

Competition for Land Use in New Zealand

Summary

New Zealanders have always depended on productive uses of the country's land areas. In the 21st century intense competition for land in rural and urban areas is being driven by a wide range of investing interests, seeking land for many and multiple uses. New Zealand has periodically reviewed its institutional arrangements designed to facilitate development and resolve conflicts amongst land owners, land users and the diversity of non-development values and environmental services. Recent publicised concerns over land use changes and their implications suggest there is urgency to understanding more fully the nature of land use competition being played out in New Zealand's rural and urban spaces. The paper reviews mainly physical and natural capital aspects relating to changes in land use in rural and urban land areas. It identifies from this perspective some of the more pressing issues facing rural and urban areas. It is suggested that National land use planning could help resolve conflicts over land resources, by integrating policies, processes and guidelines for implementation at a Regional and District Council level. Working with landowners and land users, such policies could guide a range of desired outcomes at national and regional levels, including: food production, biosecurity, biodiversity and wildlife, landscape conservation, climate change adaptation and mitigation, water management, economic development and recreational access.

Introduction

New Zealand has responsibility for a diverse and in many instances unique range of ecosystems and their attendant environmental processes. Maori adjusted to resource availability, but also changed the environment. European settlers progressively transformed the land resource¹, often with harmful

¹ Anderson, G. (ed) 1980 *Land our future*, Longman Paul, Auckland; Roche, M. 1999 *Transforming landscapes*. In Le Heron, R. Murphy, L. Forer, P. Goldstone, M. (Ed.), *Explorations in human geography: Encountering place*. Sydney, NSW, Australia: Oxford University Press. pp.207-235.; Pawson, E. and Brooking, T. (eds) 2002 *Environmental Histories of New Zealand*. Oxford University Press, Auckland; Brooking, T. Pawson, E. (eds) 2010 *Seeds of Empire: The Environmental Transformation of New Zealand*. I.B. Taurus, London

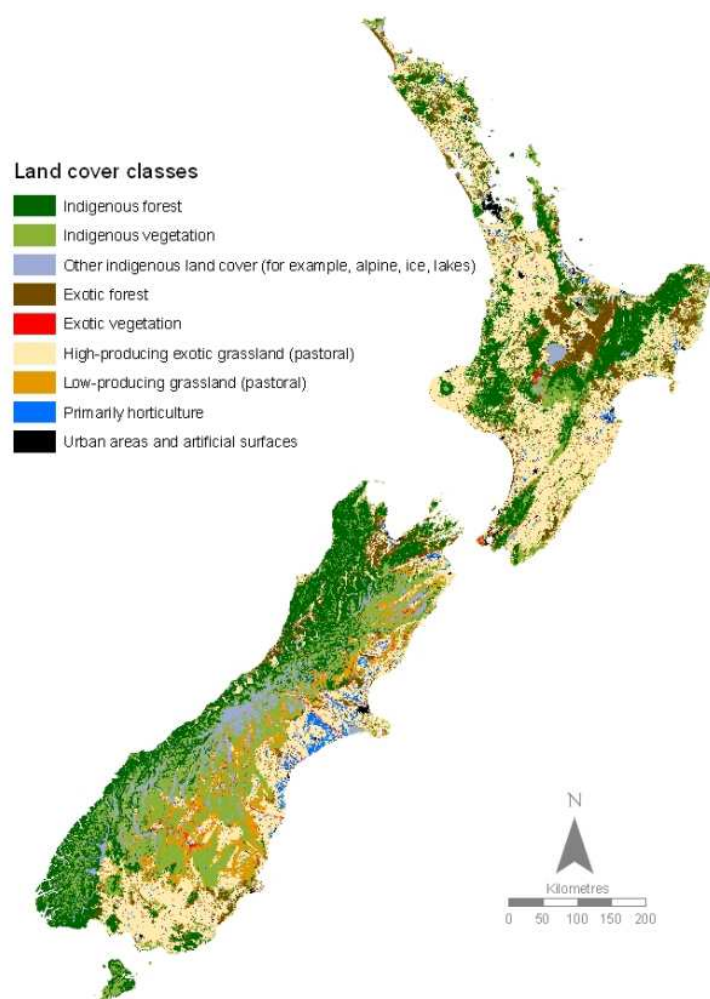


Figure 1: Land cover class map for New Zealand.
(Ministry for the Environment Land Cover Database series 2, 2002)

effects². Economic growth after WWII came from bringing more rural land into production, and in cities from urbanisation, suburbanisation and manufacturing and services growth³. Rural depopulation constrained rural land use options⁴. As traditional and new activities were scaled up in different regions and cities, land use hot spots appeared. This included urban encroachment of the main cities onto high producing land⁵ and exotic afforestation replacing sheep and beef farming⁶ in different parts of the country. Such conflicts were managed with the framework of the Town and Country Planning Acts (1951 and 1977).

Land is a finite and critical resource for the future of New Zealand and is currently fulfilling a range of roles. These include meeting demands from agriculture, forestry, housing, recreation, tourism and increasingly renewable energy, as well as providing wildlife habitats, clean water, iconic landscapes, and for cultural and spiritual purposes. Climate change also has implications for the use of the land, both in mitigating the drivers of change, and in adapting and responding to those changes likely to occur. The management of the land is therefore important for all these reasons, but while water use and water quality considerations are being addressed through a national framework of standards and discussions led by the Land and Water Forum⁷, no similar national framework exists to integrate the competing uses for land⁸ to help resolve inevitable conflicts, whether it be chain store developments on agricultural land⁹, minerals from a national park versus the social and environmental value of the currently undeveloped area¹⁰, or regional and national planning of transportation networks and the resulting impacts.

Figure 1 shows a map of the different land cover classes in New Zealand, originally prepared in the mid-twentieth century as part of national development initiatives at the time. Updated figures show 50 % of land is native forest, native vegetation and other native land cover; 33 % high productivity exotic grassland; 6 % low productivity grassland; 8.6 % exotic forest and exotic shrub land; 1.6 % horticulture and arable; and 0.8 % artificial surfaces such as urban and transport infrastructure. Over the past 25 years, urban expansion has increased by 4%-5% per year¹¹ through increases in the number of dwellings including a contribution from recreational dwellings, and increases in average lot sizes, greater than the rate of population increase. New Zealand horticulture (including the wine industry) plans to double its production by 2020, requiring more horticultural land. More land is being converted to dairy grazing and the expansion of all three is in competition with the sheep and beef and forestry sectors resulting in new areas being developed with different implications for soils, ecosystems, landscapes and the cultural values of the land they move into.

Other competing land use trends include the development of regional parks; covenanting of private land for conservation purposes; the development of New Zealand's tourism industry and visitors'

² MacLeod, C. and Moller, H. 2006 'Intensification and diversification of New Zealand agriculture since 1960: an evaluation of current indicators of sustainable land use', *Agriculture, Ecosystems and Environment*, 115, 201-218

³ Johnston, R. (ed) 1973 *Urbanisation in New Zealand*, Reed Education, Wellington

⁴ Cant, G. (ed) 1980 *Towards a land use policy for rural New Zealand*, Department of Lands and Survey, Wellington

⁵ Moran, W. 1978 'Land use, distance and rural land use change', *New Zealand Geographer*, 34, 2, 85-96

⁶ Le Heron, R B and Roche, M M (1985) "Expanding Exotic Forestry and the expansion of a competing use for rural land in New Zealand", *Journal of Rural Studies*, 1, 3, 211-229

⁷ Land and Water Forum. 2010. Report of the Land and Water Forum: A Fresh Start for Fresh Water http://www.landandwater.org.nz/land_and_water_forum_report.pdf

⁸ Land: Competition for future use (2011) A.D. Mackay, S. Stokes, M. Penrose, B. Clothier, S.L. Goldson and J.S. Rowarth. *Science Review* 68(2): 67-71.

⁹ Hastings District Council appointed an independent Hearings Commissioners on 24th July, 2009 to assess an application by a company to build a megastore on horticultural land on the outskirts of the city. Their decision to decline the application was based on the District plan for the Rural Resource Strategy and the Plains Zone, which refers to the life-supporting capacities of the soils of the Heretaunga Plains.

¹⁰ Land & Water Forum. "Summary of Points Raised at Regional Engagements" 2011

¹¹ Sanson R et al. A study of smallholdings and their owners (2004). MAF Information Paper No. 53. 49pp.

desire for a good outdoors experience; overseas interests in land ownership; and the potential development of crop-based biodiesel and bioethanol feedstocks.

Land use planning

In the 21st century existing and new land owners are seeking to use land differently, under new conditions of competition because of New Zealand's open economy, and in a context where the population at large is increasingly concerned about land use issues and the implications of land use change on New Zealand society and New Zealand's environment.

National land use planning can provide central guidance for choices around land use but requires flexibility to allow districts and cities to take account of specific local or regional conditions. National plans can integrate a diversity of land uses and work with landowners and land users to provide a range of desired outcomes, including: vibrant and viable communities; sustainably managed natural ecosystems and landscapes; and economic opportunities around tourism, energy and food.

Forestry, for example, while delivering timber and wood fuel, can also provide public benefits in carbon storage, watershed protection, non-timber forest products, recreation and hunting. The value of recreation services provided by Rotorua's Whakarewarewa Forest has been estimated at \$15.4 million/year, which is five times the timber value of the forest¹².

Resolving conflict

In the past, New Zealand's framework for managing the direction and local detail of land use change evolved to accommodate new conditions. The last major changes were made as part of the 1980s and 1990s economic and governmental reforms. These dismantled much legislation, for a model of management that focused on the effects of land use. A quarter century later, the original conditions prompting legislative change no longer hold. Who can own land in New Zealand is less constrained than previously. Many land owners are now big companies and wealthy individuals, holding large individual or aggregate parcels of land. This includes iwi, state-owned enterprises such as Landcorp, government departments such as Department of Conservation that have particular mandates, major energy companies, investors in different sectors such as agriculture, energy, recreation and leisure (e.g. golf courses) and retirement villages, tertiary institutions (e.g. commercial and teaching farms) and so on. New Zealand land is being appraised by ideas, values and perceptions from abroad (e.g. climate change, pollution, amenity value) as well as from within New Zealand. New Zealand's land use and competition for land for different uses, including land value speculation, is thus inseparable from multiple and frequently shifting values.

By taking a more active role, Government could help integrate different land use sectors and resolve conflicts over the land resource, through integrated policies, processes and guidelines that could be implemented at a Regional and District Council level. There are often trade-offs between competing priorities and demands, and decisions could best be made by identifying possible benefits and costs, a key component of this will be identifying what the national and regional policy priorities are, and where the synergies between the different land uses might be.

Possible principles for framing the contests over land uses or allowing the development of more refined criteria for deciding how to resolve conflicts to ensure the sustainable use of land and maximum benefits and minimise impacts could include:

- Which use maximises the objectives around food production, biosecurity, biodiversity and wildlife, landscape conservation, climate change adaptation and mitigation, water management and recreational access

¹² McEwen A. Collision in Land use – Forestry. Royal Society of New Zealand Primary Resource Forum. 23rd August 2010. NZ Institute of Forestry

- Which use would maintain the options for present and future generations to derive benefits from the land

Recognising and quantifying the value of the potential ecosystem services from the environment can be a useful step in the process and one way to structure natural dispute resolution in resource conflicts.¹³ In resolving disputes there should be transparency in decision making, especially in contentious circumstances where land use conflicts exist or seem inevitable¹⁴.

New Zealand research in this area includes work on resolving conflicts around land use intensification for dairy in a Southland dairy catchment¹⁵ and on the consideration of ecosystem services in assessing the expected and actual changes due to the construction of the Opuha dam¹⁶.

Specific issues for different land uses

Agriculture and Forestry

In agriculture, land use conflicts can occur because of short-term economic incentives which often trigger switches in land use, the impacts of particular land use practices such as continuous cropping, and concerns about the future sustainability of the soils, under differing management regimes. Guidance will be increasingly important around the future management of land, especially specific systems of practices associated with particular types of use, the potential costs and impacts from the reduction in local ecosystem services, and from contaminants such as cadmium, and other impurities in fertilisers being applied, such as those derived from phosphate rocks¹⁷. The use of integrated landscape management, including biofuel cropping as a form of phytoremediation for cadmium contaminated land should be explored, where soil cadmium levels exceed levels set for food crops. Research into changes to agricultural practices to allow increased agricultural production along with soil and environmental sustainability are being undertaken by the Sustainable Land Use Research Initiative (SLURI - a collaboration between Plant & Food Research, AgResearch and Landcare Research)¹⁸, Lincoln University¹⁹ and others. Multi-functional land use planning might be used to address the synergistic use of forests with other land uses, e.g. through farm forestry, and by incorporating native species. Research is being undertaken to evaluate the potential multiple benefits possible from forests to maximise total economic, social and environmental value from reducing soil erosion and carbon sequestration at the expense of reducing water provision to other users down stream²⁰.

Environment and Wildlife

Environment and wildlife conservation, particularly in conservation parks, nature and scientific reserves, is an important activity to meet national and international obligations; however indigenous

¹³ *Ecosystem Services*. Royal Society of New Zealand Emerging Issues Paper. 2011

¹⁴ Weber, E.P. et al. "Science, Society and Water Resources in New Zealand: Recognising and Overcoming a Societal Impasse" 2011, *Journal of Environmental Policy & Planning*, 13:1, pp 49-69

¹⁵ Quinn J. et al 2010. Linking Farm and Waterway Values – The Bog Burn Catchment. In: *Farming's future: Minimising footprints and maximising margins*. (Eds L.D. Currie and C.L. Christensen). Occasional Report No. 23. Fertilizer and Lime Research Centre, Massey University, Palmerston North, New Zealand. pp

¹⁶ Hearnshaw, E.J.S et al "Ecosystem Services Review of Water Storage Projects in Canterbury: the Opihi River Case" Canterbury Water Management Strategy.

¹⁷ Kim N. Cadmium Accumulation in Waikato Soils. <http://www.waikatoregion.govt.nz/publications/Technical-Reports/TR-200551/>

¹⁸ Clothier, B.E., et. al. "Soil Ecosystem Services: Sustaining Returns on Investment into Natural Capital", In "Sustaining Soil Productivity & Climate Change: Science, Policy and Ethics", Wiley-Blackwell, Chapter 9, pp.115-137

¹⁹ Sandhu, H.S. et al. "The future of farming: the value of ecosystem services in conventional and organic arable land. An experimental approach" *Ecological Economics*, 2008. Pp.835-848

²⁰ Landcare Research "Ecosystem Services for Multiple Outcomes". MSI funded research program.

forests and grasslands are continuing to be lost from lowland ecosystems²¹. Improving biodiversity can also be seen as agronomically beneficial for fruit and wine sectors as well as providing agro-tourism advantages²².

Landscape, tourism and cultural value

An area of considerable challenge is understanding how land has cultural, aesthetic and social values, as well as being a key resource for the economically-important tourism and film industries. These issues need to be considered alongside any direct income from primary production or economic development. In areas that have difficulty in maintaining viable communities, the sustainable use of environmental resources through tourism or renewable energy could provide part of the solution.

Urban and Economic Development

Most of New Zealand's population lives in big cities, a large portion of the national economy is located in its big cities, and a sizeable proportion of the capital invested into rural land uses is raised through urban land development. Land use has a central role in developing and maintaining viable communities throughout New Zealand. This has become very complex as New Zealand is an highly urbanised country, creating many dilemmas that need be addressed.

Continued population growth will exacerbate competition for land use through demand of land for new housing and urban development. In its latest projections, Statistics New Zealand forecasts a national population from 4.9 to 6.74 million people by 2061²³. Not all areas will experience growth and indeed some are expected to experience declines. Because of its relative cheapness, rural land on the periphery of urban areas is often a source of conflict for urban development, due to the provision of affordable housing and the removal of high grade agricultural land²⁴. Over the last 20 years New Zealand has lost 0.5% of its remaining high class soil to urbanisation, and life-style blocks now account for up to 10% of high class soils²⁰.

Urban parks and wildlife reserves, however, can provide important wild-life refuges. For example a small remnant of coastal forest in Auckland that is completely surrounded by urban landscape (houses, gardens and roads) is only one of three places where an undescribed native leaf mining beetle is known to occur, and an undescribed species of gall mite is known only from two indigenous reserves in urban Auckland²⁵

Conclusion

Investors assessing New Zealand's land resource are meeting a complicated, complex and confusing scene. A wide range of issues are at stake when considering the direction of land use change and competition for land use. Advice about New Zealand's priorities is crucial, if undesirable or inappropriate land uses, are to be minimised. The new conditions of land use competition require the generation of new knowledge and the design of new regulatory and governance institutions to help guide investor behaviours.

²¹ Ausseil A-G et al (in press) *Provision of natural habitat for biodiversity: quantifying recent trends in New Zealand*. Chapter in *Biodiversity*, Intech, Rejika

²² The Greening Waipara project (<http://bioprotection.org.nz/greening-waipara>)

²³ http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationProjections_HOTP09base-61.aspx

²⁴ Rutledge D.T. et. al. *Thought for Food: Implications of Changing Land-Use for Sustainable Food Production in New Zealand*. Proceedings of the New Zealand Grasslands Association 2010 Vol 72: 241-246

²⁵ Gordon DP. (ed). 2011. *New Zealand Inventory of Biodiversity (Volume Two)*, Canterbury University Press, Christchurch, New Zealand. 544 pp; and Kuschel G. 1990. *Beetles in a suburban environment: a New Zealand case study*. DSIR Plant Protection Report 3: 1-118.

This paper raises the need to consider simultaneously questions of changing patterns of investment in land and ownership of land, broad categories of land use, the particular and potentially different practices of any land use, and resource and environmental management. It puts a case for a new set of protocols, governance institutions, and instruments for making decisions about what is best for New Zealand when it comes to investments in land use. The statement is an initial contribution to debate about the framing of priorities and research over the use and ownership implications of New Zealand's land resources.

Additional Information

This paper is based on the "Collision of Land Use Forum" held in August 2010, supported by RSNZ, AGMARDT, Massey Agriculture. The forum involved agricultural practitioners, industry, policy makers at regional and national level along with academics and students in a debate around balancing the different demands on land use in New Zealand. It was produced on behalf of the RSNZ following a consultation with its Fellows, Companions and Members and signed off by the Chair of the Academy. Contributors and reviewers included: Professor Jacqueline Rowarth CRSNZ, Dan Bloomer, Dr Brent Clothier FRSNZ, John Dymond, Dr Robert Franich FRSNZ, Dr Ben Keet MRSNZ, Professor Richard Le Heron FRSNZ, Dr Alec Mackay, Dr. John Quinn, Dr Daniel Rutledge and Professor Steve Wratten FRSNZ.

Further reading:

- Ecosystem Services. Royal Society of New Zealand Emerging Issues Paper (2011) (<http://www.royalsociety.org.nz/publications/policy/2011/ecosystem-services-paper/>)
- Royal Society of Edinburgh Committee of Inquiry into the Future of Scotland's Hills and Islands (2008) (http://www.royalsoced.org.uk/cms/files/advice-papers/inquiry/hills/full_report.pdf)
- Foresight. The Future of Food and Farming (2011) Final Project Report. The Government Office for Science, London. (<http://www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf>)

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