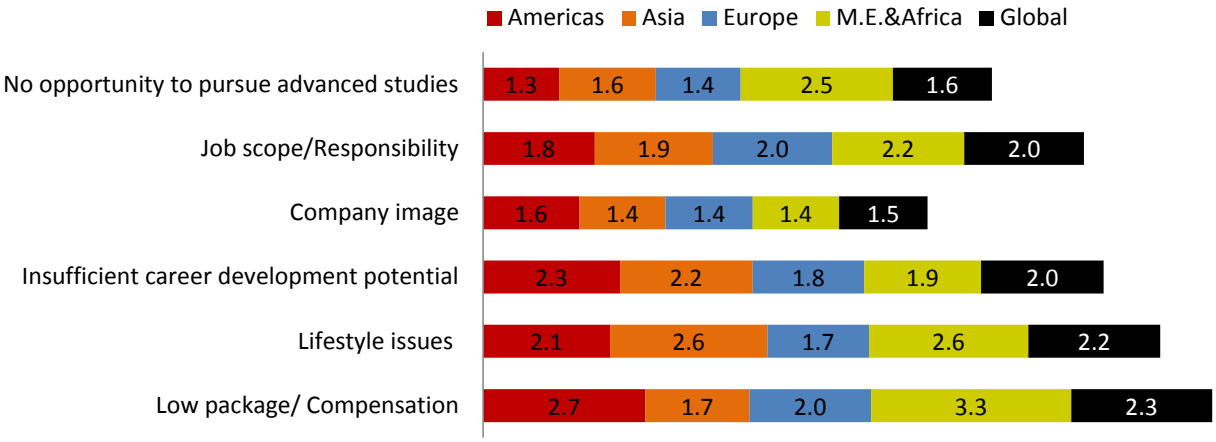
Looking at the data illustrated in figure 3.2.5 above, a series of further questions come to mind. First and foremost: *Is the industry really hiring youth?* Second, but no less important: *What is the state of the industry's efforts to raise awareness among youth and attract them to the industry?* One possible answer revolves around inertia. Specifically, while the industry realized and has been acting on the need to attract young talent to its workforce, additional time and effort is still required in finding a place for a higher percentage of youth within the gas industry.

Figure 3.2.6 Qualities that Companies Look for in Graduates
1 – least important; 5 – most important



Somewhat surprising, the grades achieved appear to be the least significant element when companies are recruiting graduates. It appears that the importance of grades fall way below other desired qualities such as technical and analytical skills developed through education. The most important qualities that companies look for when hiring graduates are behavioural qualities.

Figure 3.2.7 Reasons Mentioned by Graduates When Rejecting an Offer from a Gas Company by Region
1 – least mentioned; 5 – most mentioned



Graduates refuse to join the gas industry mainly because of the low packages and compensation available. This is, especially true for the M.E. & Africa region. The results illustrated in figure 3.2.7 above are in line with the findings of TF1's 2012 report 'Building Strategic Human Capital'.

Lifestyle issues represent another important barrier for graduates, especially in Asia where it comprises the main refusal reason mention by graduates for not joining the gas industry. Other reasons mentioned are the lengthy selection procedures of gas companies, during which graduates receive offers from other companies. Interestingly, Company image is the least mentioned reason for refusal, suggesting that energy companies tend to have an overall good reputation.

Figure 3.2.8 Reasons Mentioned by Graduates When Rejecting an Offer from a Gas Company by Size
1 – least mentioned; 5 – most mentioned

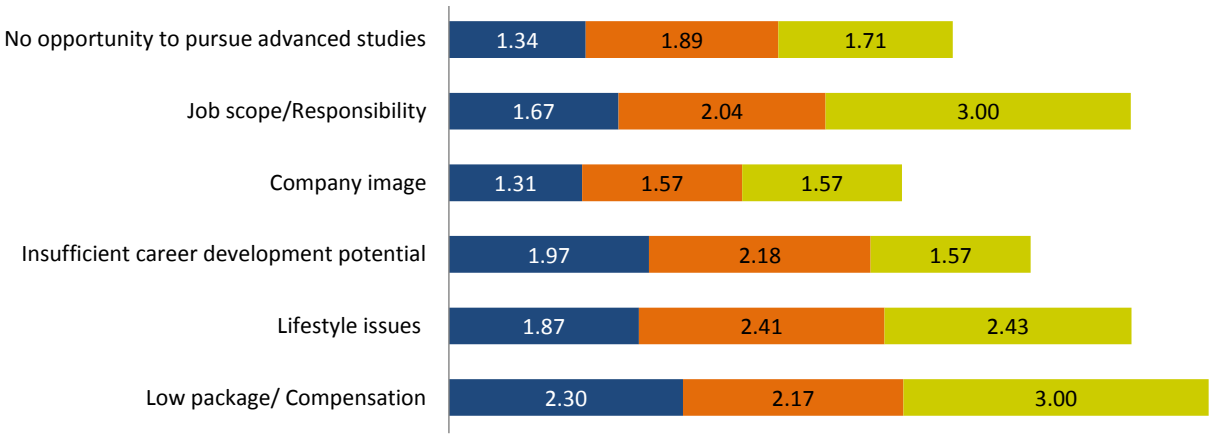
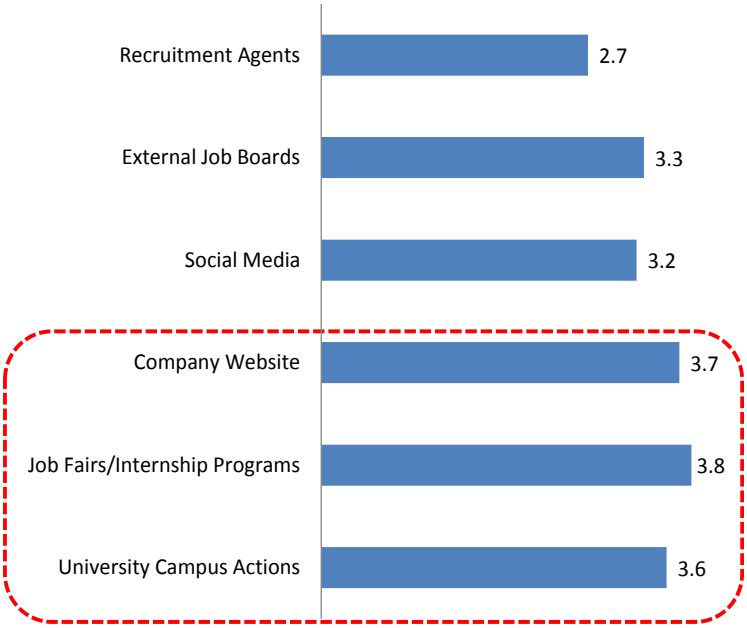


Figure 3.2.8 above illustrates that Low package/Compensation tends to represent an issue in attracting graduates, especially for large companies as compared to mid-size and small companies. This could be interpreted as a sign that large companies dedicate fewer resources for entry level positions. Another possibility is that the expectations of graduates regarding a position with a large company are higher and thus, may be harder to meet those expectations.

As depicted in figure 3.2.8, Job scope/Responsibility also represent an important reason mentioned often by graduates when refusing an offer to join a gas company. The bigger the company the more problematic this appears to become.

Not surprisingly, larger companies are perceived by graduates as offering the most agreeable career development opportunities. As far as lifestyle issues are concerned, while these represent an important obstacle globally, they tend to be less of a problem among smaller gas companies.

Figure 3.2.9 Effectiveness of Recruitment Channels
1 – very ineffective; 5 – very effective



Gas companies tend to rely on themselves for recruiting new graduates and prefer to approach directly potential employees. Figure 3.2.9 shows that gas companies rarely turn to outside recruitment agents for resolving their hiring needs.
The recruitment channels considered most efficient by gas companies are: Job Fairs, Internship Programs, Company Websites and various Actions on the University Campus. Other recruitment channels considered effective by gas companies are public recruitment and word of mouth. More and more companies are also making use of LinkedIn for recruitment purposes.

Figure 3.2.10 Level of Satisfaction with the Number and Quality of STEM Applicants-by Region
1 – very dissatisfied; 5 – very satisfied

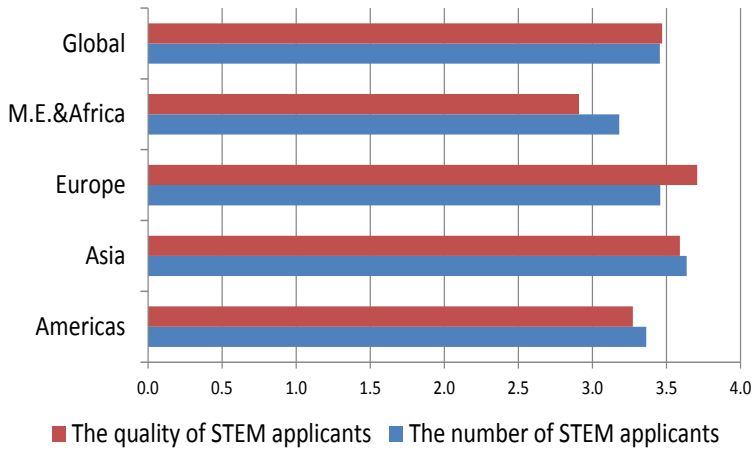


Figure 3.2.10 indicates that there is a fair number of students with a STEM (Science, Technology, engineering and Mathematics) background that are applying for jobs in the gas industry. In the M.E. & Africa region, the quality and preparation of these students is considerably lower than the global average. These findings are complementing, to a certain degree, the data illustrated in figure 3.2.3 showing the M.E. & Africa region as having the most acute shortage of skill overall. Companies in Europe and Asian appear to be receiving more applications from better prepared STEM students.

Figure 3.2.11 Level of Satisfaction with the Number and Quality of STEM Applicants-by Company Size
1 – very dissatisfied; 5 – very satisfied

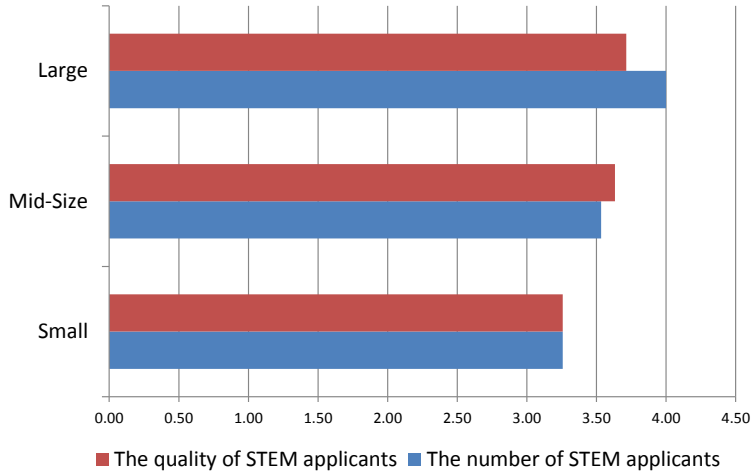


Figure 3.2.11 illustrates that the larger the company the higher their level of satisfaction with regard to both the quantity as well as the quality of applicants with a STEM background.

Figure 3.2.12 Percentage of Target for STEM Applicants that Remains Unfulfilled

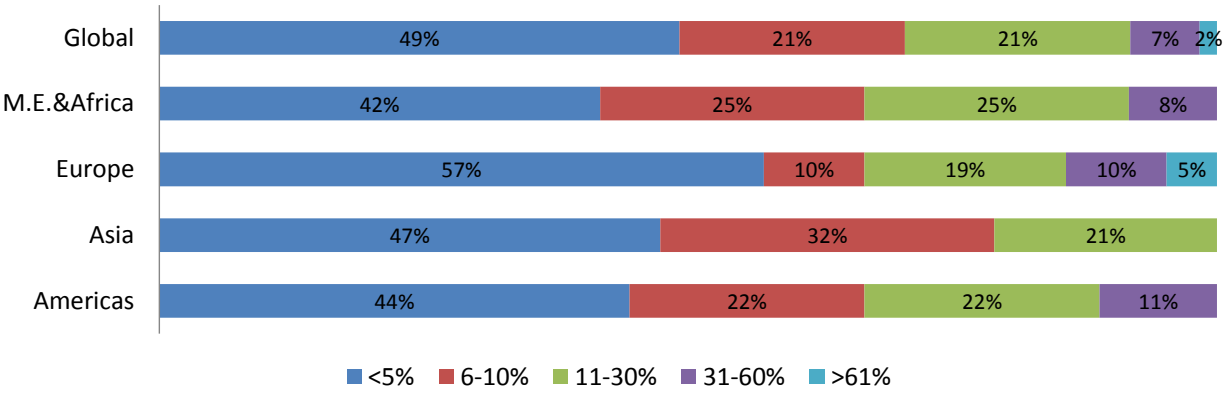
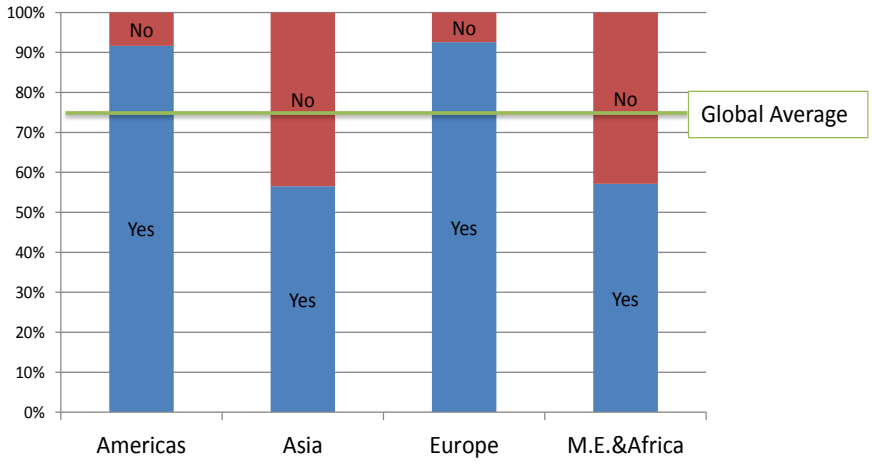


Figure 3.2.12 above indicates that gas companies are able to find STEM graduates to fill their positions, as 70% of the companies globally can fulfil over 90% of their recruiting target. These results may also be related to the relatively small percentages of graduates hired by gas companies, as illustrated in figure 3.2.5.

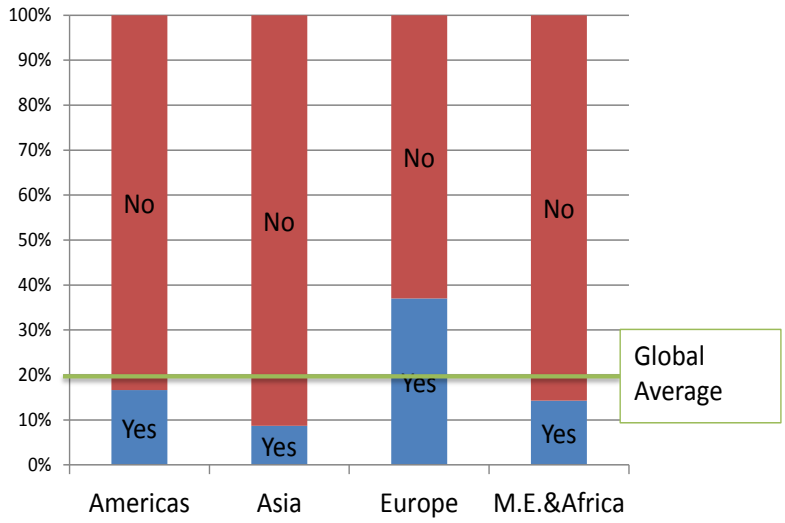
Figure 3.2.13 Percentage of Companies that Have Active Cooperation Programs with Academia



75% of gas companies globally maintain an active cooperation programs with Academia.

While 90% of European and American companies have active cooperation programs with Universities, just above half of Asian and M.E. companies entertain this practice.

Figure 3.2.14 Percentage of Companies that Sponsor STEM Students

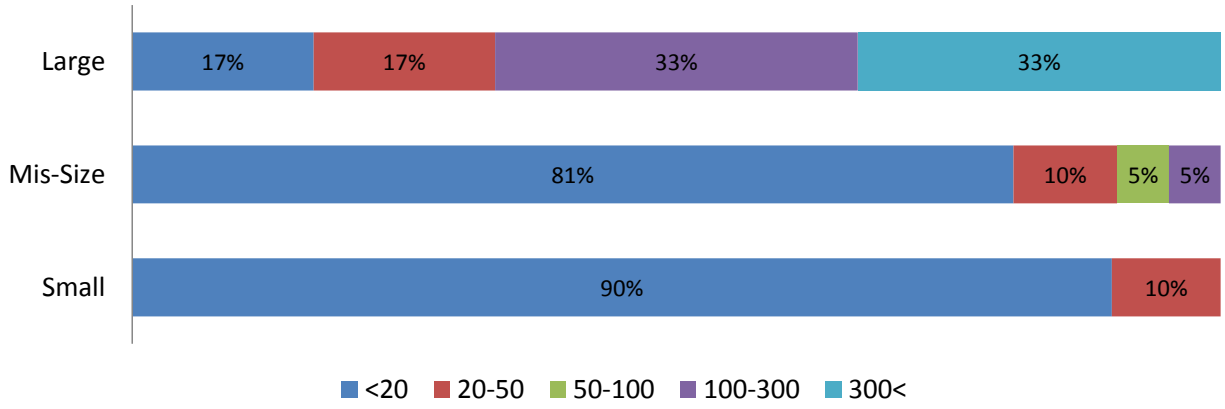


Sponsoring students does not appear to be a popular practice amongst companies. Globally, only a fifth of the companies sponsor STEM undergraduates.

European companies tend to sponsor the most STEM undergrads. This strategy seems to be yielding results, as seen in figure 3.2.10, European companies report on average a higher level of satisfaction regarding both the number as well as the quality of STEM applicants than companies in other regions.

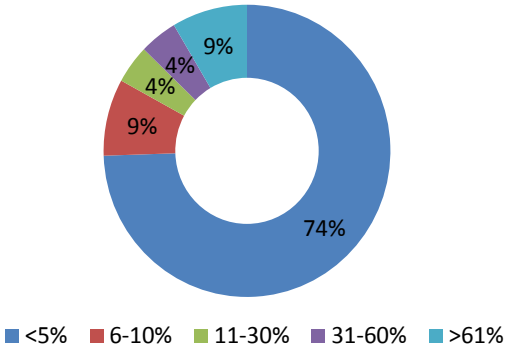
Asian companies, maintain on average a weaker tie to Academia than companies in other regions.

Figure 3.2.15 Percentage of Companies that Sponsor an Exact Number of STEM Students



Unsurprisingly, large companies sponsor the highest number of STEM students, nevertheless, there are several small and mid-size companies that are committed to sponsoring a significant number of STEM students as well. The students in question are expected to graduate within the next 4 years.

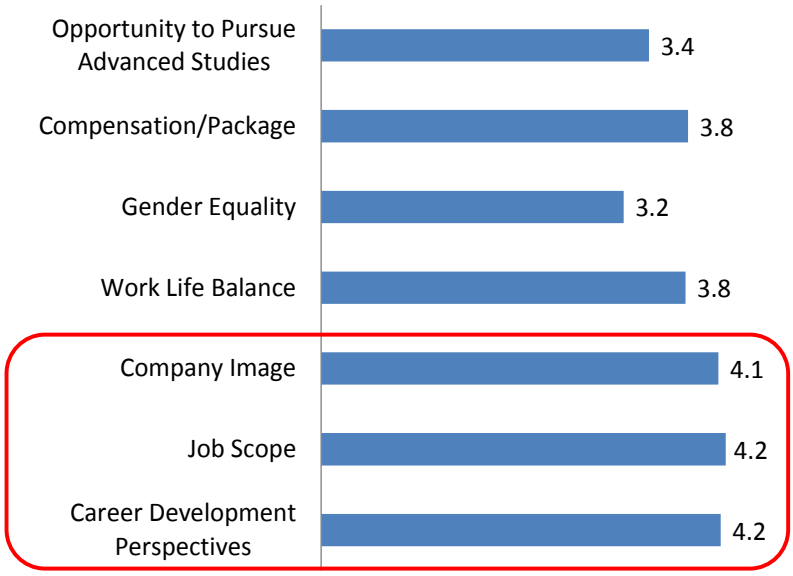
Figure 3.2.16 Percentage of the Recruitment Targets the Sponsored STEM Students Represent



About 75% of the surveyed companies aim to cover less than 5% of their recruitment targets by sponsoring students. On the other hand, almost 10% of companies aim to cover over 60% of their recruitment targets by sponsoring students.

Considering the data from figure 3.2.16 it can be reasoned that while some gas companies focus on building up their future generation, most companies are content with what the market has to offer.

Figure 3.2.17 Most Important Factors When Attracting Young Talent
1 – very unimportant; 5 – very important

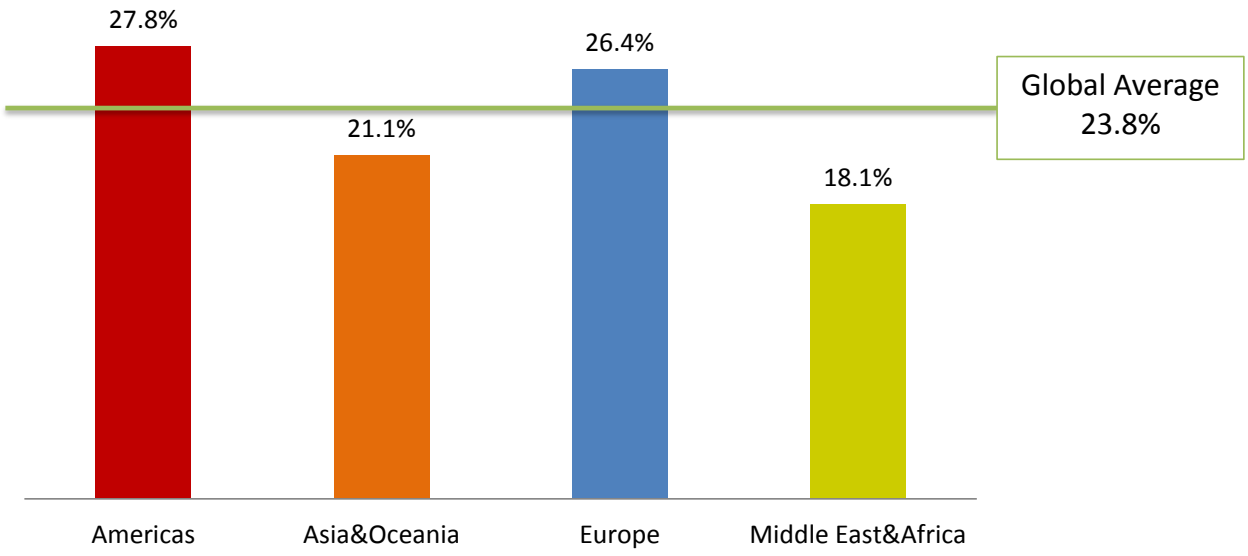


Gas companies consider Career Development Perspectives and Job Scope as the most important factors in attracting young talent. Figure 3.2.17 suggests that companies believe youth are looking for jobs that make a difference and that provide opportunities to develop themselves in the future. The Company Image that employees will be identifying themselves with is also considered very important by gas companies for attracting youth.

As illustrated earlier in figure 3.2.7, Company Image is the least mentioned reason by graduates when refusing to join the industry, therefore it can be said that gas companies are generally doing a good job at creating a good public image. Taking this comparison further, one can see that while the findings of figure 3.2.7 place Low Package/ Compensation as the main refusal reason mentioned by graduates, findings from figure 3.2.17 above show that gas companies on average consider Compensation/Package as the 4th or 5th factor of importance in attracting young talent. To debate further this discrepancy would go beyond the scope of the current report nevertheless; we consider it is factor worth investigating.

Results - Attracting Female

Figure 3.3.1 Percentage of Female Employees in the Workforce



Figures 3.3.1 and 3.3.2 illustrate that the gas industry continues to be a male dominated industry with 3 out of 4 employees being men. More than half of the gas companies globally have over 95% male managers.

Companies in the Americas and Europe have a slightly higher percentage of female employees than the global average, while among companies in the M.E & African region, only 1 in 5 employees on average are female.

As illustrated in the figure below, the majority of women in the gas industry are currently employed in non-technical/non-professional roles.

Figure 3.3.2 Percentage of Female Employees in the Workforce in the Following Positions

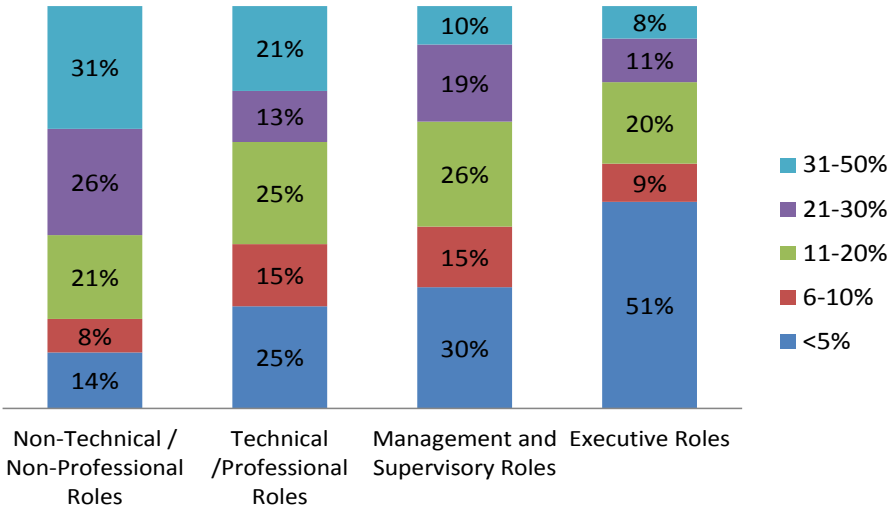


Figure 3.3.3 Percentage of Female Applicants in the Total Number of Applications Received by Region

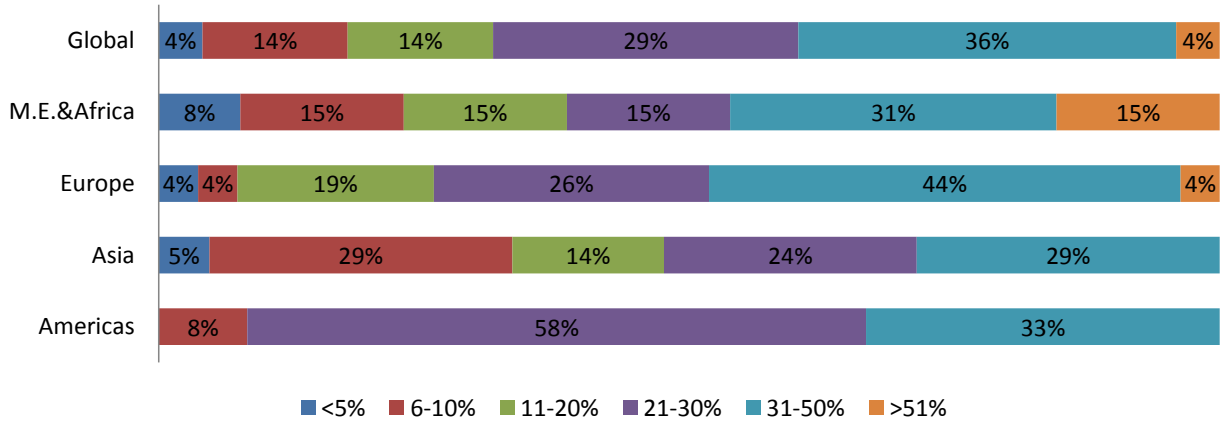


Figure 3.3.3 above suggests that women's interest in the gas industry is significantly lower than the interest shown by men. Around 60% of companies globally receive less than 30% of their applications from women. European and the American companies tend to receive more application from women than the global average.

Several companies in the M.E. & Africa region have been investing considerable effort in attracting women to the gas industry and their strategy appears to be paying off. Around 15% of the respondents from this region say they have now more applications from women than from men.

Figure 3.3.4 Percentage of Female Applicants in the Total Number of Applications Received by Company Size

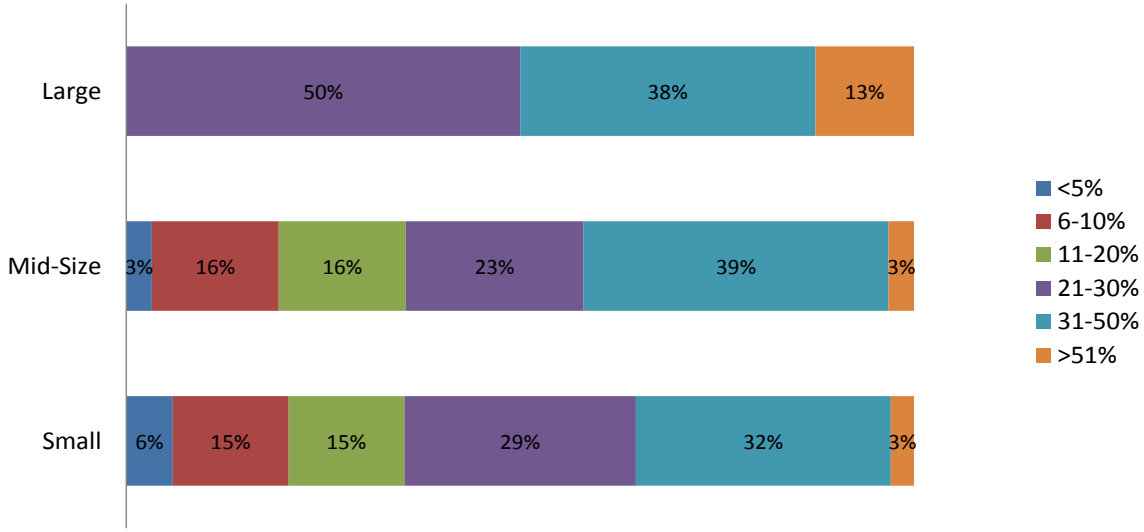


Figure 3.3.4 suggests that the bigger the company the higher the percentage of female applicants is. All the large companies that responded to the survey receive 21% and more of their applications from female applicants. Furthermore, around 13% of the large companies surveyed receive more application from women than they do from men.

Figure 3.3.5 Percentage of Females hired in the Total Number Hires by Region

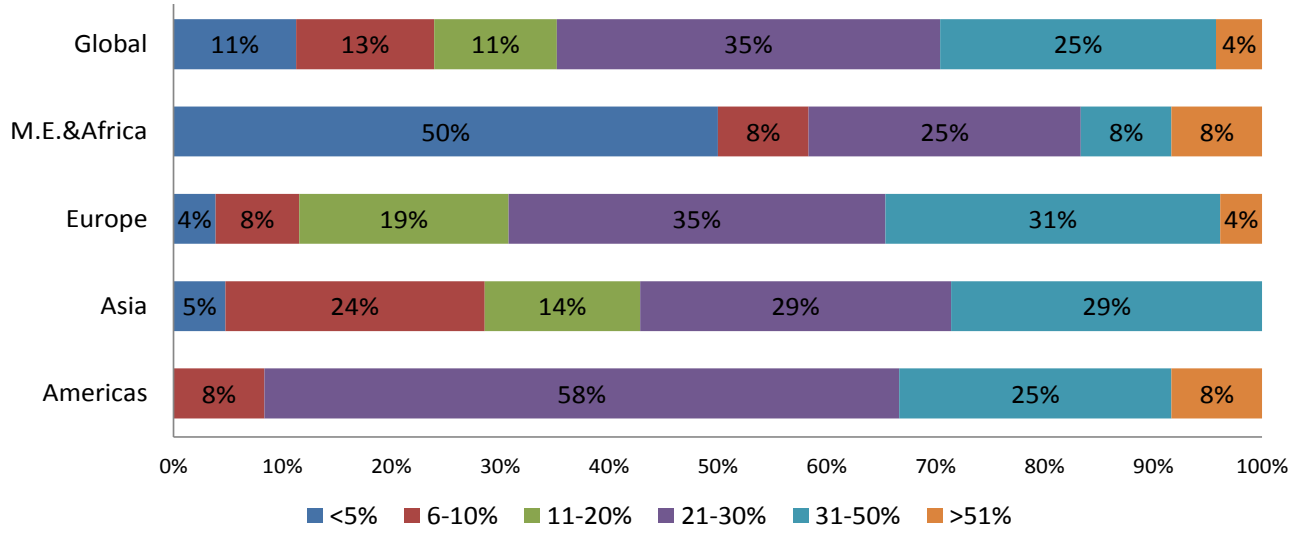
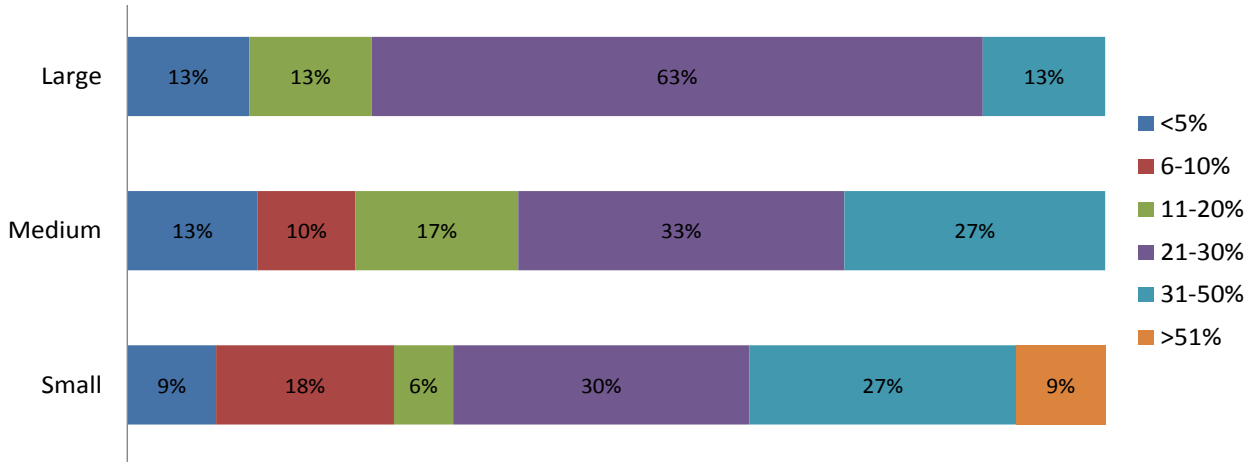


Figure 3.3.5 illustrates that, for about 70% of the gas companies globally, women represent less than a third in the number of total new hires made over the past 12 months.

Comparing the data above with the findings presented in figure 3.2.5, it can be concluded that most companies are inclined to hire more women than they do graduates.

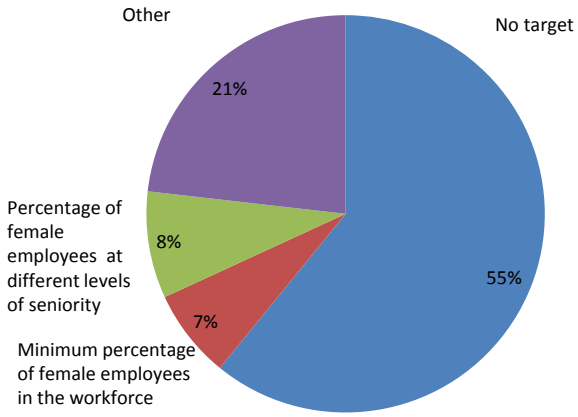
Despite a significant number of applications received, companies in the M.E. & Africa tend to hire on average fewer women than companies anywhere else in the world. Thus, while interest exists, more effort is required to integrate women in the industry.

Figure 3.3.6 Percentage of Females hired in the Total Number Hires by Company Size



While figure 3.3.4 reveals a clear preference displayed by female applicants for larger companies, figure 3.3.6 above illustrates that the percentage of females hired in the total number of new hires is less prone to vary with the size of the company.

Figure 3.3.7 Long Term Objectives for Gender Equality



55% of companies responding to the survey say they have no target set in terms of gender equality. Several companies explained that their aim is to hire the best person for the job, irrespective of gender.
Achieving a minimum percentage of female employees in the total workforce represents a long term objective for about 7% of the respondents, whereas 8% of the respondents aim to reach certain percentages of female employees at different levels of seniority.

Figure 3.3.8 Recognition and Encouragement Programs for Female Employees

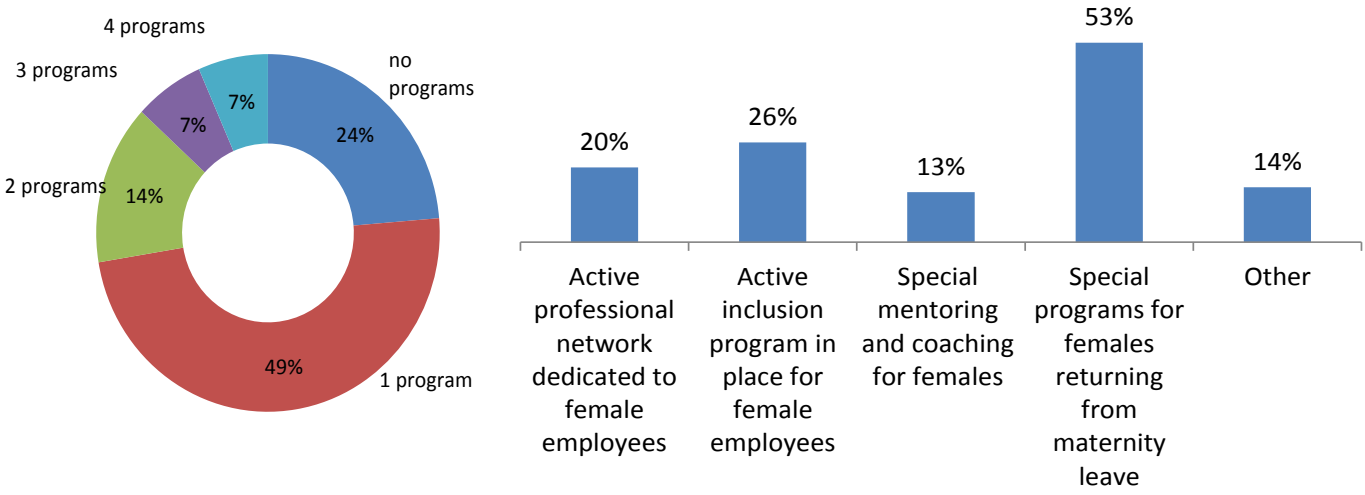
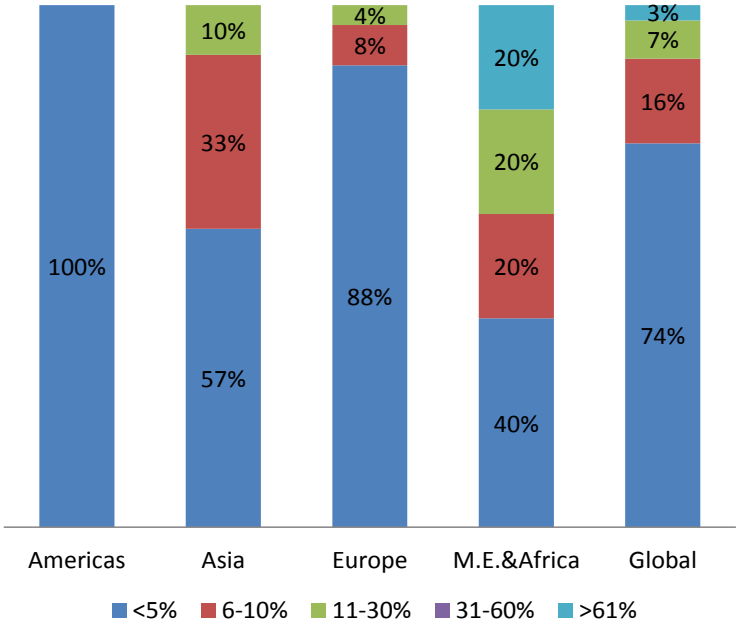


Figure 3.3.8 shows that while about a quarter of the companies have in place no special program for women, almost 49% of the companies responded that they implement one special program to recognize and encourage their women employees. 28% of the companies surveyed implement two or more special programs.

Among the companies implementing special programs to encourage female employees, the most commonly used programs focus on women returning from maternity leave. Other special programs often used are inclusion programs and professional networks dedicated to female employees.

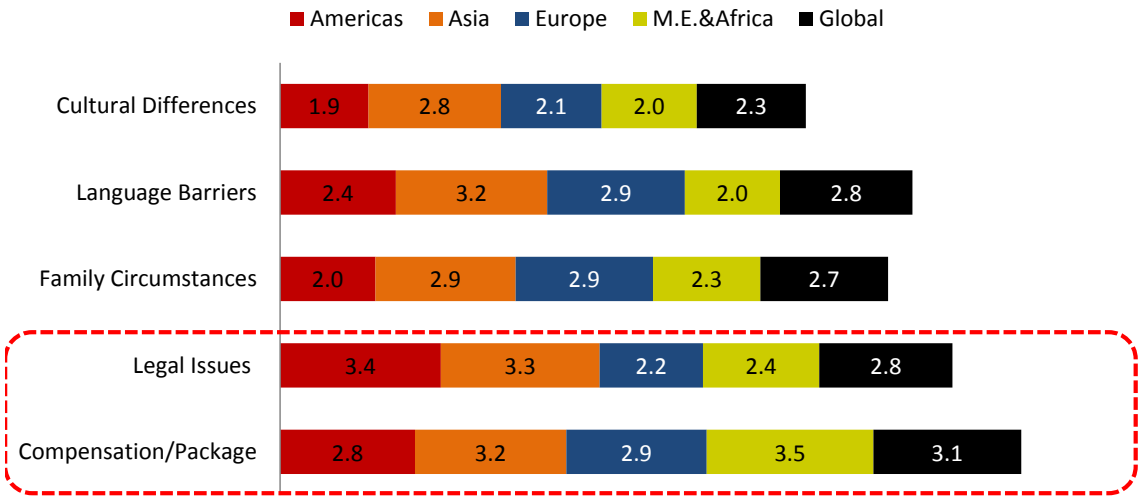
Results – Attracting Expats

Figure 3.4.1 Percentage of Expatriates in Global Hires



Gas companies show a strong preference towards recruiting domestically. In 90% of gas companies globally, expats represent less than 10% in all hires. Companies in M.E. & Africa and Asia tend to hire more expats than the global average.

Figure 3.4.2 Most Important Barriers Restricting International Recruitment by Region
1 – no impact; 5 – severe impact



As shown in figure 3.4.2 above, the biggest barrier to international recruitment is Compensation/Package. This is especially true in the M.E. & Africa region.

Legal issues also represent an important barrier for international recruitment, especially for companies in Asia, where Legal issues are the main obstacle hampering international recruitment.

Figure 3.4.3 Most Important Barriers Restricting International Recruitment by Company Size
1 – no impact; 5 – severe impact

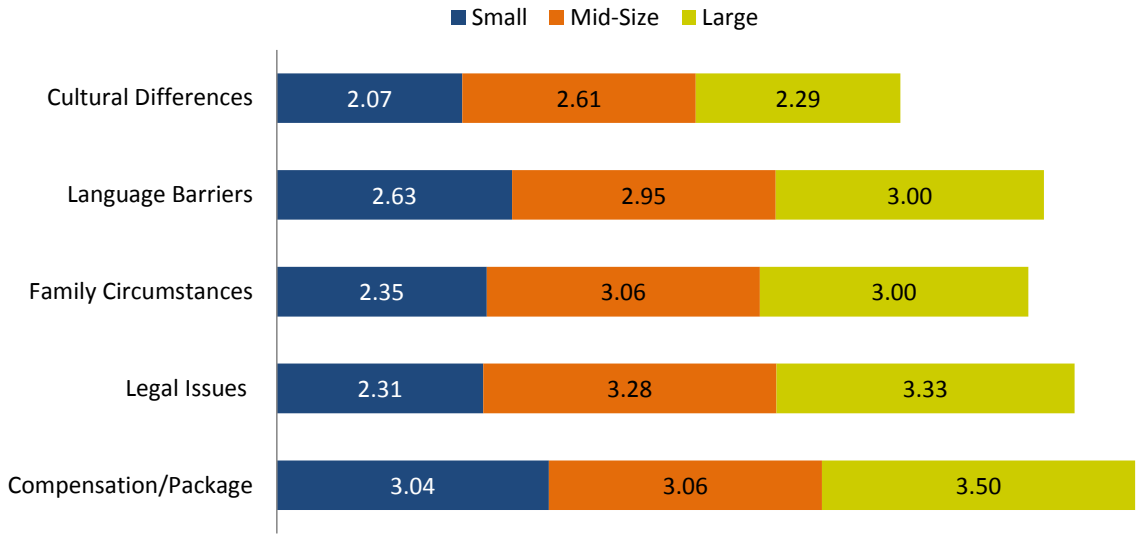


Figure 3.4.3 highlights Compensation/Package represent the most important barrier for recruiting expats especially in the case of large companies.

Comparing the above findings with the data presented in figures 3.2.7 and 3.2.8, it can be concluded that Compensation/Package represents the biggest barrier for gas companies in attracting both youth as well as expats. This seems to be especially true for large companies and for companies in the M.E. & Africa Region.

Results – Developing Talent

Figure 3.5.1 Companies That Have Establishes Career Ladders by Region

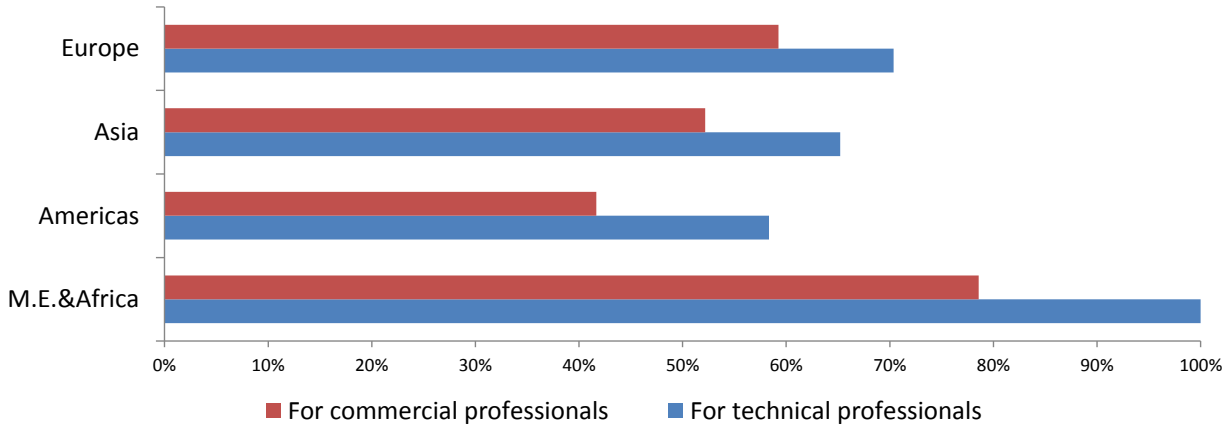


Figure 3.5.1 above shows that career ladders are used by most gas companies, for the development of technical as well as commercial professionals. However, gas companies globally seem to have in place more career ladders for their technical professionals than they do for their commercial professionals.

All participating companies from the M.E. & Africa region replied they have career ladders in place for their technical professionals while almost 80% of them also use career ladders for their commercial professionals.

Comparing the results above with those illustrated earlier in figure 3.2.3, the biggest skill shortage overall is being felt by companies from the M.E. & African region, it might be argued that gas companies in this region are dedicating significant effort and resources into catching up.

Figure 3.5.2 Companies That Have Establishes Career Ladders – by Company Size

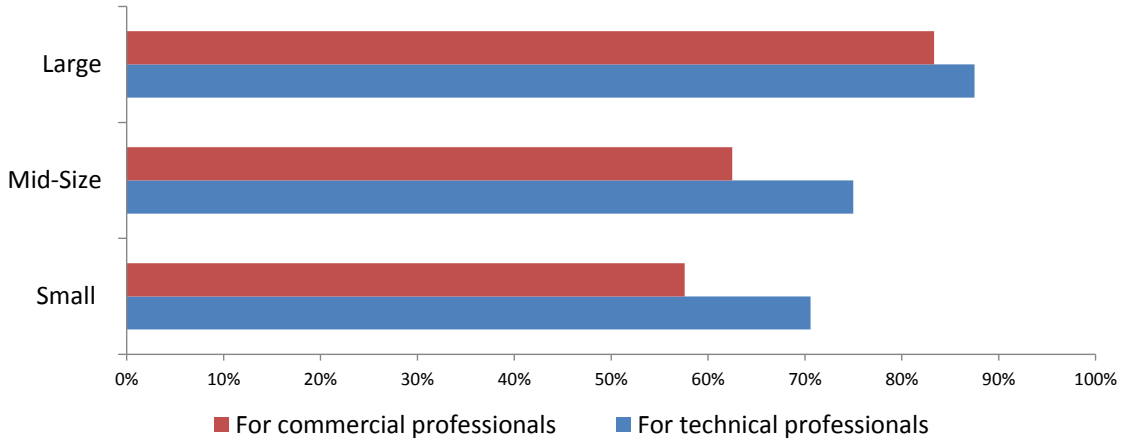
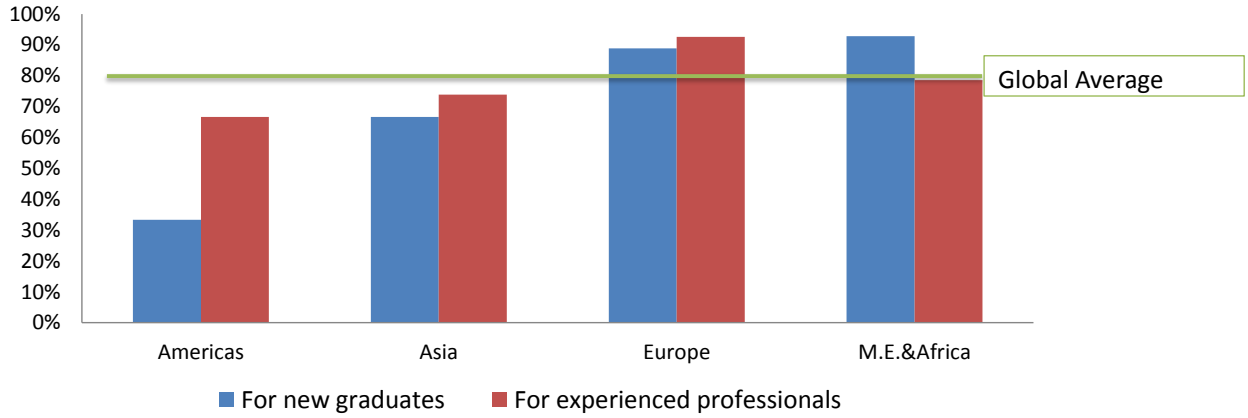


Figure 3.5.2 illustrates that career ladders are now a widely used practice at most gas companies, irrespective of size, and companies have career ladders in place for both technical as well as commercial professionals. On average however, the bigger the company the more likely it is to have established career ladders.

Figure 3.5.3 Companies That Have Individual Development Programs



Comparing the findings in figures 3.5.1 and 3.5.3 above it appears that companies tend to make use of individual development programs more than career ladders.

Figure 3.5.3 illustrates that companies in Europe and M.E. & Africa regions are more inclined to use individual development programs than companies in Asia and the Americas. Furthermore, companies in the Americas have twice as many development programs directed at experienced professionals than they do for new graduates. In fact, the percentage of companies in the Americas that have individual development programs for graduates is 3 times less compared to companies in Europe and the M.E & Africa regions. The lack of individual development programs among companies in the Americas compared to companies in other regions is noted by graduates there, who mention insufficient career development potential as the second most important reason for not joining the gas industry (Fig. 3.2.7).

Figure 3.5.4 Companies That Have Succession Plans by Region

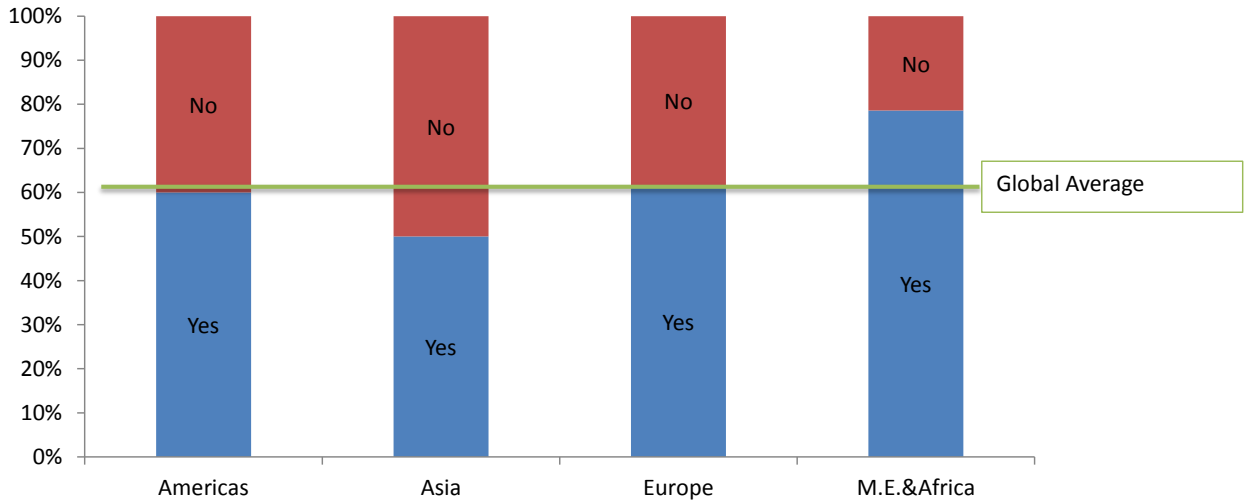
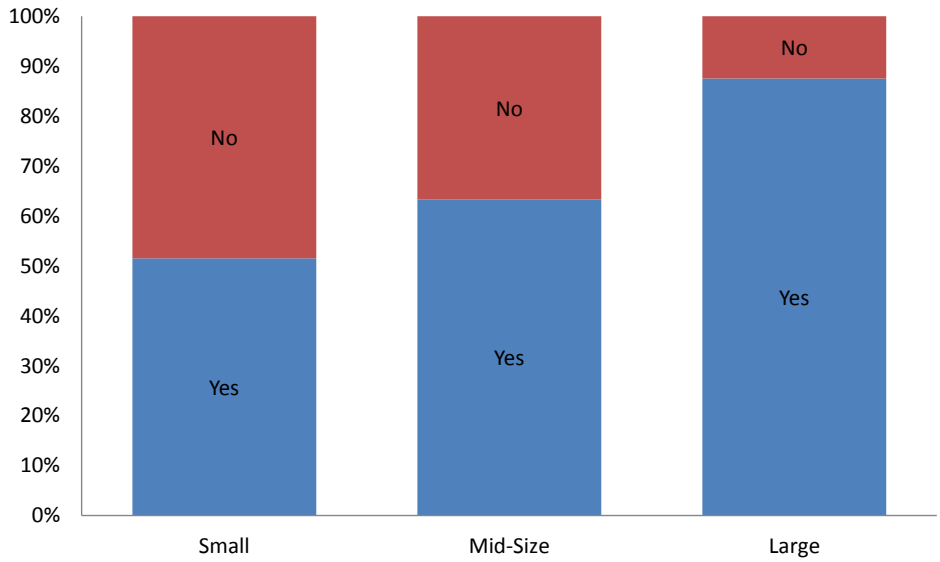


Figure 3.5.4 illustrates that over 60% of gas companies globally have in place a formalized succession plan. Succession plans are especially popular among companies in the M.E. & Africa region. 80% of the gas companies in this region say they use some sort of formalized succession plan.

Figure 3.5.5 Companies That Have Succession Plans – by Company Size



Succession plans are a practice most common among large companies. Nevertheless, on average, one in two small companies now also have a succession plan in place.

Figure 3.5.6 Time Spent on Different Types of Training and development by Junior Technical Staff

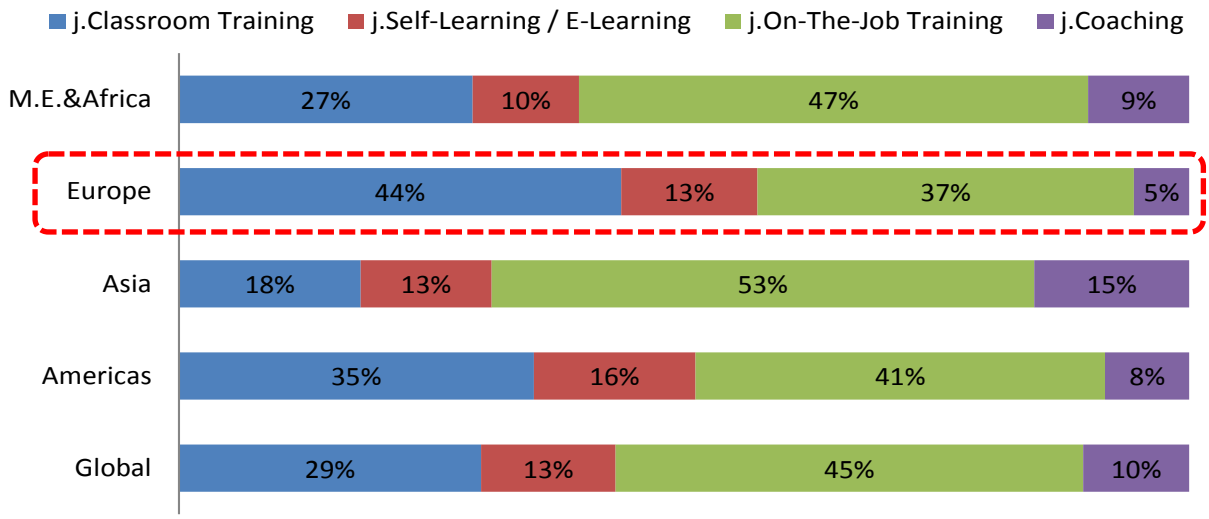
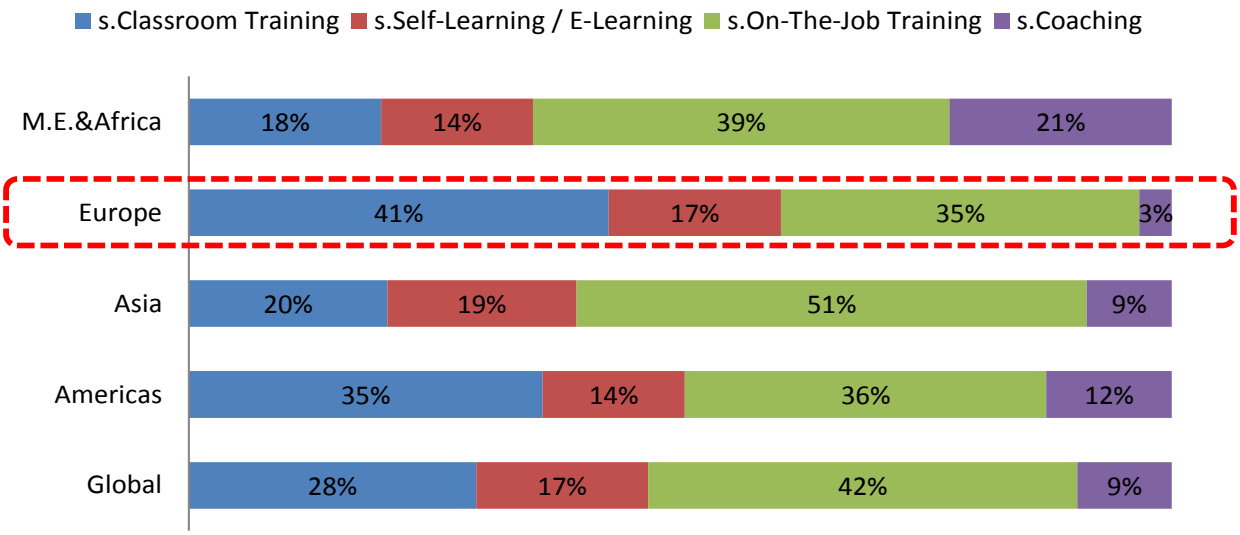


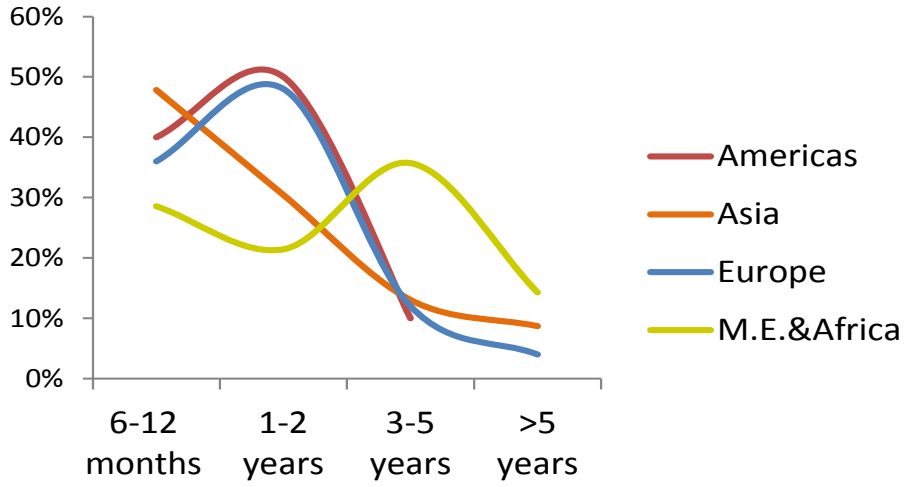
Figure 3.5.7 Time Spent on Different Types of Training and development by Experienced Technical Staff



As illustrated in figures 3.5.6 and 3.5.7 above, On-The-Job training is the preferred method of training employed by gas companies in almost all regions. Both junior as well as experienced technical staff invest more time in On-The-Job training than any other training and development program.

An exception to this is provided by companies in Europe where on average, Classroom Training has overtaken On-The-Job training as the preferred method of professional development for both junior as well as experienced technical staff.

Figure 3.5.8 Time it Takes a New Employees to Become Autonomous/ Independent



New employees in companies from Europe and the Americas tend to become autonomous faster than their peers in companies from Asia and M.E. & Africa.

90% of new employees working for companies in the Americas become independent in less than 2 years as opposed to new employees in the M.E. & Africa, who becomes independent usually after 3-5 years. A possible explanation is that according to figures 3.5.1, 3.5.3 and 3.5.4 companies in the M.E. & Africa make use of considerably more training and development programs such as career ladders, individual development programs and succession plans.

Figure 3.5.9 Time Required Time for a New Employees to Become a Leader in Their Company by Region

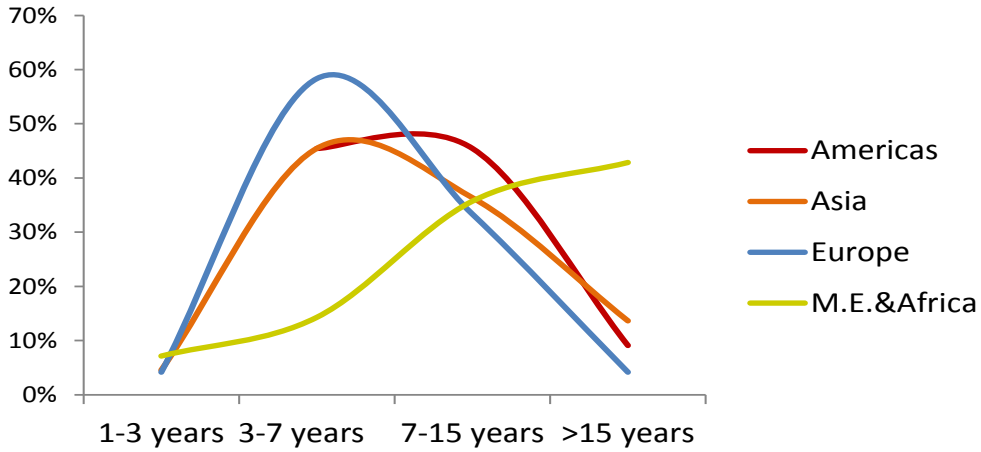
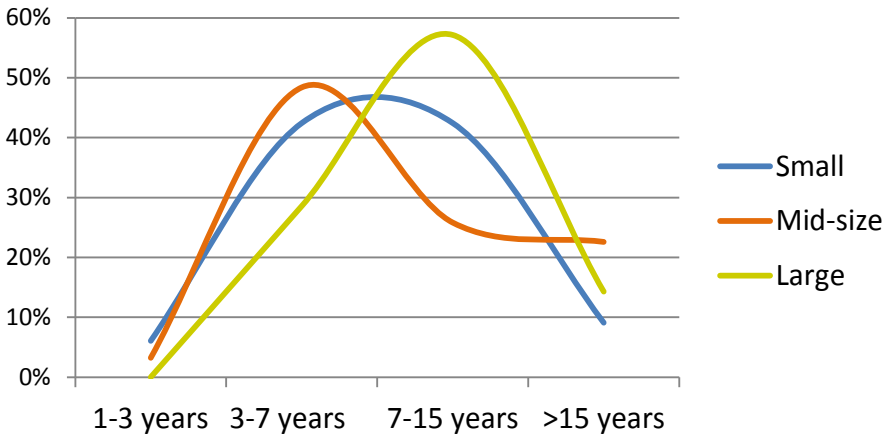


Figure 3.5.9 illustrates that European companies are the fastest in developing their employees into leaders. It takes on average 3 to 7 years for a new employee in most European companies to become a leader, whereas 80% of companies in the M.E. & Africa require over 7 years preparing their employees for becoming leaders.

Figure 3.5.10 Time Required Time for a New Employees to Become a Leader in Their Company – by Company Size



Large companies seem to be taking a longer time in preparing their leaders. Almost 70% of large gas companies say it takes at least 7 years for a new employee to become a leader in the company. According to figures 3.5.2 and 3.5.5 large companies are also the most likely to have career ladders and succession plans in place for their employees.

Figure 3.5.11 Percentage of Senior Manager Promoted from Within the Company by Region

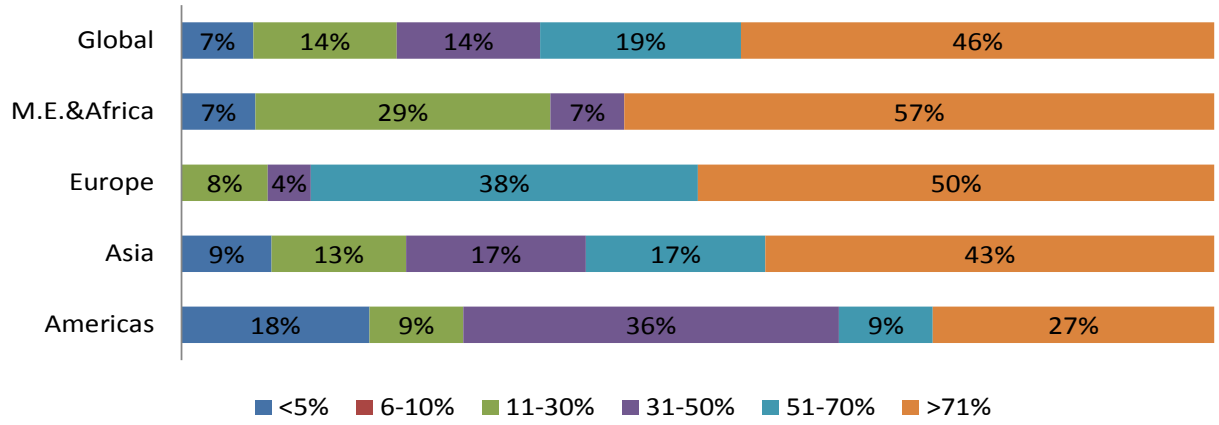


Figure 3.5.11 shows that most senior managers in the gas industry are promoted from within their own company. Around 65% of companies promoted over 50% of their senior managers internally.

Over half the companies in Europe and the M.E. & Africa region, say they promote over 71% of senior managers internally. As shown figures 3.5.1, 3.5.2 and 3.5.3 these are the regions where a higher percentage of companies tend to use career ladders, individual development programs and succession plans. On the other hand, the only region where most senior managers are recruited from outside the company is the Americas. A significantly lower percentage of companies in this region tend to have career ladders and/or individual development programs in place.

Figure 3.5.11 Percentage of Senior Manager Promoted from Within the Company by Company Size

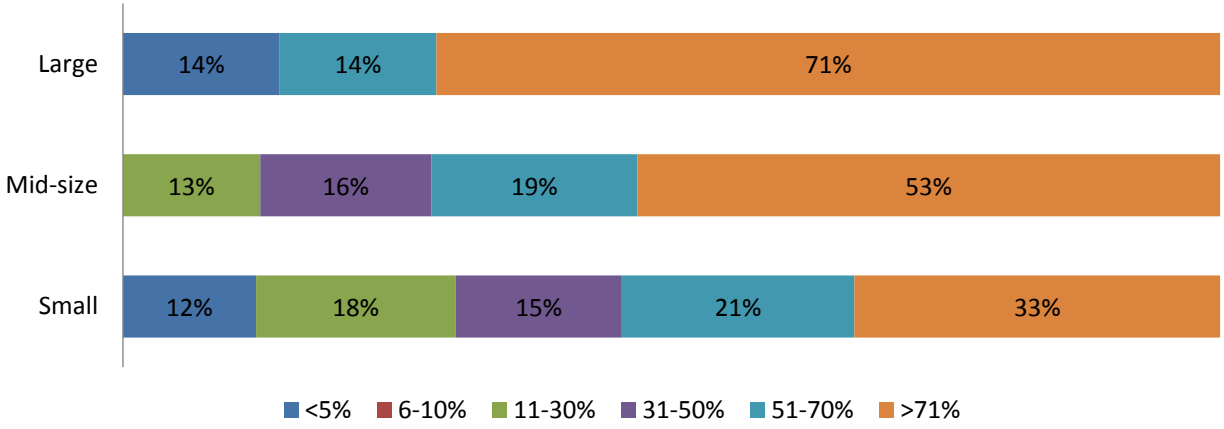


Figure 3.5.11 shows that bigger companies tend to show a stronger preference towards promoting senior managers internally. More than 71% of senior managers were promoted from within the companies in a third of the small companies globally, in over half the mid-size companies and in over 70% of the large companies responding to the survey.

For additional insight on talent development, the report 'Integration ''Education–Science–Business" as the Framework for Human Capital Development' newly released by Gazprom JSC offers an informative read. An abstract of the report's main result can be found in Appendix 4.

Results –Retaining Talent

Figure 3.6.1 Annual Attrition Rates over Past 3 Years by Region

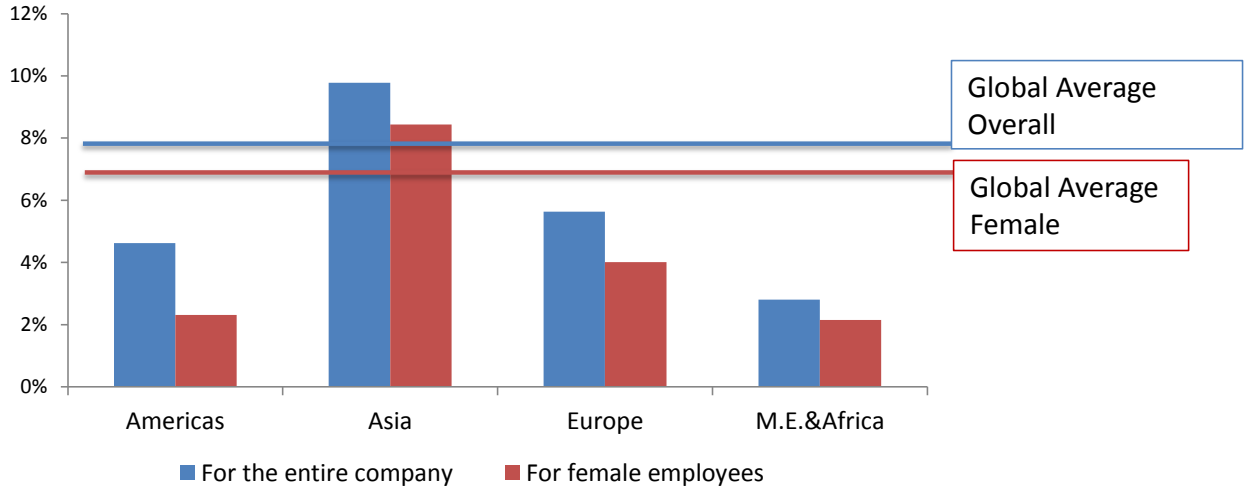


Figure 3.6.1 shows that the global attrition rate for female employees is on average lower than that for male employees. Comparing these results with the findings of figure 3.3.5 one might conclude that while the industry hires fewer women than men, female employees tend to stay longer with their companies.

The highest attrition rates for both female and male employees are found among Asian Companies, over 8%, significantly higher than the global average.

The lowest attrition rates are found among companies in the M.E. & Africa and the Americas, around 2% for women and around 4% overall. For companies in the Americas, attrition rate amongst females is 50% lower than the attrition rate for the entire company.

Figure 3.6.2 Annual Attrition Rates over Past 3 Years by Company Size

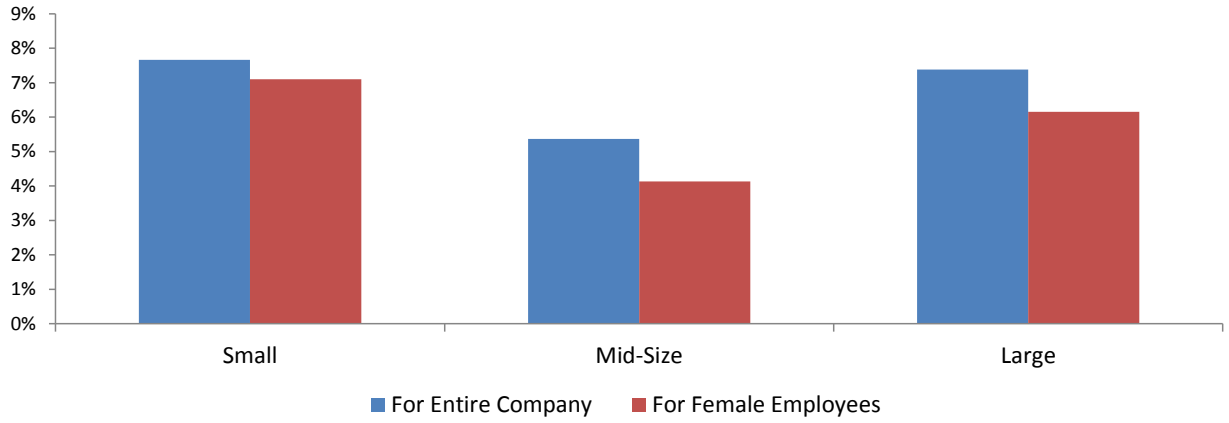


Figure 3.6.2 suggests that mid-size companies tend to have the lowest attrition for both male and female.

Figure 3.6.3 Use of Long Term Incentive Plans by Region

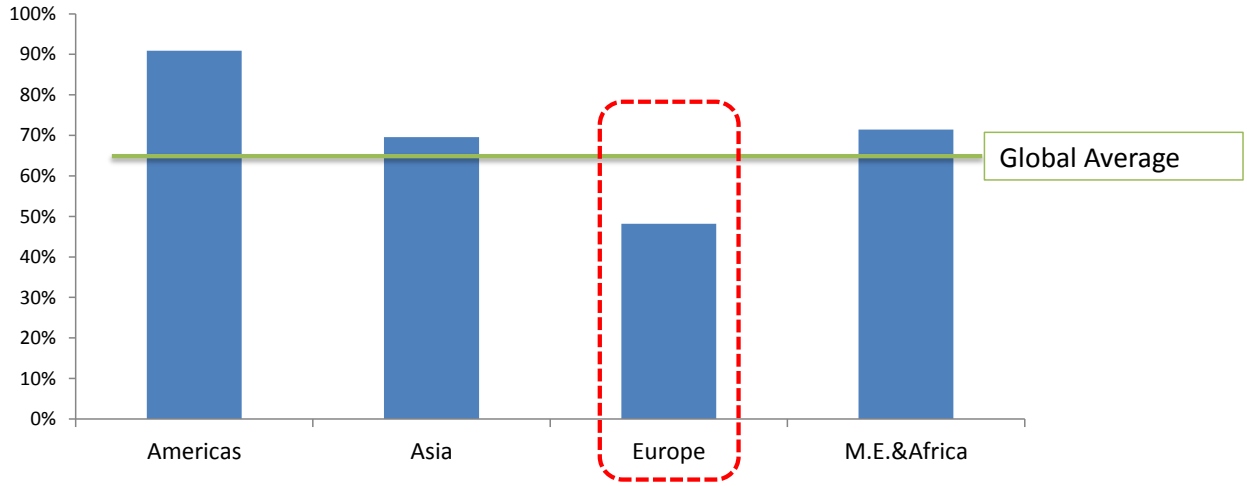


Figure 3.6.3 above indicates that less than half of European companies offer long term incentive plans to they employees, significantly lower than the global average.

On the other hand, companies in the Americas and M.E. & Africa regions tend to use long term incentives more often and, as illustrated in figure 3.6.1 above, they also tend to have lower attrition rates than companies in other regions.

Figure 3.6.4 Use of Long Term Incentive Plans by Company Size

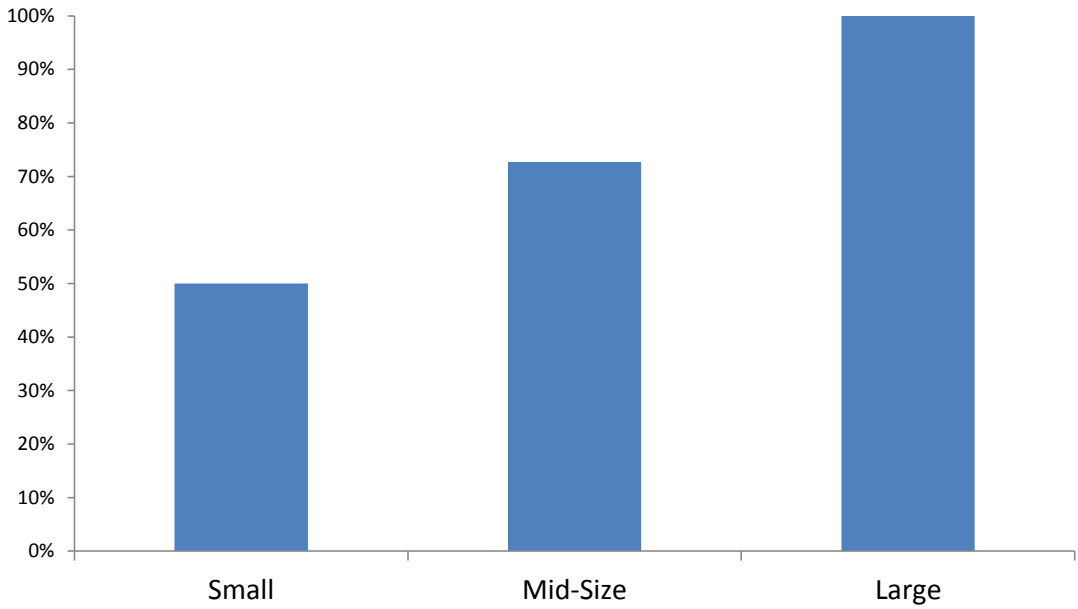
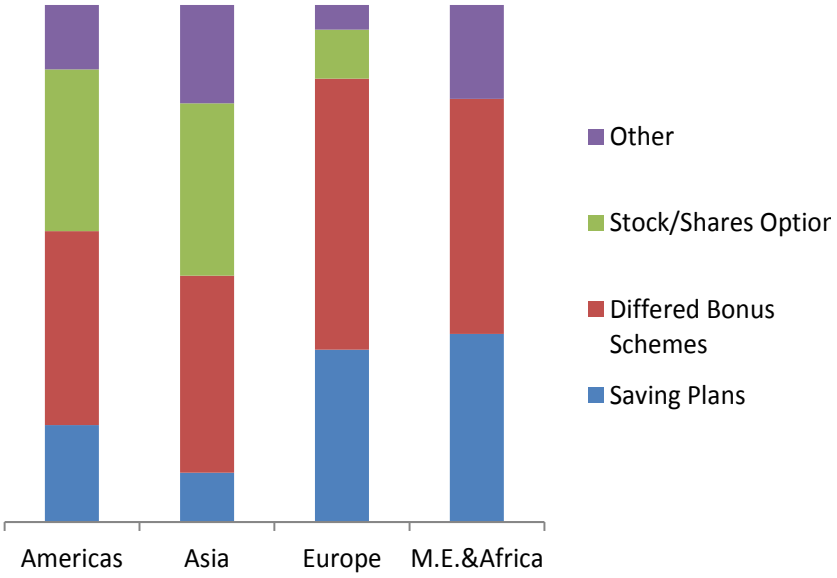


Figure 3.6.4 clearly illustrates that the bigger the company the more likely it is to use long term incentive plans for its employees. While only half of the small companies responding to the survey say they use long term incentive plans, all large companies responding to this survey state they have in place long term incentive plans for their employees.

Figure 3.6.5 Type of Long Term Incentives Used



Bonus Schemes are the most often used long term inceptive globally.

Next to the use of Bonus Schemes, companies in the Americas and Asia tend to offer employees share options (also stock/share options) while companies in Europe and the M.E. & Africa prefer to rely more on savings plans to further incentivize their employees.

Figure 3.6.6 below shows that, of the companies that use long term incentives, almost 60% have in place one incentive type while about a third of the companies use 2 types of long term incentives and only 6% of respondents say they have in place 3 or more types of long term incentives.

Figure 3.6.6 Number of Long Term Incentives Used

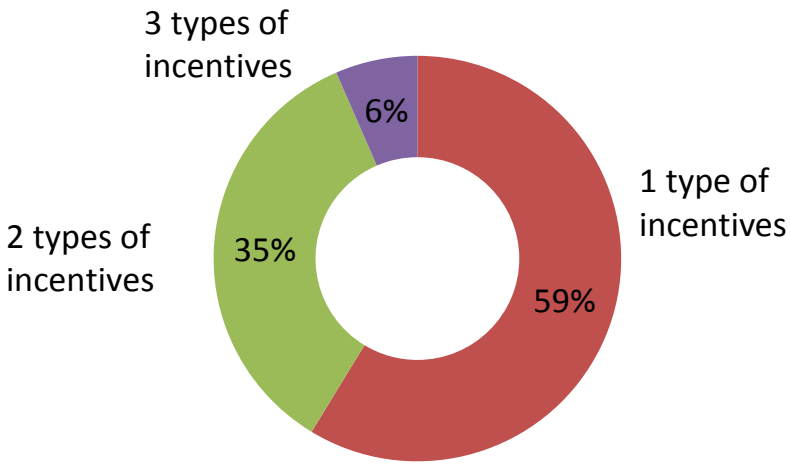
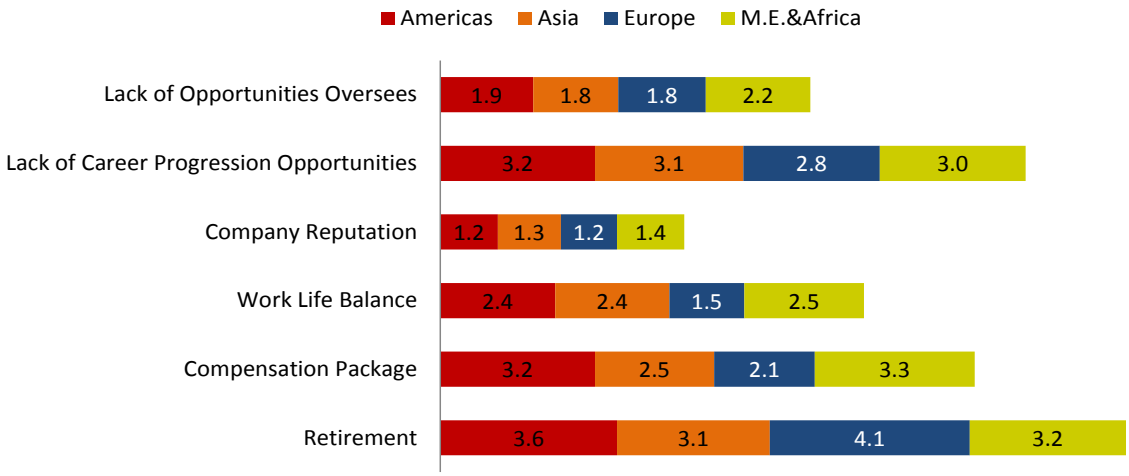


Figure 3.6.7 Most Often Mentioned Reasons by Employees When Leaving the Company by Region
1-never mentioned, 5-very often mentioned



As shown in figure 3.6.7 above, Retirement is the number 1 most mentioned reason given by employees globally when they are leaving a gas company. This is especially true for European companies.

Lack of Career Progression Opportunities is the second reason mentioned most often, especially by employees leaving gas companies from the Americas and Asia.

Furthermore, while compensation package is the most often reason mentioned by youth for refusing to join a gas company as illustrated in figure 3.2.7, it is only the third most often mentioned reason by people that are leaving a gas company.

Company reputation is the least mentioned reason by people leaving the company, which suggests that natural gas companies not only have a good image among young people, as illustrated in figure 3.2.7, but also maintain a good reputation with experienced employees who are now leaving the company.

Figure 3.6.8 Most Often Mentioned Reasons by Employees When Leaving the Company by Company Size
1-never mentioned, 5-very often mentioned

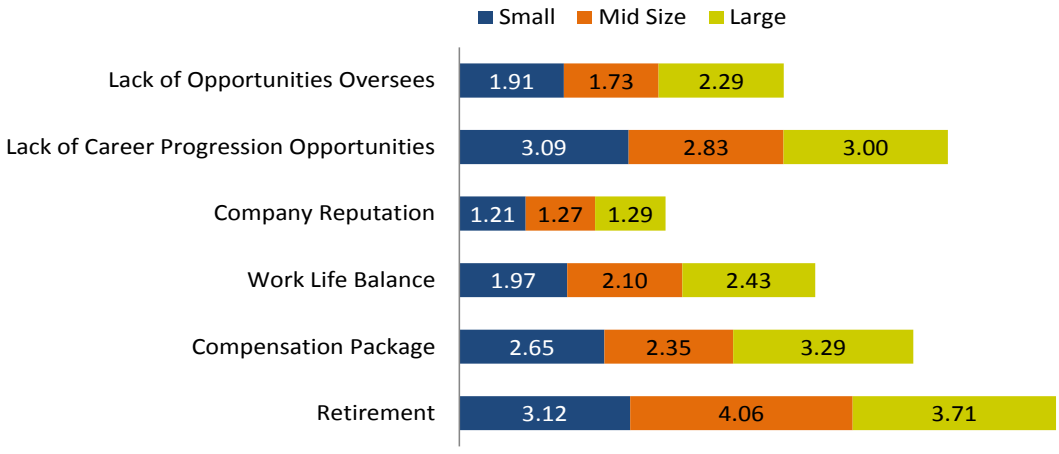
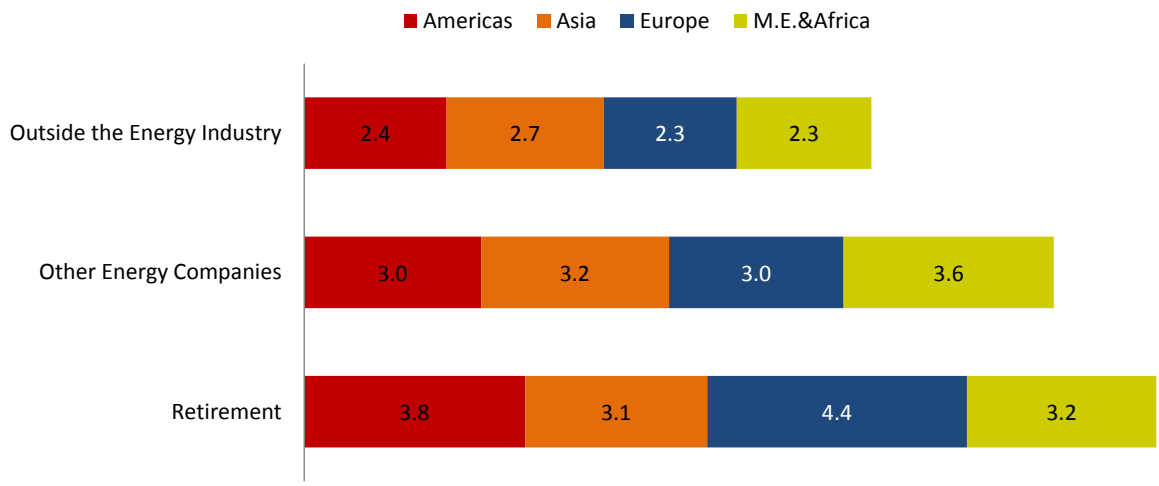


Figure 3.6.8 above emphasizes that Retirement is the main reason mentioned by employees leaving the company, especially for mid-size companies.

Compensation package is mentioned as the main reason by employees leaving the company much more in large gas companies than in small and mid-size gas companies. These results complement the findings of figure 3.2.8 which place Low Compensation/Package as the most often mentioned reason by graduates refusing to join a gas company, especially large gas companies.

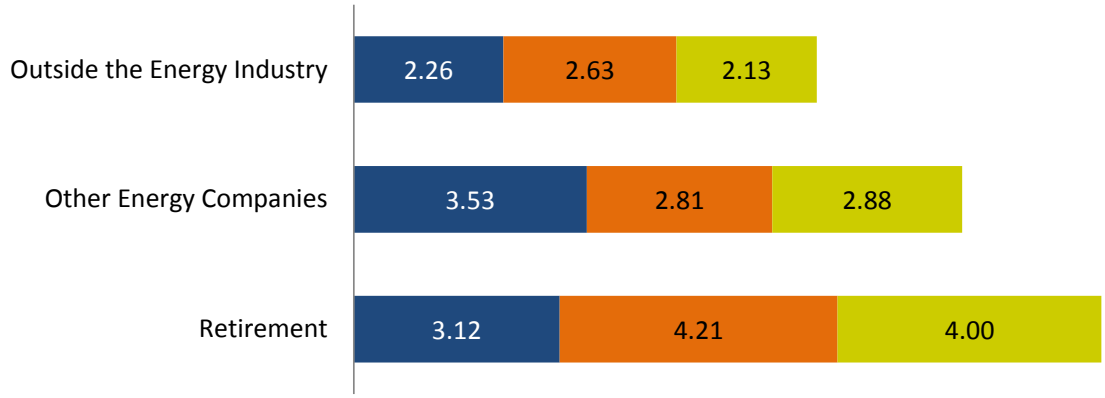
Figure 3.6.9 Where Most Employees Go When Leaving the Company by Region
1-very rarely, 5-very frequent



According to the results in figure 3.6.9 above, most employees leaving their company, are transitioning into retirement. This is occurring at a much more accelerated pace within European companies compared to companies in other regions of the world.

Regarding the employees that leave a gas company but do not retire, most of them tend to stay within the energy industry and join other energy companies

Figure 3.6.10 Where Most Employees Go When Leaving the Company by Company Size
1-very rarely, 5-very frequent



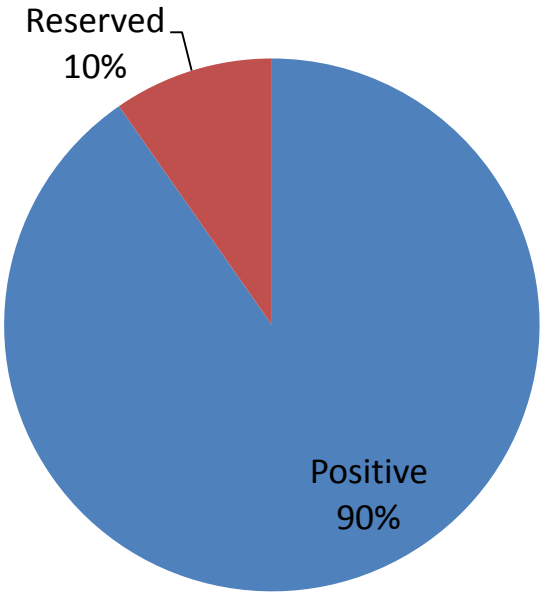
For mid-size and large gas companies most, employees who are leaving tend to retire; however most employees leaving small energy companies tend to do so in order to join other energy companies.

Talent Interviews

Senior & HR Executives

1. **How do you see the gas industry evolve over the next 10 years?**

Figure 4.1.1 Expected evolution of the Gas Industry over the Next 10 Years



About 90% of the executives interviewed believe that the gas industry will see a positive evolution over the coming decade. The industry is expected to develop further and natural gas to account for a much larger percentage in the energy mix of the future. Most interviewees expressed their convictions that the gas industry will experience a boom over the next 10 years, becoming the fuel of choice for the transition towards a more renewable and sustainable energy mix. Some interviewees expect natural gas to be a game changer in the near future that will be a great fuel upon which to base a medium term energy portfolio. Their confidence is grounded also on several energy studies that forecast natural gas superseding oil by 2030.

The pace at which the gas industry will expand depends to a considerable degree on how fast technology develops; however, the accelerated pace the gas industry has known over the past 10 years is generally expected to continue and accelerate further.

> *"If this is not the time to make a plan for aggressive growth, then I don't know when it is.'*
> David Carroll, President, Gas Technology Institute

Several interviewees support the experts' opinion according to which the natural gas industry is entering a 'Golden Age of Gas'.

> *'There is no doubt we are at the beginning of a Golden Age for natural gas across the globe. In the US we have seen an abundance of natural gas that has led to increased energy security, significant environmental and economic benefits. And it does not stop there—across the globe there are similar opportunities.'*
> Lori Traweek, SVP and COO, American Gas Association

The pace and extent of this expansion is predicted to vary from one region to another. North America is estimated to continue to develop natural gas in a very aggressive manner, advancing on its incredible transformation from an energy importing country into an energy exporter within a remarkably short time span. Russia is expected to also move forward aggressively with natural gas and perhaps China as well, provided that the appropriate price incentives are present. Less optimistic expectations were mentioned regarding the evolution of natural gas in Europe, as compared to regions like North America and Asia.

> *'In Japan ,they will not produce their own gas but they will have to import. Therefore LNG will become more important and there will be more international trading in gas and oil.'*
>
> Gertjan Lankhorst, CEO, Gasterra

Increased Energy Demand

Many interviewees note that the gas industry is destined to expand due to the general increase in global energy demand with natural gas being the most appropriate fuel to fill the gap. The IEA, in its WEO2014 central scenario expects 97% of the demand increase to come from non-OECD countries (excluding international bunkers) of which developing countries in Asia make up 65%. This growth is mainly the result of people pursuing an increase in comfort and quality of life. As pollution related health issues in these areas have become a significant concern, local authorities will be looking to source the additional energy required from cleaner fuels and natural gas is one of the most sustainable options.

> *'People are fed up with pollution and want a solution. Natural gas ticks all the boxes as a sustainable energy source, it's available, affordable and accepted by the public.'*
>
> Alaa Abu Jbara, COO Commercial & Shipping, Qatargas

Natural gas is considered to possess a variety of positive characteristics that help position it as the future fuel of choice. First, natural gas can be considered the cleanest of all fossil fuels due to the fact that it emits considerably less CO2 as compared to burning oil or coal. Second, since the 2011 incident at Fukushima and the effects that reverberated throughout the world, leading in some places to nuclear phase-out policies, many decision makers consider natural gas a safer option.

> *'The nation became quite negative towards nuclear energy so it is really hard to find a sight to build a nuclear power plant.'*
>
> Gi Chul Jung, Head of Global Relations Promotion Group, Kogas

Furthermore, natural gas is considered generally more affordable than many renewable technologies. Additionally, given the flexibility offered by natural gas, it often plays a complementary and backup role in relation to the more intermittent renewables.

Increased Gas Supply

Many senior executives pointed out that, due to of the technological advancements achieved over the past decade, natural gas reserves have become substantially more abundant, especially when considering the unconventional sources. The shale gas revolution in the US is expected by many specialists to replicate itself in other parts of the world as well. The pace at which this would happen will depend on further technological developments that can help the shale gas production become more economical and environmentally friendly.

'Shale gas could be an option but we have to reduce the footprint and reduce the water usage. The industry will be changing to a much more high tech industry.'

Geert Grevings, Head of Public Affairs, Gasterra

Recent developments in technology have not only made reserves more abundant, but they also allow for a more economical utilization, thus driving the price of natural gas down and encouraging an increase in gas usage, especially for power generation and in the transportation sectors.

'We did not have the resources and technology to produce it economically. Today with the abundance we have, a whole new world with lots of opportunities is opening up. So we see more and more natural gas used, especially for power generation.'

Anonymous

'We will probably see higher penetrations in transportation, in road vehicles, including light vehicles, but also in other market segments such as the marine sector, linked to LNG.'

Alfredo Ingelmo, Director of Market Development, Gas Natural Distribution

Furthermore, technological improvements also make the transportation of natural gas possible across longer distances and at more affordable prices allowing additional countries to become exporters and importers of natural gas.

While several interviewees believe that the evolution of the gas industry over the coming 10 years is closely linked to the development of unconventional gas, other participants argue the opposite.

'I think that what's really important, for IGU and for natural gas in general, is that the future of the gas industry is not made dependent on the future of shale gas and unconventional gas. Given the importance of conventional gas reserves, there is a future for natural gas in any case.'

Jérôme Ferrier, President, International Gas Union

In order for the gas industry to realize its full future potential, several important obstacles must be overcome. Among them are regulatory hurdles, infrastructure integrity and expansion, ensuring the availability of adequate human resources and the acceptance by the general public. Furthermore, whilst it would allow numerous development opportunities for the gas industry, technological developments may also bring several threats. One example would be the development of techniques to remove CO2 from coal and make it more environmentally friendly. The evolution of renewable energy sources is expected to carry an important influence on the future of the gas industry. If the technology for renewables develops at an accelerated pace and renewable energy becomes affordable and abundant, the market share of natural gas could in response diminish. Moreover, possible subsidies for renewable energies could have a similar impact on the market share of natural gas, even in the absence of significant technological breakthroughs.

'I see rapid development in technologies related to solar energy. We see it in the States now, where solar prices are declining to levels where they can provide cost effective electricity almost without subsidy. In the US, the power generation industry is the largest natural gas customer group. That customer group is under attack by rooftop solar. It is not a war of course; it is just the reality of technology. We tend to underestimate the potential for transformative market impacts due to rapid technology development across the board; shale gas and solar are two examples of such rapid development.'

David Carroll, President, Gas Technology Institute

Finally, a few interviewees are more reserved in their estimations regarding the future progression of the gas industry. They explain that many assumptions about the past decade have often proven inaccurate over time, and some executives point out that there is a good chance of history repeating itself and the current assumptions will be invalidated over the next decade. One of the most eloquent examples supporting this line of thought relates to the spectacular conversion of the USA from a generally expected major LNG importer, into a highly important LNG exporter.

2. Where would you like your company to be in 10 years?

Several interviewees replied that, over the next ten years their companies will be looking to consolidate their core businesses. Whether it is through increased efficiency, improved operations, additional investments in CSR, these companies are looking to position themselves as leaders in their fields and be regarded as great places to work at. Adapting to new market circumstances is considered critical by many interviewees. Elements like decreasing production or a shifting financial paradigm will present future gas professionals with considerable challenges that will have to be skilfully negotiated in order for companies to be successful.

Over the coming decade, many gas companies will be focusing on expanding their client base. Especially in regions that will be experiencing sustained economic growth and where the natural gas demand can increase significantly. Furthermore, the newly consolidated abundance in reserves makes natural gas even more affordable encouraging the development of adjacent industries that rely on natural gas to develop. The increase in customer demand also translates into more production, transmission and distribution responsibilities as well, encouraging the development of the industry and resulting in numerous additional business opportunities for gas companies.

'As a result of the natural gas abundance in the US, natural gas utilities have a significant opportunity to bring the environmental and economic benefits of this fuel to more customers.'

Lori Traweek, SVP and COO, American Gas Association

Several energy companies will be looking to increase their natural gas portfolios. Therefore, we can expect to see more efforts invested in securing additional gas supplies.

'In 2020 we want 60% of our production to be natural gas. We encourage the development of natural gas.'

Mao Qiping, Deputy Director-General International Department, CNPC

Other interviewees believe their companies are looking to become more diversified. Diversification is generally sought through adding new products to existing portfolios, entering new markets and segments to reach additional customers or securing additional sources of energy. Thus, some gas companies that are also power suppliers will be looking to move towards more renewables while others are thinking of adding LNG and/or CNG products to their portfolios.

Securing the appropriate human capital resources is identified as one of the most important challenge for the future and a critical obstacle to be overcome in order for the gas industry to fulfil its potential.

> *'Another big challenge is that we have almost half of our workforce that will retire within a few years, we have to replace them.'*
>
> Agnes Grimont, VP Performance & New Business Innovation, GDF SUEZ

3. What kind of people do you need to get there?

In order for the gas industry to sustain its development and to achieve its targets, suitable human capital with the right collection of skills is required, in its absence, achieving success is appreciated by many executives as being next to impossible. Whether to support the consolidation of core businesses or help in the diversification towards new areas, all gas professionals will have to be capable of bringing value to their companies.

> *'With new hydrocarbon reserves becoming harder to find, the gas industry is moving to new frontiers and faces new challenges. We need people who are prepared for these challenges'.*
>
> Rafik Mbarek, Resources Central Director, ETAP

> *'Innovative people thinking about new technologies, who are also flexible and capable to adapt to the new environment.*
>
> Jitka Adamkova, HR Director, RWE CZ

Many senior executives praise the benefits of nurturing diversity among their employees. This diversity refers to involving young, energy filled, recent graduates with well-seasoned professionals. Also, having people from different backgrounds, countries and cultures to compare and collaborate in the implementation of the best practices most appropriate to the problems at hand. Gender diversity is considered very important as well and while it is true that there are more male employees than female employees in the gas industry, there are a lot more female employees than there used to be. These trends are actively encouraged and should continue and even accelerate in the gas industry.

> *'We see a great value in having a mixture of young people and well-experienced people across different cultures.'*
>
> Runar Tjersland, Special Advisor, Statoil

Different skills and considerable expertise are required in different areas of the gas industry. Therefore, several interviewees mentioned they are looking for highly specialized professionals in various fields, to contribute and play their part towards achieving their companies' goals and targets. Highly skilled gas professionals are in short supply. This is especially true both at an industry as well as company level. For example, at an industry level, the recent developments around shale gas in the USA, significantly increased the demand for professional drillers. Nevertheless, conventional drilling expertise does not suffice. Specialists are now expected to also master a good understanding of hydraulic fracturing and horizontal drilling. On a company level, several enterprises that used to operate in the downstream area of the gas value chain have been showing increasing interest in E&P. In the short term, these companies often rely on outsourcing E&P skills to third parties however, in the long run, many of these companies will most likely be seeking to develop their E&P expertise intake.

> *'NGV is relatively new, especially LNG for transportation which is totally new. So it is not easy to find the right experienced and qualified people in these areas.'*
>
> Saeed M. Al Rashedi, SVP-Technical, ADNOC

Experienced project managers are highly sought after in the gas industry. The projects in question often imply extreme proportions and require significant capabilities for their design and construction. Specialized project people who are willing to move internationally are considered highly valuable.

The gas industry is a technology intensive industry. Therefore, it comes as no surprise that many gas executives emphasize the critical role strong technical skills play in the gas industry. The high level of complexity in the industry is attractive to highly competent technical professionals since it provides them with an excellent 'stage' on which they can demonstrate their skills and capabilities.

> *'Field experience is very good. There are people in this industry who have never seen installations such as production platforms. I can't say they couldn't function without seeing it but it is definitely helpful when reaching corporate decisions to understand what the main activities and issues are in the field and how these affect the business. So some field experience is good and a little bit of actual operational experience as well.'*
>
> Marcel Kramer, Former CEO, Consultant and Senior Adviser to Gazprom Management.

Some interviewees say it is very important for their employees to have command of both technical as well as complementary soft skills. For example, many engineers are very good at implementation but are not effective managers. Having communication skills, decision making skills and being a team player are often missing, say several HR executives.

> *'When I'm searching for an engineer, I find a lot of engineers but most of them don't have the right skills to be recruited. Why? Most of them concentrate on technical skills but they lack the management or the soft skills which are very important as well.'*
>
> Reham Gharib, HR General Manager, Taqa Arabia

The analytical skills of employees are treasured by senior executives in the gas industry. Therefore, highly analytical professionals, that can piece together the puzzle in order to identify where breakthroughs may be possible, add a lot of value to their companies and are

intensively sought after by gas companies. Having a comprehensive overview of all aspects of the gas value chain is also highly appreciated in an employee.

> *'The main difference between the gas and the oil industry is that to develop a gas project, you need to look at the full value chain.'*
>
> Jorge Gomez de la Fuente, Project Portfolio Manager, Repsol

Logic and language skills that enable gas professionals to communicate with their peers are considered a must.

> *'Think as logical as possible. Make it simple. Would you do it yourself? No, then don't do it for the corporation.'*
>
> Geert Grevings, Head of Public Affairs, Gasterra

Next to the hard skills and competences, professional behaviour and values are also required. Several interviewees say it is important to have employees who are open minded and have the right attitudes, are autonomous and self-motivated, that have integrity and are reliable. However, good combinations of the desired traits are not easy to find.

> *'More importantly, we look for people with the right sort of personality, the right approach and right organizational culture.'*
>
> Anonymous

Several companies focus on training their own personnel in order to ensure the best fitting solution in response to their staffing needs.

> *'We continue to recruit young people and educate them ourselves into full gas professionals. We don't buy experience from outside, we train people ourselves in the company.'*
>
> Gertjan Lankhorst, CEO, Gasterra

Securing the required talent will prove very challenging and is of critical importance for the gas industry to accomplish its future goals.

> *'There is a great shortage in various disciplines across the supply chain and especially in the exploration and production (upstream) side of the business, large demands are met with low qualified personnel throughput and an aging workforce, which makes for a double problem.'*
>
> Abdulaziz Mohammed Al-Mannai, Human Resource Manager, Qatargas

The quote above is in line with the survey results in figure 3.2.3 which illustrate that the most acute skill shortage is felt in the Middle East & Africa regions, especially in relation to technical skills. Several HR executives say the gas industry is not considered attractive enough by the youth. One reason mentioned by interviewees is the cyclical evolution of the industry. Namely, when oil/gas prices are high, the industry is looking to hire additional staff, yet when these prices fall, people are often being quickly made redundant. These fluctuations are giving the gas industry a bad reputation among prospective hires. Another reason mentioned by our

respondents is the fact that the gas industry is not perceived as environmentally friendly. Therefore, investing more effort in environmental initiatives and CSR practices is advised.

Next to attracting youth, some HR executives argue that the gas industry should also focus more effort on attracting female talent. There is in general a gender balance among graduates coming out of university; however this balance does not penetrate into the gas industry, where female professionals are generally estimated by interviewees to be making up only 20-30% of the total workforce.

Respondents believe that, by tackling one or more of the issues described, the throughput of new talent could significantly increase within a few years.

4. What do you see as the main issue young professionals have to face in the gas industry?

Some HR executives argued that young professionals must be more patient regarding their progression in the gas industry. Many young people are seeking to move with speed, to pursue immediate results and recognition, to develop short hierarchical lines and have a high impact on the projects with which they are involved. However, achieving excellence takes time and, given the size of some gas companies and the critical importance of their projects, going too fast almost always proves counterproductive and usually detrimental to one's career. The gas industry is a well-established industry that often has cycles and generally moves at a certain rhythm. There are complex skills required by the gas industry that take time to develop. These skills are not being taught at universities, they have to be developed on the job.

Young professionals starting in the industry are advised to have patience, be persistent and persevere in knowledge gathering, be it of a theoretical and/or practical nature. Investing a period of time in developing one's skills on the job and benefiting from the experience of others is highly recommended. Gas projects often entail massive scale, vast complexity and also a panoply of associated safety issues. Consequently, gas professionals leading such projects must command remarkable skill and their competences should be beyond reproach for society to trust them to develop such projects.

> *'Becoming a real expert takes time. The world was not built in one day so you can't become an expert overnight.'*
>
> Mao Qiping, Deputy Director-General International Department, CNPC

> *'The most important thing for young professionals today, and the hardest thing to do, is to be patient.'*
>
> Anonymous

In contrast, other HR executives consider the accelerated pace that young professionals have to keep up with in the gas industry is one of the main challenges to be faced. Young professionals often have to keep short deadlines and undergo aggressive development in a rigorous environment. There is little room for compromise; when on a project, young professionals are expected to deliver, no matter what. Mistakes are allowed and considered a way of learning however, supervisors most often control the risks and reduce the impact on the business.

'There is a fast pace, there is a lot to take in. You have to open up to all of it which is why this business and industry only needs the best people.'

Dana Al Mulla, Human Resources Manager, RasGas

Continuous learning is advocated as one of the most important factors for gas professionals, especially at the beginning of their careers. Complacency is considered one of the main obstacles to a successful and fulfilling career. Young professionals are advised to be aware that developing their skills and competences is first and foremost their own responsibility and not that of others. The different training programs available are mainly instrument to help them achieve their development goals. It is a given that the gas industry is constantly changing and technology evolves at an accelerated pace. Therefore, in order to develop a successful career in the gas industry, continuous education and keeping current with innovation is an absolute must.

'Learning is one of the most important things you should be focused on, especially in the first couple of years when you start a job in the industry.'

Abdulaziz Mohammed Al-Mannai, Human Resource Manager, Qatargas

A second strategy that a young professional can use in battling complacency is setting clear, progressive goals and career aspirations. In combination with learning, this provides young professionals with a strong recipe for success.

Constructing a successful career in the gas industry requires a lot of flexibility. Young professionals must be willing to step out of their comfort zone, change jobs, countries and, even companies. They are advised to take the advantage of opportunities that arise and not refuse any opportunities to learn something new. Not often mentioned, however very important here is also their life partner, it is very important that they be flexible as well as globally mobile.

'They may understand one core of the business very well but I think it is important that they broaden their horizon of information and knowledge by working in different aspects of the business.'

Saud Alarifi, HR Manager, ExxonMobil

The lack of a clear career path, proper training programs and short term thinking practiced in some gas companies, is identified as representing an important obstacle for young professional's career development.

Some interviewees identify low salary packages offered by gas companies to young professionals as an issue and an important reason why young professionals switch companies and industries. Considering the large pool of various skills required when working on gas projects, young professionals in this industry must be able to cooperate and work together in very diverse teams. Therefore, mastering appropriate language and communication skills is considered something absolutely indispensable.

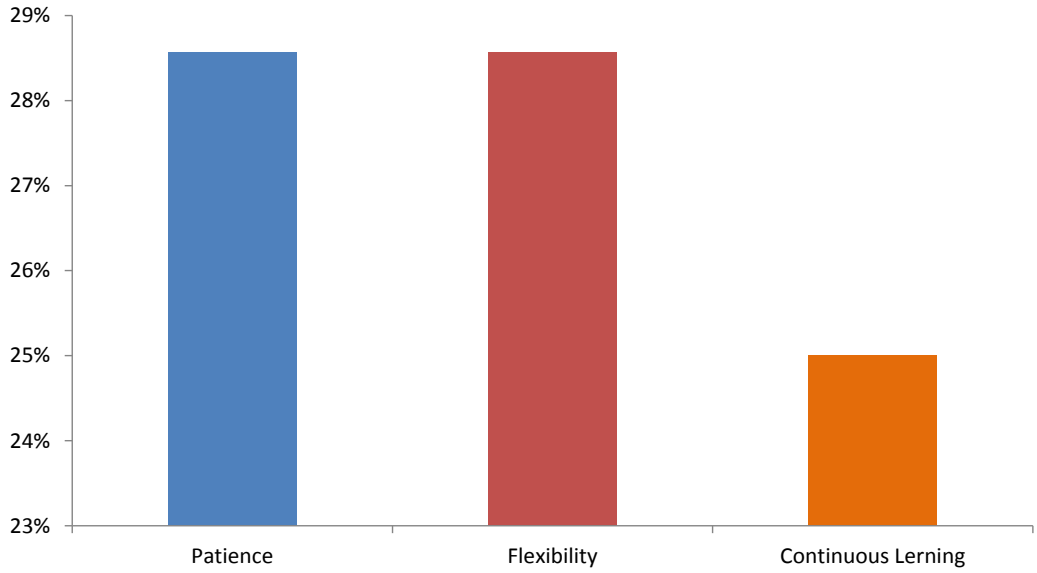
'We operate in an international setting so young professionals should enhance their communication skills.'

Gi Chul Jung,Head of Global Relations Promotion Group, Kogas

Several senior executives pointed out that more and more gas and energy projects nowadays break down because they fail to gain social approval. More and more people will be required that not only possess technical and managerial skills but also master environmental knowledge, social awareness and communication skills. This will allow them to persuade society of the advantages bought by gas projects.

5. Advice to help young professionals in their careers in the gas industry?

Figure 4.1.2 Senior Advice for Young Professionals



Patience

As illustrated in figure 4.1.2 above, young professionals are once again advised to be patient in their career progression and focus on consolidating the relevant skills a position has to offer before looking to move on. Sometimes the turnover in the gas industry is relatively low and young professionals must wait years for the right opportunities. Nevertheless, if they are patient, senior executives say the career opportunities are limitless. Interviewees compare the career progression in the gas industry with a marathon, in which participants should focus first on building up their foundational skills, set a realistic pace and adapt to the environment around them and their goal should be to persevere and persist.

> *'They are competent, smart, ambitious and have the energy, they can do it. But they are very impatient and rushing things is setting themselves up for failure as there is a lot they need to learn and a lot to reflect on before they get to the competent level where real quality can be delivered.'*
>
> Dana Al Mulla, Human Resources Manager, RasGas

> *'In some parts of the world people would like to climb the ladder like lightning. Sometimes you might get lucky and climb the ladder very quickly but you miss giving yourself the chance to learn and you won't complete your personal learning.'*
>
> Saeed M. Al Rashedi, SVP-Technical, ADNOC

Flexibility
About 30% of the executives interviewed encourage young professionals to maintain flexibility and mobility, and gather different types of experiences from various settings. For example, a young professional who is aiming for a corporate position at HQ later on in their career, would benefit from gaining hands on experience during their career progression; for instance, having worked on a hydraulic platform can help decision makers better understand subtle implications for workers.

Young professionals are advised, especially in the early part of their careers, to focus their attention on learning and not be afraid to take up multiple assignments. Executives advise young professionals to get out of their comfort zones and not be too risk adverse. Executives further explain that learning experiences, be they good or bad, will help young professionals to round out and will allow them to better understand where they wish to position themselves in the future. Therefore, young professionals should keep an open mind and take the opportunities they are offered even if at first, the proposals do not fit 100% with their plans and ambitions.

> *'Don't feel the pressure that you have to pick your entire career path and where you want to end up, during in the first few years after graduation. The likelihood is, in twenty years you'll be working in an area that nobody has invented yet or one that has evolved tremendously.'*
>
> David Carroll, President, Gas Technology Institute

Continuous learning
Continuous learning is advised by about a quarter of the interviewees. Considering the sheer size and complexity of the natural gas industry and the ever accelerating pace at which the gas sector evolves, the educational possibilities can appear almost infinite. The internet facilitates access to vast amounts of relevant information relating to the gas industry, companies, projects and required skills. Young professionals should acquaint themselves with available information as much as possible.

Young professionals are advised to keep their eyes and ears opened. They should not only seek to benefit from the experience of more senior gas professionals but also try to lean from specialists active in other areas of society as well. Staying connected to other professionals at different organizations is important. Think tanks are considered an excellent way to learn and develop.

> *'I would encourage young people and also organizations to be more connected to the IGU, because networking and been exposed to other's experiences, are very important. We don't want to reinvent the wheel.'*
>
> Khaled Abu Bakr, Chairman, Taqa Arabia

Complementing technical skills by also developing soft skills is mentioned by several senior executives. Good technical skills will help young professionals be promoted into higher positions, however, the higher the position, the more important the soft skills become. Thus, in order to have a successful career in the gas industry, young professionals should seek to construct a well-rounded career development path where technical skills are enhanced by complimentary soft skills.

'Enrol in management courses during university. Even if you are an engineer or aim to become one, complementing your technical knowledge with management skills will enable you to assess situations from a different perspective.'

Petru Vaduva, CEO, Transgaz

Other interviewees advise young professionals to maintain an open mind free of limiting preconceptions, to think outside the box and always speak freely if they think they are right.

'Having a good work ethic and bringing added value to the team can take you far and make you a trusted and valued member of your organization, even if you are young.'

Rafik Mbarek, Resources Central Director, ETAP

'We look for novel ideas and new impulse. The future is not ours, it will belong to the young talent who will write it.'

Yves Tournié, Secretary Coordination Committee, International Gas Union

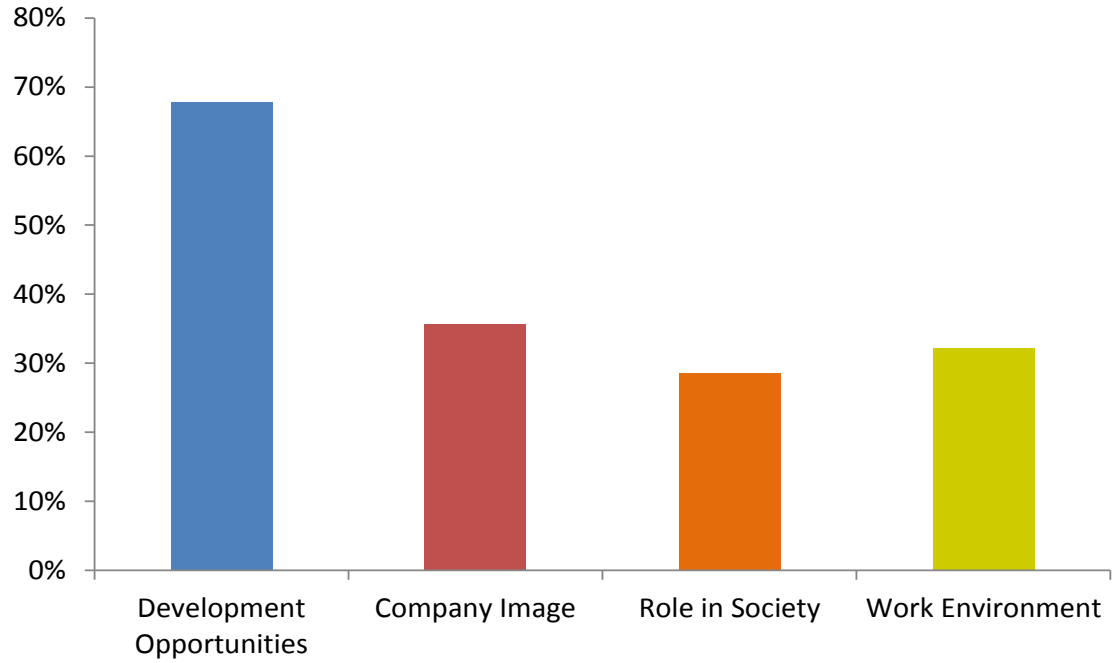
Maintaining a healthy balance between work and private life is considered a must in the long run.

'We have to remind ourselves that there is also life after work to be enjoyed.'

Runar Tjersland, Special Advisor, Statoil

6. What are your company's key selling points in attracting youth?

Figure 4.1.3 Key Selling Points of Gas Companies for Attracting Youth



Development Opportunities

As shown in figure 4.1.3 most executives interviewed believe that the key selling point making the gas industry attractive to youth is the rich collection of enticing career opportunities available in this sector. Working in the gas industry often implies an international environment where young professionals can enhance their network of contacts. Out of the wide scope of activities available in the gas industry, young professionals may choose a clear career path entailing continuous training and promising development opportunities along the way.

Many gas businesses rotate their employees through various jobs in different departments of the company and different regions of the world. This method gives young professionals the opportunity to come in contact with new cultures, different people and experience various approaches to problems solving strategies. In doing so, they gather relevant knowledge at an accelerated pace and develop their own way of reasoning while constantly expanding their horizon. Furthermore, being rotated through various job assignments, young professionals are given a good chance to find out what they feel they would like to be doing in the future and where their skill set lies. Several gas companies invest considerable effort and substantial sums of money in developing young professionals so they will one day become able to run mega projects worth billions of dollar. Some executives say that a good salary package is essential. However, more interviewees believe that, for attracting youth, offering the right development opportunities is generally more important than compensation.

> *'The support for career development, the quality of the colleagues you work with, the nature of the working environment, the opportunity to take real responsibility and to grow by doing. These are things which draw people to Shell.'*
>
> Jonathan Kohn, HR VP Qatar and MENA Russia Caspian HR operations, Shell

Company Image

Company image and brands are mentioned by about 35% of interviewees as a key selling point in attracting young talent to their companies. Youth are often interested in associating themselves with the success of a well-known brand and the message it communicates. A company that has been active for a very long time in the market has demonstrated its ability to adapt to the changing world of energy and transmits a feeling of stability with higher job security. Furthermore, a company that has shown continuous growth and expansion often inspires young professionals to believe in their own chance of gaining access to high quality professional development programs and be promoted to better jobs on promising career paths. Having a reputation of being innovative, implementing advanced technologies and providing challenging work for their employees is considered by many executives as an element highly attractive to young professionals.

Role in Society

The significant social and economic impact the gas industry plays in many regions of the world, is also considered a key selling point in attracting youth. It is often the case that big gas companies represent a main pillar of local economies with a strong global presence as well, thus enjoying a well-known reputation. In many parts of the world, natural gas provides essential needs including to heat hot water, cook food, to power busses for commuting, and in many other areas of daily life. Furthermore, natural gas is contributing to improving the cleanliness of the air in cities where natural gas replaces other, more polluting, fossil fuels thus having a large impact on the quality of life. Young professionals are often attracted by the chance of being part of the gas industry and adding their own contribution to people's quality of life and overall society

'We are talking about actually contributing to something meaningful. There aren't many things more important in this world to our fellow citizens then the provision of energy. Energy supports everything, the quality of life, economic development and a better and more secure environment for all.'

David Carroll, President, Gas Technology Institute

Working Environment

Offering a stable and friendly work environment is mentioned as another key selling point in attracting youth to the gas industry. Providing young professionals with the opportunity of having long term careers and the possibility to rotate through various positions, different countries and accomplishing diverse tasks is also considered to be desirable. Some interviewees appreciate that having a well consolidated company culture that cares about employees and offers them a pressure free work environment is more important than offering higher compensation packages. Furthermore, the gas industry offers safe jobs, with a low rate of accidents and young professionals can have challenging positions that depend on complex reasoning and intelligence.

'Everyone can deal with work pressure but not with the psychological pressure of job security or inhumane treatment or not feeling recognized for their efforts. All these elements would result in disengaged and demotivated employees.'

Dana Al Mulla, Human Resources Manager, RasGas

7. What is your best memory of being a young professional in the gas industry?

Several interviewees associate their best memories, from the time they were starting as young professionals, with the realization of the sheer size and magnitude entailed by the oil and gas industry. They were impressed with the level of complexity implied by the sector and the crucial role it was playing in society.

'My first experience in the industry was an internship with a natural gas and oil production company. During my first week, they put me on a helicopter to an offshore production platform, and that experience left its mark in more way than one…standing there on that platform, watching the dolphins jumping out of the water in front of a beautiful sun set, while they were drilling thousands of feet into the water to access this domestic energy that would help fuel the lives of Americans across the country.

Lori Traweek, SVP and COO, American Gas Association

'When I joined this industry, more than 10 years ago, I was young and it was my first job. I can remember we were talking about millions of dollars like it was millions of lollipops. For me it was really hard to think in those figures when I started with this business.'

Jorge Gomez de la Fuente, Project Portfolio Manager, Repsol

Some interviewees explained that one of the best memories they have from when they were starting their careers is related to the first time they were entrusted with significant responsibility. They appreciated the chance that was given to them but even more, they valued the trust they were invested with by their colleagues and supervisors.

My best memory probably is when I realized, a long time ago, that my management would trust me as a relatively young engineer who had barely been 3 to 5 years with the company, to carry on an important negotiation for marketing LNG. This was in 1984, I represented then my company's views and interests on a large project in terms of financial consequences. I was very excited as this was quite a responsibility. I knew that senior executives were standing right behind me, but still they trusted me.'

Jérôme Ferrier, President, International Gas Union

Most memories recalled have to do with a positive evolution. This entails starting small and achieving something important through significant effort, hard work and often against the odds.

'The memory that still touches my heart is that of the first LNG cargo that we delivered to Japan in January 1997. At that time I was in charge of Public Affairs and I felt so proud of being part of team that delivered the challenging Qatargas 1 project which culminated in delivering that first cargo of LNG on that very special day after so many years of hard work and dedication from all of us at Qatargas. Creating something with your dear friends, celebrating your successes and looking forward to another fun day is what it is all about. '

Alaa Abu Jbara, COO Commercial & Shipping, Qatargas

Some interviewees felt enriched by the international implications of their careers as gas professionals.

'I have been travelling for more than 10 years, and working abroad for a significant part of my career. This is something which is in my case a great memory. Working outside your home country, it opens up many opportunities but also adds a lot to your background, your way of thinking, your way of understanding life, it enriches you a lot, as a professional and as a person.

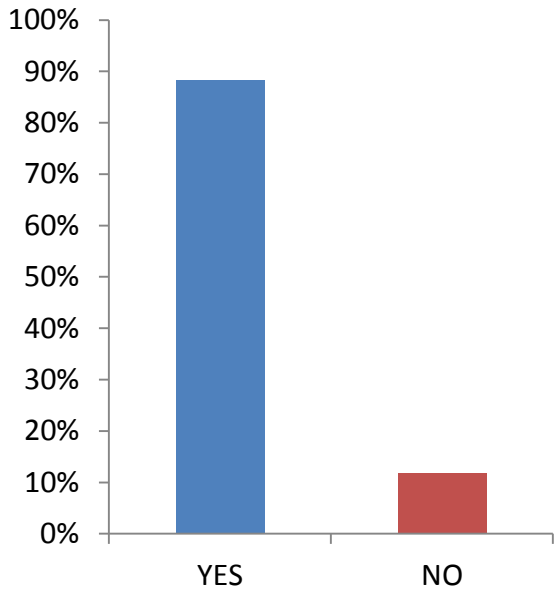
Alfredo Ingelmo, Director of Market Development, Gas Natural Distribution

Young Professionals

Through the HR survey, TF1 has consulted the point of view of companies regarding the attraction of youth to the gas industry. To complement this data, TF1 conducted 18 interviews with young professionals from 7 countries that have recently started working in the gas industry. The interviews are aimed at gathering young professionals' opinions regarding their own experiences so far in the industry, how well they feel university has prepared them for their careers, what could have been done better in their development programs and what could be improved to make the gas industry more attractive to youth. Illustrated below are the results of the subjects discussed.

1. **Do you feel you can fulfill your career expectations within the gas industry?**

Figure 4.2.1 Possibility to Fulfilling Career Expectations within the Gas Industry



Almost 90% of young professionals working in the gas sector feel that they can fulfil their career expectations within the industry.

Several interviewees stated that they are attracted by the challenges and development opportunities encountered in the industry. These give them ample opportunity to build up a successful and rewarding professional career

'My career aspirations are driven by my desire to remain constantly challenged. Because of the wide-ranging options within the natural gas industry, I have no concern about my ability to constantly evolve and try new things.'

Erin Kurilla, Engineering Services Manager, AGA

'My expectations are fulfilled because of the complexity of this industry. I discover new things about our business every single day and I can educate myself in this field.'

Anonymous

Other interviewees say they are mostly attracted by the positive impact the gas industry can have on the planet and its role in increasing the quality of life.

'We talk about how great companies like Google and Facebook are, but we forget sometimes that without the energy sector, we wouldn't have either. I like the fact that we can provide energy to millions of households and bring value to people.'

Stefanie Khaw, Manager for Competitive Strategy, Petronas

Providing enough energy to meet the increase in demand projected over the next few decades will be a real challenge and natural gas is expected to play a key role in supplying this energy. With this in mind, several interviewees stated that the positive perspective for the natural gas sector offers plenty of reasons to be optimistic about a career in this industry.

> *'Since the future petroleum industry will be focusing mainly on the natural gas resources through both conventional and unconventional exploration, this will be a major opportunity for a career breakthrough.'*
>
> Atef Belkahla, Head of Permits Department, ETAP

A few interviewees expressed their appreciation for the high level of professionalism shown by gas companies in integrating young people.

> *'When I came here, I had a very clear development plan which was realistic and made me confident. The confidence came from competing against my objectives and not against my experienced and professional colleagues.'*
>
> Meshaal Al-Sowaidi, Recruitment Officer, Qatargas.

2. **How well did university prepare you for your chosen career? (What can be improved?)**

Many young professionals say there is a gap between university teaching and the real career needs of the gas industry. Consequently, a considerable amount of relevant knowledge and skill that students would have found useful in the gas industry and which could have been obtained during university years, remain to be developed after graduation, on the job, as employees. A closer cooperation between academia and the industry is therefore strongly advocated.

> *I feel that in my country, the educational system is still a little bit far from the real employment needs'*
>
> Ramla Yousfi, Geophysicist Engineer, ETAP

> *"I think that more collaborative work and planning between the university and the oil & gas industry will yield a higher performing workforce.'*
>
> Atef Belkahla, Head of Permits Department, ETAP

Considering the findings of figure 3.2.1.13 which indicate that around 75% of companies globally have in place active cooperation programs with academia, it can be concluded that efforts are undertaken to bridge this gap; however, our data also suggests that these efforts should be intensified.

Universities are considered by several young professionals to provide students with basic skills and general knowledge. What many interviewees are saying is that including more practical examples and hands on experience during the university years would help students become better prepared for their professional careers. For example, when students learn how to create general mathematical and economic models, these models could be constructed

around a gas fired power plant, for example, or a pipeline project, thus allowing students to become better acquainted with the industry. Another idea proposed is that gas professionals active in the core part of the industry should visit universities to communicate what a career in the gas sector really incorporates. In doing so, they would add valuable information to the otherwise brief and limited interactions undertaken with HR recruiters.

> *'I never had interactions with people from the day-to-day gas business. I wasn't really able to understand what the upstream business was. I only knew what people from HR told me and those were really brief interactions.'*
>
> Anonymous

The observations expressed above corroborate our findings that the gas industry is doing a poor job at communicating with potential new hires as eloquently expressed by Marta Margarit in her quote saying that her daughter will not be joining a gas company because she is unaware of the opportunities available in the gas sector.

A few interviewees argue that universities might consider introducing industry specific subjects. In relation to this idea, some interviewees who replied that universities prepared them well for their careers mentioned that they studied subjects specific to the O&G industry.

> *'Well. My engineering school had optional courses dedicated to energy and gas.'*
>
> Ghislain Colom, Agency VP, Cofely

Some interviewees were able to integrate working experience with their studies either by doing a long term internship or by going back to school after a period of working in the industry. These interviewees all say that their efficiency increased dramatically after they had gained hands on working experience.

> *'Once you obtain some more responsibilities, you get more focused and motivate. Actual work experience makes a huge difference'*
>
> Anonymous

> *'Longer internships to get well prepared for your future career'*
>
> Emmanuel Khan, Project Owner, GRT Gaz

3. **Top 3 things you like/dislike about your current position?**

Figure 4.2.2 What Young Professionals LIKE About Their Current Positions

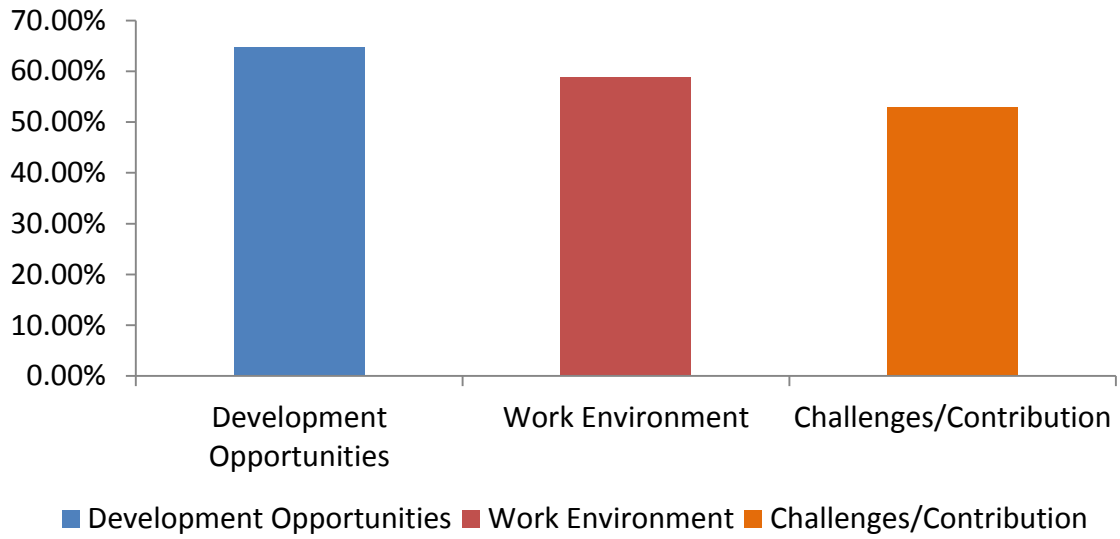


Figure 4.2.2 depicts the three positive aspects most mentioned by young professionals in regard to their current positions.

Development Opportunities
About 65% of interviewees say they appreciate the wide variety of career development opportunities available to them within the gas industry. The diverse nature of projects and tasks young professionals come across in their careers as well as the international exposure received by positions in the gas industry, are considered important factors that are highly appreciated by young professionals in their career progression.

Having a clear career development path laid before them, is also appreciated by young professionals.

> *'I know where I'm going and when I will complete this program I will have moved to a new the professional level. Afterwards, I can become a supervisor. My path is clear.'*
>
> Anonymous

Work Environment
Almost 60% of young professionals mentioned they appreciate the positive work environment they work in.

Several interviewees describe the good atmosphere in their team and the positive relationship they have with their colleagues as some of the things they like most about their current positions in the gas industry.

'The team of people that I work with, both within my company as well as external stakeholders makes my job very enjoyable. At the end of the day employees often spend more time with their co-workers than they do with their families (as sad as that may be). It's critically important that the relationships in the workplace are both gratifying and rewarding.'

Erin Kurilla, Engineering Services Manager, AGA

Good work-life balance is also mentioned by several interviewees as a positive factor offered by their current positions.

Finally, good management and a positive relationship with their superiors are highly appreciated by many young professionals working in gas companies.

'The guidance and leadership we get is great, a huge support from top management. They coach us to be on the right path.' PP

Challenges/Contribution

About 55% of interviewees mention as a positive factor the challenges they face, the responsibilities they are entrusted with and/or the contribution they make in their positions.

'I like being in the front line and leading the company's strategy in regard to petroleum exploration'

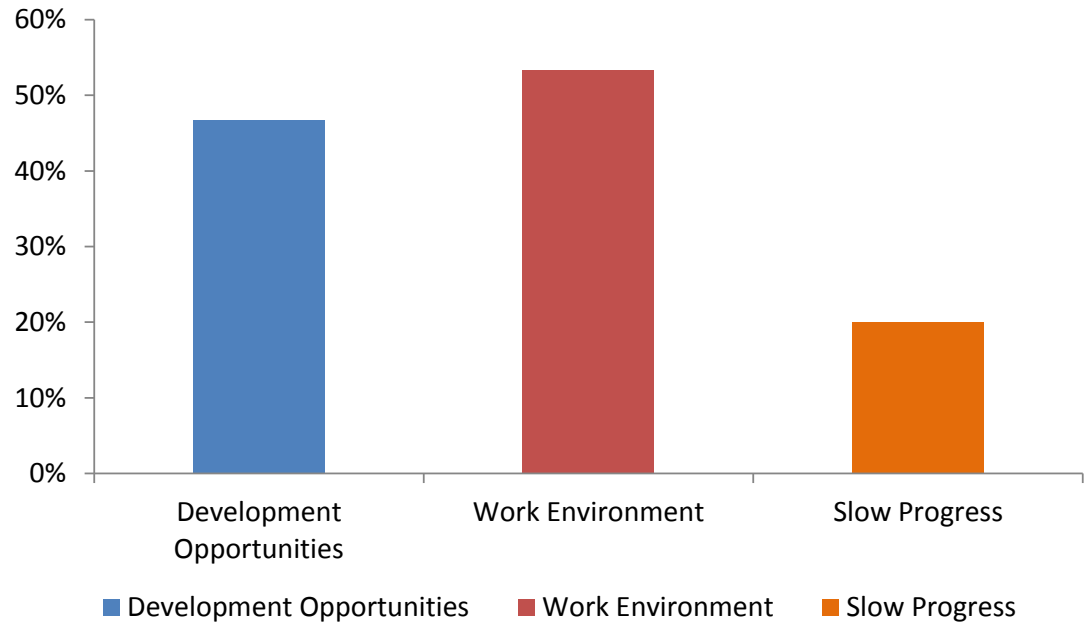
Atef Belkahla, Head of Permits Department, ETAP

'I like the feeling of doing my job for my country's development.'

Ramla Yousfi, Geophysicist Engineer, ETAP

Dislikes

Figure 4.2.3 What Young Professionals DISLIKE About Their Current Positions



Looking at what young professionals dislike about their current positions, one can see a relatively inverted image of figure 4.4.2. Namely, a lot of interviewees have emphasized the absence of things identified as LIKES in figure 4.4.2 as DISLIKES shown in figure 4.4.3.

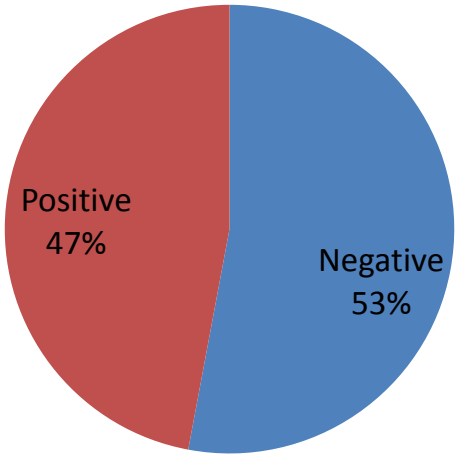
Over 50% of young professionals that identified a dislike about their current position have mentioned poor career development opportunities. Exemplified here were issues such as the absence of a clear career path, excessive routine in their work, little or no international exposure and insufficient development courses.

Most interviewees replying to this question have identified several negative issues related to the working environment around them. Chief among the mentioned issues are poor leadership, long working hours and a general lack of work-life balance.

A few respondents identified the slow pace and highly hierarchical way in which decisions are sometimes reached and changes implemented as a serious concern.

4. **To what degree do your company's career development programs meet your aspiration? (career ladder, individual development, etc.)**

Figure 4.2.4 Appreciation of Career Development Programs



There is almost an even split between the number of young professionals who expressed a general positive impression and those that expressed a general negative impression on how well their companies' career development programs meet their own career expectations.

Negative
Respondents that have expressed a generally negative impression have stated that sometimes these programs are not challenging enough, they lack in flexibility to develop faster but instead are excessively based on a fixed number of working years to be promoted.

Other respondents in this group have explained that some programs dedicate too much focus to career ladders while insufficient attention is given to individual and personal development. Section 3.3 of the report concludes that, on average, companies use individual development programs more than they do career ladders. The findings of the young professional interviews corroborate the above conclusion and show that the absence of individual training programs is generally considered a significantly negative aspect by young professionals.

A few interviewees say they would like to develop faster and disapprove of the very limited contact they have with HR, saying that almost all contact they have is with their direct managers.

In smaller-sized companies with a limited number of peers, the lack of a formal career development program is understandable. In these companies however, often the direct supervisors and upper level management often do an excellent job at creating an inclusive environment for newer employees. Some companies will not invest in formal career development programs but focus on satisfying a certain need whenever it arises.

Positive
Of the respondents that have expressed a general positive impression, some explained that their companies' development programs provide them with the abilities and thus confidence to successfully respond to the industry's requirements and challenges.

The fact that several career development programs provide opportunities for external education is also highly appreciated by young professionals.

Some interviewees say they appreciate the continuous support they receive from their coaches, supervisors and other people involved in their professional development.

Other interviewees mention that they appreciate the solid structure and clear career path laid down by their companies' development programs.

5. **If you had the freedom to add or change your career development program, what would you change?**

Numerous interviewees declared themselves completely satisfied with the development programs in place in their companies and would have nothing to add. Others have suggested various potential improvements. Presented below are some of the most relevant examples mentioned.

Some of the young professionals interviewed expressed their desire to have more dynamic development programs which allow for faster progression. An example is given in which young professionals, instead of having to wait a number of years to be promoted, should have the possibility to submit themselves for a promotion once they have completed a minimum number of projects. Additional responsibilities and job rotation mechanisms are also desired.

Job rotation is considered beneficial and some respondents state they would like to have more of it. They also believe that it is through experience in different positions that one can encounter fresh ideas and experience new ways of approaching assignments. In addition, some interviewees would also add supplementary responsibilities to their career development programs.

A few interviewees said they would like to have more freedom and be actively involved in the structuring of their own career development programs. Some respondents are content to already have had this opportunity. Furthermore, additional feedback and discussion with their

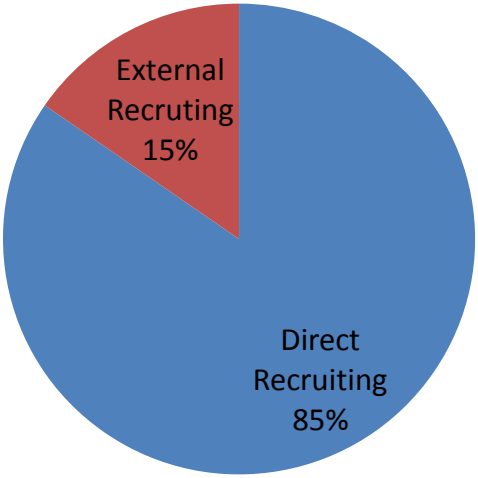
superiors on their progress would be useful in complementing the usual annual/bi-annual performance review meetings.

Several respondents indicated that they would like more hands-on experience and practical applications included in their development programs. Others have indicated specific skills they would like to develop, such as reservoir geophysics, communications, financial skills or project management. Furthermore, a few interviewees said they would prefer to have better access to external education programs, for example MBA programs.

Numerous interviewees state there completely satisfied with the development programs at their company to which they have nothing to add.

6. How did you find your first job (recruiting channels)

Figure 4.2.5 Recruitment Channels Used by Young Professionals

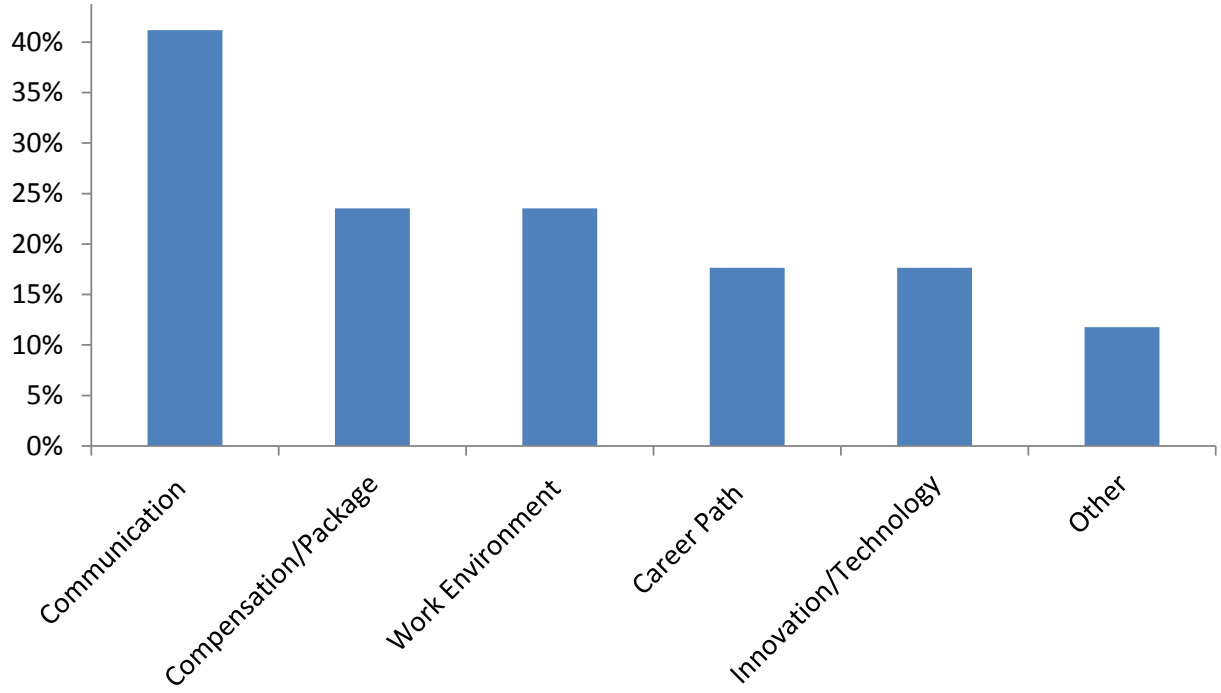


About 85% of interviewees responding to this inquiry say that they found their first job through direct recruiting (company's website), while only around 15% of respondents indicate that they found their first job through recruitment agents or job boards. These findings corroborate the results from figure 3.2.9 which indicate that gas companies seldom turn to outside recruitment agents for satisfying their staffing needs.

Among the direct recruitment channels mentioned most often are the companies' websites, scholarships, internship programs and other diverse actions organized on university campus. Word of mouth seems to be vastly underappreciated, as a high number of respondents said they initially heard of the job vacancy from a friend or acquaintance before starting their application procedure.

7. **What can be improved to make the industry more attractive to youth?**

Figure 4.2.6 Areas of Improvement to Making the Gas Industry More Attractive to Youth



Communication

As illustrated in figure 4.2.6 above, over 40% of respondents believe that in order to become more successful in attracting youth, the gas industry should first improve on its communication. Especially beneficial would be increasing communication ties with students and academia. Several interviewees argue that students have very limited knowledge about what the gas industry entails and what a career in this segment looks like. These interviewees suggest consolidating stronger relationships with students which would allow these to become more aware of the opportunities offered by the gas industry.

> *'There should be more open days at schools to have presentations. Let the students experience what we do, so they know what they can be part of after their graduation/scholarship and recognize where to bring value from their side.'*
>
> Anonymous

Furthermore, several interviewees point out the role played by the gas industry in global economics and the potential it has to help improve the environment should also be communicated better to youth. Making young people feel they are a part of something bigger is a sure way to attract their interest.

A few young professionals believe that it would be a good idea to approach youth even during their high schools years and present the gas industry and its opportunities. This way, the youth in high schools who are attracted to a career in the gas sector, may be able to pursue studies that are most relevant to their goals.

In order for the gas industry to communicate better with youth, promoting more role models and success stories from the gas industry is recommended by some respondents.

Following similar reasoning, some interviewees argue that young people are inspired, to a certain degree, to become doctors or lawyers by the TV programs portraying such careers. Thus, it might be beneficial to have TV programs that incorporate positive aspects of oil & gas professions as well.

A few interviewees believe that gas companies should invest more effort into company branding. They believe companies ought to communicate better on how the gas business is structured, what the company stands for and what kind of value they bring to society. Improving the companies' brands will make young people more eager to join.

Promoting the company by sponsoring different events which focus on youth is also considered a good way to build reputation among future talent. Furthermore, investing more effort into social media is another efficient way to reach youth.

Compensation

Almost a quarter of respondents believe that, in order to become more attractive to youth, gas companies should also improve the compensation/packages they offer. The talent pool is limited and many industries are searching for similar skills.

> *'Early in their careers, many people will migrate towards the positions that offer the most immediate and substantial pay.'*
>
> Erin Kurilla, Engineering Services Manager, AGA

Work environment

Another quarter of respondents believe that bringing improvements to the work environment would also be beneficial. Among the improvements mentioned most often are promoting the importance of teamwork and showing more openness towards the fresh perspectives younger people often bring to their workplace.

Career Path

Some interviewees stated that improving career development programs, would contribute to attracting more youth to the gas industry, especially by making these programs clearer, more challenging, more dynamic and filled with opportunities.

> *'Offer opportunities! Young people value the opportunity to do creative, challenging work.'*
>
> Ehab El Husseiny, Project Manager, House Gas

Technologies

Several respondents suggest that, gas companies should position themselves more as innovative companies. The more up to date the tools, the more attractive the gas industry will become to youth. Therefore, the use of mobile phones, tablets, up to date software, digital networking, etc. is considered beneficial to becoming more attractive to a younger generation.

> '*Provide opportunities for them to use technology tools as part of their work – it is their lifestyle after all.'*
>
> Ehab El Husseiny, Project Manager, House Gas

Female Professionals

Through the survey, TF1 was able to gather revealing statistics concerning the participation of female professionals in the gas industry. To complement this data, TF1 has conducted 24 interviews with female professionals from 12 countries who work in the gas industry. The women discussed their personal experiences and feelings with regard to the role of women in the gas sector. These responses were compared against the data obtained through the survey. Illustrated below is the outcome of the discussions.

1. Do you feel you can fulfill your career expectations within the gas industry?

Figure 4.3.1 Possibility to Fulfilling Career Expectations within the Gas Industry

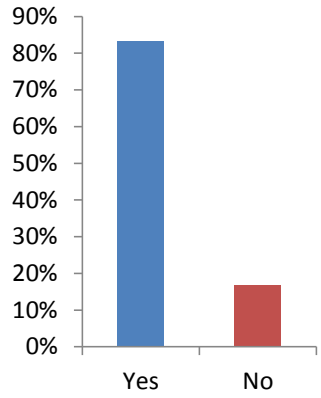


Figure 4.3.1 shows that, the vast majority of female professionals interviewed feel they can fulfil their career expectations within the gas industry. This positive perception is generally motivated by several aspects: first, the sheer size and wide diversity of the industry offers a vast array of opportunities to professionals activating within it.

'The gas sector is so broad that it is possible for anybody to find their call in this industry.'

Cheryl Cartwright, CEO, APIA

Second, the gas industry is a global industry offering career opportunities in different countries and different cultures.

> *'One of the points is that the gas industry is expanding so much, thus there is a lot of room for us to grow in the field.'*
>
> Noor Hassan K A Saleh, Competence & Performance Management Specialist, Qatargas

Furthermore, a good professional does not have their career limited to natural gas subjects, but their skills can often be used in the oil sector and other branch of the vast energy industry.

Some of the interviewees have indicated that the challenging nature of their jobs and the meaningful role plaid by the gas industry in in helping the planet, have made a significant contribution to consolidating their feeling of fulfilment.

Another 16% of the female participants however are not optimistic about their careers in the gas industry. One of the reasons mentioned is that the atmosphere in the gas industry provides less support for women`s career progression as compared with the oil industry. A few respondents have indicated the lack of an equal opportunity environment in some places as a barrier for women to fulfil their career potential within the gas industry.

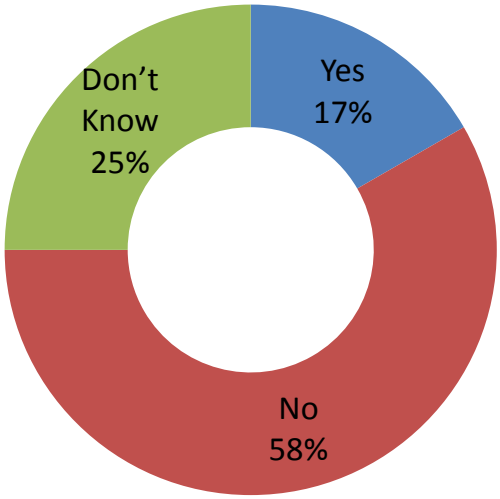
Other interviewees state that, a negative evolution of the gas sector in their geographical region is eroding their confidence regarding future career perspectives. Should this trend fail to improve, we might hear similar opinions expressed not just by women.

Figures 3.3.3 and 3.3.4, portray the percentage of female candidates within the total number of job applicants, which indicate that women are considerably less interested in obtaining a job with a gas company than their male counterparts. One the other hand, the information from these interviews show that, of all the female professionals that choose to join the gas industry, over 80% percent are happy with their choice. By analysing this data, one might conclude that gas companies are doing a good job in accommodating female professionals but they are not doing a stellar job of communicating this fact.

Comparing the above findings with the results from the young professional interviews (fig. 4.2.1) one might conclude that the gas industry is offering excellent opportunities for both youth and female professionals who chose to work in this sector. Nevertheless, the industry must step up its efforts to communicate better with potential employees.

2. **Do you feel the gas industry is doing enough to attract female employees? What more could be done**?

Figure 4.3.2 Perception of the Gas Industry's Efforts to Attract Women



To the question 'Is the industry doing enough to attract women?' only 17% of the female professionals interviewed had affirmative replies.

A few respondents point out that, an engineering related field, can be expected to be a male dominated area.

Others, argue that female professionals can indeed grow in the industry but admit it's likely for them to ascend professionally into support roles and less so in technical fields.

A quarter of the interviewees were reserved in giving a definitive answer.

According to most female interviewees, despite the fact that gender diversity and women's' career prospects in the gas industry have improved significantly from a few decades back, the O&G sector generally remains a male dominated industry where women are often underpaid and are relegated to less senior positions.

In a few extreme cases, recruiting officials themselves discourage women to continue in the gas sector and in a few regions an attitude of 'what is SHE doing here?' still exists.

The data above corroborates the survey's findings (fig. 3.3.1 and fig. 3.3.2) which point out that women represent a reduced percentage of the gas industry's workforce and are active mostly in support and non-technical roles, with executive positions largely precluded from them. This can indeed have a negative impact on the industry as eloquently stated below.

We'll never have the best industry if we can't attract the best talent regardless of gender.'
Dina Sarhan, HR Section Head, Egusco

Discussing these issues in further detail with the interviewees has revealed several shortcomings and grievances. However, two such deficiencies were repeatedly mentioned. First, gas companies still fail to offer sufficient flexibility to female professionals.

> *'A lot of women are afraid to come into the gas industry because they think they have to work long hours and can't be a good mum as well. I believe a lot of women would like to have the opportunity to work part-time.'*
>
> Anonymous

> *'I was personally offered a senior role but it was explained that because I would be a manager of a team I would have to be in the office long hours, five days a week. I said I that I was very capable of doing the job well, that I'm very flexible, I do a lot of my work from home and I work often at night when the kids are asleep. But they said no, I would have to be in the office, in the seat. I wanted the job and I would have been a good manager but they made the conditions such that I didn't want it because it would have not been a good work-life balance – would not have fitted in with the kids or me personally doing sports, playing music, being there more for the kids and having a life. I have however since met women who have succeeded well in making this work'*
>
> Barbara Jinks, Executive Director, LNG 18

Second, corroborating the findings from the previous question, it has become obvious that the gas industry is doing a poor job at promoting itself among potential female employees.

> *'Generally speaking, I believe the energy sector doesn't resonate at all with the youth of today whom are looking to start their professional careers. I have a daughter who is currently deciding her fist career path but it hasn't crossed her mind, or that of her colleagues, to consider the energy sector as a realistic alternative'*
>
> Marta Margarit, Secretary General, Sedigas

Technological progress has been making the gas industry more attractive to women and according to figure 3.3.8 most gas companies have introduced special programs to reward and encourage female employees. Nevertheless, according to the information gathered through the interviews, in order to effectively tap into the female professional pool, the gas industry must step up its efforts especially by providing more flexibility and promoting itself as an interesting workplace and a female friendly environment that listens to and addresses the needs of female professionals who also wish to raise a family.

> *'Flexible working hours, that would definitely help women with children and a family. Day care facilities would also help them focus on their work and not have to worry about their kids.'*
>
> Anonymous

> *"Try to promote the industry as something interesting. See the gas industry as a key enabler in the transition process of moving from fossil fuels to more renewables."*
>
> Feikje Wittermans, Business Development Manager, Vopak

Furthermore, some interviewees argue that, to improve communications with potential women employees, it would be beneficial to promote female role models and highlight existing female success stories from the gas industry.

> *'Promoting more women will lead to a chain effect and even more women will be encouraged to aim for similar accomplishments, because the talent is there.'*
>
> Marta Margarit, Secretary General, Sedigas

3. What are the most important skills for a woman to have in the gas industry?

Several interviewees argue that the background and core skills required by a female professional in order to succeed in the gas industry are the same as those required by men.

> *'The most important skills for women are basically the same as for men, first to be a good professional.'*
>
> Helene Giouse, Programme Manager, Storengy

Next to the core skills however, women professionals are known to often bring new points of view that often complement the male counterpart's perspective.

> 'Women bring creative solutions and often have views men would not think about ' *PP*

Furthermore, several interviewees argue that women tend to have a different approach to power.

> *'Women tend to negotiate a bit differently than men. Women can be very tough as well but among women you don't score any points this way.'*
>
> Coby Van der Linde, Director, Clingendael International Energy Programme (CIEP)

A lot of the respondents believe that, in order to succeed in the gas industry, a woman needs to exercise especially resilience and assertiveness.

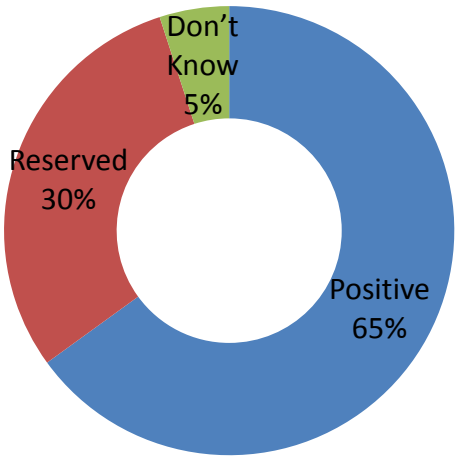
> *'The girls get a harder time. You have to be good at working out what is a waste of your time and ignoring it.'*
>
> Barbara Jinks, Executive Director, LNG 18

Finally Ms. CHE Lixin eloquently states that a female professional also needs to maintain focus.

> *"As the work you do is to some extend very dangerous, female professionals tend to be very dedicated in R&D and standards edition for gas industry."*
>
> CHE Lixin, President, Beijing Gas Group Research Institute

4. **Over the next 10 years how do you see women participating in the gas industry evolve? (qualitative and quantitative)**

Figure 4.3.3 Women's' Participation in the Gas Industry over the Next 10 Years



Around 65% of respondents are generally confident that women's' participation in the gas industry will improve over the coming 10 years.

As far as the number of women in the industry is concerned, the situation is perceived to have improved over the last 10 years and is expected to continue in doing so in the next decade.

'When I started my career 25 years ago, the ratio for females in technical fields was around 5%. Nowadays, in my company it is around 40%, but still less in purely technical domains.' PP

Helene Giouse, Programme Manager, Storengy

Interviewees also felt that, as the numbers come up, more women will transition into senior positions as well.

'Men joined way before us but we are on track and slowly catching up. We climb up the ladder. I can see more women in senior positions. You get promoted according to your competences and not your gender. That's why I like this sector.'

Noor Hassan K A Saleh, Competence & Performance Management Specialist, Qatargas

'It is well documented that senior management roles and board positions continue to go to men across all industries but over the next ten years, we are looking forward to have more women in top management and executive roles.'

Dina Sarhan, HR Section Head, Egusco

This positive outlook is also supported by the changing work environment in gas companies.

'In this next generation we have a lot of strong women coming through. Also very important, we have a lot of men who do not feel threatened by strong women.'

Cheryl Cartwright, CEO, APIA

Almost a quarter of the respondents are reserved, however, when it comes to this topic. They see the participation of women in the gas industry progressing at a slow pace and female professionals continuing to be generally restricted to support roles, at least in the near future.

'It is a topic on the table for 10 years, to hire more women and give them opportunities to be a top manager. Women's participation was supported and encouraged, but it is somehow artificial. It won't happen in the next 10 years, it is changing very slowly.'

Anonymous

Furthermore, concrete action is required before this situation can change significantly.

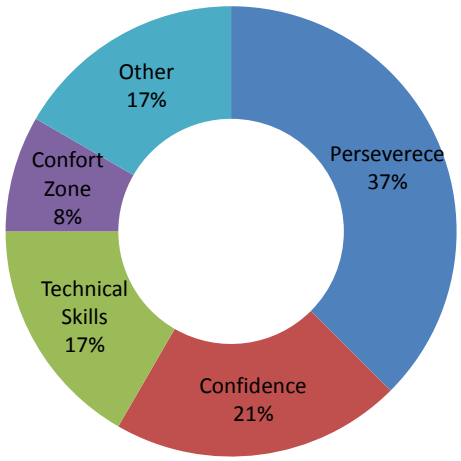
'Today you find women executives more or less in communication, legal and HR, in the enabling roles. If we really want some achievements, quotas are the only way to show the path.'

Valérie Ruiz-Domingo, SVP Strategy, GDF SUEZ

The lack of interest for technical subjects shown currently by young girls is expected have a negative impact on the role women will play in the gas industry over the next 10 years.

5. Advice for women in the gas industry

Figure 4.3.4 Advice for Women in the Gas Industry



Perseverance/resilience is recommended by almost 40% of female respondents as a key ingredient for women to succeed in the gas industry. These interviewees say that inequities and discrimination can at times exist in the workplace. If a female professional is to succeed however, she must show resilience and persevere in her goals despite any negative circumstances.

'Women also have to be more patient and tolerant in order to overcome any inequalities at their workplace.'

Maryam Bahrami, Senior Expert, NIGC

One simple yet effective strategy to do so is proposed by Barbara Jinks below.

'Keep a sense of humour and don't let other people upset you'.

Barbara Jinks, Executive Director, LNG 18

The second advice most often mentioned by interviewees is in relation to confidence. Female professionals are advised to eliminate self-doubt as much as possible, to work with confidence and trust that their capacities are sufficient to fulfil the tasks at hand. Furthermore, they are advised to find courage and to work more in the core business of gas companies.

Female professionals are encouraged to cultivate their own persona and focus on nurturing their skill instead of trying relentlessly to improve on possible shortcomings. Women are advised not to focus on trying to act like a man in order to get ahead, but invest more in their own specific skills, such as multitasking, for example.

'Women are emotional beings. This doesn't have to automatically translate into a negative factor. Utilize your emotional skills in leadership roles to build strong relationships with your peers and direct connections.'

Dina Sarhan, HR Section Head, Egusco

Around 17% of interviewees recommend the development and consolidation of technical knowledge. A good education in the technical area if possible is beneficial. However a basic understanding of technical aspects should be acquired by female professionals, even those active in non-technical areas of the industry.

'Try to be willing to understand the business and also its technical part and ask when you don't understand something.'

Elsa de Froment, Senior HR Advisor, GrDF

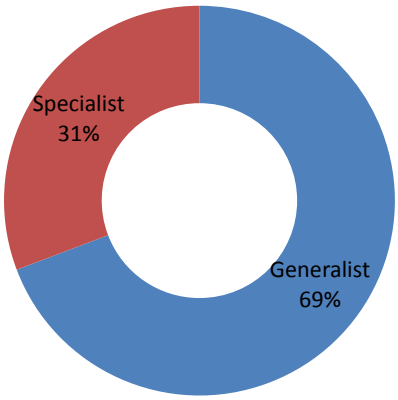
Finally, women are encouraged to go outside their comfort zones and follow the opportunities that arise, in order to move forward with their careers.

'You have to take risks and get out of your comfort zone. In order to grow, not only as a professional, you need a little bit of pain. You want to be challenged because then you become better and then it's fun. Struggle a bit and go after it.

Coby Van der Linde, Director, Clingendael International Energy Programme (CIEP)

6. **What type of job would you prefer?**

Figure 4.3.5 Types of Jobs Preferred



Over two thirds of interviewees responding to this question indicated their preference for a generalist role.

Several interviewees argue that women professionals are very good at seeing the 'big picture' and that female managers generally make excellent communicators.

Others appreciate the creativity and diverse opportunities that a generalist position has to offer.

'I experienced both and I like management because it is more interesting. Sometimes being completely focused on one thing can be a bit boring.'

Wang Qing, Deputy Director International Department, Research Institute - CNPC

A quarter of the respondents prefer specialist roles for a number of reasons, some of those most often mentioned are captured in the quotes below.

'The Oil and Gas industry is very diversified, in order to shine you must choose one specialty and become an expert in your field.'

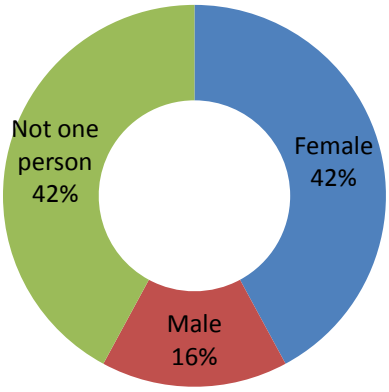
Jihen Jazi, Drilling Engineer, ETAP

'I prefer to progress in my specialty and then contribute in the development of the oil and gas industry in my company and then my country.'

Ramla Yousfi, Geophysicist Engineer, ETAP

7. Who is your leadership role model, why?

Figure 4.3.6 Leadership Role Models



Almost half of the responding female professionals indicated a woman as their role model. Numerous reasons are mentioned, some of the most common ones relate to the strength of the role model, their inspirational behaviour and their accomplishments, especially related to the education of one another.

'My role model is Her Highness Sheikha Mozah Bint Nasser. She invested a lot in the education of both men and women. She developed the whole Qatar Foundation, especially for young ambitious graduates. She encourages people to develop themselves. She completely changed the manner of education in Qatar. '

Anonymous

Respondents have proposed role models from both the public space as well as from their own personal environment.

'One of my previous bosses is this person. He had a very good attitude towards the customers, the way he communicates, also the way he worked with me was really inspirin.g'

Feikje Wittermans, Business Development Manager, Vopak

'My grandmother was the first director of higher education in Qatar. She did so much for education here, especially for women. Many more children are now going to universities and even do their masters because of her contribution.'

Noor Hassan K A Saleh, Competence & Performance Management Specialist, Qatargas

About a third of respondents indicated that they do not have a single person as a role model but they have been inspired and influenced by the actions of several remarkable individuals.

'I met many people from whom I've learned a lot of different things, which helped me build my own personality'

Raoudha Jribi, Geophysicist Engineer, ETAP

'Names shun me but I do appreciate every person who didn't stop realizing their dreams, because it all start with a little dream'

Ramla Yousfi, Geophysicist Engineer, ETAP

UNESCO Workshop – Women in Engineering[2]

Despite substantial efforts to encourage more women to pursue educational and professional opportunities in engineering disciplines, significant gaps still remain, particularly in less developed countries. Even in developed countries, women are underrepresented in engineering constituting only 10-30% of the student population and only 10-20% of the professional population.

It is clearly unsustainable to neglect nearly half of the potential work force, particularly because engineering is a key driver for sustainable development. For example, it is estimated that 2.5 million new engineers and technicians will be needed in sub-Saharan Africa to achieve the Millennium Development Goals (MDGs) of improved access to clean water and sanitation. Without significant growth in the number of engineering students and a subsequent increase in the number of engineering professionals, global efforts to achieve sustainable development will be severely hampered.

Challenges and Recommendations for Women in Engineering

The obstacles for women studying engineering or working as professional engineers varies according to region, but it is interesting to note that many of the challenges are the same for both developed countries and developing countries. Thus, many of the proposed recommendations can be applied globally.

The first roundtable, Women in Engineering in Africa: Enticing Young Women into STEM Education, highlighted the challenges that exist for young African women wanting to study science, technology, engineering and mathematics (STEM) disciplines. Workshop experts discussed STEM educational policies, curricula, teacher training, and female participation and identified ways to encourage more young African women to study STEM subjects. The second roundtable, Women in Engineering in the Arab States: Identifying Best Practices for Attracting Women to Careers in Engineering**,** underlined the social and cultural factors that deter women in the Arab States from entering the workforce in greater numbers despite the large percentage of engineering students that are women. Although the requirements for Africa and the Arab States to increase the number of women engineering students and professionals are different, the roundtable discussions identified many complementary challenges. The major discussion points included:

1. Lack of Public Awareness Regarding the Social Impact of Engineering
2. Traditional Social and/or Cultural Gender Role Perception
3. Importance of Family Influence and Role Models
4. Importance of STEM Education
5. Engineering Work Environment for Women
6. Need for Women's Presence in Decision-Making Circles

[2] UNESCO, Paris 2013

1. Lack of Public Awareness Regarding the Social Impact of Engineering

The lack of public awareness regarding the importance of engineering as a key driver of social and economic development is an issue that bridges the development divide. Workshop experts expressed that there has been a failure by government and other institutions to demonstrate the relevance of engineering to society. The general public does not make the connection between needing more clean drinking water, better roads, and a more reliable communications network and getting more students, particularly women, studying STEM subjects. The importance of altruistic work for women has been previously demonstrated and studies suggest that the retention of women in engineering could be improved by emphasizing the social benefits (Litchfield and Javernick-Will 2013). Women want to help people, but they do not see engineering as helping people. In addition, there is a need for women to be engaged in meaningful work, which correlates with improved employee engagement, performance, and retention (Litchfield and Javernick-Will 2013).

Recommendations

To address the lack of public awareness of the social relevance of engineering several actions are recommended. Media engagement in the portrayal of science and engineering from international organizations, governments, and industries can improve public awareness. In addition, governments need to make the connection between STEM education and ground-level change when advocating education policies. Finally, technical communication components and mentoring programs should supplement engineering curriculum to enable students to present technology from a big picture perspective and to equip them to become advocates for the next generation of women engineers.

2. Traditional Social and/or Cultural Gender Role Perception

Traditional social and/or cultural gender role perception is also a seemingly universal factor affecting the number of women studying and practicing engineering. Stereotypical perceptions that engineering is a career for men or that engineering is too hard for women are common regardless of development status or region. Gender role perceptions of women as delicate and not fit for engineering pursuits that allegedly require strength and boldness are frequently encountered. Given these social and cultural norms, women must work harder to prove their ability for engineering.

Recommendations

Changing social and cultural gender role perceptions is a slow and nuanced process and it will depend on the social and cultural norms in a particular region. However, access to quality early education and men's expectations are two considerations with universal relevance. Providing more girls with access to quality STEM education at an early age will combat the perception of science and engineering as male-dominated subjects. Further, men should be part of the solution and policies must consider the evolution of their expectations from traditional gender role thinking to achieve gender parity in engineering.

3. Importance of Family Influence and Role Models

The presence of family influence and role models is another important factor affecting whether girls and women choose to study and practice engineering. Family influence, particularly parents' stereotypes and attitudes, can have significant impact on the subjects and careers chosen by girls. Parents pass on social and cultural stereotypes with mothers having particular influence; thus, there is a need to recast parent's mentality thereby providing greater access to science and engineering curriculum for girls. This can be a particular problem in developing countries where traditional gender roles and associated responsibilities often take precedence over educational and career goals. The lack of role models in science and engineering may also contribute to lower numbers of girls studying engineering as they are simply not aware of it as a career option.

Recommendations

Education at home is necessary to combat parents' stereotypes and that requires media engagement programs similar to those proposed to address the lack of public awareness about engineering. These media engagement strategies can also serve to elevate the visibility and status of engineering for young girls.

4. Importance of STEM Education

High-quality STEM education is fundamental to the training of more engineers, women as well as men. Higher education or tertiary institutions are particularly important as spaces where students engage in interdisciplinary design projects and learn communication skills as well as strengthen their scientific and mathematical foundations. Successful undergraduate engineering curriculum should include group work and interdisciplinary projects in the first year as early emphasis of theory often contributes to high attrition rates. It is also beneficial to consider the environmental context of engineering education in developed and developing countries as local knowledge is often undervalued compared to science. Moreover, primary and secondary institutions are instrumental in the attraction of more women to engineering studies at the tertiary level. Children are born engineers. They take things apart, build things and ask lots of questions! Science is taught as *unveiling the world* and there is a need to introduce the engineering paradigm, which emphasizes *building a new world*, in the early education years. Difficulties, such as greater cost for primary and secondary STEM teacher training, low school attendance in rural areas, and decreased likelihood that girls will enter primary school compared to boys, still exist in many African and Arab States countries, but focused efforts can increase the number of girls and boys studying engineering.

Recommendations

Transformation of traditional engineering education is recommended to retain women engineering students and students in general. Undergraduate curriculum inversion, which incorporates more interdisciplinary design projects, group work, and presentation elements in the first years compared to a traditional focus on theory, will improve retention rates for university engineering students. Incorporating an entrepreneurial focus into engineering courses is also recommended to help attract and retain engineering students. In primary and secondary STEM education, transformative curriculum that includes hands-on experimental tools is needed to give children access to science and engineering learning and to allow them the opportunity to enjoy it.

5. Engineering Work Environment for Women

Finding a supportive work environment is not just a challenge for women engineers, but for women professionals in general. There is a need for change in professional environments to retain women by addressing maternity and child care issues as well as fair pay, hiring practices, and flexible work schedules. It is not enough to have gender equality in the constitution and laws, but individual institutions should work at the local level to create policies that promote the retention of women engineers.

Recommendations

Workshop participants unanimously called for radical reform in the corporate culture to promote a healthier work/life balance and allow for a more flexible integration between working schedule and children/family schedule. Unfortunately, national level government laws will not be sufficient. Transformative institutional policies should be developed on an individual basis and should contemplate mentoring and networking, maternity, parental leave and childcare support, dual career considerations, equal career opportunity with men, flexible promotion planning and alternative work schedules. It is recommended that science and engineering professional organizations strongly encourage their academic, industrial and civil society members to modify policies to favor the retention of women.

6. Need for Women's Presence in Decision-Making Circles

As evidenced by the men at this workshop, who voiced their strong agreement with the challenges and the necessary actions identified by the workshop participants, men are willing to be part of the solution, but first women need a space to be heard. Women need to be present in decision-making circles to voice their concerns and increase the visibility of women in engineering. For example, Kenya now requires that women occupy one-third of government posts at all levels. The Kenyan legislation is in accord with the requisite of political will at the highest government levels to enact change that increases women engineering students and professionals. In addition, in some Arab States, there are spaces where women have no access; thus, the women should take the initiative to organize their own networks.

Recommendations

Government laws that require female representation in decision-making circles are highly recommended as a necessary catalyst to policy changes that advance women engineering students and professionals in academia, industry, and civil society. Such laws grant women legal basis to insist on their presence in these bodies. In some Arab States where access to certain spaces is a greater obstacle to networking, it is recommended that women utilize social media and social networking technologies to overcome this impediment.

Conclusions and Recommendations

Conclusions Survey

Attracting Youth

Companies in the Middle East & Africa regions tend to have the youngest workforce while globally, bigger companies tend to employ an older workforce.

Recent graduates represent only a minor percentage of total new hires recruited annually by gas companies.

The hardest skills to find in the gas industry globally are technical skills and project skills.

The biggest overall skills shortage is felt in the M.E. & Africa regions. Companies here report the lowest satisfaction with the number and quality of available STEM students. However, vast efforts are being committed to filling this gap. Companies in the M.E. & Africa hire on average more recent graduates and invest more in training them than companies in any other region of the world. Despite these facts more time is required to alleviate the skills shortages in this region.

European companies maintain the closest ties with Academia and sponsor a higher percentage of students. This strategy seems to be paying off, as companies in Europe report on average the highest level of satisfaction regarding both the number as well as the quality of STEM students available.

It appears that larger gas companies are the ones attracting the highest quality of recent graduates, perhaps due to their well-known brands. These companies also seem to have more development programs in place and invest more time in grooming their employees before these can become autonomous and later on, leaders in their fields. The extra training is bearing fruit as large gas companies are inclined to promote their senior managers mostly from within the company.

Low compensation packages are reported to be the main issue keeping graduates and expats away from the gas industry. This is especially true for large companies and companies in the M.E. & Africa where it constitutes the primary reason that people leave the company.

Gas companies preferred to contact potential employees directly, seldom do they turn to external recruitment agents.

Attracting Expats

For 90% of gas companies globally, expats represent less than 10% of their total hires.
Low compensation and legal issues represent the greatest barriers to international recruitment.

Attracting Female Professionals

Women account for a reduced percentage in the gas industry's workforce and tend to work mostly in support/ non-technical functions being largely excluded from executive positions. The gas industry continues to be a male dominated industry where 3 out of 4 employees are men and over half the gas companies globally employ over 95% male managers.

Women's interest in the gas industry is significantly lower than the interest shown by men.

While big gas companies tend to receive a higher percentage of job applications from female candidates, the actual percentage held by women among new hires is less prone to vary with company size.

Despite attracting a fair number of female applicants, companies in the M.E. & Africa tend to hire fewer women than companies anywhere else in the world.

The gas industry is intensifying its efforts to become more female friendly and about three quarter of gas companies globally already have in place one or more special programs dedicated to supporting their female employees.

Developing Talent

There are more career ladders in place for technical professionals than there are for commercial professionals. Furthermore, gas companies use more individual development programs than they do career ladders.

For European companies, Classroom Training has overtaken On-The-Job Training as the preferred method of professional development in which both junior as well as experienced technical staff invests most of their time.

American companies use, on average, significantly less career development programs and individual development programs than companies in any other region in the world. This issue is noticed by the youth and 'insufficient career development opportunities' is given as a reason not to join the industry more often in the Americas than anywhere else in the world. Perhaps related to the lower investment in training and development, companies in the Americas tend to promote fewer senior managers from within the company.

The size of gas companies seems to have an inverse correlation with the number of senior managers hired externally. Namely, the smaller the size, the more likely it is to hire its senior managers from outside the company.

Retaining Talent

The gas industry hires on average considerably more men than women, yet it is the women that tend to stay longer with their companies. On average, the attrition rate for female employees is significantly lower than that of the entire company.

Bonus schemes are the most widely spread long term incentive tool used by gas companies in order to motivate employees. Gas companies in the Americas and Middle East & Africa regions

tend to have lower attrition rates, they also tend to have in place more long term incentives available to their employees.

While compensation often discourages young professionals and expats from joining a gas company, it rarely is cited as the reason for gas professionals to leave their companies.

The highest percentage of gas professionals leaving their companies usually tend to head into retirement. Among those who will continue working, most will be doing so with another energy company.

Conclusions Interviews

Executive Interviews

0ver 90% of the interviewed executives believe the share of natural gas in the energy mix will increase over the coming decade. Natural gas being the cleanest of the fossil fuels, abundant, more affordable than renewable energy and considered safer than nuclear, is in an excellent position to meet the ever increasing energy demand. The pace at which technology develops will influence the gas industry both directly, by allowing access to additional reserves and improving economic feasibility, as well as indirectly, by improving other energy sources and making them more competitive.

Securing the appropriate human capital is going to be critical for gas companies in their efforts to meet future objectives. In order to overcome the mounting obstacles in its path, the gas industry will require professionals commanding both the hard skills allowing comprehension of technical complexities as well as the soft skills to negotiate and achieve socially acceptable solutions.

Executives advise young professionals to be patient in their career progression and focus on acquiring the relevant skills required by a position before looking to move on. Skipping steps is considered counterproductive as constructing excellence takes time, yet competence and perseverance are eventually rewarded. Young professionals are furthermore advised to be flexible and have the courage to step out of their comfort zone in order to gain exposure and broader experience.

Continuous learning is advocated as one of the most important factors in developing a successful career in the gas industry. While development programs make sure that the appropriate instruments are available, each individual is primarily responsible for developing their own skills and competences.

Executives believe that one of the key selling points for gas companies to attract youth is the wide array of career development opportunities that working in the gas industry offers. Young professionals in gas companies are often rotated through various positions in different parts of the company and diverse locations. This provides them with a healthy exposure to different experiences allowing them to develop into well rounded, highly skilled professionals. The significant social and economic impact the gas industry has on society and the friendly working environment offered are also elements that motivate youth to join a gas company.

Youth Interviews

90% of the youth interviewed feel they can fulfill their career expectations within the gas industry.

There is a gap between university education and the real needs of the gas industry. A considerable amount of relevant knowledge and skill that students would have found useful in the gas industry, and which could have been acquired during university years, remains to be developed by young professionals on the job, after graduation.

Young professionals say that what they appreciate most about their current positions are the development opportunities available to them, pleasant working environments and serving a meaningful role is society. The absence of these elements also constitutes the main dislikes expressed by the interviewees.

Some Young Professionals are generally satisfied with the structure of their career development programs. In some cases, programs could be made more dynamic, with more responsibilities, more job rotation allowing participants to progress faster.

Direct recruitment is the preferred method through which most young professionals found their first jobs.

In order to attract more youth, gas companies are advised to focus on consolidating better communication with students allowing them to be aware of the opportunities offered by a career in the gas industry and the significant role played by natural gas in sustaining global economics and improving the environment. Directing more resources towards the compensation offered for entry-level positions may also allow gas companies to attract more youth.

Female Interviews

Gas companies seem to be doing a good job in accommodating female professionals but they are doing a poor job at communicating this. The vast majority of female professionals working in the gas industry feel they can fulfil their career expectations within the gas industry. The sheer size of the industry offers a vast array of opportunities to professionals working within it. The meaningful role played by gas in helping the planet also contributes to consolidating a feeling of fulfilment.

Despite the fact that gender diversity and women's' career prospects have improved, most interviewees feel that the gas industry is not doing enough to attract females and continues to remain a male dominated industry where women are often underpaid and sometimes omitted from senior positions.

In order to become more attractive to women, female interviewees recommend gas companies offer more flexibility to their female employees which would allow for a better integration of a professional career with a fulfilling family life. Furthermore, the gas industry should invest more efforts in promoting itself among potential employees as an interesting workplace and a female welcoming environment.

Women's' participation in the gas industry is expected to improve over the next 10 years. However, more effort is required in order to achieve this which includes solid quotas.

In order to succeed in the gas industry, female professionals are advised to be patient and resilient. Furthermore they should have confidence in their abilities and muster the courage required to go out of their comfort zones.

Conclusions Workshop[3]

The workshop participants recommended several actions to address the identified challenges and to increase the number of women engineering students and professionals.

To address the lack of public awareness of the social relevance of engineering, media engagement in the portrayal of science and engineering and government advocacy for STEM education as the creator of ground-level change is recommended. Adding technical communication and mentoring programs to curriculum is proposed to enable engineering students to become their own strongest advocates.

To combat traditional social and cultural gender role perceptions, the favored actions are to provide girls better access to quality STEM education and to create policies that consider the evolution of male expectations from traditional gender role thinking.

With respect to family influence and role models, media engagement programs that educate parents about gender stereotypes and elevate the visibility and status of engineering for young girls are strongly encouraged.

Undergraduate curriculum inversion by incorporating interdisciplinary design projects, group work and an entrepreneurial focus in the first years is recommended to retain university engineering students. In primary and secondary STEM education, transformative curriculum that includes hands-on experimental tools is needed to give children access to science and engineering learning and to allow them the opportunity to enjoy it.

Workshop participants unanimously recommended a paradigm shift to address mentoring and networking, maternity, parental leave and childcare support, dual career considerations, equal career opportunity with men, flexible promotion planning and alternative work schedules in institutional policies.

Finally, laws that require female representation in decision-making circles are highly recommended to advance women engineering students and professionals in academia, industry, and civil society.

Recommendations

Attracting Youth

Gas companies should consolidate closer connections with Academia and invest more efforts into better communication with students and other potential future employees.

[3] UNESCO, Paris 2013

Having experienced gas professionals discuss these topics with young people and raise awareness about opportunities available and what a career in the gas industry is really like.

The youth sometimes regards the gas industry as being a 'sunset industry' that has a negative impact on the environment. In order to change this perception more efforts should be invested in communicating the important role natural gas plays in sustaining our society and improving the environment.

Gas companies should decouple their recruitment campaigns from oil and gas price fluctuations. Maintaining a continuous recruitment effort for key technical and commercial capabilities would increase confidence in the gas industry.

Attracting Female Professionals

Gas companies should accommodate more flexibility for their female professionals which would allow for better balance between pursuing a successful career and having a fulfilling family life. Providing the possibility to work from home, more flexible hours and day care facilities are only a few ideas for improving this area.

Promoting female role models and success stories of women in the gas industry will encourage and attract to the industry more women that pursue similar achievements.

The gas industry should invest more efforts in communicating the important role natural gas plays in our society and promote itself among potential female employees as an interesting workplace and a female welcoming environment.

Fostering dedicated networks for female professionals in the gas industry creates a feeling of belonging among women professionals and gives them the opportunity to exchange experiences and share advice.

For Young Professionals

Young professionals are once again advised to be patient in gathering the required experience and consolidating the appropriate skills before looking to transition into top positions of greater responsibility. Attaining a high level position is not the end goal but constitutes the first step up into the limelight, therefore young professionals should focus less on finding such a position and more effort into preparing themselves for when such an opportunity arises.

Young professionals in the gas industry must show flexibility and mobility to rotate through different roles in different regions and gather as much experience as possible. They should follow the opportunities that are presented to them, even if at first these are seen as not completely in line with their own plans. Courage to step out of the comfort zone is required in order to gain exposure and expertise.

Continuous learning is advocated as one of the most important factors in constructing a successful career in the gas industry. The gas industry implies massive dimensions and there is a vast amount of relevant knowledge a gas professional can acquire. Each individual is primarily responsible for pursuing the development of their own skills and competences.

For Female Professionals

In order to succeed in the gas industry, women are advised to show resilience in the face of setbacks and persevere in the pursuit of their goals.

Women are advised to be confident in their own capabilities and to muster the courage to go out of their comfort zones in order to gather different experiences.

Instead of trying to mirror their male counterparts, female professionals are advised to cultivate their own persona and focus more on nurturing their own advantages.

Female professionals should construct at least a basic understanding of technical aspects, even if they are working in a non-technical part of the industry.

Appendix 1 - TF1 Membership and Countries

Chair:	Agnès Grimont, GDF SUEZFrance,
Vice Chair:	Reem Mohammad Al-Harami, Qatargas, Qatar
Secretary:	Madeleine Lafon, French Gas Association, France
Vice-Secretary:	Marius Popescu, Energy Brains Consulting, Romania
Special Contribution:	Abdulaziz Mohammad Al-Mannai, Qatar Petroleum, Qatar

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7. Andrade Emerson, Petrobras, Brazil
8. Angel Mª Gutiérrez, Naturgas Energía Grupo, S.A., Spain
9. Antonio Sevillo, Anadarko, Mozambique
10. Ayush Gupta, GAIL Training Institute, India
11. Azzedine Djouabri, Sonatrach, Algeria
12. Barbara Jinks, Australia
13. Emy Hadida, Petronas, Malaysia
14. Georgy R. Simonyan, Gazprom Export, Russia
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Appendix 2 - List of Interviewees

Senior and HR Executives

1. Abdulaziz Mohammed Al-Mannai, Human Resource Manager, Qatargas
2. Agnes Grimont, VP Performance & New Business Innovation, GDF SUEZ
3. Alaa Abu Jbara, COO Commercial & Shipping, Qatargas
4. Alfredo Ingelmo, Director of Market Development, Gas Natural Distribution
5. Antoni Peris Mingot, President, Gas Natural Fenosa
6. Carolina Pretzel, Deputy Administrator & HR Manager, TOTAL
7. Dana Al Mulla, Human Resources Manager, RasGas
8. David Carroll, President, Gas Technology Institute
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10. Gertjan Lankhorst, CEO, Gasterra
11. Gi Chul Jung,Head of Global Relations Promotion Group, Kogas
12. Jérôme Ferrier, President, International Gas Union
13. Jitka Adamkova, HR Director, RWE CZ
14. John Kent, Conoco Phillips
15. Jonathan Kohn, HR VP Qatar and MENA Russia Caspian HR operations, Royal Dutch Shell
16. Jorge Gomez de la Fuente, Project Portfolio Manager, Repsol
17. Jupiter Ramirez, Sr Marketing Advisor, Qatargas
18. Khaled Abu Bakr, Chairman, Taqa Arabia
19. Lori Traweek, SVP and COO, American Gas Association
20. Lukas Ondrej, HR Business Partner, RWE CZ
21. Mao Qiping, Deputy Director-General International Department, CNPC
22. Marcel Kramer, former CEO, consultant and senior adviser to Gazprom management
23. Maros Sugaya, Petrobras
24. Marcus Humpheys, Conoco Phillips
25. Petru Vaduva, CEO, Transgaz
26. Rafik Mbarek, Resources Central Director, ETAP
27. Reham Gharib, HR General Manager, Taqa Arabia
28. Ron Jibson, CEO, Questar
29. Runar Tjersland, Special Advisor, Statoil
30. Saeed M. Al Rashedi, SVP-Technical, ADNOC
31. Saud Alarifi, HR Manager, ExxonMobil
32. Yves Tournié, Secretary Coordination Committee, International Gas Union

Female Professionals

1. Barbara Jinks, Executive Director, LNG 18
2. CHE Lixin, President, Beijing Gas Group Research Institute
3. Cheryl Cartwright, CEO, APIA
4. Coby Van der Linde, Director, Clingendael International Energy Programme (CIEP)
5. Dina Sarhan, HR Section Head, Egusco
6. Elizabeth Noll, Manager, Clean Energy Strategy, AGA
7. Elsa de Froment, Senior HR Advisor, GrDF
8. Feikje Wittermans, Business Development Manager, Vopak
9. Helene Giouse, Programme Manager, Storengy
10. Jihen Jazi, Drilling Engineer, ETAP

11. Ksenia Gladkova, Senior Advisor, Statoil
12. Mahvash Ebrahimiyan, Head Method Evaluation and Coordination, NIGC
13. Malika Madoui Barmasse, HR manager- Operation Direction, Storengy
14. Marta Margarit, Secretary General, Sedigas
15. Maryam Bahrami, Senior Expert, NIGC
16. Mashael Salman Al-Dagher, Senior Manpower Officer, Qatargas
17. Napaporn Dewang, PTT
18. Noor Hassan K A Saleh, Competence & Performance Management Specialist, Qatargas
19. Orusa Khuntong, PTT
20. Ramla Yousfi, Geophysicist Engineer, ETAP
21. Rana Faisal, HR Supervisor, House Gas
22. Raoudha Jribi, Geophysicist Engineer, ETAP
23. Shaghayegh Khalaji, Head of Carbon Management and Studies, NIGC
24. Valérie Ruiz-Domingo, SVP Strategy, GDF SUEZ
25. Wang Qing, Deputy Director International Department, *Research* Institute of Petroleum Exploration & Development - Langfang,CNPC

Young Professionals

1. Ahmed Nagy, Accountant, Apache Corporation
2. Amira El Mahdy, Financial Accountant, Energean
3. Atef Belkahla, Head of Permits Department, ETAP
4. Ehab El Husseiny, Project Manager, House Gas
5. Emmanuel Khan, Project Owner, GRT Gaz
6. Erin Kurilla, Engineering Services Manager, AGA
7. Farida Amr, Foreign Payment Accountant, ENPPI
8. Ghislain Colom, Agency VP, Cofely
9. Ismail Wahby, Accountant, Apache Corporation
10. Kamel Zarai, Civil Engineering, ETAP
11. Meshaal Al-Sowaidi, Recruitment Officer ,Qatargas
12. Mohammed Al-Kaabi, Head of Organization Effectiveness, Rasgas
13. Ramla Yousfi, Geophysicist Engineer, ETAP
14. Raoudha Jribi, Geophysicist Engineer, ETAP
15. Saoud Abdulla Alsahlawi, Qatargas
16. Stefanie Khaw, Manager for Competitive Strategy, Petronas
17. Simona Halfarova, Trainee, RWE
18. Tamer El Mahrouki, Material & Corrosion Engineer, ENPPI

Appendix 3 - List of Figures

Appendix 4 - 'Principal Results of the Research Project Integration "Education – Science – Business" as the Framework for Human Capital Development'

In 2014 Gazprom JSC conducted a large-scale research project titled *Integration "Education – Science – Business" as the framework for human capital development*. The objective of the research was to analyse existing approaches and best practices in human capital development as well as to work out effective instruments of personnel development in the company.

To carry out the research we designed a special questionnaire form that was distributed among the leading gas companies of the world. The form was structured into ten major sections: company profile; corporate T&D system; T&D planning; T&D budgeting; effectiveness evaluation; interactions with training services providers; T&D methods and techniques; collaboration with higher schools, graduates and under-graduates; programmes for the talent pool and young professionals; cooperation with research institutions.

The results of the research are presented in a separate report which consists of the two main sections: T&D processes and T&D indicators. The report contains 45 pages, 36 figures and 10 tables generalizing the collected data.

The research has enabled to reveal a number of global trends in training and development of staff (Table 1).

Table 1.

Ranking of global trends in training and development

Rank	Trend	Share of companies who indicated the trend
1	Large-scale implementation of the competency approach	87%
2	Continuity of talent pool development	75%
3	Progressive improvement in carrier advancement management	72%
4	Closer ties between training and development and the company strategy	68%

Over the last several years the scope of T&D functions has significantly extended and crossed the borders of full-time and part-time training. Companies are increasingly delegating functions of competency-based staff evaluation to T&D centres (Figure 1).

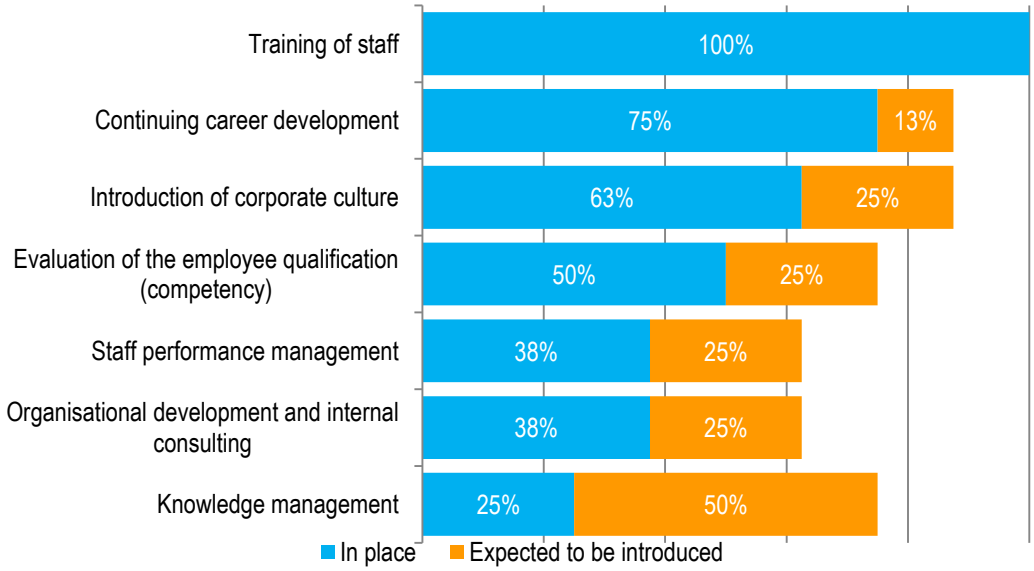

Figure 1. Functions of T&D services

Gas companies actively take on young professionals and graduates to build their talent pools. Thus, the principle of continuity ensures that corporate knowledge and experience are duly preserved.

In some companies the enhancement of continuity includes the development of organizational training based on the vertical transmission of knowledge. In this process new knowledge becomes available to all employees, thus, “corporate information capital” emerges.

In order to preserve the accumulated human capital, gas companies are intensively developing training programmes for their talent pools.

While evaluating candidates for the talent pool and building the pool, companies use objective evaluation indicators based on clear-cut criteria and annual staff evaluation results. Candidates’ leadership competencies and management potential are subject to evaluation (Figure 2).

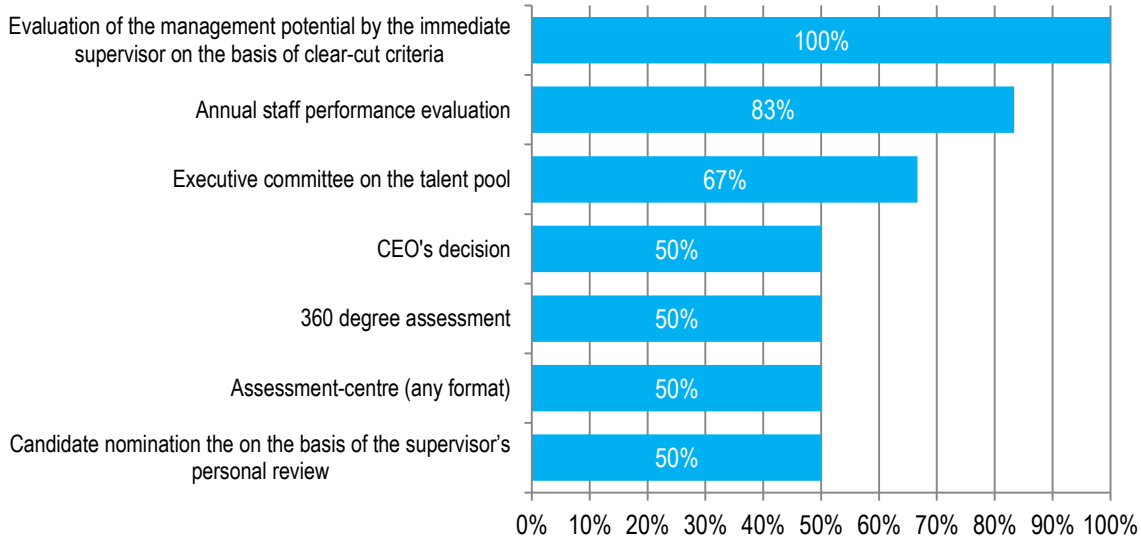

Figure 2. Evaluation tools used to assess and enrol the talent pool candidates.

In most companies, special programmes are delivered to provide for the training and development of the talent pool members aimed specifically at these categories of employees (Figure 3).

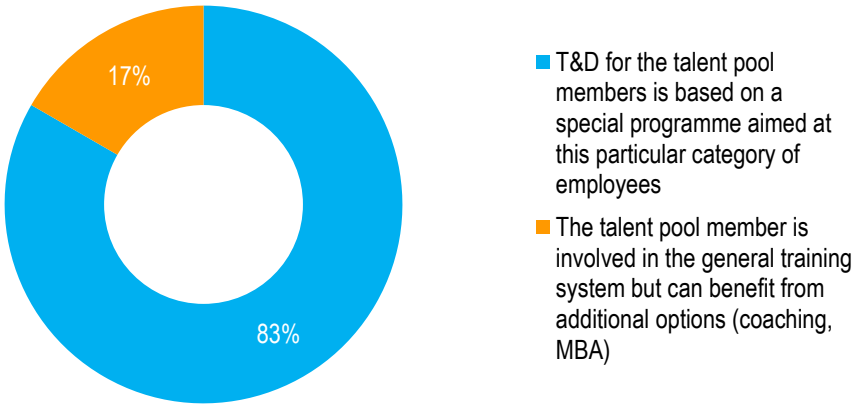

Figure 3. Breakdown of companies by their approaches to the training of the talent pool members.

It also follows from the results of the research that corporate T&D units predict further improvement of the career advancement system and continuing career development. The share of companies in which the T&D system fulfills the career development function amounts to 75% at the moment of the research, it continues growing and is estimated to reach 90% in the short run.

The above tendencies are influenced by a number of limiting factors affecting corporate T&D:

1. Engagement of line personnel in training.
2. Demand in technically qualified trainers.
3. Excessive workload on the staff of the corporate training centre.
4. Budget limitations.

To remove these and other barriers, T&D centres set up the system of interaction with providers of training services and develop the T&D planning system.

Within the T&D planning system all companies analyse their needs in the training of employees for the nearest year and design short-term training plans. Half of the companies in question develop longer-turn forecasts and already have quality management standards for the training programmes in place (Figure 4).

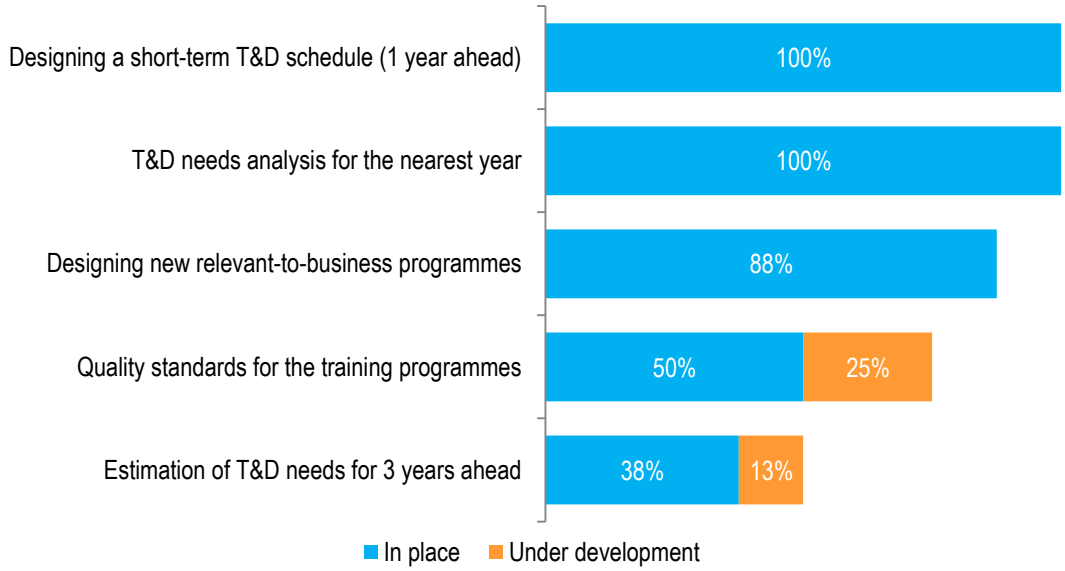

Figure 4. Breakdown of planning processes by companies, %

The problem of the training performance evaluation stands apart among many problems of the T&D system. Effectiveness evaluation is the basis for decision-making in financing of the training and delegating functions and responsibilities to the T&D system.

At present all companies evaluate the effectiveness of their training programmes at 95% by Kirkpatrick's levels 1 and 2 (the student's response to the training and material acquisition) whereas only one third of them evaluate the impact of training on ROI and key performance indicators (Figure 5).

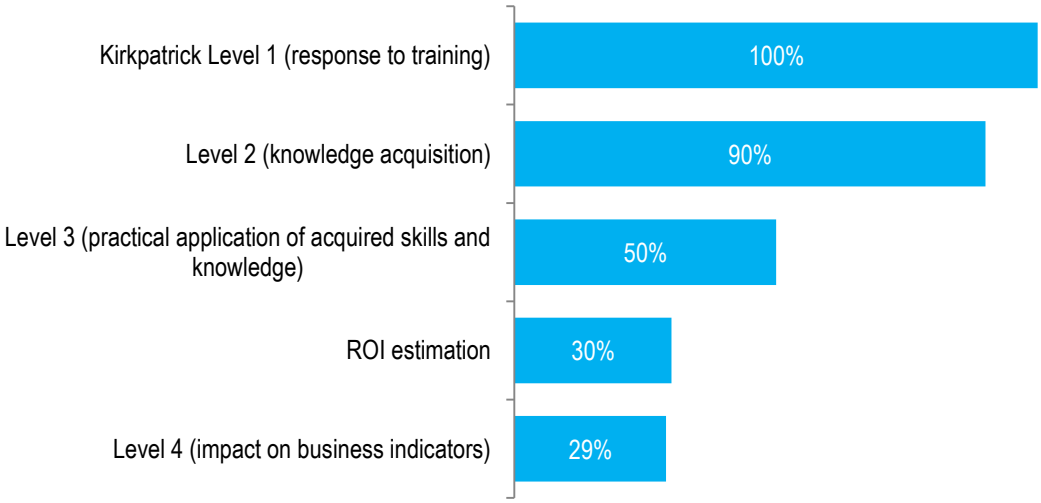

Figure 5. The share of companies applying respective evaluation tools to the T&D programmes.

The companies are increasingly developing cooperation with higher schools and their graduates in various formats (Figure 6).

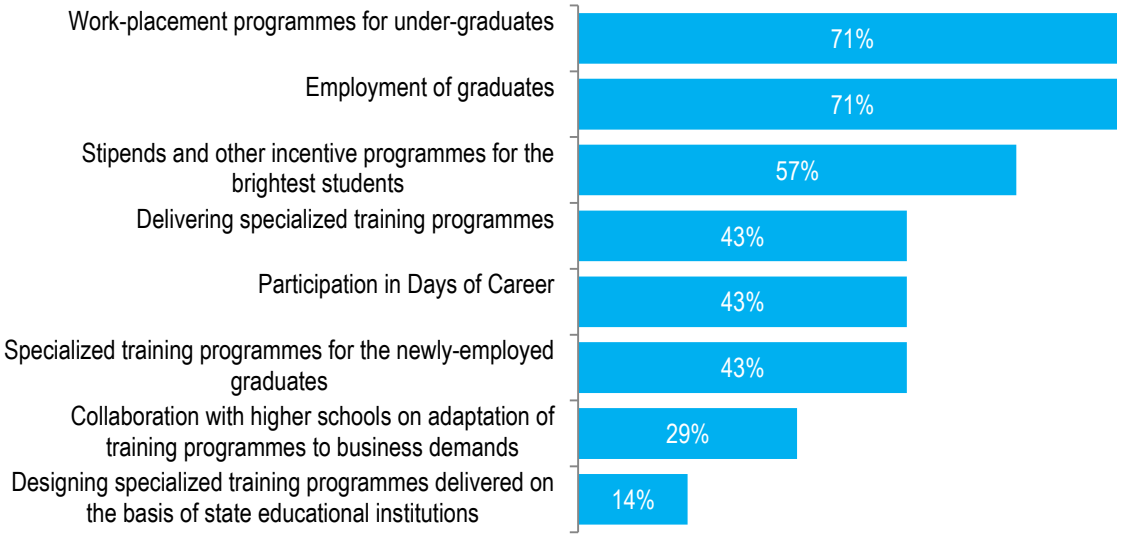

Figure 6. Breakdown of programmes for graduates by companies.

Building the attractive employer brand is a priority for most companies (Figure 7).

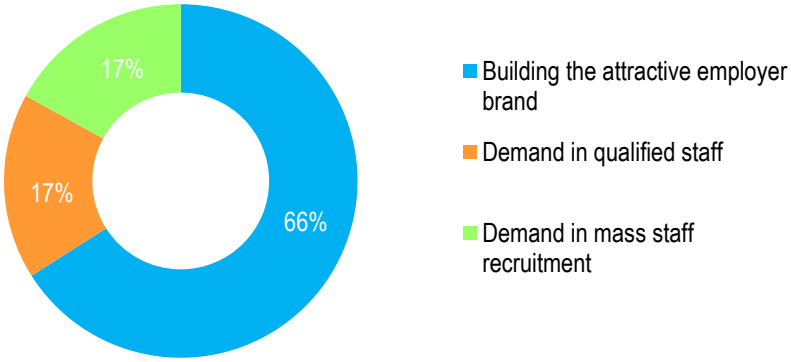

Figure 7. Priorities in collaboration with higher schools.

As demonstrated by the research findings, around 80% of companies further employ no more than 30% of graduates who have previously participated in joint programmes and received a degree.

In all companies in question the retention rate for the newly-employed graduates (i.e. the share of graduates who have stayed with the company upon the successful completion of the induction period) amounts to over 80% (Figure 8).

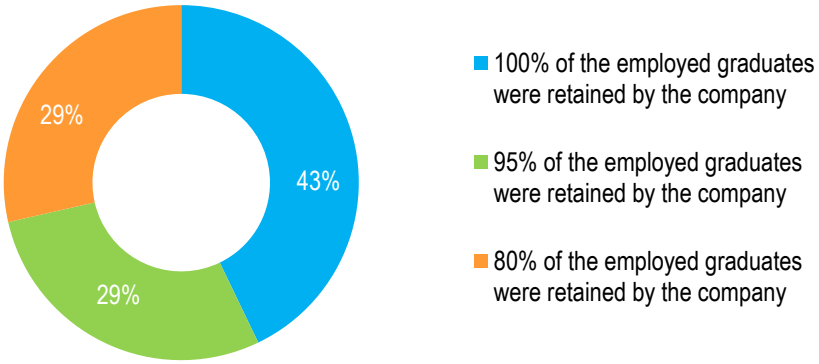

Figure 8. Breakdown of companies by the graduates' retention rate.

The system of induction for the newly-employed graduates is one of the factors ensuring a high retention rate. It is in place in over 65% of companies in question.

Evaluating the system of collaboration with higher schools, it has been revealed that 75% of companies have a formalised plan for the long-term collaboration, the rest of them communicating with higher schools ad hoc without developing longer-term plans (Figure 9).

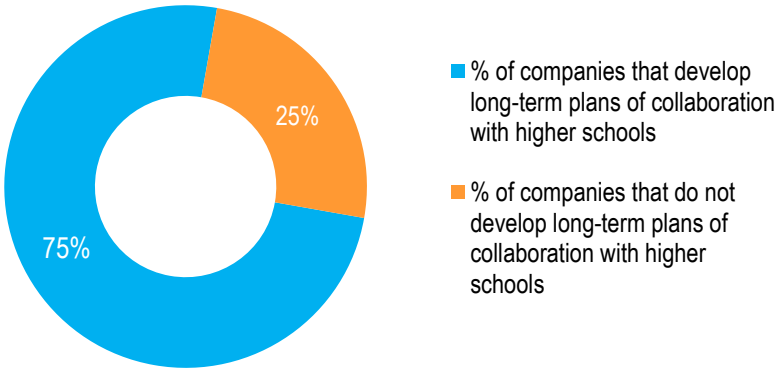

Figure 10. Breakdown of companies by the presence of a formalised plan for the long-term collaboration with higher schools.

Apart from contributing to the solution of current tasks, cooperation with higher schools enables to make an impact on the situation with human resources management in the industry in the long run. It is the cooperation between universities and colleges and successful energy companies that boosts attractiveness of the engineering education.

Introduction of programmes on innovation technology into training is another important aspect of T&D. At the moment of the research the share of such programmes was no higher than 12% (Figure 11).

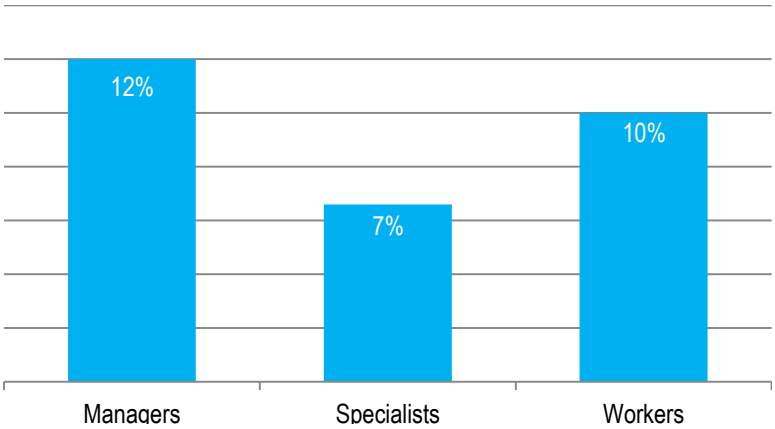

Figure 11. The share of programmes including subjects in innovation technology, by categories of employees.

Gas companies identify several particularly important fields of collaboration with research institutions and centres including design works in construction, reconstruction, overhaul and repair of industrial facilities, complex engineering research, improvement of industrial and ecological safety systems, effectiveness and efficiency enhancement in gas production.

The analysis of the collected data proves that the gas companies in question has reached maturity from the human capital development perspective. The have gained extensive experience in organizing corporate training, collaboration with higher schools and advanced research centres, career development and talent pool management.

The main priorities in corporate training and development are as follows: the individual approach based on the competency approach, introduction of the long-term forecasting to identify the company's needs in training, enhancement of the continuity in the talent pool development, improvement of career advancement and establishing closer ties between the corporate training system, the company strategy and research centres.

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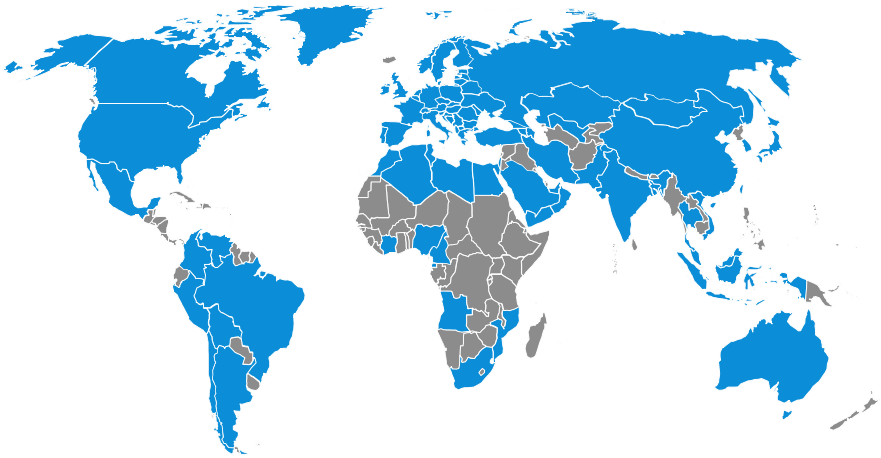

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