

The talent pipeline, the Oil and Gas Industry and new media

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Background

Global recessions aside, world demand for energy will be positive going forward, driven by growing the growth of the middle classes, urbanization, population growth and the elimination of poverty. Doubts concerning the nuclear energy option and the inherently low energy density of non-carbon renewables points to a continued dependence on fossil fuels. But this does not mean that oil and gas supplies present themselves as low hanging fruit. On the contrary, accessing resources in an environmentally responsible manner requires the commitment of high levels of capital, skill and the expansion of the knowledge frontier. In meeting such commitments the oil and gas industry (OGI) finds itself competing with other industries that require expertise in science, technology, engineering and mathematics (STEM).

The emergence of the global OGI is synchronous with the 4th Great Technology Surge (chemical industries/internal combustion engine) from the late 19th century (Perez, 2002). The 5th Great Technology Surge (ICT) is intensifying driven by and contributing to globalization and the connected world. It is estimated that a decade hence 80% of the population will be on mobiles, and another 60% will be 'wired.' A new education revolution based on tablet computers may be in the making even as this Conference meets.

There are other considerable shifts occurring – in the North services dominate GDP, and the financial crisis is pushing unemployment to levels not seen in a generation or longer. In the South is the rise of what may be termed 'liberation technology' as the new connectedness and social media compress distance and allow the masses to communicate even in the face of state crackdowns.

The rise of the BRICS (Brazil, Russia, India, Indonesia, China and South Africa) acknowledges an historic rebalancing toward the more populous East.

In the sphere of trade the Doha trade round has yet to yield a dividend, and inter- and intra-country inequalities grow, and for many the Millennium Development Goals remain elusive.

To this mix must be added the changes in demographics, with population decline in the old core, coupled with mobility for survival. The most youthful population thirty years ahead will be located in Africa.

Ahead lies the impact of The 6th Great Technology Surge of Biotechnology and Nanotechnology, the first involving genetic manipulation, and the second new combinations of molecules to create new materials with unforeseen properties.

innovation will be key to future wellbeing. China speaks of innovation as central to the ‘green and harmonious development’ of a socialist society, while over the waters President Obama declared that “innovation is more important than ever. It is the key to good-paying, private-sector jobs for the American people.”

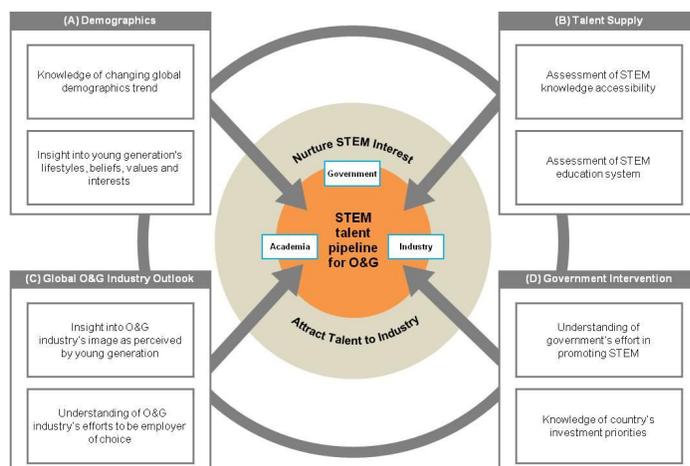
So innovation is high on the international agenda, as in the 2010 OECD Innovation Strategy that advises, “Future growth must ... increasingly come from innovation-induced productivity growth. Innovation – the introduction of a new or significantly improved product, process or method holds the key to boosting productivity” (OECD, 2010).

Innovation will be key for the global gas industry to expand as well as necessary to support future sustainability of natural gas supply. This is even more crucial given the fact that environmental considerations and expectations will be even more stringent going forward. The industry will need to attract, train and develop talented people, but worldwide, there is a fierce competition for “Talent” and admittedly, talent is in short supply. If the global gas industry is serious about building a strategic human capital and compete successfully for talent, it will have to adopt “out of the box” thinking to develop an industry-wide strategic response that may take a long lead time.

Aims

The paper reports on an eighteen month project that effected to understand the drivers associated with filling and maintaining the OGI talent pipeline, and securing the retention of industry talent. The study identified four contextual forces that impact on the STEM talent pipeline, namely demographics, talent supply, industry outlook, and government intervention. These four contextual forces impact on OGI as depicted in the accompanying (Figure 1).

Figure 1: Contextual Forces

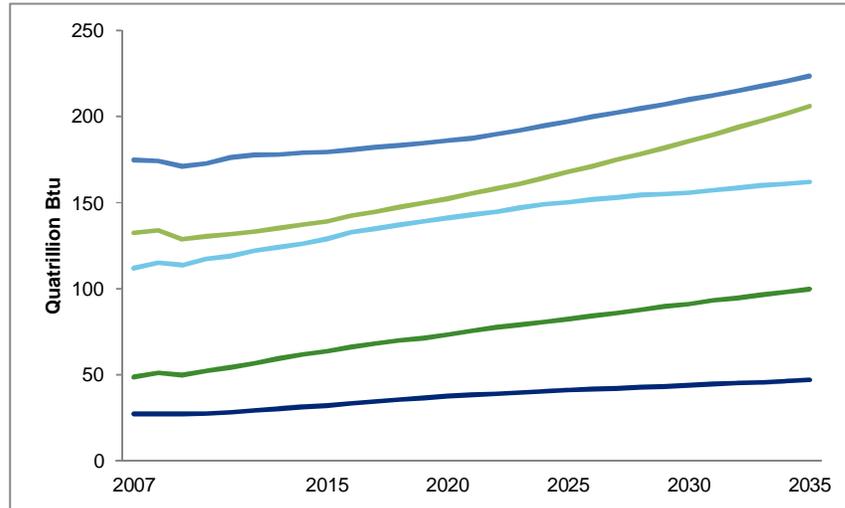


Each was investigated in depth, and from this a set of strategies developed for the consideration of the OGI Task Force 2.

Method

We consulted the literature – academic, company and media to understand OGI trends and to develop insight of young generations' perception of the O&G industry. Most fundamentally, it is expected that global dependence on fossil fuels will persist, this despite the recent setbacks for the nuclear industry, and concerted efforts to scale up renewable energy sources. Figure 2 provides

Figure 2: Projection of global demand for energy by sources



Source: U.S. Energy Information Administration (2010).

An estimate of global demand for energy by a range of sources. The massive rise in per capita income of China and India, Latin America and perhaps Africa, achieving the 'convergence' much discussed in economic literature, can only boost this demand yet further. The anticipated average annual growth rates are shown in Table 1.

Table 1: AAGR by source

Energy Sources	AAGR (percent), 2007 – 2035	
	Non- OECD	OECD
Liquids	1.8	0.0
Coal	2.3	0.0
Natural Gas	1.9	0.6
Renewables	3.0	2.0
Nuclear	5.0	1.0
Total	2.2	0.5

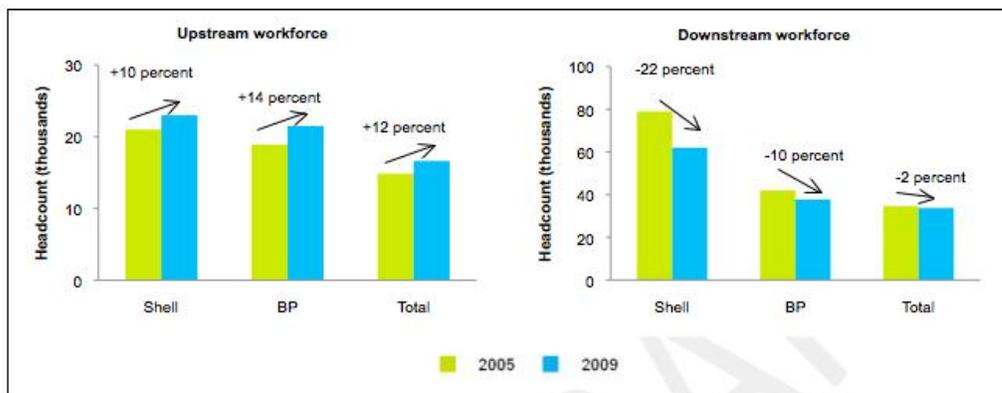
Source: U.S. Energy Information Administration (2010).

What must also be factored in is the increased technological demand on the OGI as new sources are identified and brought to market. Climate change and environmental concerns mitigate any reckless exploitation of shale bed methane or ultra deep ocean sources. A technological frontier challenge faces the industry as it attempts deep water extraction, shale beds, tar sands, coal bed methane, coal to liquid, and considers geo-engineering (managing atmospheric brown clouds). Petrobras for example is already spending 3% of revenue on

R&D and has a massive need for young researchers.

As the industry's focus shifts towards the upstream sector, major industry players have also expanded their upstream workforce while reducing the headcount in the downstream sector. On average, Shell, BP, and Total had collectively increased their upstream workforce by 12 percent and reduced their downstream workforce by 11 percent between 2005 and 2009 (Figure 3). As a result, demand for certain professions in the upstream sector has grown. Specifically, the increase in need for mechanical engineer, integrity engineer, and chemical engineer is projected to be the highest, followed by petroleum engineer and electrical engineer.

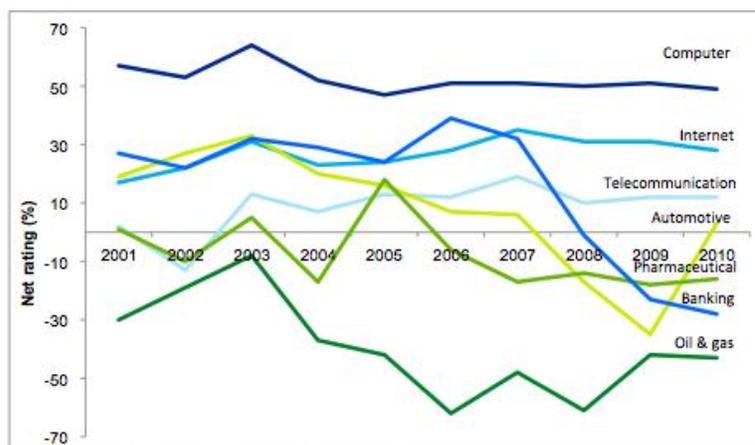
Figure 3: Hiring patterns by major industry players



Source: Shell Annual Report (2009); BP Annual Report (2009); Total Annual Report (2009).

Unfortunately the increasing need to meet the STEM workforce demand is hindered by negative public perception of OGI. For the last decade the O&G industry has been perceived as the industry with the most negative image. Conversely, the computer industry has consistently been perceived as the industry with the most positive image, followed by the internet and telecommunication industries.

Figure 4: Industry perceptions



Source: Gallup Annual Work and Education Poll (2010).

Another factor contributing to the negatively perceived image of the industry is the cyclical nature of the industry. Drastic layoffs during the bust cycles of the eighties and nineties were widely publicised by the media, causing the industry to be viewed as one which provides low job security.

A response to this negative publicity has been to ramp up corporate social responsibility (CSR) though its motivation and effectiveness are questioned by the public. Some social investments made by O&G companies have been viewed as a means to garner local competitive advantage. Development priorities pursued by these companies may be catered for specific government officials who have the authority to provide competitive advantage.

CSR investments have also been described merely as public relations stunts. Many social initiatives have been started following bad publicity and seen as attempts to improve a company's reputation. Consequently, media-friendly projects such as donating medical equipment or helping to construct a new hospital may be given higher priority by the companies as compared to slow local capacity-building or the training of village nurses. Additionally, in contrast to development practice advocated by the World Bank or Oxfam, some O&G industry's CSR initiatives have been observed as having little participation by local beneficiaries, with implementation of these initiatives failing to address the root causes of community problems.

The final issue relates to the changing values and expectations of the workforce. Essentially one may distinguish four groups with different attitudes to work and life: Baby Boomers; Generation X; Generation Y; Generation Z. It would be erroneous to ascribe absolute characteristics to these different birth cohorts, and there is obviously considerable variation within and across countries. Even so, one may distinguish a strong tendency toward the valorization of personal freedoms of association, domicile, and media access. Together these imply increased choice captured as "I Twitter, therefore I am."

Negative public image remains as the biggest challenge faced by the O&G industry in attracting STEM talent. A well-planned joint effort between the industry players is essential to tackle this challenge, with emphasis on initiatives to become a more responsible corporate citizen. While the industry offers lucrative monetary rewards, poorly perceived work culture deters the required talent, especially women, to enter the industry. Moving forward, industry players ought to position themselves as a competitive and attractive employer by understanding the evolving needs of young generations and by engaging the public proactively.

How then is the OGI to become an "employer of choice" for young generations? A critical component of this study was to examine young generations' lifestyles, beliefs, values and interests, so that any strategic engagements to attract talented young people into the sector will have addressed young generations' aspirations, values and interests more effectively. The study looked into efforts of governments worldwide in promoting STEM education to see how or why STEM education fits into the respective country's investment priorities. The study

also assessed whether young generations worldwide are presented with opportunities to gain access to STEM subjects, knowledge and education before finally concluding on whether young people are enjoying STEM education, even if they are given the opportunity and why.

Results

Within the demographics contextual force, it is apparent that the emergence of a new generation has brought with it new career selection criteria and learning styles. This implies that one must critically appraise curricula, teacher education and the perceived needs and wants of students. Summaries of these forces follow as Figures 5-8.

Figure 5: Contextual force #1- Demographics

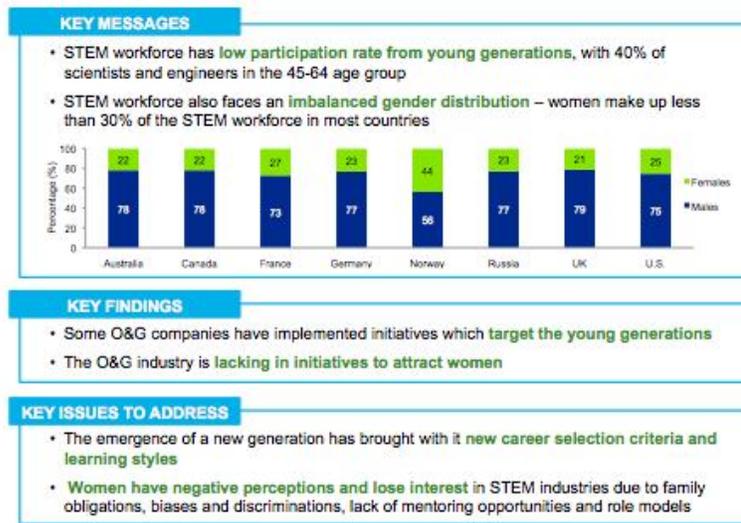


Figure 6: Contextual force #2 – Talent Supply

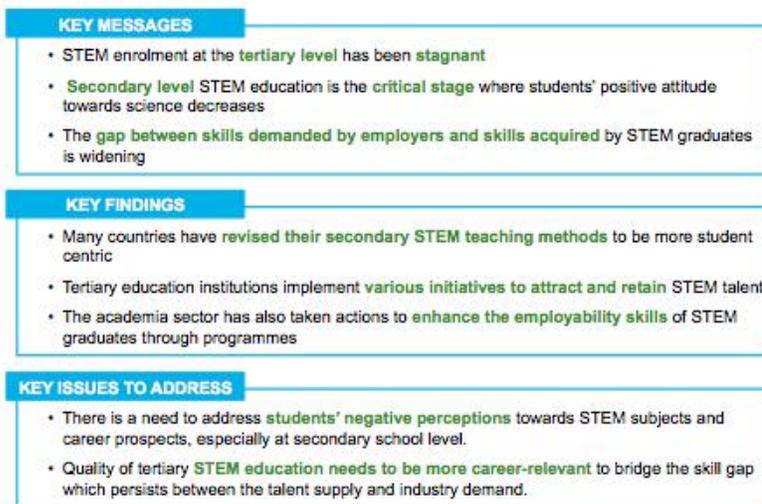


Figure 7: Contextual force #3 – Global O&G trend

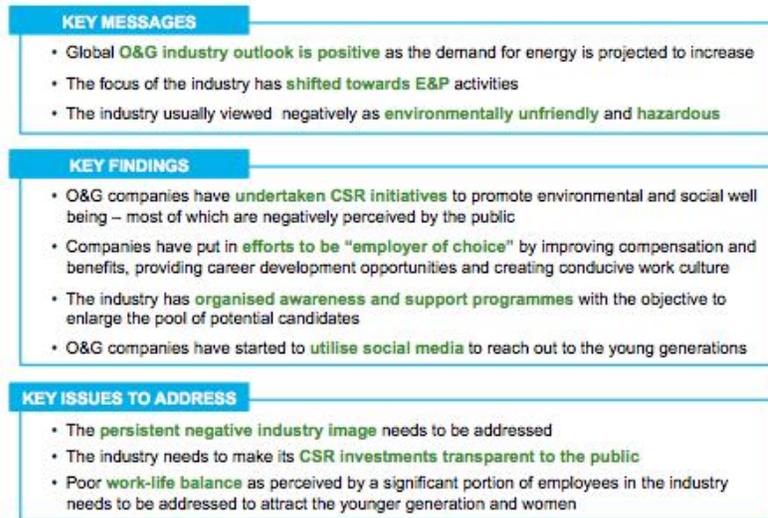
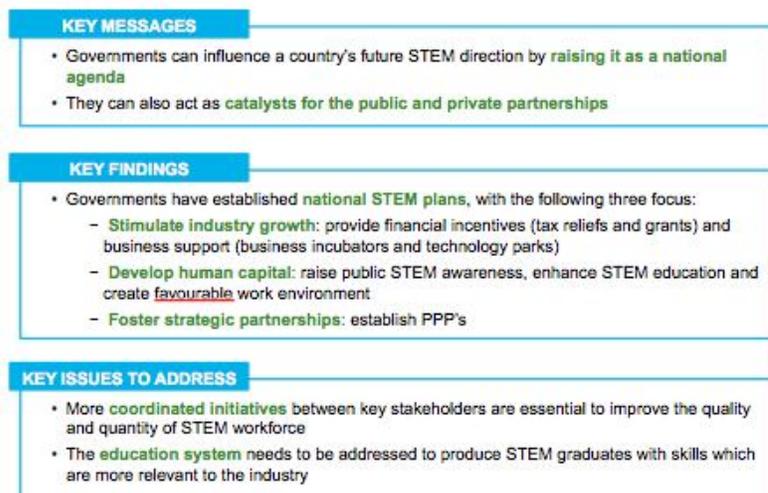


Figure 8: Contextual force #4 – Government intervention



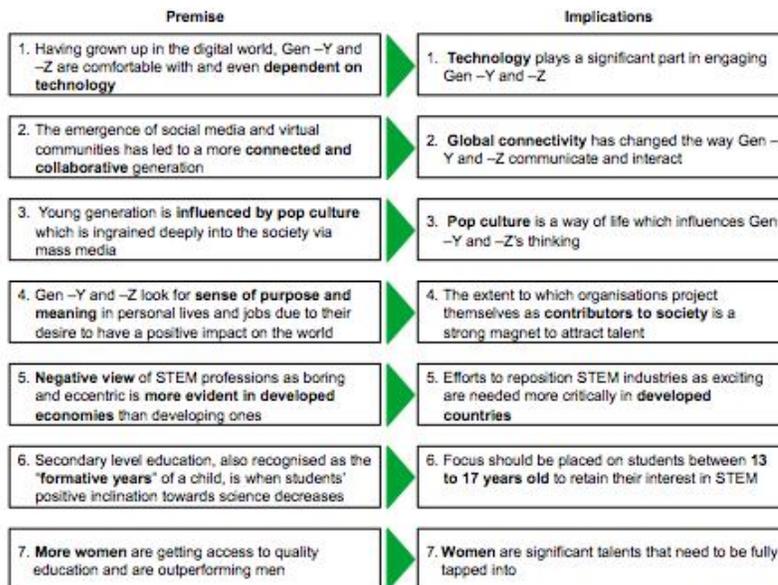
In order to attract and retain future staff, O&G organisations need to understand and create a working culture and environment that promote these values. Examination of the talent supply contextual force reveals that the need to address students’ negative perceptions towards STEM subjects and career prospects, especially at secondary school level. The secondary school level is also recognised as the “formative years” of a child, when their positive inclination towards science decreases. Henceforth, focus should be placed on students between 13 to 17 years old to retain their interest in STEM. Furthermore, quality of tertiary STEM education needs to be more career-relevant to bridge the skill gap that persists between the talent supply and industry demand. According to Australia’s Chief Scientist, there is a mismatch between how science is taught in schools and how science exists in the ‘real world’. On top of these there is also a persistent negative industry image that needs to be revamped in order to attract talent. In addition, a significant portion of employees perceive the O&G industry as offering poor work-life balance.

The study looked at the role of social media, science centres, online education experiences, gaming technology and the power of draw card international events as mechanisms through which OGI can promote its positives and win the interest of the young generation.

Summary and conclusions

In developing talent it is necessary to match the phenomenal pace of growth of the industry and meet the higher technical requirement of advanced technologies and tougher operating conditions. Certainly, the global gas industry cannot just sit back and wait for the Education system or the Academic institutions to deliver the talent we need (Figure 9).

Figure 9: Summary of Findings



OGI needs to recognize and address that this is a critical part of staffing and workforce development investment and take proactive measures to arrest the decline in the talent pipelines as the global O&G industry is facing an unprecedented talent crunch which is expected to worsen in the coming years. Young staff see the workplace as but one component of a full life, and this issue needs to be recognized that the young generations want to work to live and not live to work.

As a whole, the industry needs to make its corporate investment strategies more transparent to the public in order to show a genuine effort in contributing to wellbeing.

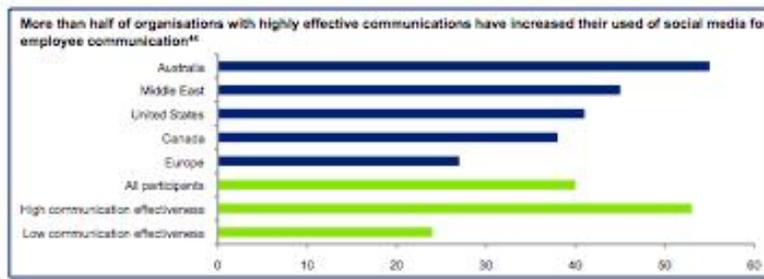
Last but not least, the key issues discovered in the government intervention contextual force include the lack of coordinated initiatives between key stakeholders. Cooperation among all stakeholders is essential to ensure successful implementation of initiatives whose objective is to improve the quality and quantity of the STEM workforce, taking new learning and communication technologies into account.

Our research points to the following steps for OGI to take forward:

- Enhance formal STEM exposure with experiential, collaborative and virtual learning
- Reposition STEM industries as exciting and progressive
- Accentuate linkage between STEM and life
- Promote O&G industry as the champion of “me brand
- Enhance women representation in O&G industry
- Promote O&G industry as a forerunner in R&D and innovation

Effecting this will not be simple, but the possibilities inherent in the new media hold out a number of solutions (Figure 10).

Figure 10: Use of social media



It is time to develop the *O&G.app*.