6
Migration of Engineers and the Gender Dimension

Matthew Dixon

6.1 Introduction

Engineers are useful people – they make things work!¹

A recent comprehensive international survey of engineering by UNESCO confirms the massive contribution made by engineers to socio-economic development around the world:

The critical roles of engineering in addressing the large-scale pressing challenges facing our societies worldwide are widely recognized. Such large-scale challenges include access to affordable health care; tackling the coupled issues of energy, transportation and climate change; providing more equitable access to information for our populations; clean drinking water; natural and man-made disaster mitigation, environmental protection and natural resource management, among numerous others. As such, mobilizing the engineering community to become more effective in delivering real products and services of benefit to society, especially in the developing world, is a vitally important international responsibility.

But it also flags challenges:

Engineering as a human endeavour is also facing... challenges of its own, including attracting and retaining broader cross-sections of our youth, particularly women; strengthening the educational enterprise; forging more effective interdisciplinary alliances with the natural and social sciences and the arts; enhancing our focus on innovation, entrepreneurship and job creation, and promoting increased public awareness and support for the engineering enterprise.

(UNESCO 2010)
The purpose of the chapter is to introduce the fairly complex realities of the engineering workforce and factors influencing the international mobility of engineers and technicians offering their services in the labour market, and so to set the scene for the analysis of more specific empirical evidence on engineering migration presented by Gropas and Bartolini in the next chapter.

The chapter addresses this purpose with methods that combine presenting knowledge gained by direct experience as a practitioner within the relevant communities along with quantitative evidence based on data from key public surveys within Europe. The explanations of the workforce make-up and structure are based on observation over many years of working both within the engineering profession (handling links between the UK national regulatory body and the equivalent national authorities in a number of other key countries) and within UK skills policy for engineering. The analysis points to factors that are generally little understood but are of major importance in determining workforce activity and work opportunities for the individual.

In particular, the author has been engaged since 1995, directly and indirectly, in the development of a number of multilateral mutual recognition agreements on professional engineering qualifications, both within Europe and beyond. The analysis draws on this professional experience, the knowledge base of which has been written up in detail for the Migration Policy Institute (Dixon 2013). The barriers to international mobility arise from different approaches by the national regulatory authorities in different countries to the task of ensuring that engineering work is safely conducted. Some countries have responded to serious incidents with engineering artefacts and systems that have caused damage to things and people with comparatively light regulation of work, and others with much ‘heavier’ regulatory requirements. Mobility issues are greater when a practicing engineer or technician moves from a country with ‘light touch’ regulation to one with rather imposing requirements on engineering practice.

While female engineers and technicians undoubtedly experience many of the generic challenges of migration as women (and also as spouses and mothers) who are new to the country, the regulatory requirements for engineering work are generally gender blind. However, it is indeed the case that women represent a comparatively small fraction of those engaged in engineering work in most countries – the chapter provides data, from the European Union Labour Force Survey (EU LFS), on the development of the male–female split over recent years in EU member countries for those working in science and engineering professional and associate professional occupations.

Section 6.2 introduces the structure of the engineering workforce, explaining the different dimensions of importance (occupation, sector, engineering discipline and skill level) and pointing out the pitfalls of assuming that