Deborah Russell

Chair, Environment Committee

Parliament Building Wellington

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**Additional evidence in relation to a question from Jonathan Young MP**

The Royal Forest & Bird Protection Society (Inc) wishes to provide some additional evidence to assist the Committee in response to a question by Member of Parliament for New Plymouth Jonathan Young on the Crown Minerals (Petroleum) Amendment Bill during our oral submission on 16 October 2018.

Jonathan Young raised a question on the role of natural gas in the transition to a low-carbon economy. He correctly said that natural gas has a lower carbon content than coal, and raised concerns about energy security and affordability. We did not have time to properly respond and so this note provides the additional evidence required.

1. The carbon content of various energy sources is:
    a. Coal 700-1000 gCO2/kWh
    b. Natural Gas 500-600gCO2/kWh
    c. Geothermal 110gCO2/kWh (in NZ)
    d. Renewables 10-110gCO2/kWh.

2. The gas figure does not take methane leakage (eg from pipelines) into account. When this is factored in, the carbon difference between natural gas and coal is much smaller. It is important to note that methane is a very powerful driver for climate change over the short to medium-term.

3. The IPCC 1.5 Special Report[1] clearly states why we need to keep global warming to well below 1.5deg above pre-Industrial levels and sets a carbon budget (ie, the amount of CO2e that can be released) of 420 gigatonnes (320GT if the permafrost melts and released stored methane). In the past six years, the world has released 200GT, and the International Energy Agency has this month warned that this year is likely to be a record year for global emissions.[2]

[1] http://www.ipcc.ch/report/sr15/

[2] https://www.euractiv.com/section/climate-environment/news/bad-news-and-despair-global-carbon-emissions-to-hit-new-record-in-2018-iea-says/https://www.euractiv.com/section/climate-environment/news/bad-news-and-despair-global-carbon-emissions-to-hit-new-record-in-2018-iea-says/

4. The "controlled descent" implied by Jonathan Young's question is no longer available if we are to prevent the kinds of impacts identified in the IPCC 1.5 degrees special report for the reasons outlined in paragraph 3. The world must instead make rapid changes that deliver deep emissions cuts over the next decade. That means going straight from emissions-intensive fuels like coal to low-emissions energy sources and bypassing transitional fuels wherever possible.

5. At the current rate of use, New Zealand has about 10 years' supply of natural gas. This Bill allows for exploration that could extend that period. Used carefully, however, the supply could last much longer. For example, currently, one third of New Zealand's annual gas use goes on electricity generation[3]. This could be reduced by bringing some of the 2000MW of consented, unbuilt wind generation on stream and accelerating the development of biogas.

6. The amount of natural gas presently being turned into urea can be reduced through changes in farming practices, eg, much more targeted fertiliser application, and a return to greater use of natural nitrogen fixers. This would extend the lifetime of current reserves and reduce both nitrous oxide emissions and nitrate pollution of waterways.

7. Any money that is invested in gas exploration is money that is not invested in low-carbon technologies. The point was made at the committee hearing that many of these technologies are not yet proven. However, some, like hydrogen (which could, potentially, use the gas distribution network) are at an advanced state of development.

8. There is no guarantee that any new exploration for natural gas will yield results. Investment in new forms of renewable energy and biomass is likely to deliver more certainty of supply into the long term because it is not dependent on highly speculative exploration seeking new fields. To date, the block offers have been a failure.

9. Carbon capture and storage technology is too uncertain to rely on as a way of mitigating emissions from natural gas. The reason why it has not seen large-scale deployment is because renewable energy sources are almost always more cost effective than carbon capture and storage.[4]

10. New Zealand's unusual emissions profile (with nearly half its emissions coming from agriculture) means that it already faces a challenge in meeting its Paris Agreement commitments. Continuing to use natural gas instead of lower-emissions energy sources will mean that other parts of the economy will have to make greater emissions cuts to

[3] https://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/publications/energy-in-new-zealand/documents-images/energy-in-nz-2018.pdf

[4] https://www.dlr.de/tt/Portaldata/41/Resources/dokumente/institut/system/publications/Poster_CCS_Viebahn_SETAC_final.pdf

make up for it. New Zealand has a potentially strong comparative advantage in the move to a low carbon economy because of the availability of renewable energy.

11. A more detailed explanation of why natural gas is not a transition fuel to the low-carbon economy has been prepared by international climate and energy expert and IPCC author Professor Ralph Sims, of Massey University.[5]

Feel free to contact me if you have any further questions on a.hallett@forestandbird.org.nz or 027 2217451.

**Adelia Hallett**

**Climate Advocate**

**Forest & Bird**

[5] http://carbonnews.co.nz/story.asp?storyID=14162