

Land Clearing and Landscape Repair in Queensland

Summary

Land clearing is widely recognised as the biggest threat to wildlife in Australia. It causes dryland salinity, soil erosion and water quality decline and contributes a substantial proportion of Australia's greenhouse gas emissions. As our understanding of the long-term implications of land clearing improves, community expectations towards controlling broadscale land clearing are changing. This understanding is driven by world class Australian scientists, who are telling us that to protect our rivers, our farms and our wildlife in perpetuity, it is not enough just to protect threatened ecosystems or areas of catchments or bioregions on a simple percentage basis. To ensure that Queensland's agriculture can move forward on a sustainable footing, the broadscale clearing of all remnant or mature native vegetation must end, valuable regrowth native vegetation should be protected and landholders should be assisted financially in adjusting to the changed circumstances.

Land Clearing in Queensland

Australia clears more native vegetation per year than any other developed nation and ten times the average of other Commonwealth countries¹. On available figures, only four other countries outpace this rate: Brazil, Indonesia, Sudan and Zambia².

More than 75% of land clearing in Australia takes place in Queensland³. Around two thirds of vegetation cleared is remnant (mature) bushland⁴. This accounts for an area three times the size of Fraser Island a year or more than 10 suburban house blocks a minute. Much of the cleared bushland belongs to rare or threatened vegetation communities^{5,6,7,8}.

Most land clearing in Queensland is driven by the expansion of pasture for beef cattle. The latest satellite data shows that during 1999-2001, 94% of tree clearing was for pasture⁹. The rest was mostly for crops, infrastructure and urban development.

The Environmental Problems Caused by Land Clearing

Salinity, Soil Erosion and Water Quality Decline

Removal of deep-rooted native vegetation upsets the natural balance of rainwater infiltration versus plant water use. The reduction in water usage when native vegetation is cleared can cause salty groundwater to rise towards the surface soils, leading to dryland salinity and rising salinity levels in rivers¹⁰. Studies show that salinity resulting from land clearing is likely to afflict 17 million hectares of land in

Australia by 2050, including over a hundred internationally and nationally significant wetlands¹¹.

Dryland salinity reduces farm productivity and in severe cases renders land completely unproductive. It damages roads, buildings and other infrastructure and reduces surface water quality¹². In Adelaide, for example, drinking water supplies from an increasingly salty Murray River may fail World Health Organisation standards on 2 days out of 5 within 20 years¹³. At least 200 rural communities in Australia are already affected, including Queensland towns like Kingaroy and Warwick¹⁴.

In Queensland, 107,000 hectares of land on 993 farms is already showing signs of salinity, and over a third of this land can no longer be used for farming¹⁵. An increase in salinity has already been noticed in half a dozen river systems in Queensland including the Condamine River on the Darling Downs and the lower reaches of the Mary River near Maryborough¹⁶.

Land clearing also causes water quality decline as a result of soil erosion, sedimentation and nutrient loading in rivers and streams¹⁷. To date, about 50,000 km of streams have been degraded by sand deposition and sediments are moving off cleared hill slopes faster than soil is formed¹⁸.

The recent drought has exacerbated the impacts of land clearing on soil erosion and eastern Australia has been blighted by a series of huge dust storms. One dust storm in October 2002 which blew an estimated 7 million tonnes of topsoil into the Tasman Sea has been explicitly linked to land clearing practices¹⁹.

Salinity trends relate to a range of factors including vegetation type and cover, climate history, rainfall, topography, geology and hydrogeology. State-of-the-art salinity hazard maps in Queensland showing that vast areas are subject to a high or moderate to high salinity hazard²⁰. Depending on local and regional circumstances, any significant reduction in the 'leaf area index' of perennial vegetation can change the hydrological balance to the point where salinisation of land and water resources may result at some stage in the future²¹. Almost certainly, clearing of even 30% or 40% of the native vegetation in some parts of Queensland will result in extensive salinisation.

This is recognised through the ambitious \$1.4 billion *National Action Plan for Salinity and Water Quality* (NAP) and states are required to "...prohibit land clearing ... where it would lead to unacceptable land or water degradation"²². Yet clearing continues apace in Queensland.

Failures to take an early, precautionary approach to vegetation and water management for salinity control have led to widespread and chronic land degradation in southern Australia. There is a real risk that similar mistakes are being made in Queensland. Without tackling land clearing, the primary cause of salinity, the NAP will not achieve its objective.

Greenhouse Gas Emissions

Land clearing contributes around 12% of Australia's greenhouse gas emissions, or 64.8 megatonnes of carbon dioxide equivalent²³. This is in the same order as the transport sector which contributes approximately 14.3% of national emissions²⁴.

The domestic impacts of climate change are predicted to include major adverse changes in rainfall patterns especially in southern Australia, increased storm activity, frequency and severity of drought and conditions of high wildfire risk²⁵.

Although currently declining to ratify the *Kyoto Protocol* the Commonwealth Government is committed to meeting Australia's *Kyoto* target of 108% of 1990 emission levels by the commitment period 2008-2012. Since Australia is officially projected to reach 111% of 1990 levels by the commitment period,²⁶ a 25 Mega Tonne reduction in annual emissions is a highly cost effective way of closing the gap between current projections and the 108% target²⁷.

We understand that some of the remnant vegetation that will be protected under the current proposal falls outside the *Kyoto* definition of a forest²⁸. However, although this vegetation cannot be 'accounted' for through the *Kyoto* mechanisms, protecting it will still provide climate change benefits as well as benefits for biodiversity, prevention of land degradation etc.

Accordingly, we acknowledge the substantial contribution that an end to broadscale clearing of remnant native vegetation in Queensland will make to Australia's and particularly Queensland's efforts to reduce greenhouse gas emissions. This is also a significant step towards mitigating the impacts of climate change by maintaining a greater level of connectivity in the landscape and thus enhancing its resilience to the inevitable impacts of global warming.

Loss of Native Plants and Animals

Australia is one of only twelve countries recognised internationally by scientists as "mega-diverse". Nearly 10% of the world's species are found in Australia, 80% of which are endemic^{29, 30}. However, the unique natural heritage generated in Australia over millions of years of isolation is being eroded at a rate unprecedented since the last ice age.

With the possible exception of climate change, land clearing is the issue most often identified as the biggest threat to terrestrial biodiversity in Australia^{31, 32, 33}.

When native bushland is destroyed, birds, mammals and other wildlife lose their food and shelter. The displaced wildlife either die immediately or soon after land clearing, from starvation, predation or stress. A recent review by leading Australian scientists found that during 1997-1999, approximately 100 million native mammals, birds and reptiles died each year, due to land clearing in Queensland alone³⁴. This includes an estimated 19,000 koalas, huge numbers of possums, gliders and bandicoots, and millions of parrots, finches, skinks and geckos.

Whilst many species remain in patches of remnant vegetation shortly after extensive clearing, the longer term process of 'extinction debt' results in their local, regional and eventually absolute extinction over a period of decades³⁵. Extinction debt explains the current wave of local and regional species extinctions in southern Australia even though clearing there declined significantly in the late twentieth century³⁶. Thus, size and connectivity of remnant areas of vegetation are important for wildlife conservation.

Habitat destruction and fragmentation has already contributed to the extinction of twenty-two mammal species in Australia, the worst record of any country in recent

times. One quarter of Australian mammals are now extinct or threatened with extinction, a third of freshwater fish species are rare, endangered or vulnerable and almost one third of Australia's two hundred frog species are in various stages of decline^{37, 38}.

Scientists estimate that half of Australia's rich complement of land-based birds could become extinct this century unless the current rates of land clearing and habitat loss are reversed^{39, 40, 41}.

But not just species are threatened: entire landscapes and ecosystems are being lost. Ecosystem services, essential to agricultural productivity as well as the natural environment, including protection from wind erosion, maintenance of clean water and healthy soil, pollination and pest control, are breaking down and being lost from the landscape, as evidenced by the growing problem of dryland salinity.

Sediment and nutrient run-off from cleared land is also damaging the marine environment. On the Great Barrier Reef, inscribed on the World Heritage List in 1981⁴², 438 inshore reefs are at risk. This includes 200 reefs at high risk from sediment loads that have increased tenfold since pre-European settlement times. Sediment from cleared land is smothering inshore reefs and sea-grass meadows, essential food sources for threatened dugongs and green turtles^{43, 44}.

The Commonwealth Government introduced the AU\$1.5 billion *Natural Heritage Trust* (NHT) in 1996 with the objective of "reversing the decline in the quality and extent of Australia's native vegetation by June 2001". However, although 5,000 hectares of native bushland is re-planted each year by volunteers under Bushcare and other programs, over 500,000 hectares of trees are cleared each year^{45, 46, 47}. In other words, for every tree planted one hundred trees are cleared⁴⁸.

An independent consultant's review of the NHT, commissioned by the Government, stated that unless land clearing was controlled, the goal of Bushcare and the NHT would not be reached⁴⁹. The Auditor-General has also criticised the NHT in terms of failure to address overarching problems such as land clearing⁵⁰.

The *Environmental Protection and Biodiversity Conservation Act (Cwth) 1999* (EPBC Act) was intended to enact Australia's obligations under several international treaties to which it is a signatory including the *United Nations World Heritage Treaty*, the *Ramsar Convention on Wetlands* and the *Convention of Biological Diversity*. In principle, this demonstrates an admirable level of commitment to biodiversity conservation.

However, of only 735 matters referred to the Environment Minister under the EPBC Act to date, fewer than twenty (less than three percent) have come from the agricultural sector and of these, there is not a single farming or commercial action where approval has not been granted⁵¹. For a sector that spans 60% of the Australian landscape and clears hundreds of thousands of hectares of Australian bushland each year, there can be no doubt that many agricultural activities are having an impact on matters that are protected under the EPBC Act.

The recent '*Australian Terrestrial Biodiversity Assessment*'⁵², prepared for the Commonwealth Government, is unequivocal in declaring the threat that land clearing poses to biodiversity. The most urgent actions identified by this and other studies are to end the clearing of native vegetation. Clearly, neither the objectives of the NHT nor the EPBC Act will be met in Queensland for as long as land clearing continues at current rates.

Social and Economic implications

The costs of environmental degradation caused by land clearing are borne by the broader society rather than just those responsible. Externalising costs to the environment places the burden of repair on taxpayers, future generations or on downstream users of resources such as drinking and irrigation water. Some of the costs to the private and public sector are summarised below:

- Repairing land and water degradation will cost between AU\$20-65 billion over the next 10 years depending on which aspects are included⁵³;
- Around AU\$700 million has already been lost from the capital value of land on account of dryland salinity⁵⁴;
- As a result of land degradation, two thirds of landholders state that the values of their properties will decline by up to 25% over the next three to five years⁵⁵;
- Around AU\$1.15 billion *per annum* is being lost in agricultural productivity due to land degradation (five percent of the total value of agricultural production)⁵⁶;
- Every dollar spent now on controlling land clearing, would produce collateral benefits in the order of twenty times that amount in the future⁵⁷;
- In assessing Australia's progress in terms of human, social and natural capital during the 1990's, the Australian Bureau of Statistics noted a significant increase in land clearing and associated biodiversity decline and land degradation. This erosion of natural capital contrasts with most social and human progress indicators, which for the most part are trending upwards⁵⁸;
- Tourism accounts for more than 4.7% of Australia's GDP (11% indirectly) and there are likely to be significant impacts if environmental conditions or icons of the natural environment such as the Murray River, Great Barrier Reef and wildlife populations continue to be degraded⁵⁹; and
- Carbon sequestration is estimated to cost around AU\$10/tonne whereas carbon abatement by investing in conservation of native vegetation slated for clearing could cost less than AU \$1/tonne⁶⁰.

In commenting on the costs of biodiversity decline, the Prime Minister's Science, Engineering and Innovation Council have noted the cost effectiveness of maintaining natural systems, as opposed to repairing damaged ecosystems, stating that:

"...it is far cheaper to maintain our natural systems than it is to allow them inadvertently to be damaged and, subsequently, to inherit a costly repair bill"⁶¹.

Trade and market implications

Broad-scale land clearing and the resultant environmental degradation are a substantial threat to the "clean and green" image that Australia seeks to promote amongst export markets. This may have repercussions for trade agreements and market access as well as market reputation.

Consumer expectations are changing with regards to the impacts of their purchases, including food. In the longer term this could affect both the domestic and overseas markets for Australian products, especially beef, which drives most land clearing in Queensland.

Purchasers in the USA, Japan and Europe in particular are developing environmental performance requirements and product-sourcing guidelines that exclude unsustainable production methods, such as those involving land clearing⁶² as exemplified by Sainsbury's in the United Kingdom⁶³. Market access for some Australian products may become more limited as environmental standards gain currency⁶⁴.

This trend was referred to a number of times at the recent International Conference held in conjunction with *Australia's Beef Expo 2003* at Rockhampton. Whilst broad scale land clearing continues, Queensland cannot live up to the 'clean and green' image.

Aside from potential benefits for trade and market access, properly addressing land clearing and its impacts may positively enhance companies', or indeed Australia's competitive advantage, reduce costs, including those of production inefficiencies and land and water degradation, add to share value and lift public profile.

Conclusion

If the objectives of the NAP, the NHT and the EPBC Act are to be achieved in the long-term, broadscale land clearing of remnant, native vegetation must end. To achieve this, landholders should be provided with a financial package to help them manage their land sustainably and alleviate any hardship caused by the transition to new clearing controls.

Significant areas of regrowth vegetation such as those of high conservation value or where clearing is likely to result in land degradation must also be protected.

The costs of inaction are rising and lead not only to severe environmental degradation but also to economic and social disadvantage for current and future generations. In a wider context, controlling broadscale land clearing must be seen as an indicator of Australia's willingness to mature as a steward of an ancient, unique and fragile continent.

We can have healthy native bushlands and sustainable rural industries, but we have to find a new way of living with the land, not repeat the mistakes of the past. The alternative is the loss of our precious wildlife and a rising tide of salinity and land degradation that will devastate our farmlands.

Environment groups support the joint Government proposal and urge its implementation without delay. In order to deal with the land clearing problem in its entirety in Queensland, we also urge the incorporation of urban vegetation and significant regrowth into the package.

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