Section 5: Boosting investment in energy efficiency and renewable energy technologies

This section explains the issues relating to underinvestment in energy efficiency and renewable energy technologies. It seeks your views on whether the Government should be considering these issues and how these issues could be addressed.

This section responds to key barriers identified in the submissions on the Technical Paper *Process Heat in New Zealand: Opportunities and barriers to low emissions.*

What's the problem?

Initial analysis suggests that the total potential for emission reductions from cost effective clean energy projects in industry amounts to an estimated 2 – 3.5 Mt CO_2-e per year (as outlined in Appendix 2).

Energy projects within a business compete internally with other capital investment projects. Even when these projects are privately profitable, they can remain unimplemented as other, more attractive, more easily quantifiable, or essential to core business projects are prioritised. As such, a gap exists between the carbon price that would make a project profitable and the price that would make a project a priority for implementation. This competition for capital is a major barrier to more efficient and renewable use of process heat. In addition, some businesses may have limited access to capital to allow them to implement cost-effective energy projects.

While energy investment results from what might be privately-rational investment behaviour by firms, it can also result in foregone benefits and sub-optimal outcomes for the energy system and emissions reduction efforts. Unless a business has strategic prioritisation of all cost-effective clean energy[39] technologies or has ring-fenced funds for energy technologies, significant economic energy savings and emissions reduction potential may not be realised.

What could be considered to address these issues?

The NZ-ETS and the Corporate Energy Transition Plans (if implemented)[40] are expected to increase investment in energy efficiency and renewable energy technologies. However, barriers of internal competition or access to capital could still persist, which could leave some remaining economic energy efficiency potential unrealised.

We have identified two ways of addressing these barriers, either through regulating clean energy spend or through providing incentives to stimulate investment in clean energy technologies. Both

[39] Clean energy investments includes energy efficiency technologies and technologies that enable fuel switching to low emissions sources such as electricity, biomass, and geothermal. Energy efficiency technologies and the efficiency by which fuel – electricity, coal or gas – can be converted into usable process heat (measured by the Coefficient of Performance (CoP)) can reduce the overall costs of transitioning to a low emissions energy system. For example, lower temperature processes can take advantage of commercial and industrial-scale electric heat pump technology with CoPs of between three and seven (so 3-7 units of useful energy are produced for every unit of electricity). By comparison, using a central gas or coal-fired boiler to produce steam can have a CoP of only 0.5, so only half the energy is used, and half is wasted. Source:

[40] The Corporate Energy Transition Plans option in Section 1 is considered as an important first step to enable the effective design of and support for a range of additional measures.

approaches have the potential to impose high costs on either the Government or industry and could carry significant risk if they are not well designed and targeted.

Due to the nature of these approaches and the scale of investment likely required by the Government and/or industry to achieve our climate change objectives, they need to be carefully considered alongside forthcoming broader government decisions on climate change policy. These decisions include proposals discussed in this paper, changes to the NZ-ETS, discussion on the role of complementary measures to the NZ-ETS, and the pace and pathways of domestic emissions reductions to meet the country's emission targets. As such, we are seeking feedback and gathering further information on the types of levers, rather than consulting on a preferred set of policy proposals.

We are gathering information on the both regulatory and incentive-based levers.

Regulatory approach - regulating clean energy spend

Regulation can be an effective tool in driving investments in energy efficiency and renewable energy technologies. For example, it could be a regulatory requirement that for large energy users all eligible profitable clean energy projects with a payback under a specified number of years are implemented by the business.

In the short term, such regulation could impose significant compliance costs on industry. Increased investment in clean energy projects would potentially be at the expense of investment in other more profitable or urgent core business priorities. The impact on firms is likely to vary depending on their financial position and competing priorities for investment. Firms with limited access to capital and urgent core business spend may struggle to comply with the regulations. To alleviate the upfront investment barriers (compliance costs), regulation could be supported by financial incentives as discussed below.

In addition, the scope would need to exclude projects with significant production risks, so that businesses are not dissuaded from identifying opportunities or forced into unduly risky projects.

In the medium-long term, well designed regulation may not impose excessive compliance costs on industry. Compliance costs could be outweighed by the energy and emissions cost savings that result from the increased energy investment. Regulation could result in greater energy savings and emissions abatement than delivered by the NZ-ETS alone.

At this stage, we would not recommend regulation to drive investment in clean energy is developed. Changes to the NZ-ETS, and other options discussed in this paper should be considered as first steps to drive changes in industrial energy use.

Non-regulatory approach - incentives for specified low emissions heat technologies

This section seeks your feedback on the potential use of incentives that the Government could utilise to support industry in the transition to a low emissions economy. More detailed analysis is required to determine the necessity of and the type of incentives, timing of implementation, the technologies that should be eligible, and the impact on emissions.

Poorly targeted support for low emission energy technologies may have negative interactions with the carbon price by encouraging higher cost abatement. The NZ-ETS reforms will lead to a cap and trade scheme, whereby the total volume of emissions is capped in advance and the price is allowed

to vary. If support accelerates the deployment of low emission technologies in industry, in turn reducing emissions, this could suppress the NZ-ETS price by reducing demand for NZ-ETS units by those benefitting from incentives. To avoid potential negative interactions with the NZ-ETS, incentives will need to be well designed and targeted.

Incentives would likely impose high costs on the Government and have the potential to subsidise expenditure that may occur anyway. Without additional incentives however, it may take some time for the NZ-ETS price to rise to levels sufficient to drive significant change and have a material impact on emissions reductions in the industrial sector. The internal competition for capital may persist as a significant barrier if clean energy investments are not prioritised.

At this stage, we would not recommend that incentives to drive investment in clean energy are developed. Changes to the NZ-ETS, and other options discussed in this paper should be considered as first steps to drive changes in industrial energy use.

Questions

Q5.1	Do you agree that complementary measures to the NZ-ETS should be considered to accelerate the uptake of cost-effective clean energy projects?
Q5.2	If so, do you favour regulation, financial incentives or both? Why?
Q5.3	In your view what is a bigger barrier to investment in clean energy technologies, internal competition for capital or access to capital?
Q5.4	If you favour financial support, what sort of incentives could be considered? What are the benefits, costs and the risks of these incentives?
Q5.5	What measures other than those identified above could be effective at accelerating investment in clean energy technologies?