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## 10.1 INTRODUCTION

This chapter presents a broad overview of the state of engineering in South Africa. Emphasis is given to the key drivers of the South African economy, highlighting some of the key challenges associated with economic growth. In particular, statistical analysis and contributions of various engineering disciplines to the development of the country are presented. An understanding of the statistical dimension is imperative in a complex society such as South Africa.

As a developing economy, South Africa faces many opportunities and challenges. Paramount among these is the issue of sustainability, given that South Africa, like most developing countries, is largely dependent on fossil fuels as a source of energy. The last 15 years have been characterised by unprecedented investment in infrastructure mainly due to the commitment of the government to a better life for all citizens of the country. Perhaps the most outstanding commitment in this regard is the provision of potable water to 15 million people who were previously not catered for in the formal supply infrastructure. The forthcoming 2010 *Fédération Internationale de Football Association* (FIFA) World Cup is serving as a catalyst for infrastructure development and maintenance across the country.

## 10.2 PROFESSIONAL SITUATION: PRACTICE AND TRAINING

Engineering encompasses a range of activities essential to a modern economy such as the development and maintenance of basic infrastructure, transport and energy, mining and minerals beneficiation, manufacturing and many other activities. Engineering professionals at various levels are required to service these and are regulated by the statutory Engineering Council of South Africa (ECSA) under the Engineering Profession Act, *Act 46 of 2000*. The core engineering disciplines recognised by ECSA are aeronautical, agricultural, chemical, civil, computer, electrical, electronic, industrial, mechanical, metallurgical and mining engineering. The major disciplines in terms of numbers of registered professional engineers are percentage wise (without considering various specialities) civil engineering (43%), electrical engineering (24%), mechanical engineering (19%), chemical engineering (5%), with other engineering disciplines constituting the remaining 10%.

With just under 15 000 registered professional engineers to service a population of 47 million people, or an engineer for every 3 200 people, engineering can be regarded as a scarce skill if the same level of service delivery is expected as, for example,