

## **MITIGATION OPPORTUNITIES IN A TEMPERATE AGRICULTURAL AND FORESTRY ECONOMY**

**Dr Gerald Rys**  
**Senior Scientist, Natural Resources Policy**  
**Ministry of Agriculture and Forestry**

New Zealand's temperate climate and soils are ideally suited for agriculture and forestry. 150 years of development have seen the transformation of 60% of New Zealand's land area into pastoral agriculture. Over the past fifty years there has been reforestation of agricultural land into planted forest, mainly *Pinus radiata*. Thirty percent of the landscape still remains in protected indigenous forest. Greenhouse gas mitigation opportunities exist through the afforestation and reforestation of land, and the reduction of nitrous oxide and methane emissions from ruminant animals, which make up about 50% of New Zealand's emissions.

New Zealand also has potential for biofuel production both from woody biomass and converting current crop and pasture land to biofuel crops, including grasses. In one major catchment with a nitrogen surplus (associated with the iconic Lake Taupo), integration of biofuels and forestry into a program to limit nitrogen input will reduce nitrous oxide emissions and improve lake water quality.

Mitigation options for methane produced by grazing ruminants appear limited at this stage. Current research focuses on animal and microbial genetics, alternative animal feeds and supplements to modify rumen microflora and animal output. Opportunities to reduce nitrous oxide emissions through more efficient nitrogen fertiliser application, nitrogen utilisation by animals and nitrification inhibitors appear more promising.

The presentation will cover mitigation opportunities and limitations in an economy based on agriculture and forestry.