

## Submission on New Zealand's commitment to Greenhouse gas emissions' reductions

New Zealand is ideally placed to lead the world in reducing our Carbon Dioxide emissions to zero as is required by all countries by 2070 if we are to have any hope of avoiding catastrophic unadaptable levels of climate change.

I ask that we commit to zero Carbon Dioxide emissions by 2040.

To get there I ask that we:

\*2015 Stop all domestic coal exploration and extraction

\*2015 Close all coal and gas powered electrical generation. Shortfall in current electricity requirements to be met immediately by (i) efficiency measures, (ii) priority usage of Manapouri power going to national grid and only power surplus to grid demand being supplied to Tiwai. In medium and long term shortfall will be met by additional renewable supply (including local microscale grid-tied generation) coupled with grid scale storage (using substation scale flow cell batteries or alternative grid scale storage)

\*2015 Stop all subsidies, tax breaks and financial incentives to gas and oil exploration.

\*2015 Convert all industry currently using coal, oil or gas directly for energy to use (i) on site renewable or grid supplied electricity or (ii) biomass created from waste products such as landfill gas, or wood chips and timber waste made into wood pellets.

\*2015 (start), 2018 (finish) fully electrify New Zealand rail network. All train engines to be fully electric by 2018.

\*2015 (start), 2018 (finish) all freight to travel by rail or domestic shipping to closest railway station or port.

\*2015 (start), 2040 (finish) have all land transport powered by 100% renewably generated electricity

- 2015 All newly imported vehicles (new and used) to be fully electric or hybrid by end of 2015.
- 2025 All newly imported vehicles (new and used) to be fully electric by end of 2025.
- 2025 All government, business, rental vehicles, buses, taxis and other transport providers' vehicles to be fully electric by end of 2025.
- 2015 (start), 2025 (significant progress), 2040 (finish) increase renewable grid capacity to meet additional demand due to electrification of transport. Large scale geothermal, wind (on and off shore), and tidal current turbines and local microscale solar, wind and microhydro
- 2015 (start), 2025 (finish) add substation scale grid storage to grid to allow matching of grid demand from a fully renewable generation resource. Grid scale flow cell batteries or other grid scale storage.
- 2015 (start), 2025 (finish), 2040 (improvement) Build a national fast charging infrastructure for electrical vehicles. Fast plug-in or inductive charging stations plus electrolyte switchout for fuel cell powered electric vehicles.
- 2015 (start), 2025 (significant progress), 2040 (finish) create a smart grid that allows for smart integration of electric vehicles into the grid, allowing two way electrical flow in and out of plugged in electric vehicle's batteries within programmable restraints set by vehicle owner.

- 2015 (start) investigate conversion of existing vehicle fleet to electric motors powered by organic flow cell batteries as recently developed at Harvard and investigate possibility of building new electric vehicles in NZ.
- 2040 All NZ's vehicle fleet to be legally required to be fully electric.

Due to our unusual emissions' profile for a developed country I believe we need to make separate commitments with regard to (i) Carbon Dioxide and (ii) Agricultural greenhouse gas emissions. It is important to commit to reducing our Carbon Dioxide emissions to zero by 2040. With regard to agricultural emissions we should continue our current research efforts and the on farm implementation of research findings whilst making a shift to lower impact, less intensive but more efficient (in production of edible biomass) farming.

Lara Wilcocks

