Chapter 5
Conceptual Thinking in Coping with Water Scarcity

Abstract There are important conceptual and ownership issues that can over-ride the physical and engineering aspects of coping with water scarcity. Water has a very high value for support of life, but it is often not fully valued by the community of water users. How do we place a value on water? What are its social, environmental, economic, and cultural values? Who owns the water? Who has the right to collect, store, allocate, distribute and sell or lease water? Who has the authority, and how do they proceed, to set the price to be paid for water? How are ownership and accessibility managed where water crosses political boundaries?

5.1 Introduction

When thinking of coping with water scarcity there are many issues to be considered other than the direct technical matters dealing with collection of water and prevention of losses. The human dimension is of great importance. Over its history humankind has developed cultural traditions, social structures and institutions which have a huge impact on the availability and use of water. For example in some traditions there is a concept of ownership whereas in others the idea of ownership of a product of a natural process makes no sense.

This chapter attempts to discuss some of these “non technical” issues and their impact on water resources availability. To those from a particular culture, the traditions of another place, and their influence and constraints on water resource use may appear strange and even unacceptable. However in dealing with cultural issues great care is needed, particularly to understand how the current situation developed historically. To advocate change of some practices may be offensive to the local population, no matter what the logic from a water resource point of view. Therefore advocacy of change must be approached with great sensitivity and empathy. It may be that no change will be possible during the life of the current generation. Other traditions however, may have no more basis than “accepted practice” and change of these to increase benefits to all concerned may only be a matter of logical argument and demonstration.

This chapter attempts to consider some of the key ideas that influence water resources development, and therefore also impact strategies for coping with water...
Fig. 5.1 Framework for conceptual thinking on coping with water scarcity

scarcity (Fig. 5.1). As has been mentioned in previous chapters, water scarcity may be due to natural causes – aridity and droughts – or to man-made causes. Man-made scarcity is produced through a wide range of problems that may include: (1) pollution or contamination by upstream users – urban, industrial, mining – causing degradation of that water before it can be accessed by downstream users, (2) poor water management such that there are strong inequities in allocations both in time and space between potential users, and (3) insufficient or inadequate infrastructure for water collection, storage, conveyance and distribution, especially during periods of stress, and when infrastructure maintenance is poor.

Water scarcity problems are different among various groups of the population and users, e.g. rural vs. urban populations, environmental vs. human and economic uses, or domestic and industrial vs. irrigation uses. A key issue is controlling the demand for access to water, since the demand for water is everywhere growing very rapidly, including in water scarce areas.

5.2 Social Value of Water

5.2.1 Water for Life

Water is essential to life and therefore it affects lifestyles. Conversely in areas of water scarcity the availability of water is very much affected by the lifestyles of the local population. Land use and animal husbandry practices have considerable influence on water use. In water scarce regions there is a need to capture some of the precipitation for household use and to retain as much as possible of the