



The consequences of an innovative water quality policy implementation

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INTRODUCTION

Cap and trade has been widely promoted in New Zealand as a policy for enabling the co-existence of a thriving business sector and a healthy environment.

The argument is that the cap enables an environmental goal to be met and allows business managers to choose how they manage their business. The trading part encourages technology uptake and innovation, and allows for changes that are in line with market signals. Thus, it appears to be the ideal policy regime to achieve environmental as well as social goals.

The aim of this study was to take an in-depth look at the consequences of an exemplar cap and trade implementation.

CASE-STUDY

The Taupo Nitrogen Trading Programme (LTNTP), one part of the Variation 5 regulations, has been applied to farms in the Taupo Catchment (in the central North Island of New Zealand) since 2007. Variation 5 aims to protect the water quality of Lake Taupo – and the LTNTP part of that policy aims to control diffuse nitrogen pollution from farming sources within the watershed. Thus, farming is now a ‘controlled use’ and farmers must obtain a consent to farm from the Waikato Regional Council.

The reason the LTNTP is an exemplar case of a water-quality cap and trade is because it is the only water quality programme in the world (to date) where discharge limits are set at both the watershed and the farm level. Thus, a consent to farm includes a limit on the amount of nitrogen that the consented farm can discharge each year. Consents are valid until 2036.

METHOD

Landscape biographies (i.e. stories of landscape change over time) were developed for three locations in the Catchment and each focused on a different spatial scale i.e. the Catchment level, the local (community) level and the farm level.

RESULTS

The landscape biographies showed that from 2000 (when the regulations were first signalled) only 24% of the farmland had changed land-use. Most change involved sheep and beef farms being converted to dairy farms and to forestry (including carbon forests), and most involved nitrogen trading.

But inquiry at the local (community) level showed that changes to land-use systems (principally de-intensification) have taken place on 60% of the consented land in the study area. Thus, sheep and beef farms remain sheep and beef farms but have reduced their stocking rate, often without reinvesting in other income generating land-uses.

At the farm level, it was expected that nitrogen mitigations or low nitrogen land-uses would have been applied, but these were seldom found because there are few mitigation alternatives available for sheep and beef farms. Instead farmers have changed their farm structure. Some "farms" are now partly located outside of the catchment or the farm is only one part of a portfolio of income earners (such as the stock market). Alternatively, the farm now includes the manufacturing part of their supply chain.

The overall implication for farming in the Catchment is that levels of re-investment and maintenance on farms may diminish as other sources of income, and other locations, gain in importance.

The landscape paths that have evolved since 2000, at the level of the whole Catchment, help to make sense of all the changes that have occurred. Land-use change (e.g. sheep and beef to forestry) that was facilitated by nitrogen trading occurred on nearly a quarter of the study area. Restructuring, particularly rural manufacturing, occurred on only 5% of land, while land-use changes occurred without nitrogen trading being involved on a further 6% of land. On a quarter of the study area farmers have continued their same farming practices and farm system, but on over 40% of the study area farmers have reduced stock numbers without apparent re-investment in other farm-based income sources.

When the driving forces that are operating are taken into account it can be seen that some of these landscape paths are unlikely to continue into the future. Either the driving forces have ceased (such as large, cheap properties coming onto the market) or new driving forces have emerged (for example there are now restrictions on water takes in the Catchment) or essential driving forces did not eventuate (such as alternative technologies and land-uses). This suggests that the future trajectory for the Catchment is a path of reduced production - unless new, low-nitrogen land-uses or technologies can be found.

STUDY IMPLICATIONS

There are several implications arising from this study.

1. Currently, there are few alternative land-uses or mitigations available for sheep and beef farms and this is part of the reason why farmers are reluctant to trade. To make the cap and trade implementation fully functional, therefore, land-use and technology research is needed. Policy implementations, this suggests, could be more successful if they were accompanied by (or preceded by) implementations of supporting agricultural policies.
2. Many factors were found to have contributed to the low trading volumes amongst farmers. Some factors were external to the farm system (like the lack of mitigations). Others were internal – e.g. farmer goals, feelings of place attachment, responsibility for future generations, and the potential effect of trading on land values. Because trading delivers many of the economic benefits of cap and trade, and given that this is an exemplar case, it is reasonable to question whether cap and trade delivers benefits over and above a simple cap. This study suggests that, currently, the answer for sheep and beef farmers is “probably not”.
3. Investigation at multiple scales is needed to gain a full understanding of the effects of a policy implementation.

CONCLUSIONS

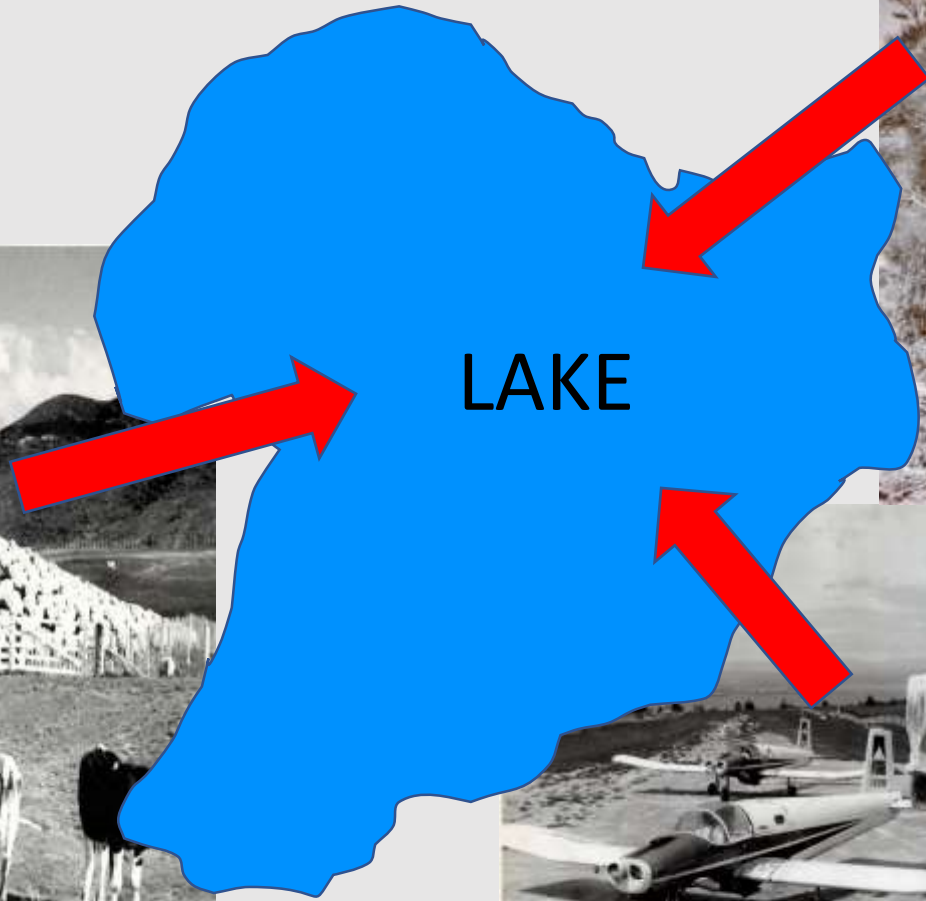
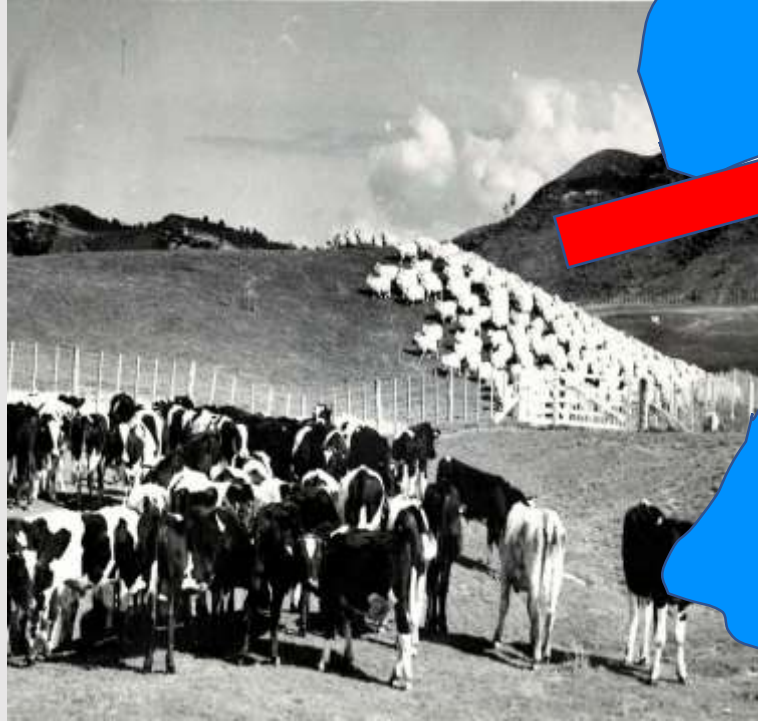
The Waikato Regional Council reported recently that the environmental goals of Variation 5 are on track to being achieved. But this study casts doubt on the ability of cap and trade, on its own, to enable a viable agricultural sector. The support of complementary research and technology policies is essential, as well as the capacity to find new ways of making money from rural land. Without these the full potential of cap and trade remains unfulfilled and sustainability not achieved.

The Consequences of an Innovative Water Quality Policy

Anne Spicer PhD

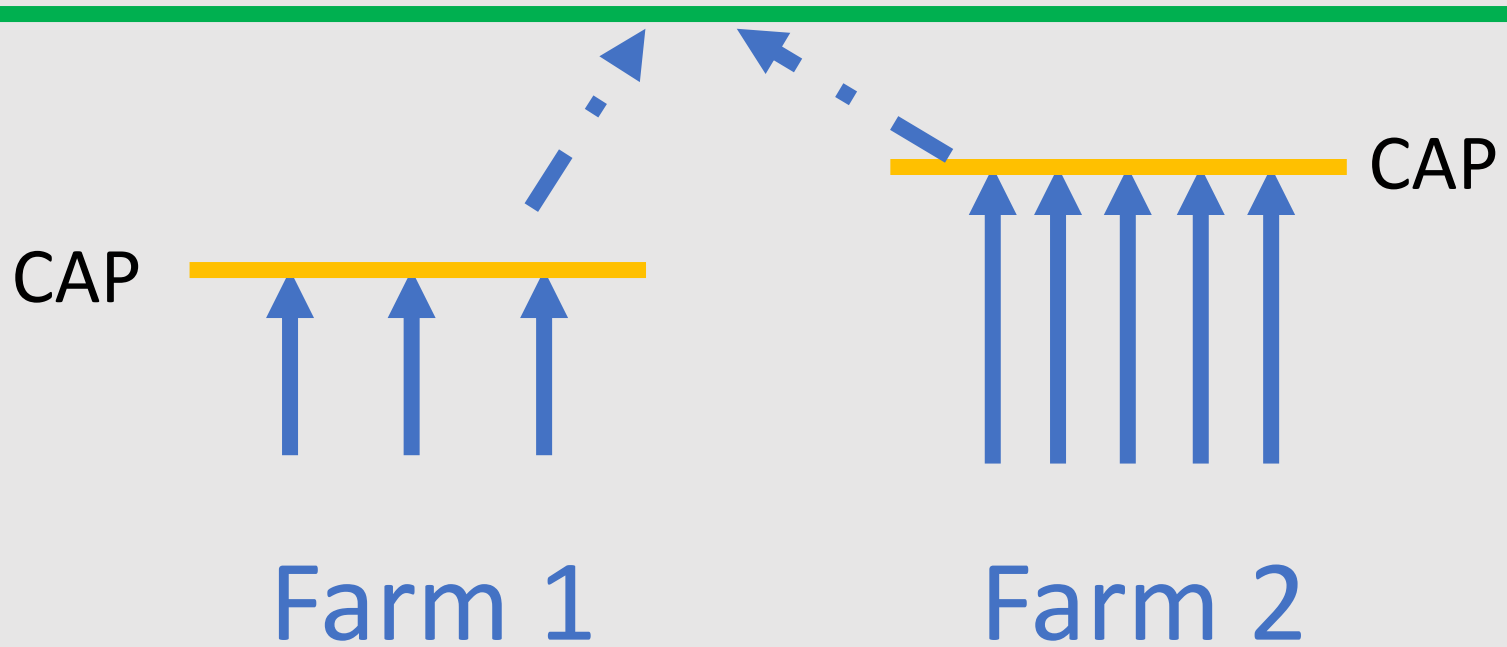
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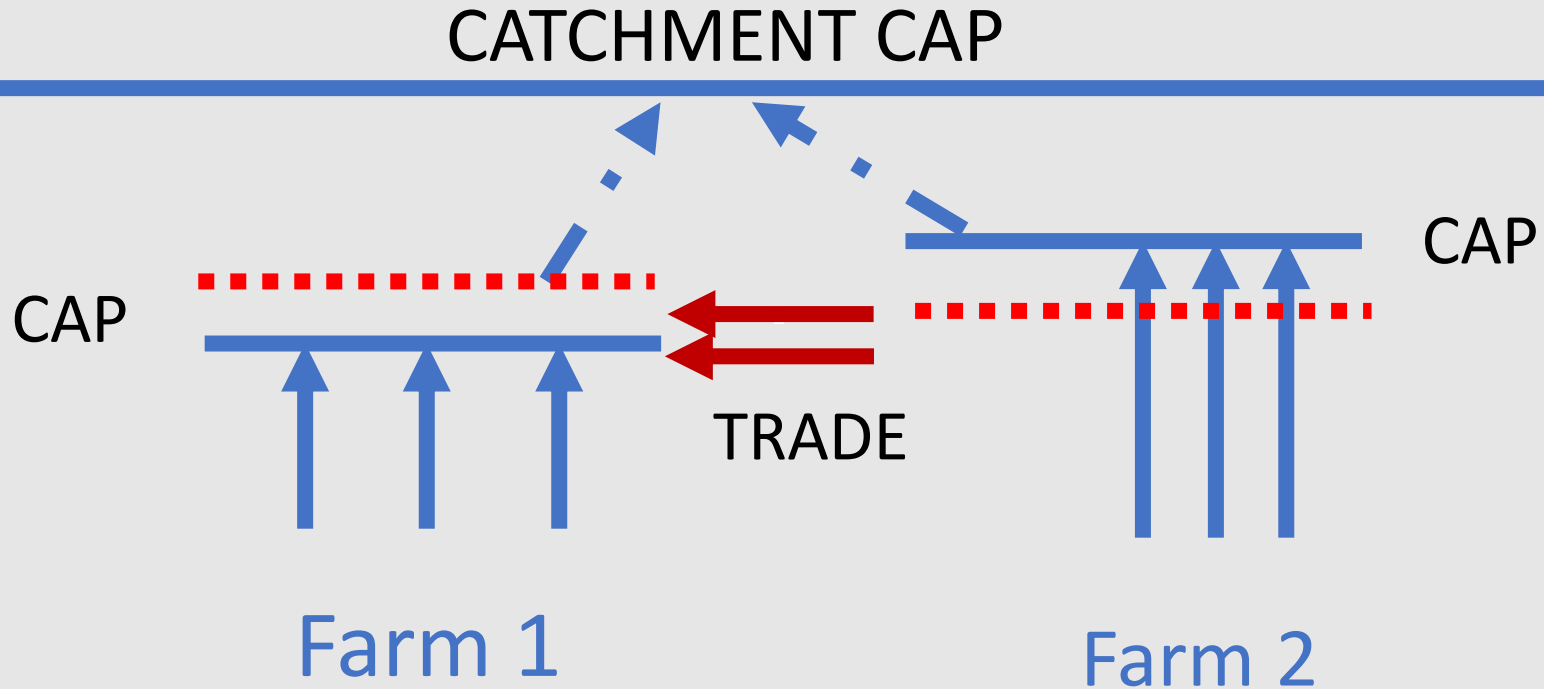


Cap and Trade – the Cap

CATCHMENT CAP – ENVIRONMENTAL LIMIT

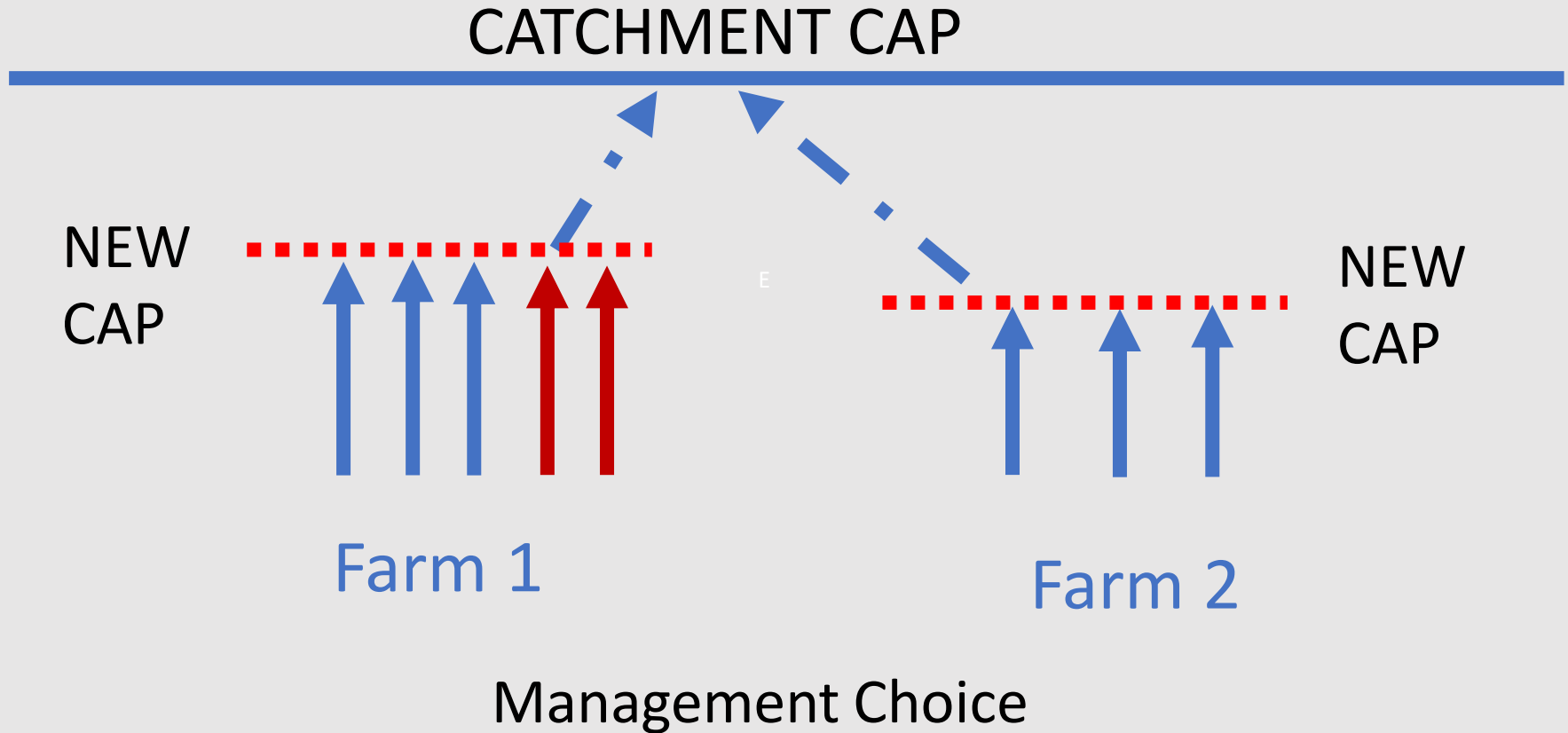


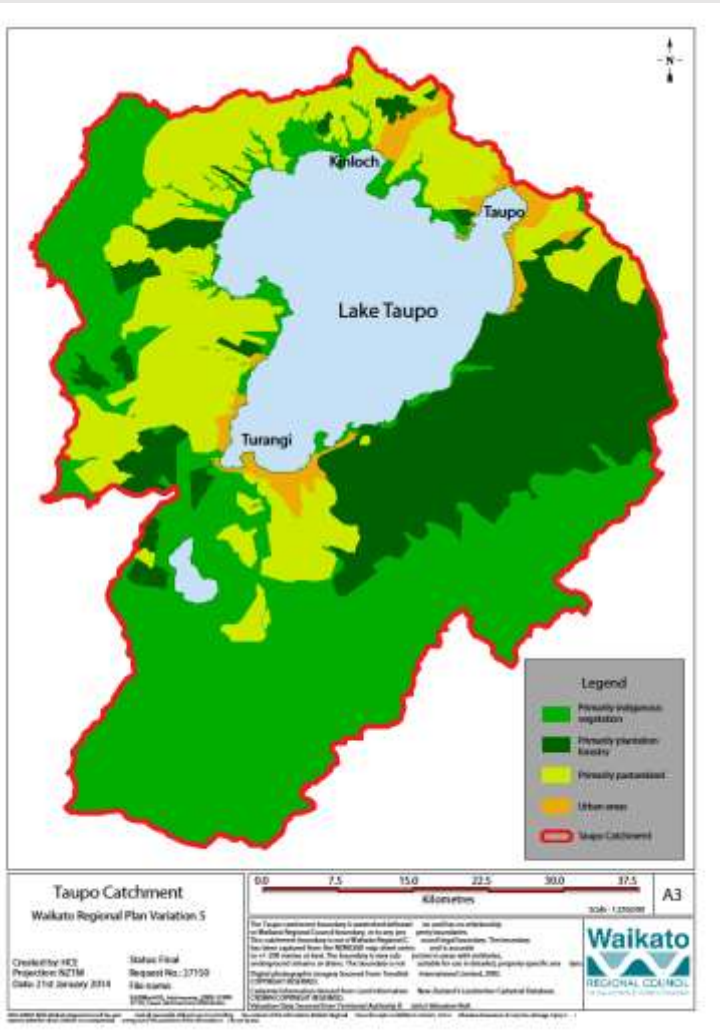
Cap and Trade – trading



Management Choice

Cap and Trade – trading





Land Covers (2002)

Forest

80%

Indigenous Forest

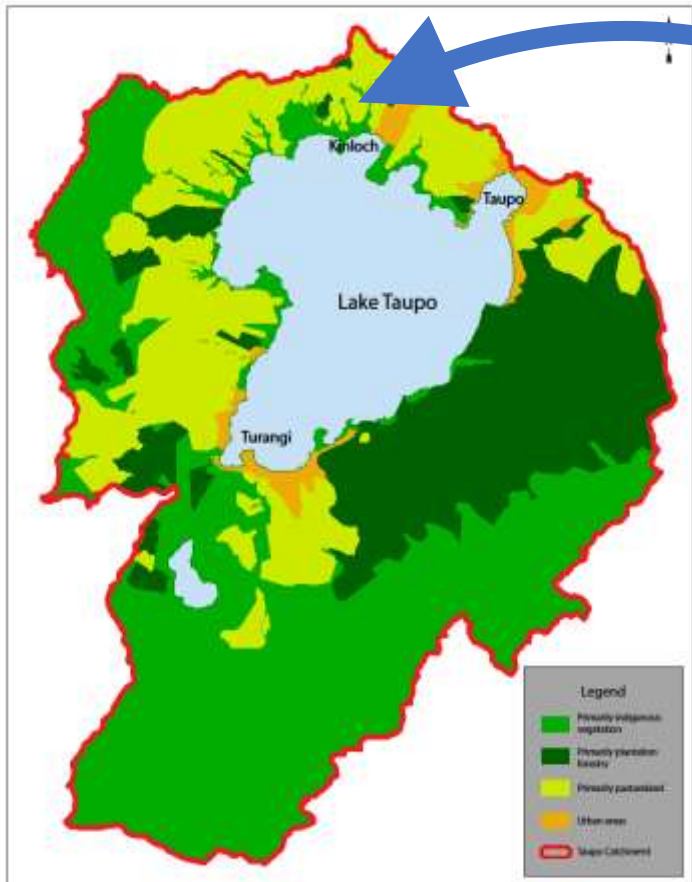
Exotic Forest

Pastureland

19%

Urban

<1%



Taupo Catchment
 Waikato Regional Plan Variation 5

Scale: 1:250000
 Kilometres: 0.0, 7.5, 15.0, 22.5, 30.0, 37.5

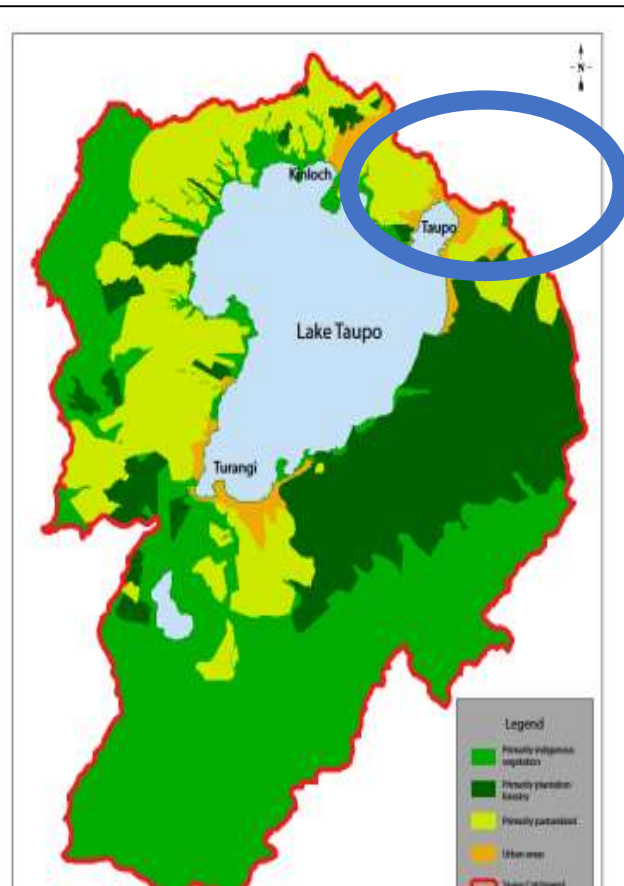
Waikato
 REGIONAL COUNCIL

Checked by: HZJ
 Prepared: NZTM
 Date: 21st January 2014

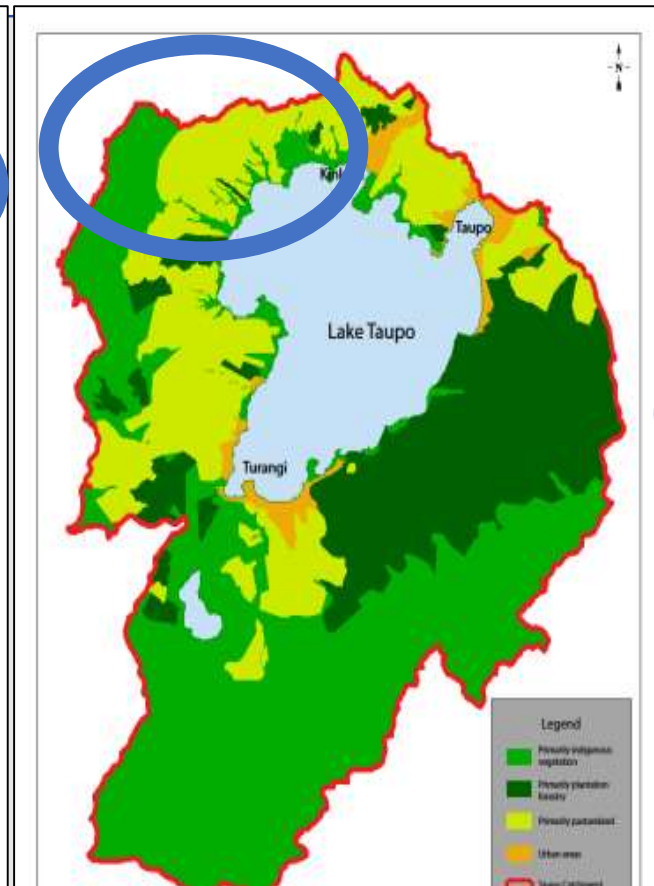
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For Taupo catchment boundary to be confirmed and/or amended, the Waikato Regional Council boundary is to be used. This catchment boundary is for the Waikato Region only. It does not include the Bay of Plenty or the Hauraki Gulf. Digital photographs were derived from the New Zealand Government's Digital Elevation Model (DEM) and the New Zealand's Land Information System (LIS). The boundary is not to be used for any other purpose without the written consent of the Waikato Regional Council. New Zealand's Land Information System (LIS) is the source of the boundary data. © Crown Copyright 2014. All rights reserved.

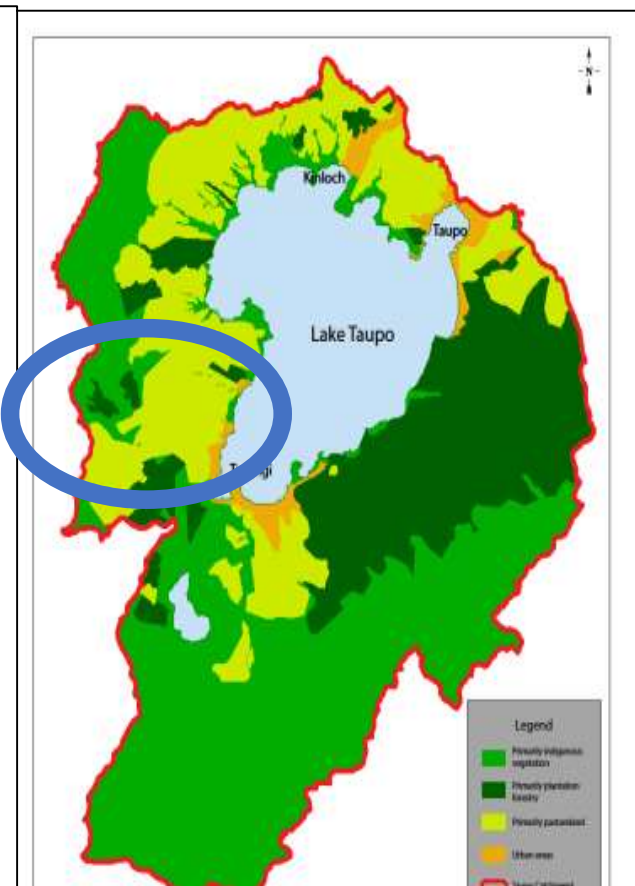




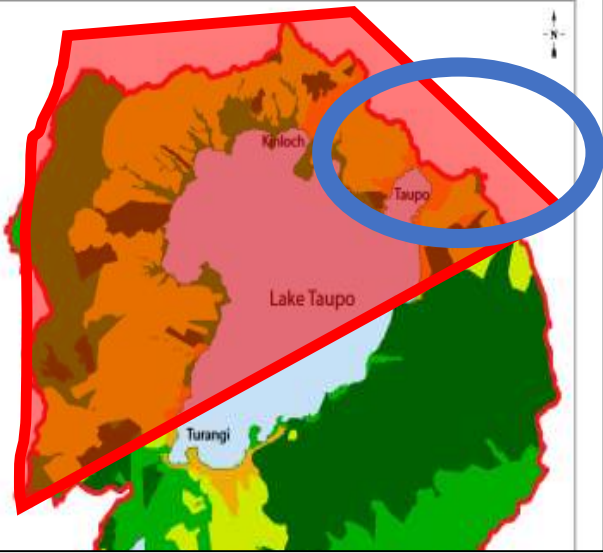
NORTH



WEST



SOUTHWEST



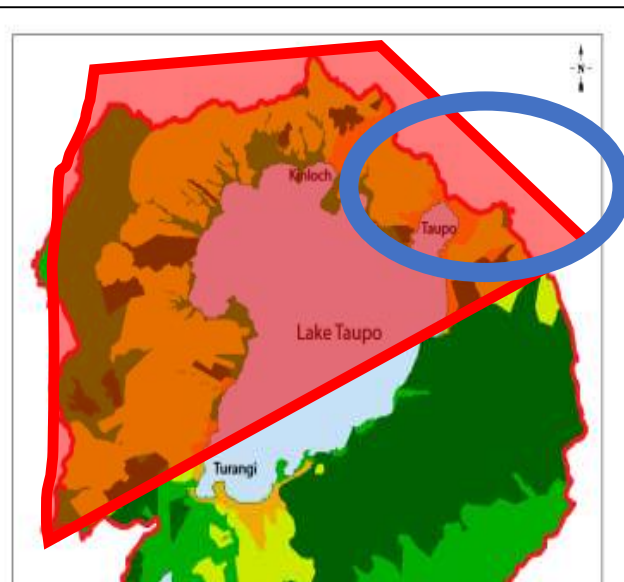
NORTH -
CATCHMENT
LEVEL



WEST -
LOCAL LEVEL

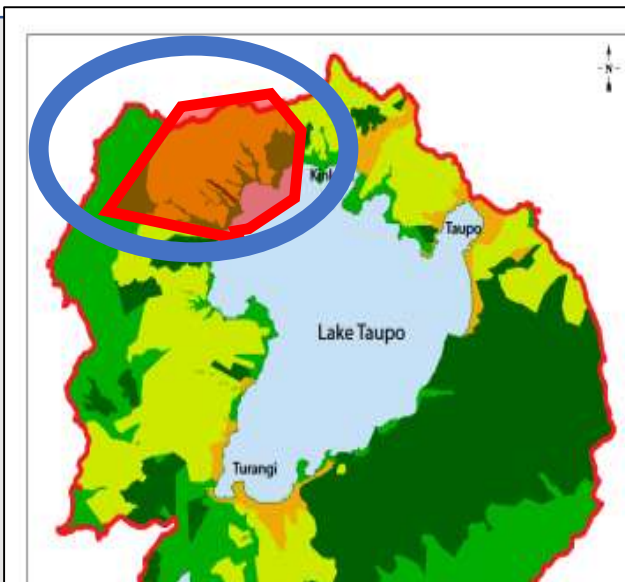


SOUTHWEST -
FARM LEVEL



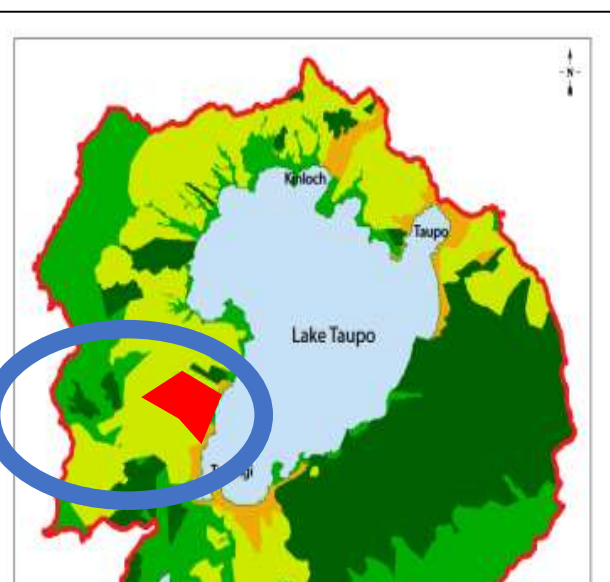
NORTH -
CATCHM'T LEVEL

LAND-USE
CHANGE



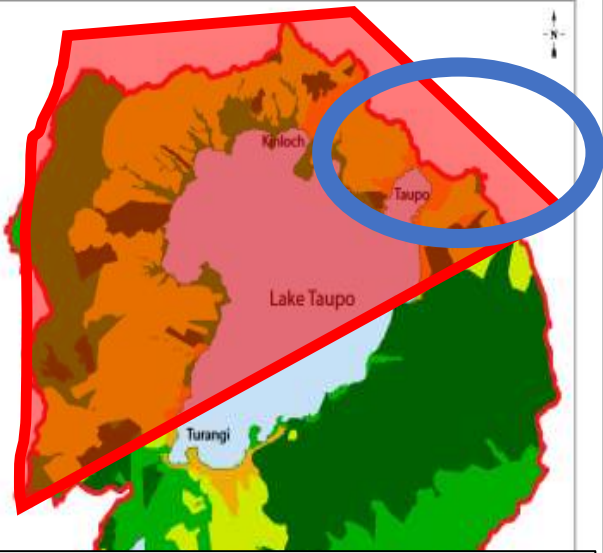
WEST -
LOCAL LEVEL

LAND-USE
SYSTEM CHANGE



SOUTHWEST -
FARM LEVEL

FARM
PRACTICE CH'G



NORTH -
CATCHM'T LEVEL

LAND-USE
CHANGE **24%**



WEST -
LOCAL LEVEL

LAND-USE SYSTEM
CHANGE **60%**



SOUTHWEST -
FARM LEVEL

FARM PRACTICE
CHANGE **8%**

Key Drivers

EXTERNAL

Markets
Gov Policy
RMA

CATCHMENT

Citizen
concern
Climate
Land-use
alternatives
OVERSEER™

LOCAL

Landcorp
Carbon mkt
Legacy
**Lake Taupo
Protection
Trust**

FARM

Alternatives
Capital
value
Farmer aims

Landscape Paths

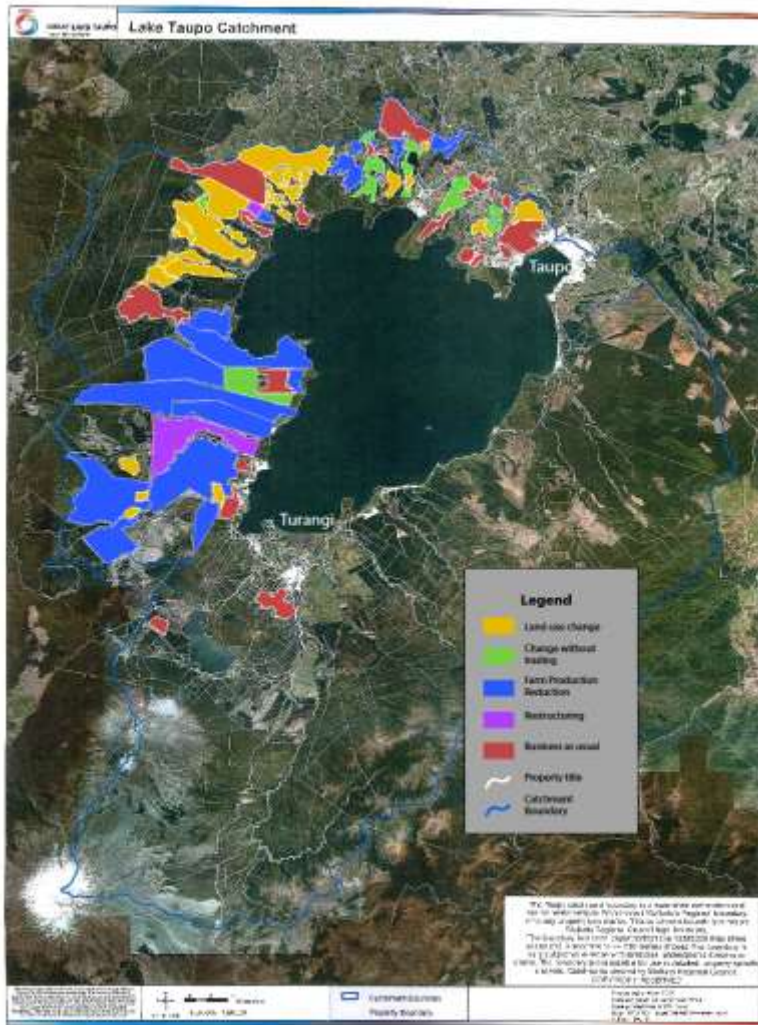
Change with trading 21%

Reduced production 42%

Restructuring 5%

Change without trading 6%

Business as usual 25%



Implications



For Cap and Trade

Low trading levels

Place attachment

Lack of mitigations

Effect on land value

Effect on saleability

Long-term viability

2018 review

For NZ Agricultural Policy

Supporting policies required

