

1. Introduction and purpose

As development in South Africa progresses, there is an increasing demand for fresh water. There is also increasing demand for energy but, unlike energy where if we run out we can make more, water is finite – we can't make more and there is only so much to allocate. Also, South Africa is a water-scarce country (Fig. 1) and many of our catchments are already under pressure from competing demands for the available water. Add to this our new water laws which recognise that the ecosystem (river, lake, wetland or estuary) has a legitimate right to some of that water. Also, there is a growing realization that we have abused, and continue to abuse, the available water. Not only do we have less to use but what we have is often of poor quality. Add to this the certainty that global climate change will alter rainfall patterns and the uncertainty of what this change will bring. The recognition dawns that, whatever the future holds, it will certainly include major water management challenges.

Compounding current and future water management challenges is the nature of the resource. Water,

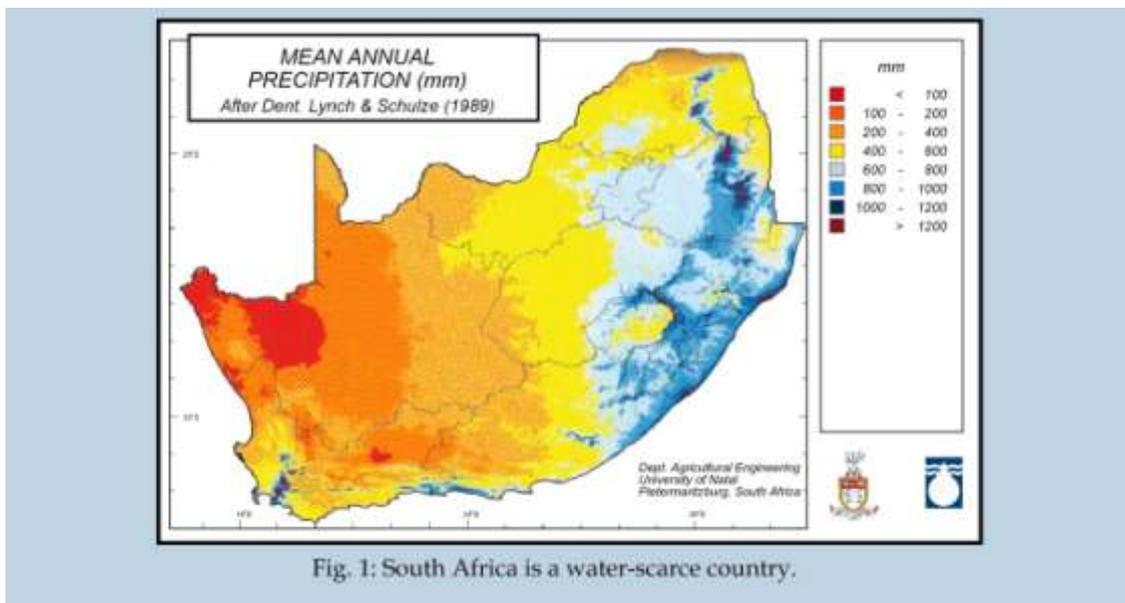


Fig. 1: South Africa is a water-scarce country.

wetlands, rivers and estuaries are public or common property resources. They are not privately owned. They are 'owned' by society and managed on our behalf by the state. In order to effect

management and arrive at decisions, extensive consultation is required. Managers of these resources and of people whose activities affect these resources already find themselves in the eye of a very complex storm. From the headwaters of the catchment to the sea, people are competing for what is available – for water and the various ecosystem services associated with it. This issue is increasingly finding itself on a manager's desk – farmers, residents, industry and towns are removing water from river systems upstream while those downstream at estuaries are asserting their rights to the same water. Who gets the water, how much do they get, and what systems do we use to ensure fair and efficient allocation?

Compounding the difficulty of decision-making is the nature of water and its delivery, particularly in South Africa. One day it's drought and the next there are floods; one day crystal clear and the next heavily polluted or turbid.

Fair or equitable allocation is a complex challenge and, until recently, managers have not had the tools to support improved decision-making. However, things are changing. Scientists have developed systems to establish an estuary's freshwater requirements. Economists are allocating values to the various uses of water so that decisions can be made on what the most appropriate uses might be and what trade-offs might be made. Society is becoming far more vocal about what it values and what is important. Specialists have developed structured yet adaptable management processes that provide frameworks for decision-making. In short, we are now able to capture the ecological, economic and social dimensions of a challenge, opportunity or problem in a structured and participative process and make well-informed decisions.

It is not the purpose of this handbook to turn managers into water specialists, estuary experts and/or economists. The purpose is to expose managers and stakeholders to what estuaries are, why freshwater is important to estuaries, what impacts on freshwater inflow into estuaries, and the role that economics might play in contributing to decision making on the various issues. The handbook is inspired by a Water Research Commission project which examined the economic value of freshwater inflows into estuaries.