

If we had discovered England, would we have grazed it with kangaroos?

Growth in global levels of population and per capita production and consumption has meant that humans have used as much natural capital in the last two generations as in all previous history. Current political and economic systems reinforce accelerated depletion of non-renewable resources and unsustainable use of renewable resources. Furthermore, they ensure that the products of this exploitation are distributed so that the net flow of both nutrients and dollars is from poor countries to rich countries, a trend which is increasing. The doubling of world population in the next 40 years seems likely to compound these trends, especially in the absence of fundamental changes in trade relations, patterns of production and consumption, and social organisation.

The industrialisation of the last two centuries, and a parallel revolution in farming methods in industrialised countries, has seen a continued decline in the market prices of food and fibre, and a continued increase in reliance on off-farm inputs to support ever-higher production levels. Consequently, farmers' terms of trade (the ratio of returns to costs) have been on a long, slippery, downwards slide, farms have increased in size, and each generation has seen fewer and fewer farmers. The achievements of modern agriculture in feeding those people who can afford to buy food have been commendable. But there have been many costs, costs which have yet to be passed on to the consumer, but which will be borne by everyone eventually. All around the world, farmers are struggling to maintain their livelihoods.¹ The social fabric in countless rural communities is threadbare and disintegrating.

There is no shortage of environmental signals pointing to the need for profound change. We do not want to descend into a dis-

mal litany of doom and gloom, but neither do we want to gloss over the issues confronting us. Here are some fairly obvious warning signs which any society concerned about even its short term future would be wise to take extremely seriously. The important feature of the few examples mentioned here is not the accuracy or significance of each individual statistic, but their collective impact, in terms of scale, complexity, uncertainty and urgency, the fact that the trend in most of these indicators seems to be towards greater depletion, degradation, pollution and inequity, and the extent to which they defy management by conventional political systems and decision-making processes.

Neoclassical economics since the industrial revolution has tended to ignore the fact that the human economy, or macro-economy, is an open subsystem of the biosphere and is totally dependent on it as a source of inputs and as a sink for waste. Managing the size of the human economy relative to the global ecosystem (or in farmers' terms the carrying capacity of the planet) has been described by World Bank economist Herman Daly as '*the major problem of our time*'. Daly suggests that the greenhouse effect, ozone layer depletion and acid rain are telling indicators that we have already exceeded a prudent carrying capacity for the scale of the macro-economy.²

One of the clearest indications that humankind has fully occupied the ecological space available, and is probably starting to exceed it, is the impact of *Homo sapiens* on other living organisms, either directly, by wiping out or severely over-harvesting species of flora and fauna, or indirectly, through habitat destruction, degradation and pollution. The loss of species is staggering. After a slow increase in the extinction rate due to the hunting, clearing and burning of earlier generations, the earth is entering a phase of unprecedented extinctions. The erosion of genetic diversity within species, particularly animals and plants domesticated for human food and fibre, is probably equally critical.³

While the world demand for food and fibre continues to grow, the amount of arable land available continues to diminish through land degradation and conversion to non-agricultural uses. A continuation of present trends will see a net loss of eighteen per cent of the world's arable land by the year 2000 and the same again by 2025.⁴ In 1950, just over 100 million hectares of forest had been cleared, but 30 per cent of global land was still covered by forest, half of it tropical. By 1975, the cleared area had more than doubled, and the area of tropical forest had dropped from fifteen to twelve per cent of the land, and is likely to be less than seven per

cent of the land by the end of this century. The effects of forest clearance are not merely local. Large-scale deforestation has far-reaching impacts on rainfall patterns, hydrological cycles (exacerbating floods and droughts) and probably global climate. The increasing scarcity of fuelwood, on which more than two billion people rely for cooking (crucial for hygiene) and warmth, is an often overlooked energy crisis at both global and human levels.⁵

The oceans are the earth's sump. They play a natural role in absorbing run-off of silt and minerals, but in recent decades oceans have had to absorb exponential increases in human-generated waste—sewage, industrial effluent, bacteria and viruses, agricultural chemicals, as well as soil and radioactive wastes. The global level of this waste reaching oceans is difficult to quantify,⁶ but the more disturbing point is that we have very little idea of the assimilative capacity of oceans, nor of the impact of the many toxic substances finding their way into the oceans. What is known is that human-made toxins are present throughout the world's oceans and that many of these chemicals become more concentrated as they move up the food chain. The world fish catch increased by an average of seven per cent per year between 1950 and 1970, but has reached a plateau, despite large changes in the composition of the catch as major stocks have been reduced and replaced by small fish processed into fish meal and oil, and animal feed supplements. Thus the food value per tonne has declined, and over-fishing and poor management have impoverished many fisheries.

In industrialised countries, pollution of both groundwater and surface water has become one of the most pressing environmental issues. The continued popularity of large dams for hydroelectric power and irrigation schemes, despite a tragic litany of profound ecological dysfunction, threatens fresh water ecosystems and human food and water supplies in many countries—not just in the south.

The average daily energy requirement for human well-being is estimated to be 2400 calories. People in the developed countries of the north receive an average of 40 per cent above this figure, while the average person in the developing countries of the south subsists on ten per cent less than this basic requirement.⁷ The Worldwatch Institute's *State of the World* divides the world population of five billion people into three groups which they call overconsumers, sustainers and marginals. There are about one billion overconsumers—people who travel by car and plane, eat lots of meat and generate vast quantities of waste. North America tops the scale for consumption and waste, with the average citizen

accounting for nearly his or her weight in basic materials each day. At the other end of the scale, one billion people (the marginals), live at or below subsistence level—travelling by foot, eating no meat, but generally food of low nutritive value, drinking contaminated water, producing virtually no waste, and often lacking basic shelter. The middle group (the sustainers) travel by bicycle and public transport, eat healthy diets of grains, fruit and vegetables supplemented by a little meat, drink clean, unbottled water and recycle much of their wastes.⁸ David Korten points out that the latter group are also the targets of a multibillion-dollar advertising industry devoted to convincing them to adopt the lifestyles of the overconsumers in the name of economic progress.

The key point here is that problems of obesity, hunger and malnutrition are clearly not problems of aggregate world food supply, but rather problems of distribution and weak effective demand, exacerbated by war.

Between the 1950s and 1980s, agricultural use of synthetic chemicals in northern industrialised countries rocketed. For example, the use of nitrogen doubled in Europe between 1950 and the 1980s, and quadrupled in the US between 1960 and 1981.⁹ Over roughly the same period in the US, there was a 170 per cent increase in the amount of pesticide ingredients applied on farms, but no increase in the cultivated area. Much chemical pest control is not only environmentally damaging and potentially harmful to human health,¹⁰ but it ignores basic ecological principles of genetic selection, and is thus ineffective over the longer term, except from the perspective of increasing the use of chemicals.¹¹ Pesticides tend not to be specific to a single species of pest, and thus wipe out natural predators.¹² It should be noted, however, that in response to these issues more work is now being done in many countries to develop Integrated Pest Management (IPM) strategies designed to minimise the amount of pesticides used and to apply them to optimum effect, complemented by natural predators and making much greater use of farmers' observation skills.¹³

Finally, it seems that man's influence has extended to the global climate, although the long-term ramifications of this influence are uncertain. Carbon dioxide (CO₂) levels in the atmosphere have increased by about 30 per cent from 1850 to 1980 and are projected to leap a further 75 per cent by 2060. CO₂ and other so-called 'greenhouse gases' are creating a thermal blanket, causing the temperature at the earth's surface to increase at an abnormal rate. The possible impacts of a global rise in temperature of between two and five degrees Celsius over the next century include rises in sea

levels due to melting polar ice caps, more severe climatic extremes (hurricanes, floods, droughts etc), and highly differentiated impacts on agricultural productivity. Perhaps even more disturbingly, significant 'holes' have appeared in the stratospheric ozone layer in an apparently short time—a phenomenon which is linked to emissions of chlorofluorocarbons (CFCs). These man-made chemicals break down ozone molecules in the stratosphere. Even if present emissions of CFCs ceased, ozone depletion would continue to occur for many years, allowing a greater amount of potentially damaging ultraviolet radiation to reach the surface of the earth.

In other words, humankind has already caused irreversible changes in atmospheric biochemistry. The key questions now are: to what extent will these changes be benign or malign, what will be the cost of coping with the impacts, and for whom? And will we learn quickly enough to modify practices which are causing these problems?

In summary, attitudes which see natural resources as inexhaustible and substitutable have fostered systems of land use which have degraded and/or depleted land, air and water, flora and fauna, not just out of ignorance but with an acceptance of degradation as a corollary of 'development'.

TURNING THINGS AROUND

Litanies of doom and gloom are prevalent in the explosion of green literature which has symbiotically accompanied the growth in environmental awareness since Rachel Carson's *Silent Spring*¹⁴ was published in 1962. The statistics are hard to grasp, and when one does understand their implications, they are so alarming and/or depressing that it is hard for any individual to know where to start or how to make a difference.

Turning around the global environmental trends mentioned above seems unlikely to occur through merely fine-tuning the existing relationship between humans and nature. Much more fundamental re-thinking is required. What most alternative approaches have in common is reliance on a fundamental change in values to underpin subsequent redirection of political and economic forces, to alleviate resource depletion and degradation, and to ensure more equitable distribution of the wealth generated from the use of natural resources.

But how can a community or a society undergo a fundamental change in values? How can communities learn to learn and to reach and implement difficult decisions? This is a critical issue in the face

of environmental problems characterised by technical uncertainty, large scale and apparent urgency. It seems unlikely that fundamental change will come about solely through the statesmanship of political leaders (although some far-sighted leadership is essential), or through altruism among powerful groups whose power is vested in the status quo. Such learning and changes in values seem most likely to occur if ordinary people are directly, actively involved in these issues at a human level, rather than remote from them. As most environmental issues need to be tackled at a scale bigger than the individual, the family or the household, it follows that there is a need for processes for bringing people together cooperatively and constructively at a community and regional level.

Landcare in Australia is an exciting example of just such a process.¹⁵ Landcare is a multi-faceted, highly differentiated movement which is hard to define or to put boundaries around. At its core there are almost two thousand Landcare groups. These are groups of local people mostly in rural areas and mostly consisting of farmers, who have joined together to tackle land degradation problems and to work towards better land management in their district. The issues they are tackling and the ways they are doing it are as diverse as the landscape itself.

Northern Territory pastoralists trying to combat infestations of the noxious weed *Mimosa pigra* on the flood plains east of Darwin; rural communities in Tasmania concerned about stream water quality and river bank erosion; part-time farmers in central Victoria organising coordinated rabbit control programs; coastal communities in New South Wales stabilising sand dunes; Western Australian wheatbelt farmers surveying and mapping their district to develop catchment plans to coordinate salinity, drainage and erosion control works; Land Care Committees in Queensland combining local and scientific knowledge to produce land management manuals for their district; schoolchildren measuring salinity levels, producing maps, investigating environmental indicators such as frog and worm populations; rural Landcare groups planting trees helped by visiting bus loads of city people, bridging the Great Divide between urban and rural Australia; farmers working jointly with researchers to define and investigate more sustainable farming practices—all of these activities are threads which make up the rich pattern of Landcare.

But before going into Landcare in more detail it is instructive to elaborate on its Australian setting, which is crucial to an understanding of how and why Landcare emerged and of its significance, both in contemporary Australia and internationally.

AUSTRALIA—A ROUGH SKETCH

Australia is an ancient land and the history of European settlement in Australia is very short. Bob Beale and Peter Fray in their book *The Vanishing Continent*¹⁶ illustrate just how short, by pointing out that, if the geological history of Australia is considered as a journey along the 4300 kilometre length of the Indian Pacific Railway from Perth to Sydney (so that each kilometre of travel equates with one million years), then the arrival of the first European settlers occurs only twenty centimetres before the train grinds to a halt at Sydney's Central Station. Even the Aborigines, the first human settlers, arrived only about 50 metres (50 000 years) from the end of the journey measured on this timescale—relatively recently in geological terms, but long ago in human terms.¹⁷

The point of these comparisons is to emphasise that the land we live from is incredibly old, and that our current society has developed in the blink of an ecological eye. These two facts form a crucial background to any analysis of human impact on the Australian landscape.

In keeping with their great age, the soils of the flat and low continent of Australia are generally weathered and shallow, inherently infertile and poor at retaining water, relying in their natural state on efficient nutrient cycling by native vegetation and soil organisms to maintain structure and fertility. The natural rate of soil formation is so slow that Australian soil is effectively non-renewable. Only ten per cent of Australia's 768 million hectares is considered arable. The dominant feature of the Australian climate is not so much its dryness (although it is the driest continent) but its variability, due in large part to a huge instability of atmosphere and ocean known as the El Nino Southern Oscillation. The technologies to anticipate this phenomenon are improving, but drought, floods and fire continue to cause irregular devastation in the essentially European farming systems of Australian agriculture.¹⁸

Agricultural and pastoral uses occupy more than 60 per cent of the physical area of Australia. Historically, Australian agriculture has always had to contend with a small domestic market, high labour costs and long distances to overseas markets. The response has been to grow large quantities of export commodities which do not perish on long sea voyages, and which require minimal inputs of labour. This strategy has persisted. In the 1990s, 80 per cent of Australia's agricultural output still consists of wool, wheat, beef, sheep-meats, sugar, butter and milk. About 125 000 farms (the vast majority run by a single family), with an average size of 2800 hec-

tares, produce these seven commodities, with few farms producing more than three or four different products. The dominant trend in the number and size of farms means that each year fewer people are working bigger farms more intensively. The volume of agricultural production and exports has doubled over the last 30 years, with only a sixteen per cent increase in the area farmed.¹⁹

This is not a book about land degradation. Readers interested in detailed accounts of the impact of Europeans on the Australian environment would be moved by the forcefully argued chronicle of William Lines in *Taming the Great South Land* and by the disturbing description of the current state of Australian land in *The Vanishing Continent*.²⁰ However it is too easy to fall into the trap of decrying the impact of Australian agriculture on the landscape without understanding the complex interaction of forces which shaped the way in which farming systems were developed. The evolution of farming practices in Australia represents a continuing search for better ways of managing this unique land. *Greening a Brown Land*, by Neil Barr and John Cary, traces this search for sustainability and discusses what appears to be a litany of destruction and exploitation in a more sympathetic light.²¹

Barr and Cary describe European agriculture in Australia as a 200-year experiment, which of course is ongoing. They point out that the Aboriginal inhabitants at the time of European settlement saw themselves as part of the land, and that their culture and systems of land management had evolved with the land over tens of thousands of years. Aboriginal firestick farming altered the landscape, favouring the development of grasslands and open woodlands, thus increasing the marsupial stocking rate which benefited the native hunters. In contrast, the white settlement of Australia was inspired by overcrowding in British jails and Britain's strategic interests in the southern hemisphere. The composition of the first fleet was pathetically inappropriate for establishing, housing and feeding a new society²² and the first generations of white settlers did not see themselves as part of the land—quite the contrary.

Early Australian literature is full of phrases like 'taming the land', 'the harsh and hostile scrub', 'the lonely outback'. The seasons were upside down, the native animals seemed utterly bizarre and the trees shed their bark instead of their leaves. Farming practices and means of maintaining soil fertility which had been developed over centuries in the young fertile soils and soft gentle climate of England proved disastrous in Australia's ancient soils, hot sun, drying winds, unpredictable rains and long, energy-sapping dry spells.

It is still customary to refer to long dry spells as 'drought' or 'natural disaster' rather than considering them an innate characteristic of the territory.

Greening a Brown Land outlines the key phases in the development of Australian land use, beginning with the 'anarchic pastoral expansion of the squatters',²³ which had a devastating impact on the native human population and on native grasslands and soils. The gold rush of the 1850s brought new settlers and, as the alluvial gold ran out, a phase of more orderly selection of land and closer settlement began. What Barr and Cary describe as 'the great Australian dream of making land more accessible to its citizens' was evident for roughly the next hundred years, with a succession of closer settlement schemes and irrigation schemes. These schemes were driven by social imperatives and concerns, including a wish to settle and develop the 'empty' land in the face of perceived threats from much larger Asian populations in the north, and the need to reward and pacify returning soldiers from the Boer War and the two World Wars. Such schemes were rarely well planned from an ecological or even agronomic perspective; large irrigation schemes and land clearance schemes have been pushed through by social and political pressure in the face of strong technical evidence of potential salinity problems and likely poor returns.²⁴

A thumbnail sketch of the history of agricultural impacts on the landscape reveals a gradual exhaustion of the soils in cropping areas and of perennial pastures in grazing regions up until Federation in 1901, owing to overgrazing, overcropping and the devastating impact of the rabbit (introduced for gentlemen's sport in the 1860s).²⁵ Then the introduction of new wheat varieties, superphosphate and dry fallow heralded new prosperity for wheat farmers, which proved to be short-lived, as bare fallow and cultivation reduced soil organic matter, broke down soil structure and, in the words of one mallee farmer, 'pulverised the soil into submission'.²⁶ The erosion decades of the 1930s and 1940s spawned the first widespread community concern about land degradation²⁷ and the establishment of soil conservation agencies by state governments. Improved pastures and crop varieties, clover ley rotations, soil conservation works, and the apparently successful biological control of rabbits, dramatically reduced erosion. The wool boom of the early 1950s saw a new golden era in which pastoral fortunes were made and consolidated, and agriculture was the mainstay of the Australian economy. However, over the last 40 years more insidious and intractable long-term problems have emerged in the form of soil acidification and soil structure decline

over very large areas, and more spectacularly, soil salinity due to changed hydrological balances following clearing and subsequent cropping and grazing, exacerbated in irrigation areas.

As Barr and Cary caution, this history suggests that current prescriptions for more sustainable farming practices may not stand the test of time, and that these complex issues will not be solved by simple recipes. Importantly, they note that each generation has defined its own challenges (initially to survive, then to develop, then to fix obvious degradation problems, and now to pursue sustainability with all its inherent social, economic and environmental dilemmas) according to its existing cultural norms. An examination of the ecology of agricultural systems throughout history reveals that the exact nature of farmers' response to their environment depends not so much on the ecological constraints imposed by their environment, as on the society in which they find themselves.²⁸ The European settlers tried to impose on the Australian landscape the farming systems with which they were familiar—sheep, cattle and wheat. The following dry reflection of an old western Queensland grazier puts this in perspective: 'If we [Australians] had discovered England, do you think we would have grazed it with kangaroos?'²⁹ This apparently bizarre notion is a simple inversion of what occurred in Australia.

Social and cultural norms are very influential, which is one reason why the direct involvement of a significant percentage of rural Australians in Landcare groups is potentially such a powerful force for change.

LAND DEGRADATION

While we have cautioned against drawing simplistic conclusions from stark portraits of environmental problems, one cannot understand the development of the Landcare movement and the impetus behind Landcare groups without a brief introduction to the severity and extent of land degradation in Australia.

Changes in the Australian landscape since European settlement have been astonishing in their scale and swiftness, to the extent that our knowledge of the impact of these changes and ongoing degradation processes is still sketchy and superficial. According to figures from the Australian Bureau of Statistics and Doug Cocks' *Use With Care*:³⁰

- Various combinations of soil erosion, salinity, acidification, soil structure decline, waterlogging and water repellency affect a sig-

- nificant proportion of the land used for agriculture.³¹
- Fresh water resources (both groundwater and surface water) are threatened by salinity, eutrophication, sedimentation, contamination with agricultural chemicals and municipal and industrial wastes. Riparian environments commonly suffer ecological disruption through altered flow regimes caused by regulation for irrigation and urban water supplies.
 - Half of the tall and medium forests (higher than ten metres) and about 35 per cent of the woodlands have been cleared or severely modified, so that, since European settlement, the area of Australian land under forest has been reduced from ten per cent to five per cent and of woodlands from 23 per cent to fifteen per cent.
 - Ninety-seven species of vascular plants are extinct and 3329 plant species (seventeen per cent of the total) are either rare or threatened.
 - Twenty species of mammals and ten species of birds are extinct and a further 111 vertebrate species are considered endangered.
 - At least ten per cent of Australia's flora now consists of introduced species, some of which (including Mesquite, *Mimosa Pigra*, Prickly Acacia, Rubber Vine, Bitou Bush, Lantana, Blackberry etc) have been ecologically disastrous.
 - Similarly, rabbits, foxes, cats, pigs, donkeys, camels, horses, goats and cane toads (among others) have been deliberately introduced to Australia and have become significant pests, causing widespread land degradation and either destroying the habitat of or directly consuming native flora and fauna.

The costs of this depletion and depreciation of natural capital are very difficult to calculate. Many estimates have been made, the most recent suggesting that weeds alone cost the Australian community three billion dollars a year, not counting the cost of blue-green algae.³² Losses in Gross Value of Agricultural Production due to land degradation are as high as seventeen per cent per year in some regions.³³ These losses are not recognised as a cost of agricultural production in Australia's national accounts. Rather, expenditure on land conservation, which is directed at reducing this cost, is registered in Gross National Product as income.³⁴ Depletion of natural capital such as soil, fresh water and biodiversity is not accounted for at all.

As farmers and as a nation we may be competent at recognising and allowing for depreciation of man-made capital assets, but when it comes to recognising depreciation of natural capital our account-

ing is third rate. Given the dominance of economic theory in policy formulation, the way in which the use of natural resources is accounted for reinforces rather than exposes irrational priorities in the allocation and use of these resources.

This point is not unique to Australia. One of the most pervasive influences of economics in modern industrialised countries is the compilation of national accounts and their consequent use to compare the performance of economies (and by inference the quality of government) over time and between nations. News bulletins and newspapers quote share market indices, the value of currencies, latest trade statistics and quarterly results in growth or otherwise in Gross National Product (GNP), which reveal whether an economy is growing (a 'good thing') or contracting (a recession, 'bad news'). Economic growth as measured by increase in GNP is a political goal of the vast majority of national governments and is identified with increasing social welfare. So defined, economic growth measures production, not welfare. Thus the way in which economists carry out the analyses and the measurements which comprise these accounts is of great political importance. It is also one of the main targets of the green critique of mainstream economics.

According to Garret Hardin, who coined the term 'tragedy of the commons' in a seminal article in *Science* in 1968, for a politician to try to maximise GNP makes as much sense as for a composer to try to maximise the number of notes in a symphony.³⁵ Roughly 70 per cent of GNP increases have traditionally been gained by growth in the most environmentally damaging and depleting sectors.³⁶ Therefore, economic growth has tended to occur at the expense of the environment and the major goal of economic policy in almost every country effectively is translated into increased degradation, depletion and pollution of natural resources. Thus, in the words of Roefie Hueting, an economist working on reforming the Netherlands National Accounts,

*... society is sailing by the wrong compass, at the expense of the environment; the error is covered up by a wrong use of terms; the belief in ever continuing exponential growth in production, as measured in national income, is the heart of the environmental problem.*³⁷

The environment performs three economic functions—as resource supplier, waste assimilator and as a direct source of utility, the value of which is rarely reflected in national accounts or analyses of economic trends or international economic comparisons. Many econom-

ists, as well as environmentalists, are uncomfortable with the status given to national accounts, because they have three main deficiencies: the use of monetary transactions is inadequate for measuring social and economic performance; different forms of wealth (capital and income) are treated inconsistently; and important variables which influence economic activity (for example the extent and quality of natural resources and the depreciation or otherwise of human capital), are ignored.³⁸

Regardless of how it is accounted for, and while rigorously ground-truthed statistics may not exist, visual and anecdotal evidence is sufficiently stark to suggest that in all the key degradation categories (with the possible exception of erosion on cropping land), Australia is still going backwards. Salinity, soil acidification, soil structure decline, vertebrate pests, weed infestation, rural tree decline, water quality decline and species extinction are all increasing, if not accelerating.

These are sad and sorry indicators of the extent to which current standards of living have been achieved at the expense of Australia's natural capital. But we should not lose sight of the other side of the equation—the achievements of modern Australian society. As Doug Cocks points out in his comprehensive, constructive and clear-sighted book *Use With Care*, Australia is one of the oldest democracies and, on the indicators of life expectancy, infant mortality and adult literacy, it has been among the most successful countries for more than a century. Our quality of life, admittedly an intangible and subjective descriptor, is very high by world standards.³⁹ With its comparatively low population pressure, stable political climate, well-educated population and highly-developed technological capacity, Australia is well placed to take a lead in developing systems of land use and management which support a high quality of life without depreciating natural capital. If we accelerate our efforts in this direction, we are likely to generate new skills and technologies (scientific and social) which will be extremely valuable in Australia and elsewhere.

RURAL DECLINE

But we have a huge hurdle to confront. The rural crisis in Australia is one of the most severe this century.⁴⁰ This crisis is a formidable constraint to Landcare, in that it limits the financial capacity of groups and their individual members to fund practical land conservation works. Furthermore, it is placing rural communities under great stress as families are forced to leave the land or are living

under a shadow of imminent foreclosure. But it is also a powerful stimulus for Landcare, because it underlines in stark terms the sheer unsustainability of current farming systems, which is a compelling incentive to develop better ways of using the land—ways which are more profitable, which preserve or enrich the social fabric of rural communities, and which protect the resource base upon which the whole system and the Australian population ultimately depends.

The most obvious indicator of rural decline is farm finances. The Australian Bureau of Agricultural and Resource Economics (ABARE) estimates that farm business profit on Australia's 77 800 broadacre farms declined by 350 per cent between 1989–90 and 1990–91, to an average loss of \$18 000 per farm.⁴¹ More than 70 per cent of broadacre farms recorded a farm business loss in 1990–91, and ABARE estimated that the average farm business profit dropped further in 1991–92, to an average loss of \$23 100 per farm, the third year in a row that broadacre farms have recorded a negative farm business profit on average. The latest estimates are for an average farm business loss of \$10 500 in 1992–93, worsening again to a loss of \$13 200 for 1993–94.⁴² Obviously consecutive years of negative profits make things extremely difficult for people attempting to carry debt. By June 1992, declining terms of trade (the ratio of prices received for their products to the cost of their inputs) had seen farm costs rise to 95 per cent of the gross value of farm output, leaving the average broadacre farm a margin of only five per cent from which to repay loans, pay tax and support families. The average broadacre farm in Australia in June 1992 owed more than \$100 000 and paid \$14 000 in interest.⁴³

These figures are even more disturbing when seen as merely a continuation of longer-term trends, rather than as the 'bust' period in a boom and bust cycle. Sure, farmers' terms of trade fluctuate and there were some good years in the late 1980s. But the underlying long-term trend is an inexorable downward slide. In the early 1950s (admittedly a boom period in Australian agriculture) agriculture accounted for 29 per cent of Australia's Gross Domestic Product (GDP) and 83 per cent of exports, but by 1991–92, this had fallen to 3.6 per cent of GDP and 22.6 per cent of exports. Over this period, farmers' terms of trade has declined by an average of four per cent per year. Overall, Australian farmers' costs have increased (in real terms) by more than 100 per cent, while their returns have increased by only about 50 per cent. Figure 2.1 illustrates this long-term squeezing of farm profit margins, and suggests that Australian agriculture is facing a crunch period, or in ABARE language 'there is unlikely to be any let up in the severe

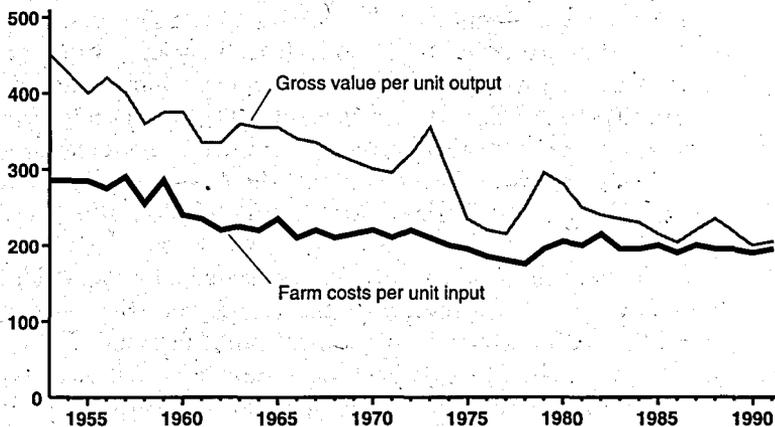


Figure 2.1 Real farm costs and real gross value per unit output on Australian broadacre farms, 1950 to 1992

adjustment pressure facing Australian farmers over the rest of this decade'.⁴⁴

The bottom line to these figures is that throughout the 1980s and early 1990s Australian farmers have had to increase productivity by an average of five per cent each year (over good seasons and bad), just to *maintain* profitability. Of course the traditional response of farmers to declining terms of trade has been to raise productivity and this has continued to occur. Australian agriculture has improved productivity by an average of three per cent per year since the 1970s, which compares very favourably with other OECD countries and other sectors of the Australian economy.⁴⁵ Gross farm output in Australia has increased by 250 per cent since the 1950s, but most of this growth occurred prior to the late 1970s, largely through more intensive production involving higher input use. Since the late 1970s, productivity gains have been achieved through reducing inputs, to the extent that there has been a negative net investment in broadacre farm plant and machinery every year since 1982–83.⁴⁶ In other words, farmers have tightened their belts, making machinery last longer because they cannot afford replacements, and deferring other investments, which has severe flow-on effects for country towns and employment in agricultural service industries.

Figure 2.1 shows very clearly that productivity improvements through new technologies and reduced inputs have not been sufficient to compensate for increased costs and lower returns, which suggests that Australian agriculture is facing a massive shake-out.

Neoclassical economic rhetoric would have it that the most efficient and progressive farmers will survive, and that rural industries will emerge 'leaner, meaner and hungrier'. This is not necessarily the case, as survival for a particular family depends heavily on their level of debt. Younger farmers who are still trying to consolidate and improve their farms, and who have higher expenses with young families or children at school, tend to carry most debt and are most vulnerable regardless of their efficiency or progressiveness. Given the lack of on-farm investment during the 1980s revealed by the ABARE figures, when commodity prices rise again Australian agriculture will surely be lean, mean and hungry, with the social and environmental consequences that everyday use of these words implies.

The number of farms continues to decline⁴⁷ and the average age of farmers is in the high fifties and probably increasing. Agriculture is becoming increasingly less attractive for young people, including the children of farm families, as there is simply not enough money in farming to enable younger expanding families with higher financial commitments to enjoy the lifestyle which Australian agriculture has traditionally offered. The vertical and horizontal restructuring of agriculture in rural regions raises questions about the long-term viability of the family farm in Australia.⁴⁸

The decline in farmers' terms of trade and the rural economic crisis has been well documented, but the social and environmental side effects of farm financial stress have not gained much public attention until relatively recently. When the social plight of rural communities has gained national prominence, it has usually been in the context of severe droughts, floods or bushfires, which the national consciousness can assimilate as 'natural disasters', rather than confronting the fundamental underlying issue of the future of rural communities.

Lawrence and Williams⁴⁹ review the dynamics of decline in health, welfare and education in rural Australia and discuss its implications for social welfare delivery. They note many disturbing points, including:

- About one-third of Australia's country towns are in decline, associated with population movements and government rationalisation.
- Many of the people remaining in withering country towns are those who most need access to human services; they are trapped in a physical and social sense, unable to sell their homes or to gain work.

- Rural poverty is more widespread and is more chronic than urban poverty, and those in poverty in the country exhibit greater social and health problems than the poor in cities.
- The level of domestic violence is higher in rural than in urban Australia.
- Per adult consumption of alcohol and tobacco is about 30 per cent higher in rural areas.
- Rural people experience 28 per cent more hypertension and psychiatric disorders than urban people.
- Only seven per cent of boys and ten per cent of girls who finish year twelve in rural schools go on to tertiary study compared with 27 per cent of boys and girls in cities.

Lawrence and Williams note that rural people historically have always been disadvantaged in access to services such as health and education, and to information about service options and funding guidelines, probably because political and economic power has been located in national and state capitals and statutory power is vested in state rather than local government. Thus local communities have traditionally been able to exercise little self-determination in decisions about locating new services or withdrawing existing ones. With continued decline and withdrawal of services to regional centres, local influence dwindles further. When a community drops below a 'critical mass' in elements such as local skills, contributed funds, local volunteers and accumulated capital facilities, government funds are even less likely, particularly from submission-based programs which favour more articulate and better-organised communities. Lia Bryant notes that, in keeping with the dominant political flavour of economic rationalism, state and federal government agencies have rationalised health, welfare and agricultural-based services in country areas, withdrawing essential services from or closing schools, hospitals and government offices, further compounding the problems of the still growing proportion of rural people in poverty.⁵⁰

Lawrence and Williams suggest that the tradition of self-help and self-sufficiency within rural communities is no longer sufficient to find local solutions to the problems caused by rural decline. They conclude that, given agriculture's shrinking importance in the Australian economy, new rural industries are required if real social development is to occur.

We have painted a gloomy picture, perhaps too gloomy. There is always some room for manoeuvre for rural communities. Landcare groups and related initiatives enlarge the options for rural people and can more effectively harness local resources and energies in an at-

tempt to reverse the dynamics of decline. Commentators point to encouraging external developments such as progress in negotiating the Uruguay round of the General Agreement on Tariffs and Trade (GATT) and the rapid expansion of the Asian food market, both of which present medium-term opportunities for Australian agriculture. Furthermore, in 1994 there are tentative national moves towards rural (re)development, with initiatives underway or planned under policy headings such as employment, welfare, rural adjustment, education and training, environment, ecotourism, and agribusiness.

A profound sense of unease about the future of farming and of life on the land permeates rural Australia. In many conversations with rural people, we have encountered a suspicion that urban Australians feel they do not need or want farmers any more. We do not wish to tar everyone in government, industry and farmer organisations with the same brush, as there is some hard, constructive thinking taking place in various offices in both the public and private sectors. But people in the bush see little evidence of such thinking, which is yet to crystallise into a long-term plan or clear direction for Australian agriculture.⁵¹ There are few obvious signs that the environmental and social consequences of rural decline have been thought through. There is no better time than now to develop a much more forward-looking rural policy for Australia, which takes as its point of departure the extraordinary community endeavour described here, using it as a platform to support strategic long-term investment in an economic sector in which Australia still enjoys a comparative advantage. It is short-sighted to see rural Australia marginalised.

Talk of 'level playing fields' is rancid rhetoric to people saddled with debt and high real interest rates, receiving wool and wheat cheques which fail to cover out-of-pocket costs. Ultimately, rural decline is not just a social and economic issue, it has profound environmental implications. More sustainable systems of land use and management are unlikely to be developed or implemented by people preoccupied with short-term survival. As one farmer put it, 'it's hard to be green in the red':

In short, existing systems of food and fibre production are unsustainable. The rural sector is ageing, declining, stressed and going broke, and depleting natural and human resources in the process.

That is the bad news. While it may seem hard to be green in the red, many families and communities are doing just that, working to find solutions which get them off the accelerating treadmill of decline, and on to a more self-reliant and sustainable path. The rest of this book is devoted to how they are going about it—how rural communities are responding to these environmental, economic and social challenges.