

Submission to Productivity Commission report on the draft
Low Emission Economy document.

First it must be remembered that:

Energy can neither be created or destroyed (Isaac Newton). Apart from nuclear there are no other energy sources waiting to be used or discovered. (Simple physics).

You seem to be labouring under the assumption that electric vehicles are low emission and will thus reduce greenhouse gasses.

It is agreed that the vehicles themselves emit negligible emissions but the generation of the required extra electrical energy is not. As of now all of our low pollution energy is already fully accounted for and the source of any additional energy must come from somewhere else, of which there very few renewable options. As of 2014 some 39% of world wide electrical energy was generated by burning coal with an overall conversion efficiency of about 30%. As the world demand increases it is almost certain that this will increase. India has declared its intention to ban fossil fuelled cars by 2025, but is already importing nearly 20 millions tonnes of coal a month. China consumes around five billion tonnes of coal annually. I cannot imagine the economic consequences without that energy source.

You wrongly assume that New Zealand generates about 80% of its electrical energy from renewable sources, which is simply false. Whilst hydro generates over 50%, natural gas (~25%) is not renewable and current known sources are expected to run out in 10 years. What then?

With a world population having trebled in my lifetime, and the rising living standards particularly India and China, the demand for energy is exponential. The prime underlying cause of the strife in the world is "over population" which can only be viewed as a gigantic pyramid scheme. I have no answer to that problem, but current thinking will not solve the energy or pollution crisis, but it is very important that you include this in your draft report to the Government.

If an electric fleet taps into our current renewable energy supply, then they are misappropriating that energy from existing users who will then have to use power generated from non renewable sources, and thus to claim that electric cars will reduce pollution is just not true. We are not (and never will be) 100% reliant on pollution free energy.

The conversion efficiency of converting coal or gas to electrical energy in New Zealand is around 30%, add to that transmission losses and battery charging/discharging and standing loss and we can expect no more than 25%, much the same as a petrol powered vehicle, but with a potentially greater atmospheric pollution.

The concept of hydrogen-powered vehicles is flawed. To produce hydrogen we have to supply energy. The efficacy of the conversion process is always much less than 100%. There is no free lunch here. If I am missing something here then please explain the flaw in my logic.

Wind generation may mitigate but not solve the electrical energy problem as we cannot cover the whole country in turbines, and as this is an intermittent source we still must have an alternative source immediately available on standby. The same logic applies to solar, which according to the N.Z. governments own figures will produce 16% of their maximum rating spread over one year. Geothermal has its problems too. The wastewater from the Wairaki geothermal plant enters the Waikato River which according to the Governments own report, *"A serious environmental effect of the geothermal industry is arsenic pollution Levels of arsenic in the Waikato River almost always exceed the World Health Organisation standard for drinking water of 0.01 parts per million. Most of the arsenic comes from geothermal wastewater discharged from the Wairāki power station. Geothermal fluids contain elevated levels of arsenic, mercury, lithium and boron"*.

<http://www.teara.govt.nz/en/geothermal-energy/page-5>

Some of this Waikato river water is piped to augment the Auckland reticulated supply. (A scandal in the making?).

I ask a simple question, where are we going to get the energy to serve existing users and then propel electric vehicles, both as of now and into the future? There is no alternative energy source that will meet our needs other than coal and oil, for the foreseeable future. Without their widespread use, we are in for a very rough ride. Fossil hydrocarbons are also the feedstock for almost every product that we manufacture, it keeps our cities viable and without them the world will soon suffer a major economic collapse. If New Zealand ceases to recover fossil fuels then the shortfall will simply be produced somewhere else.

The use of electric vehicles will not reduce global pollution. One American University study estimated that the energy required to produce a Li battery might be about 10% of the total energy that the battery can store in its lifetime. The crustal abundance of lithium is reported to be 21 parts per million, which means to recover 1 Kg would require the process of mining close to 50 tonnes of ore, with the consequential environmental damage not to mention the energy required for the recovery and processing. The bulk of the worlds cobalt (also used in Li batteries) is mined in the Democratic Republic of the Congo predominantly by child labour, each child earning around one dollar a day.

Another consideration is the "energy density" of Li batteries, which is at best only about 5% of petroleum, and the expected battery lifetimes is maybe 1000 full charge/discharge cycles. Are we going to fill our landfills with millions of tonnes of defunct batteries in a decade?

There are about 20,000 commercial passenger jets in service, which are a major contributor to atmospheric pollution, mainly carrying tourists around the world. There may be close to one million people at any one moment sitting in an airplane seat. Tourism and pollution reduction is an oxymoron.

It is of serious concern that New Zealand is giving away huge volumes of pristine water to commercial overseas companies, who on sell the product for profit. Even worse, it is being bottled in millions (or is that billions) of non-biodegradable plastic containers, few of which are ever recycled. This is a scandalous story, which must be halted without delay.

After all, we don't get oil or other commodities free and plastic is proving to be a very serious worldwide pollution problem. Water is a most critical resource, with many large cities throughout the world struggling to maintain adequate supplies now, and it can only get worse.

These are my immediate thoughts and comments for your consideration.

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