

FACT SHEET 3: Land clearing and climate change

Implications of past and future land clearing for emissions and climate

INTRODUCTION

Historic land clearing has been shown to affect temperature and rainfall patterns in regional Australia, and land clearing contributes significantly to greenhouse gas emissions. Intact native vegetation absorbs heat and releases moisture into the air, and when removed leads to more hot days, less rainfall and more severe droughts. Australia's greenhouse gas emissions from the land sector are currently skyrocketing, with land-sector emissions almost doubling in the past three years, and projected to further increase. The projections do not take into account the proposed changes in NSW vegetation management.

The proposed changes to land clearing laws in NSW must therefore address the implications of land clearing on emissions and climate. This is particularly important as climate change will have the greatest impact on agriculture and those who make their living from the land.

CONTEXT

The NSW biodiversity reforms are almost certain to result in an increase in land clearing. This is because they repeal the *Native Vegetation Act 2003*, which is known to have dramatically reduced land-clearing (Taylor and Dickman 2014), and increase the range of scenarios in which landholders can undertake code-based clearing.

Codes are likely to result in an increase in clearing for several reasons: they remove the simple deterrent of having to go through a process for clearing, such as producing a property vegetation plan; they reduce interactions with ecologists in the Local Land Services or Office of Environment and Heritage who can help ensure clearing is minimised; and they expand the

range of instances under which landholders can clear—including large tracts of native vegetation under the 'equity code' and threatened ecological communities.

Sweeping changes in regulation of native vegetation management occurred in Queensland under the Newman government in 2012. The relaxing of clearing laws by reducing enforcement and introducing code-based and exempt clearing resulted in a huge increase in vegetation clearance with between 275-296,000ha cleared in 2013-14 (Maron et al. 2015, Taylor 2015, Bulinski et al. 2016). The NSW codes closely resemble those in Queensland (see code fact sheet).

The NSW reforms are occurring against the backdrop of increasing urgency to address the threat of climate change. This urgency led to the development of the Paris Agreement in December 2015, signed by 196 countries. The relaxation of rules regulating land clearing in NSW therefore undermines global efforts to tackle climate change and will further erode Australia's international standing.

Projections show that, not counting abatement from Direct Action, Australian emissions in 2020 would be 17% above 2000 levels (Commonwealth of Australia 2015). Counting emissions reductions purchased by Direct Action, Australia is set to miss its 2020 goals of a 5% reduction on 2000 levels by almost 20% at a conservative estimate (Christoff 2015).

Given the major impacts (lower rainfall, more heatwaves, longer fire seasons) that climate change will have on Australia (CSIRO 2015) this is a source of extreme concern and shows that there is a huge amount of work to be done to reduce carbon pollution and meet international goals. As the most populous state in the country NSW bears a particular responsibility for Australia's emissions reductions.

LAND CLEARING HAS ALREADY CHANGED REGIONAL CLIMATES

Research (Pitman et al. 2004, McAlpine et al. 2007, Deo et al. 2009) shows that land clearing and loss of vegetation cover has had strong regional climatic effects. These effects include:

- Increased surface temperature in eastern Australia and south-western Western Australia, particularly in summer;
- Warming and reduced rainfall in south-western Western Australia;
- Decreased summer rainfall in eastern Australia (4-12%) and south-western Western Australia (4-8%);
- An average 2 degree increase in temperature during the 2002/2003 drought in eastern Australia;
- Decreased rainfall intensity in the Murray-Darling basin;
- Decreased wet-day rainfall of 10-30mm per year in southern NSW and northern Victoria;
- Increased number of dry days in coastal NSW;
- Increased duration of droughts in central NSW and northern Victoria (0.25-0.5 months per year);
- Amplification of El Niño events.

This research suggests that an increase in clearing as a result of the NSW reforms will hinder, not help, farmers as it will exacerbate future droughts, reduce rainfall and increase surface temperatures. In contrast, large-scale reforestation could help reverse the negative effects historic clearing has had on climate (Pitman et al. 2004, McAlpine et al. 2009). In light of regional and global trends that have already, and will in future, result in increased temperatures and climate extremes in Australia (CSIRO 2015), a relaxing of land clearing controls is not an appropriate policy response to the challenges facing landholders.

CARBON EMISSIONS FROM LAND-USE CHANGE

Besides the historic regional climatic effects from reduced vegetation cover, there are two key sectors of carbon accounting relevant to the NSW reforms:

1. Land use, land use change and forestry (LULUCF) and;
2. Agriculture.

Land use, land use change and forestry

The most recent figures (2013-14) (Commonwealth of Australia 2015) show that LULUCF contributes approximately 3% to Australia's total emissions. However, emissions from LULUCF are now rising quickly from an historic low in 2010-2011 and will rise by 212% over the next five years—the largest increase in any emissions sector. Emissions from deforestation will average 46 million tonnes per annum between 2014 and 2020, which is almost 24% higher than 2013 levels (Bulinski et al. 2016). This increase is attributed to regulatory changes resulting in increasing land clearance. A change in NSW legislation that results in an increase in land clearing would therefore be expected to further increase emissions from LULUCF.

Agriculture

Agriculture contributes 15% of Australia's emissions (Commonwealth of Australia 2015). However, agricultural emissions do not include CO₂ besides that emitted from liming and the application of urea. This is because emissions from animals are considered part of the carbon cycle. Agricultural emissions are projected to increase by 4% over the next five years.

The conversion of bushland to agricultural land will therefore have a dual impact: there is an initial pulse of carbon released as vegetation is cleared and an ongoing source of carbon emissions created as agricultural activities take place.

THE FEDERAL EMISSIONS REDUCTION FUND

Despite being a relatively small proportion of Australia's total emissions, LULUCF is the major cornerstone of the Emissions Reduction Fund (ERF). Over the three auctions to April 2016, abatement from vegetation (avoided clearing and revegetation) accounted for 98.5 million tonnes, or 69% of total emissions purchased (Clean Energy Regulator 2016). At the average price of \$12.25 per tonne, the total amount paid by Australian taxpayers for carbon from averted clearing and revegetation is \$1.2 billion. Landholders in NSW have been the largest benefactors from the ERF: 47% of all contracted projects are in NSW.

IMPLICATIONS

Relaxing land clearing legislation ignores the importance of considering land cover change effects on regional climate, and is diametrically opposed to recommendations to increase cover by tightening legislative controls on clearing and investing in restoration to avoid irreversible climate change (McAlpine et al. 2009). Australia is already struggling to achieve its legally binding, and internationally low, target of a 5% reduction in carbon emissions by 2020. Given the threat of climate change and the implications to rural communities in particular, it is vital that every effort is made to reduce emissions quickly. Relaxing land clearing laws in NSW will instead result in a further increase in emissions on top of those resulting from Queensland's legislative changes.

Not only does this undermine Australia's efforts to reduce emissions as part of international commitments made at the Paris conference, it also undermines the \$1.2 billion investment Australian taxpayers to avoid land clearing. In fact, the changed emissions trajectory that followed increased clearing in Queensland (which does not include any emissions increase from NSW) will add 115 million tonnes of CO₂ by 2030 (Bulinski et al. 2016). At the average ERF price of \$12.25 per tonne, these emissions would cost \$1.4 billion—more than the \$1.2 billion worth of vegetation-based abatement purchased by the ERF to April 2016.

In light of the fact that NSW farmers have benefited most from the ERF, relaxing land clearing laws may also compromise the future ability of farmers to profit from native vegetation, as there will be less vegetation available to protect in return for payments.

Prepared by the National Parks Association.

For more information please visit our website at <http://www.StandUpForNature.org.au>

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