NEW ZEALAND

Submission to the Subsidiary Bodies of the UNFCCC, Koronivia Joint Work on Agriculture on topic 2(b) – Methods and approaches for assessing adaptation, adaptation co-benefits and resilience
May 2019

Context

1. New Zealand welcomes the opportunity to submit its views on topic 2(b) – *Methods and approaches for assessing adaptation, adaptation co-benefits and resilience* – in accordance with the conclusions of the Koronivia Joint Work on Agriculture (KJWA) at the 48th session of the Subsidiary Bodies.

2. This submission sets out New Zealand's experience of adaptation planning, and specifically addresses the concept of effective adaptation, resources available for adaptation planning, and adaptation needs of the New Zealand dairy sector. It highlights developments relevant to the work of the KJWA and proposes specific contributions to the forthcoming workshop in Bonn.

Adaptation in New Zealand

3. While the New Zealand Government is committed to a low emissions and climate resilient economy, climatic changes already set in motion pose significant risks. Adaptation to climate change has become a priority together with mitigation.

4. Central government[1]:
    (a) Provides the legislative and policy framework;
    (b) Provides information and guidance to support local government and businesses to make effective adaptive decisions;
    (c) Funds research and publish information on climate change impacts; and
    (d) Prepares for and responds to major natural hazard events.

5. Currently the government, led by the Ministry for the Environment, is progressing work on New Zealand's first National Climate Change Risk Assessment, which will gather information on the risks that climate change poses to New Zealand as a whole, on an economy-wide basis, and be used to help prioritise where action needs to be taken.

6. The Government has just introduced (May 8, 2019) the Climate Change Response (Zero Carbon) Amendment Bill, which will gives core adaptation functions legislative backing. In addition to a mandate to regularly carry out National Climate Change Risk Assessments, the Bill includes

[1] http://www.mfe.govt.nz/climate-change/climate-change-and-government/adapting-climate-change/adaptation-and-central

obligations on the government to develop a National Adaptation Plan (NAP) setting out its response to the biggest issues posed by climate change. The Bill proposes a new Climate Change Commission, which would have, among other tasks, the role of monitoring implementation of the NAP including reduction the identified risks.

7. In 2019 the Ministry for Primary Industries established the Climate Change Adaptation Evidence and Reporting (CCARE) team to work with the primary sector and rural communities to reduce the risks and realise the opportunities associated with a changing climate. The CCARE team are working in partnership with Māori, government, the Primary Sector and Rural Communities to co-design a work programme and facilitate the development of community-led adaptation activities. They work with a Te Ao Māori (Maori worldview) that encompasses holistic, equity focussed decision making. This team also enables the monitoring and reporting of New Zealand's agricultural greenhouse gas emissions.

8. The Ministry for Primary Industries takes responsibility for planning for adverse events and helping rural communities and individuals recover from them, including those due to climate change[2].

9. Much of the front-line responsibility for climate change adaptation in New Zealand lies with local government.[3] New Zealand's city, district and regional councils are legally required to consider the effects of a changing climate on communities.[4] Councils are required to incorporate climate change into existing frameworks, plans, projects and standard decision-making procedures. Climate change adaptation is now integrated into activities such as flood management, water resources, planning, building regulations and transport.[5]

10. A Climate Change Adaptation Technical Working Group (CCATWG)[6] was established in 2017 to develop a comprehensive, integrated set of recommendations as to how New Zealand can reduce its exposure and vulnerability to climate change.

11. The CCATWG has found that to be 'effective' adaptation action must enable New Zealand communities to reduce the risks from climate change impacts today and over the medium and long term by:
    (a) Reducing the exposure and vulnerability of our social and cultural systems, natural and built environment and economy
    (b) Maintaining and improving the capacity of our social, cultural, environmental, physical and economic systems to adapt.

---

[2]https://www.mpi.govt.nz/protection-and-response/responding/adverse-events/
http://www.rural-support.org.nz/
[3] https://www.lgnz.co.nz/climate-change-project/
[4] Under section 7 of the Resource Management Act 1991.
[5] http://www.mfe.govt.nz/climate-change/climate-change-and-government/adapting-climate-change/adaptation-and-local-government
[6] https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/ccatwg-report-web.pdf

12. Three characteristics have been identified by the CCATWG for adaptation to effective in New Zealand:
    (a) Being **informed** about how the climate is changing and what this means for New Zealanders
    (b) Being **organised** with a common goal, a planned approach, appropriate tools and clear roles and responsibilities
    (c) Taking **dynamic action** to proactively reduce exposure and vulnerability to the social, cultural, environmental and economic consequence of climate change.

    These criteria were used by the CCATWG when assessing the effectiveness of current adaptation work underway in New Zealand. The CCATWG concluded it is essential for the whole of New Zealand to be engaged due to the complexity of adaptation action. This involves central and local government, indigenous populations, the private sector and the community taking responsibility to enable informed decisions and choices.

13. The CCATWG noted that strategic funding and coordination of adaptation research was essential, along with investment in research, to further understand the implications of future climate change, and tools to address those changes. New Zealand's government is spending approximately $100 million over 10 years on research and projects relating to adapting to climate change. This research will assist local councils, businesses, individuals and communities to identify impacts and implement effective adaptation solutions.

14. Research initiatives for the land sector include the Sustainable Land Management, Agriculture and Climate Change (SLMACC) fund, which has supported 32 adaptation research projects with $7 million of investment since 2007[7]. The fund is managed through the New Zealand Ministry for Primary Industries.

15. A review was recently undertaken of the adaptation research funded through the SLMACC fund. It identified the information needs and knowledge gaps for better targeted future research for the land sector[8]. The review identified five areas that have relevance to the KJWA:
    (a) Is there a common understanding of what we mean when we talk about 'effective adaptation'?
    (b) To what extent is it feasible to develop and agree best-practice guidance on adaptation?
    (c) To what extent is it feasible to measure the impact of adaptation options, and develop robust reporting indicators that align to climate and sustainable development goals?
    (d) What are the social dimensions of adaptation decision-making, including the barriers to implementation and how are these impacted by the limitations of adaptation options and/or the complexities of future climate impacts?

---

[7] Link to SLMACC website. https://www.mpi.govt.nz/funding-and-programmes/farming/sustainable-land-management-and-climate-change-research-programme/

[8] Cradock-Henry, N. et al., 2018. Mind the gaps: synthesis and systematic review of climate change adaptation in New Zealand's primary industries. A report prepared for the Ministry for Primary Industries
Buelow, F and N. Cradock-Henry, 2018. What you sow is what you reap? (Dis)-incentives for adaptation intentions in farming. *Sustainability*, 10, 1133
Cradock-Henry, N. et al., 2018. Dynamic adaptive pathways in downscaled climate change scenarios. *Climatic Change*, 150:333-341

(e) What are the options for scenario testing for multiple adaptation pathways and modelling of insights, experiences, values and attitudes to be identified and evaluated?

Adaptation resources

16. A rich body of information about adaptation options that are available for implementation to assist primary sector producers and landowners in planning has been produced in New Zealand.

(a) The climate cloud is a digital library for land based businesses containing resources on the risks, impacts and adaptation solutions for climate change and adverse events. The library contains physical copies and links to reports, fact sheets and video, sourced from New Zealand organisations. Each resource is classified using sector and subject keywords and is also searchable by any word within the resource.

(b) A comprehensive review of literature published since August 2013 on:
1. Emerging climate change pressure points and implications for policy and management;
2. Tools and frameworks to support adaptive management of climate change impacts; and
3. Enhancing adaptive capacity so that climate change implications are incorporated into decision-making.
The selected publications in the review include studies of impacts, adaptation, resilience, vulnerabilities, and adaptive capacity in relation to decision-making, but exclude mitigation-focused studies.

(c) A landmark report on climate change resilience employing a social enterprise approach, in the Hawke's Bay region of New Zealand, which is still recovering from the impacts of Cyclone Bola that struck 30 years ago applies an "ecological infrastructure" lens to the climate change challenge, with an emphasis on a community-wide response to a collective threat, and with solutions that make economic sense.

Case study: adaptation action by Fonterra

Fonterra is a large New Zealand based dairy exporter. For the majority of milk production in New Zealand (NZ) cows' diet is predominantly pasture based, with rain-fed farm systems on highly productive and well-drained soils. With this reliance on pasture feeding, farms in NZ are exposed to changes in weather patterns. Farmers are highly aware of the need to adapt farm systems through each dairy season to manage seasonal variability and long-term climate change.

- To provide insights into future climate change impacts, Fonterra worked with the Copernicus Climate Change Service (funded by the European Commission) to consider long-term climate change impacts via climate modelling. This work collated 18 global climate models, then, using multi model ensembles, provided case study data to end users such as Fonterra, Heineken and Oxfam to consider climate change impacts.
- Insights from this work show that most NZ dairy supply regions are likely to become hotter, typically have fewer frost days and more tropical nights, with many regions having variable differences in daily rainfall (static to slight increase in the South). Other NZ work indicates that rainfall is likely to be more frequently condensed into storm events, with periods of prolonged drought in between. Given such predictions, many aspects of the pasture-based farm system will need to be able to adapt to variable soil moisture conditions, prolonged droughts, and, animals may face increased heat stress risk as we move toward and beyond mid-century.
- To face these challenges, dairy farming operations in NZ will need to be more flexible to be able to change and recover from short-term climate events. They will also need to be resilient over the long term considering the lasting impacts to damaged pastures and the inherent cost of reduced production in times of climatic events. Systems will need to be both physically and financially resilient over the longer term. Farm finance and lower debt loadings may be required to ensure that farmers can flex and change, and feed systems (pasture, other on-farm feeds and off-farm NZ and imported feeds, noting these may also be drought effected) will need to be able to be managed throughout the dairy season around climatic events.

These challenges will require new and novel solutions to be able to increase long-term resilience[1]. If farms are overly indebted, locked into a singular feeding regime, or unable to cope from repeated climate events, farmers are likely to struggle to remain profitable. System flexibility and having the ability to tactically identify and manage climate events will be required to ensure farmers continue to provide low footprint dairy nutrition to the world's growing population.

Conclusion

17. New Zealand believes strongly in the importance of building capacity and capability in adaptation and resilience to climate change in the primary sector. It supports the KJWA as an appropriate vehicle to help deliver robust scientific and technological advice that can lead to implementation on farm and at the policy level. As such, New Zealand would be in a position to provide technical input at the workshop if the Secretariat and others felt our experiences were of value. In particular, we would be willing to present the principal conclusions of the review of adaptation research funded through the Sustainable Land Management, Agriculture and Climate Change fund, and the initial findings of the Climate Change Adaptation Technical Working Group.

18. New Zealand looks forward to participating in a fruitful discussion during the proposed workshop at SB50 in Bonn, Germany. We call upon the subsidiary body chairs to provide for a six hours to be provided for this discussion in light of the importance of this subject.