

Chapter 1

Introduction

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This book is about growing new forests in harsh environments for wood products and environmental services, the relevant multidisciplinary knowledge acquired over the last 15 years, and needs and priorities for the future. It builds on a smaller volume, 'Restoring tree cover in the Murray–Darling Basin', published earlier (Nambiar et al 2000).

In Australia during the last decade, increasing recognition of priorities in natural resource management has led to several key national initiatives. These initiatives have re-enunciated goals for the establishment of plantations and farm forests to provide economic and environmental benefits. The community has recognised that further expansion of traditional plantation forestry may have to be, in part, in new land base located in areas of low rainfall. At the same time, both the extent and the impact of salinity on agricultural production and water quality have become a matter of national concern. Dryland salinity, largely caused by large-scale clearing of woodlands and related agricultural practices, has degraded about 2.5 million hectares of agricultural land. The extent and severity of this threat to land and water is increasing rapidly.

The planting of trees and other perennial vegetation on a sufficient scale in strategic parts of the landscape provides one, but by no means the only, option for mitigating land and water salinity and improving productivity of the land. Other environmental services that can be provided by tree planting and similar revegetation include carbon sequestration, biological diversity, and aesthetic values at local and landscape levels.

Large-scale reforestation, like most activities that humans undertake, may also incur environmental disservices and other costs. Potential reductions in downstream water flows, and losses of agricultural production in the planted area, need to be weighed against the potential net benefits from environmental services and any commercial commodities — wood and an array of non-timber tree products — that can be produced.

The broad challenge is to ascertain where such tree planting might best be pursued, what species and technologies should be used for establishment and later management, how productivity can be improved, what mix of environmental services and commercial goods is optimal, and whether the likely net benefits justify the change in land use and the requisite investment.

While many regions of Australia face natural resource issues, water and soil management is brought to a focus in the Murray–Darling Basin. This vast and complex area of the Australian continent encompasses a wide range of soil and biophysical environments, and suffers from significant land and water degradation.

Characteristics of the Murray–Darling Basin which differ from those associated with commercial plantation development elsewhere in Australia include: