

Land use and sustainable ecosystems

Rural production has played a major role in Australia's economic development. However, Australian agricultural practices and the application of European-style agricultural and pastoral systems have had a profoundly detrimental impact on biodiversity, including ecosystem processes, which have led to deterioration in the quality of land and water resources. We are now producing commodities with ever-declining terms of trade and at significant cost to the environment. The search for farming systems and land use patterns that do not harm our environment is urgent.

Australia is a unique, ancient, flat and incredibly biodiverse continent with a dry but highly variable climate. Our geological history has created a landscape that has accumulated enormous amounts of salts in the land, lakes streams and groundwater. Native vegetation has adapted well to these unusual conditions but unfortunately, most of our European style of agriculture, pastures and annual crops is ill suited to this landscape. The large-scale clearing and change of species has raised water tables and leached salt in the upper layers of the soil. The resulting loss of native species, changes in ecosystem processes and the consequent land and water damage is well documented. Much of the degradation is the consequence of agro-ecosystems that leak carbon, water, nutrients and sediments.

The solutions lie in a nation-wide revolution in land use. We need to build ecologically sustainable landscapes consisting of a mosaic of commercial land uses that can capture this waste and turn it into wealth creating food and fibre products. To create and shape such a future we will need to move from producing the familiar commodities to producing new products for new markets that demand goods produced in environmentally benign ways. We need commercial land uses that do not cause further species losses or impacts on ecosystem processes including damage to land and water.

These new products and land uses will need to be coupled with native ecosystems that provide a suite of ecosystem services (such as the production of clean water, sequestration of carbon dioxide, and production of oxygen) that are valued and paid for by stakeholders and beneficiaries, public and private. This will require innovative and inclusive approaches that permit fair comparison of market and non-market values. Developing the concept of valuing and marketing ecosystem services as part of this process will be increasingly important.

Discovering and building new land use practices that meet these essential criteria requires solutions to scientific and technical problems that are many, complex and difficult. For example, the deficiencies in our scientific understanding of the ecology of the rehabilitation process in Australian ecosystems and landscapes are such that we risk creating new problems while attempting to solve current ones.

As well as new scientific knowledge and strong economic drivers, solutions to environmental and natural resource issues require institutional, structural, social and economic changes. Thus we need rural communities working with scientists, sociologists and economists to build new systems, and close cooperation between the many organisations involved in research to underpin the development of ecologically sustainable agriculture. On another front, growing numbers of case studies are

providing encouraging evidence of community willingness to address the problems when they are understood. Our new approaches need to be supported by community-wide education on sustainable land use.

"In Search of Sustainability" - Progressive Internet conference, March to November 2003

Conference summary communiqué with eleven chapters — one chapter for each of the conference themes as well as an introductory and a closing chapter. Each chapter will contain, in simple language, a summary of what we understand to be the challenge of sustainability in that theme and a group of proposals or recommendations for action.

Whereas the chapter in the communiqué will not be attributed to authors, the resulting book chapter that expands on the issues developed in the communiqué will be attributed to authors.