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28 February 2020

Energy Markets Policy
Ministry of Business, Innovation and Employment
PO Box 1473
Wellington 6140

Sent by email: energymarkets@mbie.govt.nz

SUBJECT: Submission on the "Accelerating renewable energy and energy efficiency" Discussion Document

Ballance Agri-Nutrients Limited would like to thank the Ministry of Business, Innovation and Employment (MBIE) for the opportunity to make this submission on the Accelerating renewable energy and energy efficiency" Discussion Document.

Our detailed submission is attached.

Glenn Johnson

National Operations Manager

Cc Mark Wynne – Chief Executive Officer

Dominic Adams – Environmental Manager

Submission on:

"Accelerating renewable energy and energy efficiency" Discussion Document

from

Ballance Agri-Nutrients Limited

Contact information

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Submitter type*	Individual	☐	
	NGO	☐	
	Business / Industry	☒	
	Local government	☐	
	Central government	☐	
	Iwi	☐	
	Other (please specify)	☐	Click here to enter text.

Commercial Sensitivity

Nothing in this submission is confidential.

1 Introduction

Ballance Agri-Nutrients Limited ("Ballance") would like to thank the Ministry of Business, innovation & Employment (MBIE) for the opportunity to make this submission on the "Accelerating renewable energy and energy efficiency" Discussion Document, released December 2019.

Ballance has been actively engaged in the low emission economy consultation processes with recent submissions to the Productivity Commission and the Ministry for the Environment.

In 2019, Ballance made submissions to MBIE on:

- "Process Heat in New Zealand: Opportunities and barriers to lower emissions"; and
- "A Vision for Hydrogen in New Zealand Hydrogen".

Noting that the MBIE published Summary of Submissions for the former is very high level and that no summary is yet available for the latter, we ask that MBIE staff reviewing this submission take the time to read these earlier submissions in conjunction with this submission as they provide important context.

2 Summary of Submission

Ballance shares the view that investment in renewable energy and energy efficiency needs to be accelerated.

Ballance recognises the need for Government agencies and the independent Climate Change Commission to have accurate and timely energy and emissions data in order to plan the transition to a low carbon economy. We therefore endorse the continued and expanded scope of energy and emissions data exchange with the Government but oppose public release of non-aggregated data.

Current engagement with MBIE on data transfer is based on trust and openness, however the stance of Section 1 of the document is overwhelmingly seeking greater regulatory intervention and enforcement, with mandatory energy audits and energy transition planning proposed. This is not appropriate.

Instead Ballance recommends the collaborative approach for Energy Intensive Highly Integrated (EIHI) industry as set out in Option 3.2. We strongly believe that his approach will yield better results for Government, Ballance and New Zealanders.

One underlying concern is that the potential effectiveness of the New Zealand Emissions Trading Scheme (NZ ETS) has yet to materialise, with a full surrender obligation and a higher $25+ carbon price only recently being in place. The ETS Reform Bill and proposed settings will increase its effectiveness further. A regulatory approach for energy efficiency overlaying the NZ ETS risks introducing excessive costs on business and delivering poor outcomes.

It is important to highlight that the ETS Reform Bill and wider Industrial Allocation Review planned for 2020-2021 has introduced considerable uncertainty which undermines the case for investment in New Zealand manufacturing and in particular investment in new technologies for energy efficiency.

3 Company Overview

Ballance is a farmer-owned co-operative with over 18,000 shareholders and approximately 800 staff throughout New Zealand. Ballance owns and operates super-phosphate manufacturing plants located in Tauranga and Invercargill, as well as New Zealand's only ammonia-urea manufacturing plant located at Kapuni, South Taranaki. The Company also owns and operates 'SuperAir', an agricultural aviation company; and 'SealesWinslow', a high-performance compound feed manufacturer. Ballance has a network of around 40 fertiliser storage and dispatch facilities across the country.

As well as supporting New Zealand farmers, Ballance also supplies products to a range of domestic industrial businesses including the domestic wood processing sector:

- Urea, is used in the production of formaldehyde based resins, a key ingredient in the manufacture of particleboard and MDF.

- An extremely high purity urea solution is used to produce GoClear and marine grade GoClear at the Kapuni plant. GoClear is an exhaust system additive and scrubbing agent that reduces harmful nitrogen oxide (NOx) emissions from diesel engines (both marine and land transport), breaking the NOx down into harmless water vapour and nitrogen gas.

- Other products important to non-farming industries include ammonia, sulphuric acid used in the dairy, pulp and paper, and power generation industries; and liquid alum and hydrofluorosilicic acid, both used in drinking water treatment processes.

Ballance places a strong emphasis on delivering value to its shareholders and on the use of the best science to inform and deliver sustainable nutrient management.

Ballance's Future Plans – Kapuni Green Hydrogen

Since submitting on MBIE's Process Heat in New Zealand paper, on 20 June 2019, Ballance Agri-Nutrients and Hiringa Energy confirmed a Joint Development Agreement for a major clean-tech project in Taranaki to produce 'green' hydrogen using renewable energy.

Under the Joint Development Agreement the two companies are planning the construction of up to four large wind turbines (with a total capacity of 16MW) to supply 100% renewable electricity directly to the Kapuni site, and also power electrolysers (electrolysis plant) to produce high-purity hydrogen – for feedstock into the ammonia-urea plant or for supply as 'zero-emission' transport fuel.

The $50 million showcase project of Taranaki's new energy future will be based at Ballance's Kapuni ammonia-urea plant, and is seen as a catalyst for the development of a sustainable green hydrogen market in New Zealand to fuel heavy transport – as fleet operators push to reduce carbon emissions ($CO_{2\text{-}e}$) in response to Zero Carbon legislative change.

This project highlights the "absorptive capacity" foundation of existing assets and skills that can be leveraged to transform the economy to a low emissions future.

4 Ballance's interest in Process Heat in New Zealand

4.1 Description of Ballance Process Heat and Fuels Balance

Ballance's operations are energy intensive and in the case of the ammonia urea plant directly impacted by the New Zealand Emissions Trading Scheme (NZ ETS):

- The Kapuni Urea manufacturing facility is an Emissions Intense Trade Exposed (EITE) industry competing against imported Urea. The Kapuni plant uses natural gas as both a feed stock, fuel for our large engines and to generate high grade process energy;
    - The facility has heavily integrated heat recovery technologies such as pinch technology to minimise process heat requirements.
    - The Kapuni plant production meets approximately one third of New Zealand's demand for urea. Remaining demand is met through imports sourced primarily from the Middle East, Far East and China. Ballance is therefore in direct competition against countries with less stringent international climate change obligations.
    - Please see Attachment 1 for an overview of the Kapuni plant.

- **Energy use at the Kapuni Site:**
    - The Kapuni site uses 7PJ – 7.5PJ of natural gas annually.
    - 53% of natural gas use is as the raw material in the manufacture of Ammonia and Urea. Natural gas provides Hydrogen used in the production of ammonia and carbon used in the production of urea.
    - High grade heat is used in the reformer to crack natural gas at temperatures greater than 800 °C. The reformer uses 20% of total natural gas and extensive heat integration; and recovers most of the waste heat which is then used elsewhere on site.
    - Kapuni operates 3 large compressors which are powered by natural gas; these compressors use 14% of total energy.
    - Only 9% of the natural gas at Kapuni is used for steam raising and electricity generation which is produced from the integrated cogeneration plant. The remaining 4% of natural gas is used by minor equipment and facilities on site.
    - Electricity is used for motive power (for pumps, small compressors, air cooling fans) which is sourced internally from the cogen plant and from the national grid.
- Carbon dioxide produced during the reforming process is recovered and used in the manufacturing of Urea together with additional carbon dioxide sourced externally.

Table 1 presents an overview of the fuel switch potential for the Kapuni Site.

Table 1 - Kapuni Ammonia Urea Plant Fuel Switch Potential Overview

Service	Current Fuel	Annual Consumption	Alternatives
Feedstock and Reforming	Natural Gas	5.1PJ	Partial substitution of natural gas for hydrogen manufacture may be possible, e.g. through electrolysis, but this not yet commercially viable at scale.
Compression	Natural Gas	1PJ	Substitution within the current plant is not possible
Cogeneration	Natural Gas	0.7PJ	Partial substitution is possible. However, grid supply reliability is a key limitation (Taranaki's vulnerability to lightning strikes is a factor).

The Mount Manganui Super phosphate site recovers waste heat from the production of sulphuric acid which is then used to generate electricity for internal use and export to the grid.

4.2 Ballance Energy Management

- Energy management is a foundation activity for the Ballance ammonia urea plant. Energy is the largest cost for the facility and is monitored in real time by our operational staff. Energy performance is reported daily to senior management and monthly within the Kapuni Board papers.
- Energy KPI's include;
    - Process Gas conversion efficiency
    - Fuel gas consumption by all uses (Cogen, reforming, compression)
- Ballance has and continues to actively investigate Energy Efficiency Projects including the replacement of existing ammonia urea plant to realise energy efficiency improvements and the use of renewable energy for both feedstock and electricity supply.
- Ballance regularly benchmarks performance of the Kapuni site versus international ammonia and urea plants.
- Ballance has previously undertaken energy audits for our operations and we are currently working with EECA (Energy Efficiency and Conservation Authority) to conduct a targeted (Type 2) energy audit of our operations during 2020 with the aim of identifying further options for improving our energy efficiency.

4.3 Future of Urea and other Products

- Demand for Urea, and Ballance's other product lines, is expected to continue and grow in both agricultural and industrial applications.
- With the right policy settings, domestic manufacture will continue to make a strong economic contribution to New Zealand while transitioning to a low emissions economy.

5 Detailed Submission Points

Balance's detailed submission points are provided in the MBIE requested format below.

Accelerating renewable energy and energy efficiency - Have your say

Introduction

* 1. **Name (first and last name)**

Glenn Johnson

* 2. **Email**

Glenn.johnson@ballance.co.nz

* 3. **Is this an individual submission, or is it on behalf of a group or organisation?**

☐Individual
☒On behalf of a group or organisation

* 4. **Which group do you most identify with, or are representing?**

☐ Iwi or hapū
☐ General public
☐ Environmental
☐ Local government
☐ Research institute / academia
☐ Transmission or distribution sector
☐ Industry or industry advocates
☐ Central government agency
☐ Other (please specify)
☐ Electricity sector
☐ Community organisation
☒ Energy intensive and highly integrated industry
☒ Large energy user
☐ Oil and gas sector
☐ Biomass or geothermal sector
☐ Consultant, financial services etc
☐ Coal sector

*5. **Business name or organisation (if applicable)**

Ballance Agri-Nutrients Limited

*6. **Position title (if applicable)**

National Operations Manager

* 7. **Important information about your submission (important to read)**

The information provided in submissions will be used to inform the Ministry of Business, Innovation and Employment's (MBIE's) work on *Accelerating renewable energy and energy efficiency*.

We will upload the submissions we receive and publish them on our website. If your submission contains any sensitive information that you do not want published, please indicate this in your submission.

The Privacy Act 1993 applies to submissions. Any personal information you supply to MBIE in the course of making a submission will only be known by the team working on the *Accelerating renewable energy and energy efficiency*.

Submissions may be requested under the Official Information Act 1982. Submissions provided in confidence can usually be withheld. MBIE will consult with submitters when responding to requests under the Official Information Act 1982.

We intend to upload submissions to our website at www.mbie.govt.nz. Can we include your submission on the website?

☒ Yes
☐ No

8. **Can we include your name?**
☒Yes
☐No

9. **Can we include your organisation (if submitting on behalf of an organisation)?**
☒Yes
☐ No

10. All other personal information will not be proactively released, although it may need to be released if required under the Official Information Act.
Please indicate if there is any other information you would like withheld.

None

Accelerating renewable energy and energy efficiency - Have your say

11. **[FOR INDIVIDUALS] Where are you located?**

☐ Northland / Te Tai Tokerau
☐ Auckland / Tamaki-makau-rau
☐ Waikato
☐ Bay of Plenty / Te Moana-a-Toi
☐ Gisborne / Te Tai Rāwhiti
☐ Hawke's Bay / Te Matau-a-Māui
☐ Taranaki
☐ Manawatū-Whanganui
☐ Wellington / Te Whanga-nui-a-Tara
☐ Tasman / Te Tai-o-Aorere
☐ Nelson / Whakatū
☐ Marlborough / Te Tauihu-o-te-waka
☐ West Coast / Te Tai Poutini
☐ Canterbury / Waitaha
☐ Otago / Ōtākou
☐ Southland / Murihuku
☐ Outlying Islands, including Chatham Islands

12. **[FOR ORGANISATIONS] In what region or regions does your organisation mostly operate?**

☐ Northland / Te Tai Tokerau
☐ Auckland / Tamaki-makau-rau
☒ Waikato
☒ Bay of Plenty / Te Moana-a-Toi
☐ Gisborne / Te Tai Rāwhiti
☐ Hawke's Bay / Te Matau-a-Māui
☒ Taranaki
☒ Manawatū-Whanganui
☐ Wellington / Te Whanga-nui-a-Tara
☐ Wellington / Te Whanga-nui-a-Tara
☐ Tasman / Te Tai-o-Aorere
☐ Nelson / Whakatū
☐ Marlborough / Te Tauihu-o-te-waka
☐ West Coast / Te Tai Poutini
☒ Canterbury / Waitaha
☐ Otago / Ōtākou
☒ Southland / Murihuku
☐ Outlying Islands, including Chatham Islands

Regions identified relate to our major manufaturing sites.
We have regional distrubtion sites throughout New Zealand.

Accelerating renewable energy and energy efficiency - Have your say

Areas you wish to provide feedback on

The *Accelerating renewable energy and energy efficiency* discussion document examines a range of barriers and issues, and seeks feedback on a range of options. The document is divided in two parts:

- **Part A: Encouraging greater energy efficiency and the uptake of renewable fuels in industry (process heat)**
- **Part B: Accelerating renewable electricity generation and infrastructure (renewable electricity generation)**

Each part has multiple sections. You are invited to provide feedback and respond to questions in as many, or as few of the sections as you would like, depending on your interests.

13. **<u>Part A</u> relates to process heat.**

Please indicate which sections, if any, you would like to provide feedback on.

☒ Section 1: Addressing information failures

☐ Section 2: Developing markets for bioenergy and direct geothermal use

☒ Section 3: Innovating and building capability

☒ Section 4: Phasing out fossil fuels in process heat

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

☒ Section 6: Cost recovery mechanisms

14. **<u>Part B</u> relates to renewable electricity generation.**

Please indicate which sections, if any, you would like to provide feedback on.

☐ Section 7: Enabling renewables uptake under the Resource Management Act 1991

☐ Section 8: Supporting renewable electricity generation investment

☐ Section 9: Facilitating local and community engagement in renewable energy and energy efficiency

☐ Section 10: Connecting to the national grid

☐ Section 11: Local network connections and trading arrangements

Accelerating renewable energy and energy efficiency - Have your say

Section 1: Addressing information failures

This section explains the issues relating to information failures and asymmetries and seeks your views on options to:

- **Require large energy users to publish Corporate Energy Transition Plans (including reporting emissions annually), and conduct energy audits every four years**
- **Develop an electrification information package for businesses looking to electrify process heat, and offer co-funded low-emissions heating feasibility studies for Energy Efficiency and Conservation Authority's (EECA's) business partners, and • Provide benchmarking information for food processing industries.**

15. **Option 1.1 would require large energy users to report their emissions and energy use annually, publish Corporate Energy Transitions Plans and conduct energy audits every four years.**

Do you support this option?

☐ Yes - I fully support this option

☒ I support this option in part

☐ No - I do not support this option

16. **Please explain your answer**

<u>Energy and Emissions Data:</u>

Ballance recognises the importance of good data to enable sound policy making and emissions abatement and energy infrastructure planning

Ballance is already reporting energy and production data for its major manufacturing site, the Kapuni Ammonia Urea plant, on a quarterly basis to MBIE's "Markets; Evidence and Insights Branch; Corporate, Governance & Information Group."

Further data is reported through Statistics New Zealand and the EPA.

Ballance supports greater reporting however:

- the requirements must be clearly defined and aligned with the publicly declared intended use of the data by the Government
    - this will include clear definitions of scope boundaries, noting that NZ ETS activity definitions for EITE activities differ from full site / production
    - whether the data is for financial or calendar year
    - whether indirect energy is included and how double counting is avoided
- the data must be treated as confidential as energy data in conjunction with production levels is a key indicator of operating cost for high energy users – information which competitors are keen to obtain.

Corporate Energy Transition Plans and 4-Yearly Energy Auditing:

Energy management is a foundation activity for Ballance.

For the ammonia urea plant, energy is the largest cost for the facility and is monitored in real time by our operational staff. Energy performance is reported daily to senior management and monthly within the Kapuni Board papers.

- Energy KPI's include;
  - Process Gas conversion efficiency
  - Fuel gas consumption by all uses (Cogen, reforming, compression)
- Ballance has and continues to actively investigate Energy Efficiency Projects including the replacement of the existing ammonia urea plant to realise energy efficiency improvements.
- Ballance regularly benchmarks the performance of the Kapuni site versus international ammonia and urea plants.
- Ballance has previously undertaken energy audits for our operations and we are currently working with EECA to conduct a targeted (Type 2) energy audit of our operations during 2020 with the aim of identifying further options for improving our energy efficiency.

This internal focus also drives behaviours across our other plants.

Mandated 4-yearly energy audits would introduce an unnecessary compliance requirement with low added value and potential high costs:

- The mandated frequency would not align with the plant(s) shutdown schedules/improvement opportunity windows
- The appropriate expertise for such audits is operationally specific and international, and findings are commercially sensitive for both the consultants and the site.
- The audit findings are often complex and although focused on energy /emissions improvements, other factors such as safety, reliability, process integration, technology licensing, as well as cost and payback must be taken into account - simplistic reporting of audit findings creates a misunderstanding of improvement scope potential. Improvements to the process energy efficiency are normally realised together with capacity increase, proposed changes to the ETS may act as a barrier to energy efficiency project which also have a capacity benefit.
- The requirement that audits meet the Government's guidelines or the company is ISO50001 certified is inappropriate as it may rule out the best available expertise being used (i.e. industry / process-specific). Instead a local auditor with limited or potentially no understanding of the specific process (where the material opportunities may be found) may meet the "compliance" requirement but added value will be low / negative due to distraction of resources and suggested improvement options which may not be suitable or practical to implement for the specific process being audited.

Recommendation:

For Energy Intensive Highly Integrated (EIHI) business the proposed approach under Section 3.2 is more appropriate

17. **Which parts (set out in Table 3 of Section 1 in the discussion document) do you support?**

☐ Target group - companies with an annual energy spend of greater than $2 million per annum

☐ Public reporting

☒ Government reporting

☐ Energy auditing

☐ Compliance

18. **Please explain your answer**

Target Group: Too little information presented to assess. Is this on a per site basis or across all activities? For Ballance, on a Company basis, this would pick up nationally spread hubs and service centres' energy reporting costs which will not have a high abatement potential.

The Government needs to clearly define what the purpose of the data collation is before setting thresholds.

Public Reporting: Energy and Emissions data is complex, made more so with an NZ ETS that has upstream points of obligation and downstream allocation. We already see confusion amongst Government officials and wider stakeholders which requires resources to clarify misunderstandings. Unless the Government is going to commit to a public education campaign, public disclosure risks becoming a major distraction to the business at hand – increasing our operational performance. Publication of data also risks releasing commercially sensitive data, undermining a key domestic business.

Government Reporting: Supported – see also Section 3.2 but any published data must be aggregated. We view this as a continuation of current practice.

Energy Auditing: Refer response 16. Above.

Compliance: Refer response 16. Above. Such an approach seems to be based on "distrust" of business and is inappropriate.

19. **What public reporting requirements (listed in Table 3) should be disclosed?**

☐ Annual corporate level energy use and emissions, split out by a range of sources, including coal, gas, electricity and transport

☐ energy efficiency actions taken that year

☐ Plans to reduce emissions to 2030

☐ Other (please specify)

None – See above. Only aggregated data should be public.

20. **In your view, should businesses be expected to include transport energy and emissions in these reporting requirements?**

☒ Yes

☐ No

Please explain your answer

For Government (not public) reporting it would be naïve to only focus on stationary energy when the transport sector emissions are a major challenge.

21. **For manufacturers: what will be the impact on your business to comply with the requirements?**

☐ No impact

☐ Some impact

☒ Significant impact

Please provide specific cost estimates if possible

Costs for major site energy audits with appropriate international expertise is in the hundreds of thousands dollars range. The compliance requirements proposed would incur significant management resources, currently applied on day to day improvements.

22. **Option 1.1. Suggests that requirements to publish Corporate Energy Transition Plans should apply to large energy users, and proposes defining *large energy users* as those with an annual energy spend (purchased) of greater than $2 million per annum.**

Do you agree with this definition?

☐ Yes

☒ No

23. **If you selected no, please describe what in your view would be an appropriate threshold to define 'large energy users'.**

The proposal is too simplistic and without definition of the large energy entity it is not possible to suggest an appropriate threshold. Is a large energy user defined as a site, or parent company?

24. **Is there any potential for unnecessary duplication under these proposals and the disclosures proposed in the MBIE-Ministry for the Environment discussion document** *Climate-related Financial Disclosures – Understanding your business risks and opportunities related to climate change, October 2019*?

☐ No

☒ Yes (please explain)

Scope boundaries for financial and corporate sustainability reporting may not align with NZ ETS or proposed energy compliance reporting.

Emission factors (in particular GHG Protocol Scope 2) may vary between reporting requirements.

Inclusion of GHG Protocol Scope 3 may also lead to double-counting e.g. business travel aviation energy / emissions.

Calendar year or financial year? (for Ballance this is different)

A full stocktake of data and reporting requirements across Government agencies (EPA, FMA, MfE, MBIE, StatsNZ, etc) is required prior to being able to confirm the appropriate disclosure requirements.

Accelerating renewable energy and energy efficiency - Have your say

Section 3: Innovating and building capability

This section explains the issues around technology risk for process heat users, and the lack of viable low carbon solutions for emissions-intensive and highly integrated (EIHI) industries. It seeks your views on options to:

- **Expand Energy Efficiency and Conservation Authority's (EECA's) grants for technology diffusion and capability-building, and**
- **Collaborate with EIHI industries to foster knowledge sharing, develop sectoral low-carbon roadmaps and build capability for the future using a Just Transitions approach.**

Technology diffusion and capability-building

47. **Do you agree that de-risking commercially viable low-emission technology should be a focus of government support on process heat?**

☐ Strongly disagree

☐ Disagree

☒ Neither agree nor disagree

☐ Agree

☐ Strongly agree

Please explain your answer

De-risking and diffusing are not sufficiently well defined in the paper.
- EECA should only focus on "commodity" opportunities with widescale applications.
- For large industry specialist expertise is required.

The Government needs to be mindful that while it is seeking to offer support, its actions through other policies are undermining investment confidence with the investment in low emission technology being currently hampered by increased uncertainty as a result of the NZ ETS industrial allocation review and wider NZ ETS settings

48. **Do you agree that diffusing commercially viable low-emission technology should be a focus of government support on process heat?**

☐ Strongly disagree

☐ Disagree

☒ Neither agree nor disagree

☐ Agree

☐ Strongly agree

Please explain your answer

See 47 above

Accelerating renewable energy and energy efficiency - Have your say

Section 3 (continued): Innovating and building capability

On this page, we are seeking your feedback on industrial innovation and transitioning to a low-carbon future.

53. **For emissions-intensive and highly integrated (EIHI) stakeholders: What are your views on our proposal to collaborate to develop low-carbon roadmaps?**

This is supported but information exchange must be confidential.

Collaboration over mistrust and enforcement is the right approach.

- The recently published MACC analysis from the Ministry for the Environment highlights the risk of Government agencies trying to make assessments without direct communication with the EIHI firms directly, with core assumptions in some cases being highly erroneous.
- The approach should be industry led, with the Government sitting down with industry prior, to establish an agreed “template” to enable data to be transferred into information and knowledge.

54. **Would low-carbon roadmaps assist in identifying feasible technological pathways for decarbonisation?**

☒ Yes

☐ No

Please expand on your answer

They would provide a common industry-government basis for discussion planning and informing policy settings.

55. **What are the most important issues that would benefit from a partnership and co-design approach?**

- Greater understanding of abatement potential and timing.
- Industrial allocations and wider emissions policy
- More accurate carbon budgets.
- A fostering of trust between Government and industry.

56. **What, in your view, is the scale of resourcing required to make this initiative successful?**

For Government the resource requirement should be Low.

- It should be industry led, feeding into a small group of Government appointees.
- As this is linked so closely to C-budgets it may be appropriate for the Climate Change Commission to have this role.
- Scale is not the issue – calibre and skill sets are.
- A separate secretariat is unnecessary.

Accelerating renewable energy and energy efficiency - Have your say

Section 4: Phasing out fossil fuels in process heat

This section explains the issues around long-lived process heat investments and emissions lock-in, and seeks your views on options to:

- **Deter the development of any new coal-fired process heat, through a ban on new coal-fired process heat equipment for low and medium temperature requirements, and**
- **Require existing coal-fired process heat equipment supplying end-use temperature requirements below 100°C to be phased out by 2030.**

Deterring the development of any new fossil fuel process heat

57. **Do you agree with the proposal to ban new coal-fired boilers for low and medium temperature requirements?**

☐ Strongly disagree

☐ Disagree

☒ Neither agree nor disagree

☐ Agree

☐ Strongly agree

58. **Do you agree with the proposal to require existing coal-fired process heat equipment for end-use temperature requirements below 100 degrees Celsius to be phased out by 2030?**

☐ Strongly disagree

☐ Disagree

☒ Neither agree nor disagree

☐ Agree

☐ Strongly agree

59. **Referring to Question 57 - is this ambitious or is it not doing enough?**

☐ Ambitious

☐ Not doing enough

Please explain your answer

In respect of Q 57 & 58, Ballance disagrees with regulatory override of the primary policy tool – the NZ ETS – without adequate analysis of how the NZ ETS in its full obligation, higher price mode of operation will drive behaviour.

This also creates a precedent that may be expanded on for all fossil fuel users including those with high temperature process heat duties.

60. **What would be the likely impacts or compliance costs on your business of a** *ban on new coal-fired process heat equipment?*

Ballance does not have coal-fired boilers and is not likely to require them.

61. **what would be the likely impacts or compliance costs on your business of** *requiring existing coal-fired process heat equipment supplying end-use temperature requirements below 100°C to be phased out by 2030.*

Ballance does not utilise coal. As noted above, Ballance favours allowing the NZ ETS to be the primary policy tool for driving the adoption of low emission solutions for the supply of process heat.

62. **Could the Corporate Energy Transition Plans (Option 1.1) help to design a more informed phase out of fossil fuels in process heat?**

☐ Yes

☒ No

Please explain your answer

Ballance strongly recommends against the mandated approach.
A better way forward is that set out in Section 3.2

63. **Would a timetabled phase out of fossil fuels in process heat be necessary alongside the Corporate Energy Transition Plans?**

☐ Yes

☒ No

Please explain your answer

Neither corporate energy transition plans or timetabled phase-outs are appropriate for the reasons highlighted in our response in 16 above.

64. **In your view, could national direction under the Resource Management Act (RMA) be an effective tool to support clean and low greenhouse gas-emitting methods of industrial production?**

☒ Yes

☐ No

65. **If yes, how?**

Best available technology (BAT) type assessment criteria are often location dependent, service dependent and in many cases may not result in an appropriate technology and financially viable selection. Direction under the RMA has the potential to be an effective tool but would have to include allowance for businesses to ultimately make decisions on adoption of BAT based on a range of their own viability thresholds.

66. **In your view, could adoption of best available technologies be introduced via a mechanism other than the RMA?**

☐ Yes

☒ No

Please explain your answer

As indicated above, the choice of the appropriate technology for process heat is multi-facetted and not solely driven by environment factors. Reliability, safety, cost, performance etc are just some of the factors involved.

Accelerating renewable energy and energy efficiency - Have your say

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.

67. **Do you agree that complementary measures to the New Zealand Emissions Trading Scheme (NZ-ETS) should be considered to accelerate the uptake of cost-effective clean energy projects?**

☐ Strongly disagree

☐ Disagree

☒ Neither agree nor disagree

☐ Agree

☐ Strongly agree

68. **Would you favour regulation, financial incentives or both?**

☐ Regulation

☒ Financial incentives

☐ Both

☐ Neither

Please explain your answer

The section starts "**explains the issues relating to underinvestment in energy efficiency and renewable energy technologies"**

This is concerning from two perspectives:

1) The NZ ETS has only recently (2019) moved to a full surrender obligation and only recently has the C-price been in the ~$25 range. The full impacts of these changes have not yet been assessed.

   The proposed NZ ETS settings will increase the C-price upper price bound, initially by 40% to $35 (Fixed Price Option) and subsequently to $50 (Cost Containment Reserve Trigger Price).

2) The analysis quoting 2-3.5Mt CO2e p.a. of potential emissions reductions appears to be the same MfE led MACC analysis that has major flaws and has not had the benefit of dialogue with the relevant industries.

The evidence for "underinvestment" is therefore weak and the case for intervention is uncertain. Future investment is being impeded by continued policy uncertainty which has increased investment risk. Across many energy intensive businesses current investment is limited to maintenance spend while policy settings are determined and the case for manufacturing locally can be assessed vs importing.

The concept of "regulating energy spend" fails to recognise that Government is not best placed to identify spending priorities – is emissions abatement more important than spending to improve site safety, working conditions for staff, product innovation that has the potential for end user emissions reductions.

69. **In your view what is a bigger barrier to investment in clean energy technologies, internal competition for capital or access to capital?**

☒ Internal competition for capital

☒ Access to capital

In order to invest business must be profitable.

- This affects access to capital **and** competition for capital.

There is a significant risk of business being increasingly burdened with regulatory overheads that diminish profitability and prevent investment.

In Ballance's case, decisions on restricting oil and gas exploration and the uncertainty created by potential NZ ETS amendments have undermined the business case for significant investments that could have yielded substantial energy efficiency gains.

70. **If you favour financial support, what sort of incentives could be considered?**

We suggest the focus should be on removing investment impediments first, not least risk of regulatory intervention and unpredictability of policy settings.

71. **What are the benefits of these incentives?**

N/A

72. **What are the risks of these incentives?**

N/A

73. **What are the costs of these incentives?**

N/A

74. **What measures other than those identified above could be effective at accelerating investment in clean energy technologies?**

For EITE firms, the major issue is uncertainty over future industrial allocation policy.
In its submission on the Climate Change (Emissions Trading Reform) Bill, Ballance made the following points:

Predictability of Industrial Allocation Phase-Out

1. Ballance seeks amendments to the Bill to increase the predictability of industrial allocation phase-out.

2. The Bill as drafted does not provide a sufficiently sound foundation for planned capital investment. The currently proposed phase out rules risk complicating business decision making, including for Ballance's green hydrogen project and undermine any significant capital investment plans to reduce emissions and improve productivity at our Kapuni urea plant.

3. Predictability is further undermined by news that a wider review of industrial allocation policy settings is to be made over the period 2020-2021, which will go beyond the allocation level of assistance phase-out parameters set out in the Bill (refer section 4.1.2).

4. Ballance supports the default industrial allocation phase out rate for the period 2021-2030 but recommends determination of phase out rates beyond 2030 is postponed until completion of the wider Industrial Allocation Review.

5. Ballance also seeks amendments to the currently proposed provisions for reduced allocation phase-out to be available to specific eligible industrial activities and for any increased phase out rates to be capped in magnitude, have a sufficient notice period prior to commencement and for the criteria for their introduction to be focused on reducing emissions leakage risk.

Certainty of industrial allocation needs to be re-established, with the design retaining the appropriate carbon price signal, including the avoidance of retrospective adjustments to allocative baselines and unpredictable changes to the level of assistance, which undermine investment returns on emissions abatement projects and broader operational improvements.

Accelerating renewable energy and energy efficiency - Have your say

Section 6: Cost recovery mechanisms

This section seeks your views on introducing a levy on consumers of coal to partially recover the cost of implementing any new policies in Part A that may be introduced.

75. **What is your view on whether cost recovery mechanisms should be adopted to fund policy proposals in Part A of the** *Accelerating renewable energy and energy efficiency* **discussion document?**

Ballance is already concerned that levies are a drain on cashflow that would be better spent on-site, than have the levy funds diluted by overheads of collection and distribution mechanisms.

We recommend the ability to opt-out of levies and ringfence funds for energy efficiency expenditure should be introduced for EIHI firms.

Should the levy be maintained/ expanded to other fuels, Ballance recommends that it should only apply to fuels used for process heat and not for chemical reactions e.g. as is the case for gas in the urea process.

ENDS

Attachment 1 – Kapuni Ammonia–Urea Plant Details

Ballance owns and operates New Zealand's only ammonia-urea plant located on a 32.4 hectare site at Kapuni in South Taranaki.

Using some 7 petajoules (PJ) of natural gas, the plant produces 150,000 tonnes of ammonia per year, over 99% of which is converted to 265,000 tonnes a year of premium grade granular urea. The high quality granular urea product is used as a nitrogen-rich fertiliser in the agricultural, horticultural and forestry sectors, and as a component in the manufacture of other products (primarily resins).

The Kapuni plant production meets approximately one third of New Zealand's demand for urea. Remaining demand is met through imports sourced primarily from the Middle East, Far East and China. Ballance is therefore in direct competition against countries with less stringent international climate change obligations.

The company makes a significant economic contribution to the local economy and employs 130 permanent staff and 17 full time contractors.

The Kapuni Ammonia-Urea Plant

1) The location and scale of Kapuni site is show below (Figure 1).

Figure 1 – Kapuni Ammonia-Urea Plant

2) The plant, which commenced operation in 1983, was built to make use of the Government's "take or pay" gas contract arrangements at the nearby gas fields.

3) The plant was designed from the outset as a single site integrated ammonia-urea plant, ammonia being an intermediate product in the conversion of natural gas to urea.

4) The plant was one of a series of "Think Big" projects instigated by the Muldoon led National Government.[1] It was envisaged that the plant would help New Zealand's balance of payments by exporting urea, however New Zealand's current demand of 850,000 tonnes now exceeds plant production resulting in all sales being domestic.

5) The plant was revamped in 1996 to increase production and reduce energy use through closer heat integration of the ammonia and urea sections of the plant.

6) The process is summarised in Figures 2-3 below, which show the primary chemical reactions and the location in the plant of the activities.

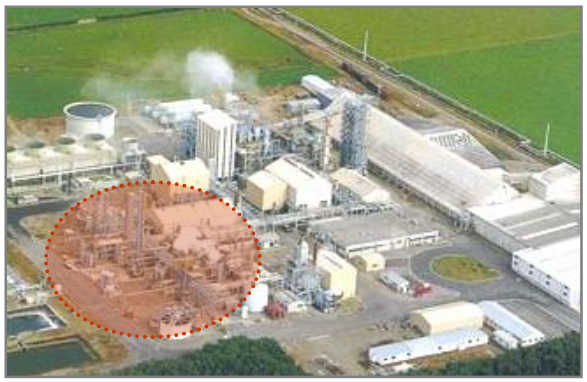
Figure 2 – Ammonia Production Step

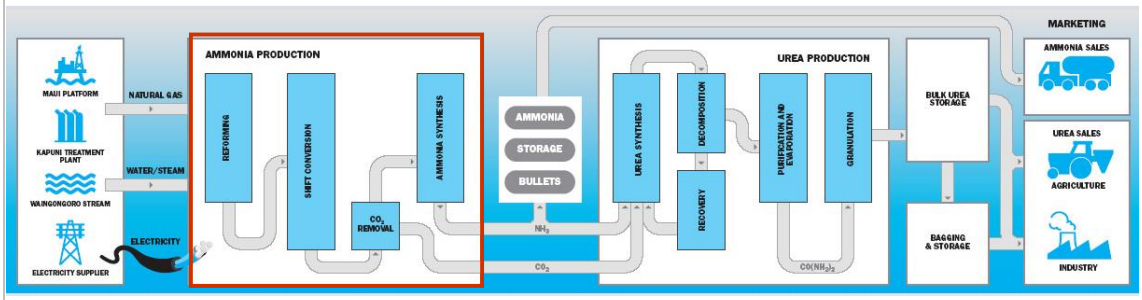
$CH_4 + 2H_2O \Leftrightarrow 4H_2 + CO_2$

gas + steam ⇔ hydrogen + carbon dioxide

$N_2 + 3H_2 \Leftrightarrow 2\,NH_3$

nitrogen + hydrogen ⇔ ammonia





Notes (typical production statistics shown):

- *Natural gas feedstock is predominantly specification gas (7PJ).*
- *Ammonia production is 150,000 tonnes per annum.*
  - *There is a small intermediate storage capacity of 450 tonnes ammonia (1 days production if full). This is primarily to allow sequential (ammonia then urea) start up of the plant and to provide a buffer for any minor upsets.*
- *Carbon dioxide production is 195,000 tonnes per annum.*
  - *There is no intermediate storage of carbon dioxide.*

Figure 3 – Urea Production Step

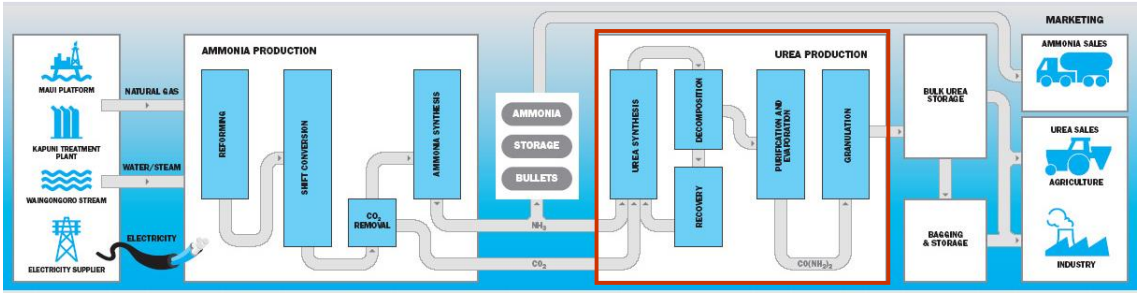
[1] Other Think Big projects included the Methanol plant at Waitara, the Synthetic-petrol plant at Motunui, Expansion of the Marsden Point Oil Refinery, Expansion of the New Zealand Steel plant at Glenbrook, Electrification of the Main Trunk Railway between Te Rapa and Palmerston North, A third reduction line at the Tiwai Point aluminium smelter, The Clyde Dam on the Clutha River.

$2\ NH_3 + CO_2 \Leftrightarrow NH_2COONH_4$

ammonia + carbon dioxide ⇔ ammonium carbamate

$NH_2COONH_4 \Leftrightarrow H_2O + NH_2CONH_2$

ammonium carbamate ⇔ water + urea



Notes:

- *All of the ammonia and carbon dioxide from the ammonia production step is converted to 265,000 tonnes of urea per annum.*
- *The urea is produced in granular form allowing easy transportation with no hazardous chemical shipping requirements.*
- *The urea is shipped in bulk and packaged form by road or by rail.*
- *Approximately 5 million litres of GoClear urea solution is produced per annum – GoClear is an exhaust system additive and scrubbing agent that reduces nitrogen oxide emissions from diesel engines, enabling truck operators to run low-emission and efficient vehicle fleets.*

7) As an integrated ammonia-urea plant, there is common infrastructure which yield energy efficiency gains and cost savings:

- Cogen (Electricity and Steam)
- Steam mains + heat integration
- Demineralised water for boilers
- Clarified water + cooling water system
- Control Room & Services
- Effluent Treatment
- Utility air supply