

45th CCOP Annual Session
23 – 28 November 2008
Khon Kaen
Thailand

Geoscience Context in Response to the Current Global Issues
Thematic Session

ARE THERE ENOUGH GEOLOGISTS IN THE WORLD TO MEET DEMAND?

David Ovadia
Director of International
British Geological Survey
Keyworth
Nottingham
UK

Abstract

Geologists are in short supply, although the evidence to support this is thin. The rising global demand for commodities requires ever more skilled and experienced geoscientists, but trends in education, training and society are counter cyclical. This paper looks in a discursive way at whether there really is a skills shortage, why this may have arisen, and suggests some possible solutions.

Introduction – is there a problem?

We all hear anecdotal stories of insufficient trained and experienced geologists (geoscientists) to meet demand. Is there really a problem?

The recent FINEX 08 conference held in London devoted a session to this subject, in particular the emerging skills shortage in the minerals industry and the constraints this would impose on future sustainable development.

The shortage of mining engineers was recognised in Australia as early as 2005 and is being addressed through various innovative schemes, in which industry and academia are working together [1].

The oil industry is facing similar challenges. A recent report [2] claimed that around 50% of professional exploration and production (E&P) staff are aged 40 to 50, while only 15% are in their early 20s to mid 30s. It is forecast that up to half the E&P workforce will retire within the next 10 years.

The UK Immigration Authority defines a Tier 1 category of known shortage areas of resident workforce in which employees are able to obtain work permits for non-EU citizens. The Tier 1 list includes transport and highway engineers, doctors, dentists, nurses and geologists [3].

Supply and demand issues

The size of the jobs pool, whether this is at the company, or at the nation level, is maintained by inputs from graduates and apprentices, plus hires from competitors, balanced by outputs to competitors, retirements, losses due to illness or death and skills erosion (figure 1). The latter can include promotion to management, or administration, which degrades the technical skills base.

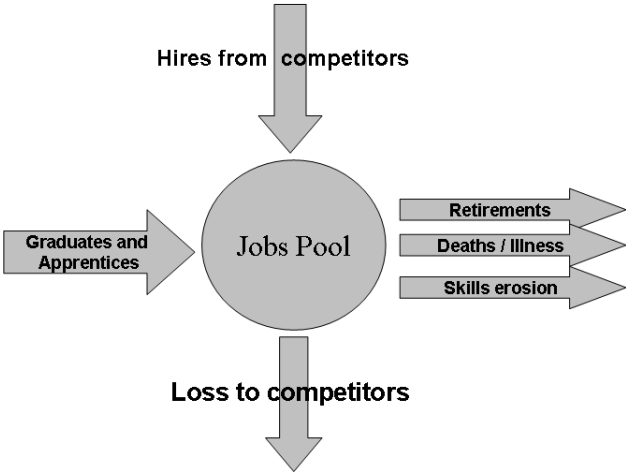


Figure 1

For equilibrium, if the supply of new graduates becomes less, the pool must increase its hires from competitors and/or stem its losses. This is not always easy. In a global free market economy, hiring from competitors is expensive, in that higher salaries have to be offered and transfer grants paid. Competitors will respond by upping their

own remuneration packages and an upward prices-wages spiral will result. We are seeing this effect as part of the recent rises in world commodity prices.

Demographic trends, in particular that the 'baby boomers' post World War II are now reaching retirement age, is increasing rather than decreasing losses in this area, as has already been mentioned. The problems of HIV/AIDS, particularly in Africa, are sadly having a severe effect in death rates amongst the young to mid-aged geologists in the mining and energy sectors. Skills erosion is partly a consequence of social trends, in which the DINKY (double income no kids yuppie) generation [4] is not willing to work in the challenging conditions of mining and E&P, and prefer office jobs in finance, media or advertising. It is also an outcome of insufficient on-the-job training in a world where technology advances rapidly; as illustrated by how few 50+ year old active geologists are really comfortable with GIS, GPS, 3D models, computer simulations and the like?

The problems are made worse if growing market demand requires the size of the jobs pool to increase, as we are now seeing.

Growth in commodities

Oil and gas production in the CCOP region has risen from 5.6 MBD in 1995, to peak at over 6.1 MBD in 2005 (oil) and from 11 BCFD in 1995, to over 22 BCFD in 2007 (gas) [5].

Copper price trends have risen from around \$3000/tonne in 2000, to remain at over \$5000/tonne in the last two years, despite world production increases from 13.5m tonnes metal content, to 15.1m tonnes in the period 2002 to 2006 [6]. Similar data can be shown for most Earth resource commodities over the same period.

More or fewer geologists?

It is difficult, if not impossible, to determine how many geologists there are in the world and how the numbers are changing. A very unrepresentative indication is shown by membership figures of the Geological Society of London [7]. Following a very active recruitment campaign, the numbers of Fellows and of Chartered Geologists has risen slowly since 2002, although in the case of C.Geols. is now

falling again. These data are encouraging until the age breakdown is studied, where it will be seen that the Fellowship contains an ageing population:

Membership of the Geological Society of London

	2002	2003	2004	2005	2006	2007	2008
Fellows	9081	9105	9184	9262	9312	9365	9676
Chartered Geologists	2040	2083	2134	2176	2175	2165	2147

	2002	2003	2004	2005	2006	2007	2008
60 or over	997	1043	1090	1148	1173	1264	1382

In the UK, the number of university geology departments has reduced considerably over the last twenty or so years and even of those left, fewer are teaching at undergraduate level the classical geological skills and techniques for employment in the mining and hydrocarbon sectors. In Malawi, where the BGS is currently working in capacity building with the Geological Survey Department of Malawi and the University, the difference between the supply rate of, at best, two new geology graduates per year, and the demand rate from both the Survey and the growing mining sector, is made up mainly by expatriate Zimbabweans, whose own mining industry is, sadly, dysfunctional, but may soon recover and attract back its nationals, leaving Malawi vulnerable to a serious skills shortage that could seriously damage her economy.

Effects

The consequences of growing world demand for skilled and experienced geologists, coupled with shrinking supply, will bear most heavily on countries with emerging economies that depend for a high proportion of their GDP on natural resources. Here, to attract staff, they will have to pay ever higher salaries and depend more and more on expatriate consultants who have less national loyalty and probably leave less behind in the way of transferred skills. The natural resource potential may not be properly explored and, ultimately, higher commodity prices feed their way into global monetary inflation and recession.

Suggested solutions

Solutions are not easy. Fundamentally, it is in the national and trans-national interests to train and retain more geologists with the requisite skills and motivation. A key ingredient is to use the diminishing pool of retired, and soon to retire, geologists,

who have considerable experience, to train others, particularly a new generation of trainers. It is also important for geological surveys and universities to co-operate more closely with the extractive industries, in order to transfer skills, perhaps through secondments that do not impact negatively on careers. The image of being employed as a geologist must also be improved and conditions made more family friendly. Social conditions and positive health schemes will encourage and facilitate retention. Many of these and other policy matters are for government and decision makers in the extractive industries, who will probably not themselves be geoscientists.

Conclusions

In summary, it appears that there is a growing shortage of geologists to meet world demand, although hard data to support this assertion are difficult to come by. The geological survey organisations cannot themselves solve the problem, but have an important role as catalyst towards a solution.

Politicians, industrialists, investors, academics and geological surveys would do well to note, in the words of Mr Helge Lund, Chief Executive, of Statoil Hydro, at 33rd IGC, Oslo 2008, that “Not one barrel of oil was ever found by a lawyer or an economist”

References

1. Minerals Council Of Australia, 2005, Press Release ‘Industry/Academia to Address Skills Shortages: “Mining Education Australia”’ issued by Clare Ross, www.minerals.org.au
2. Resourcing the challenges of maturity – an oil industry view, 2005, Report by Booz Allen Hamilton
3. http://www.workpermit.com/uk/work_permit/occupations.htm
4. Wouter van Gils/Gerbert Kraaykamp, *The Emergence of Dual-Earner Couples. A Longitudinal Study of the Netherlands*, in: *International Sociology*, Jg. 23, 2008, p. 345-366
5. Nguyen Hong Minh, CCOP, Poster at 33rd IGC Session EME-02, Oslo, 2008
6. World Mineral Production 2002-2006, Hetherington et al, British Geological Survey, Keyworth, UK
7. Nield, E., 2008 Geological Society of London, personal communication