

23 August 2024

## Submission on ERP2 consultation

### Introduction and Key Recommendation

In what follows the National Energy Research Institute (NERI)<sup>1</sup> focuses on emissions from energy use, and from fossil fuel use in particular. Fossil fuels generate 70% of our energy (including international transport), virtually all of its GHGs, and two thirds of NZ's total non-biogenic net GHGs.

We have three ways to address fossil fuel emissions: adopt clean substitute fuels, reduce fossil fuel demand, or directly sequester the GHGs.

The user is central to achieving all of these. It makes little sense to consider reducing energy emissions without considering its use<sup>2</sup>.

In the terms of the Draft ERP2<sup>3</sup> (the "Draft") this means sector plans for energy and the main fossil fuel use sectors (transport and industry) need to be addressed together.

*"From Fossil Fuels to Local Renewables: A research framework to address Aotearoa New Zealand's energy GHGs"* (NERI 2023)<sup>4</sup> does this, setting out where medium-term applied research into substitute fuels, demand side management, and CCUS is needed to help NZ reduce our energy GHG emissions, while maximise opportunities and minimising negative impacts.

It thus identifies the areas ERP2 needs to address to achieve medium-term emissions reductions, and offers a better framework than the rather eclectic selection of initiatives in the Draft. In particular it reinforces the need for investment in applied directed research to identify and address areas where public benefits are available beyond what is captured in the CO<sub>2</sub>-e price.

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<sup>1</sup> The National Energy Research Institute (NERI) is a NZ Charitable Trust. Its primary purpose is to enhance NZ's sustainability and to benefit the NZ community by stimulating, promoting, co-ordinating and supporting high-quality energy research and education within NZ. Its research members are GNS Science, Scion, University of Canterbury, and University of Otago, and its industry association members are the Bioenergy Association of NZ, BusinessNZ Energy Council, the Carbon and Energy Professionals New Zealand, Energy Resources Aotearoa, Gas NZ, the New Zealand Geothermal Association, the New Zealand Wind Energy Association, la Ara Aotearoa Transporting New Zealand, and Tourism Industry Aotearoa.

<sup>2</sup> Energy Roadmaps that ignore the end user are similarly limited. See NERI's comments on the Interim Hydrogen Roadmap as an example <https://www.neri.org.nz/resource/Files/Submissions/Interim%20Hydrogen%20Roadmap.pdf>. The retrenchment by Fortescue on hydrogen investments reinforces this.

<sup>3</sup> "New Zealand's second emissions reduction plan (2026–30): Discussion document" (MfE 2024)

<sup>4</sup> Unless otherwise indicated statistics in this submission are sourced from this.

In particular our view is that:

- Investment in a well-directed targeted research portfolio is a key priority for meeting our fossil fuel emissions reduction goals;
- The current public RS&I investment process cited by the Draft as meeting this need gives no guidance on where that investment should occur<sup>5</sup>, and unsurprisingly is not producing the targeted investments required in respect of fossil fuel emissions.
- In contrast, the Draft focuses in detail on the investments in RS&I to support Agricultural methane emissions reductions<sup>6</sup>.

So, our primary recommendation is that the final ERP2 should establish a specific RS&I investment programme for *fossil fuel emission reductions* equivalent to that which exist for *agricultural methane emissions*. NERI 2023 provides a framework for where the medium-term problems lie in addressing fossil fuel emissions and their relative priorities. See Appendix 1 for a summary.

Comparing with the funds being specifically applied to methane emissions an annual ~\$50m p.a. specifically targeting fossil fuel emission reduction research would be indicated, particularly if international aviation and marine emissions are included within its scope.

## The ETS and the role of public good RS&I

### Actions beyond the ETS

Beyond issues around the ETS's design (discussed below) there are areas where government intervention can enhance the ETS's performance by addressing public benefits and costs not captured in the CO<sub>2</sub>-e price.

Examples include:

- Risk reduction (e.g. increasing options in the face of uncertainties, sharing early-stage technology and market risks etc);
- Assisting co-ordination along emerging supply chains for new fuels and reducing other barriers to uptake (e.g. economies of scale in new technologies inhibiting commercial uptake);
- Addressing any weaknesses in our energy feedstock and fuel markets;
- Ensuring environmental, cultural and social impacts and the opportunities from the changes are addressed.

In each case better information and targeted innovation are needed. This is what a well targeted and directed applied research programme should deliver. However, this will take time to deliver.

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<sup>5</sup> See for example the "*Investment Signals for the Endeavour Fund*" that simply notes "The Science Board will also look for opportunities to fund proposals that ... supports adaptation to climate change ..." with no further direction.

<sup>6</sup> E.g. ERP2 p. 72 cites the *Global Research Alliance on Agricultural Greenhouse Gases*, the *New Zealand Agricultural Greenhouse Gas Research Centre*, and *AgriZero*<sup>NZ</sup>.

The implication is ERP2 needs to be laying the foundation for subsequent ERPs. But investment in applied R&D to address emerging needs for the 2030s is lacking.

*This is a fundamental weakness in the Draft.*

NERI 2023 identifies where these medium-term problems lie in the NZ energy sector and their relative priorities. See Appendix 1 for a summary.

### **Actions beyond the ETS proposed in the ERP2 Draft**

As a general comment NERI considers that the Draft needs to be based on a much more rigorous policy analysis to justify actions beyond the ETS. Neither the Climate Change Commission's advice on the ERP2, nor the Government's "Five Pillars" Climate Strategy provide an empirical basis for the targeting of its recommended initiatives in the Draft.

As the Draft stands it is a rather eclectic selection of initiatives without any underpinning intervention logic.

Four of the seven key initiatives (Chargers, CCUS, Electrify NZ, Public Transport) address fossil fuel emissions reductions. These are described as "*policies that could have the greatest impact on our ability to meet our targets*".

While there is some cost/benefit analysis and comparison with BAU in the policy modelling, this is not demonstrated.

Most of the proposals rely heavily on regulatory change that, unintended consequences of reduced regulation aside, will be low cost. They therefore appear to deliver benefits over BAU at low cost and are within the gift of the Government.

These are supported, but the issue is that there may still be more significant and/or effective regulatory change available. For example, Electrify NZ will support cheaper but not faster consents for renewable electricity infrastructure. This looks like a low-cost approach but still leaves other barriers to entry that could be being addressed<sup>7</sup>.

The analysis justifying not going wider isn't included.

In the case of the two policies that do go beyond regulatory change (Chargers, Public transport) there is no attempt to assess them against other potential interventions or to assess their impacts in terms of their public costs and benefits. Again, it isn't obviously these are "*the policies that could have the greatest impact on our ability to meet our targets*".

The Charger policy isn't evaluated against other barriers to EV uptake, and as light urban vehicles transition to EVs, public transport and urban form are well understood to be very expensive approaches to reducing transport emissions<sup>8</sup>.

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<sup>7</sup> Concept Consulting for the Electricity Authority (2023) *Generation investment survey – 2023 Update*

<sup>8</sup> Productivity Commission (2017) *Better urban planning*; Productivity Commission (2018) *Low emissions economy*; and Climate Change Commission (2021) *Draft Advice for Consultation. Finding 16.3*. Public transport may provide other benefits but they aren't cost effective for emissions reductions.

Rigorous assessments need to be undertaken before specific policies are recommended in the ERP2 to ensure we do not miss opportunities offering higher relative impact. In particular the proposed actions need to be compared against the potential public benefits from investing in a well targeted R&D programme to underpin those assessments.

## ETS design

A robust ETS is the basis of any effective mechanism to address GHGs. Central to this is the cap being credible with no potential for leakage, and there being robust accounting for emissions within it.

Credibility and robust accounting should be a given, but leakage comes down to *boundary issues* and two issues that specifically arise in looking at energy emissions are:

- Inclusion of CCUS This provides for emissions to be used twice or more, and for emissions to be removed from the biosphere, both contributing to reducing net emissions. It seems arbitrary not to include these. In implementing this the Draft raises afforestation and the potential for it to compete for land with agriculture. This will also impact on the energy sector because afforestation competes for land with biofuel feedstocks. *Any treatment of this issue for agriculture needs to be even-handed in comparison with biofuels.*
- Inclusion of international shipping and aviation This is being reviewed this year<sup>9</sup>. Regardless of whether they remain outside the cap or if they are bought in with a special arrangement, care needs to be taken to ensure arrangements to meet *international obligations don't distort the supply of locally produced E- or biofuels.*

## Recommendations

That in advice on the final ERP2, MfE should:

- ensure that it includes investments, particularly in RS&I, to lay the foundations to help emitters to address the potential more difficult future ERPs, and to that end
- recommend the establishment of a RS&I investment programme specifically targeting fossil fuel emission reductions, and comparable to that which exists for reducing agricultural methane emissions (~\$50m p.a.);
- note that "*From Fossil Fuels to Local Renewables: A research framework to address Aotearoa New Zealand's energy GHGs*" (NERI 2023) provides the basis for setting priorities areas for such a programme;
- adopt a much more rigorous analysis to justify its initiatives.
  - The priority for the regulatory targets is moot, the proposals for EV Charges needs better justification, and those for Public Transport and Urban Form are definitely poor quality.
- ensure that a rigorous assessment is undertaken of other options, noting that targeted RS&I investment programme will help meet this need for future ERPs; and

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<sup>9</sup> Climate Change Response (Zero Carbon) Amendment Act 2019 Sect 5R

- ensure that the inclusion of CCUS with forestry in the ETS doesn't distort land use for biofuels as well as agriculture, and that any arrangements for international aviation and shipping do not distort domestic clean fuels supplies.

A handwritten signature in black ink, appearing to read 'S Arnold'.

Simon Arnold  
Chief Executive

## Appendix: The priority areas for NZ's energy GHG reductions from NERI 2023

### Develop the supply of clean fuels where significant increase in demand is anticipated

De-risk the scale up of:

- Clean electricity supply for short-haul transport and industry. The key issues are electricity system stability and expanding lower cost supply from geothermal and offshore wind.
- Biofuel supply for industry, long-haul marine, and aviation. A key issue is growing a new industry converting biomass to both gaseous and liquid fuels while reducing costs.

Opportunities: NZ's comparative advantage in clean electricity; early availability of near 100% clean electricity; growing geothermal; and a new bioenergy industry. A resilient clean energy supply.

### Clarify the fuel options for long-haul transport and their implementation in NZ

Increase our fuel options and de-risk their uptake: i.e., better batteries and charging; electro-fuels (e.g., hydrogen, synSAF); biofuels; hybrids; and fossil fuels with Carbon Capture, Use, or Storage (CCUS).

Opportunity: To enhance our exporters' ability to meet international markets preferences for environmentally sound products and services.

### Reduce the demand for long-haul transport

Apply emerging technologies and behaviour changes to target demand, develop weightless alternatives, and improve the efficiency of logistics.

Opportunity: To exploit these advances internationally, e.g., low-cost virtual tourism.

### Develop clean/low energy industries

Support shifts to industries that have low energy intensity or add significant value to clean energy.

Opportunity: To grow our economy and trade.

### Address the major wider impacts

Identify and address the major cumulative wider economic, work force, social, cultural, and environmental impacts of cutting fossil fuels.

### Empower te ao Māori in addressing energy GHGs

Enable the contribution of Māori knowledge, resources, and people to research that addresses sustainability and economic opportunities to Māori.