NEW ZEALAND

Submission to the Subsidiary Bodies of the UNFCCC, Koronivia Joint Work on Agriculture for workshop 2(f) on socioeconomic and food security dimensions of climate change in the agricultural sector

October 2020

1. New Zealand welcomes the opportunity to submit its views on topic 2(f) - *Socioeconomic and food security dimensions of climate change in the agricultural sector* - in accordance with the conclusions of the 48th session of the Subsidiary Bodies on the Koronivia Joint Work on Agriculture (KJWA).[1]

2. New Zealand strongly supports the KJWA and looks forward to actively participating in a constructive discussion. New Zealand acknowledges that with the COVID-19 pandemic, this workshop must be postponed but welcomes the idea of conducting the workshop virtually.

Context

3. This submission presents an overview of socioeconomic and food security dimensions of climate change in the agricultural sector, from New Zealand's perspective. It also suggests ways forward to alleviate some of the impacts discussed throughout the submission.

4. Increasing agricultural productivity, reducing emissions, and building resilience to climate change impacts are crucial to improving global food security. These are also important components of achieving the overarching goal of the Paris Agreement to limit global temperature increase to 1.5°C above pre-industrial levels.

5. As an island nation with a long coastline, and an economy based mainly on primary production, New Zealand is vulnerable to the impacts of climate change. According to New Zealand's National Institute of Water and Atmospheric Research climate change is projected to bring mixed prospects for our farmers affecting a range of activities such as harvest times, crop choice, productivity, irrigation, and pasture growth.

[1] Report of the Subsidiary Body for Scientific and Technological Advice on the first part of its forty-eighth session, held in Bonn from 30 April to 10 May 2018.

6. While New Zealand is projected to experience increases in the frequency and intensity of extreme events, exposure and vulnerability are largely determined by socioeconomic development. New Zealand's National Climate Change Risk Assessment found that climate change poses a significant risk of exacerbating existing inequality and creating new and additional inequities as a result of the differential distribution of climate change impacts.

Extreme weather events, higher temperatures and sea-level rise

7. Climate change is projected to impact New Zealand in a multitude of ways, including less snow and ice, stronger storms, changing rain patterns, more floods, higher temperatures, more droughts and wildfires, ocean acidification, warmer oceans and rising sea levels.[2] These impacts will affect economic, environmental and social outcomes.

Drought

8. Climate change is expected to increase existing drought risks in New Zealand, particularly in the eastern and northern areas of the country.[3] Likely impacts of drought on our agriculture sector include drying out pasture and shrivelling crops. With increased drought, farmers may consider irrigation as a solution to adapt. However, it is important to recognise that increasing levels of irrigation could lead to wider downstream issues such as higher demand for water resources, and increased run-off and risks to waterways. These effects may also drive land use change to less water-intensive activities or shifts in activities to other regions, which will likely have social and economic impacts.

Flooding and greater rainfall intensity

9. Climate change is also expected to increase the frequency and intensity of extreme rainfall, leading to a greater likelihood of New Zealand river floods. Approximately one third of our population lives in areas prone to flooding, and it is estimated to be New Zealand's most frequent and, after earthquakes, most costly insured disaster.[4] Flooding often has significant economic and livelihood consequences for impacted farmers. Likely impacts on our agriculture sector include emergency evacuation of livestock, prevention of livestock access to pasture, and damage to or loss of crop yield as well as increased runoff sediment loss and erosion.

Higher temperatures

10. An overall increase in temperature as a result of climate change will also have socioeconomic and food security implications. In horticulture, potential impacts include early flowering and higher risk

[2] New Zealand Ministry for the Environment, *National Climate Change Risk Assessment for New Zealand Snapshot*, 2020, p3.
[3] Lawrence, J., Blackett, P., Cradock-Henry, N., Flood, S., Greenaway, A. and Dunningham, A., *Synthesis Report RA4: Enhancing capacity and increasing coordination to support decision making. Climate Change Impacts and Implications (CCII) for New Zealand to 2100*, 2016, p35.
[4] New Zealand Royal Society website.

of frost damage in spring.[5] In the agriculture sector, individual animal productivity is expected to be negatively impacted by temperature rise.[6]

11. Increased temperatures will also increase the likelihood and range of new pest and disease establishment. This introduces a risk for New Zealand's indigenous ecosystems and species from the enhanced spread, survival and establishment of invasive species[7], which will impact our agricultural sector and food production.

12. We recognise that pests and diseases are also of concern for our Pacific neighbours, increasing the vulnerability of Pacific crops and livelihoods. This would impact food security and nutrition in terms of available income to purchase food, both local and imported, as well as the availability of crops grown by subsistence farmers.

Sea-level rise

13. An ongoing increase in sea-level rise as well as warmer and more acidic oceans is another concern to New Zealand, particularly for agricultural land in coastal communities. Coastal communities are starting to notice salinization of coastal agricultural land caused by sea water floods, with saltwater entering coastal aquifers and damaging crops and grasses.[8]

14. The impacts of the above-mentioned threats will have flow-on effects for food production, and thereby food prices. These impacts are likely to lead to a disruption in food production and supply, exacerbating food security issues.

Food security

15. Food security will be increasingly impacted by future climatic change, with low income consumers at particularly high risk.[9] The impacts of climate change on food security are multi-faceted and are closely linked to socioeconomic outcomes. Climate change is expected to hinder food production in regions already struggling to achieve self-sufficiency. This will impact food and nutrition security, causing flow-on effects for the economy and the socioeconomic status of individuals.

16. In New Zealand, food security is closely linked with how accessible, available, and affordable food is to our population. Given the high volume of food our agriculture and horticulture sectors produce, we are unlikely to experience a shortage of food in the near future as a result of climate change.

[5] Climate Change Adaptation Technical Working Group, *Adapting to Climate Change in New Zealand*, 2017, p35.
[6] New Zealand Agriculture Greenhouse Gas Research Centre *Impacts of Global Climate Change on New Zealand Agriculture*, 2012, p4.
[7] New Zealand Ministry for the Environment, *National Climate Change Risk Assessment for New Zealand*, 2020, p9.
[8] Lawrence, J., Blackett, P., Cradock-Henry, N., Flood, S., Greenaway, A. and Dunningham, A., *Synthesis Report RA4: Enhancing capacity and increasing coordination to support decision making. Climate Change Impacts and Implications (CCII) for New Zealand to 2100*, 2016, p31.
[9] The Intergovernmental Panel on Climate Change, *Climate Change and Land, an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*, 2019, p439.

However, the price and availability of food may change significantly, exacerbating the challenge of reliable access to adequate nutritious food amongst some of our population.

Impacts on Māori in the agriculture sector

17. New Zealand also recognises the likely socioeconomic and food security aspects of climate change on our tangata whenua[10], our indigenous Māori population.

18. Māori are significant contributors to New Zealand's agriculture sector, with Māori agribusiness a key driver to the economy. Over half of Māori-owned land and around 15 percent of Māori businesses are agriculture-focused, and Māori make up a large proportion of the agriculture workforce. Climate-sensitive primary industries account for 50 percent of Māori commercial assets, including agriculture, forestry, fishing and mining.[11]

19. For Māori, climate change risks stem from loss and degradation of environmental and cultural assets due to ongoing sea-level rise, and changes in rainfall and drought. Another risk is linked to social cohesion and community wellbeing from displacement of individuals, families and communities due to climate change impacts are both identified as having extreme consequences.[12]

20. Mātauranga Māori[13] with its philosophy of reciprocity and protection between the natural environment and Māori, will be critical in developing a greater cultural understanding of these risks, and centring culture in future climate change planning, policy and adaptation.

Ways forward

21. In this section we address some of the solutions we are implementing or supporting to alleviate the impacts of climate change on food security and socioeconomic outcomes in the agricultural sector.

Adaptation to the impacts of climate change

22. A significant component of addressing the socioeconomic and food security impacts of climate change in the agricultural sector will be how countries can adapt. As this sector is particularly exposed to greater climate variability and extreme events, its ability to adapt will be challenged by the increasing magnitude and frequency of climate events and their cascading impacts through the economy.

23. We are committed to climate change adaptation together with mitigation. The Government has recently published New Zealand's first National Climate Change Risk Assessment, which provides a national picture of how New Zealand may be affected by climate change. The risk assessment provides a basis to prioritise action and to develop a national adaptation plan by 2022.

[10] "Tangata whenua" is the Māori term for our indigenous population, Māori.
[11] New Zealand Ministry for Primary Industries, *The Climate Change Challenge for Māori*, 2014, p1.
[12] New Zealand Ministry for the Environment, *National Climate Change Risk Assessment for New Zealand*, 2020, p9.
[13] Indigenous Māori knowledge.

Trade

24. New Zealand recognises the importance of trade for achieving global food security and positive socioeconomic outcomes in the context of climate change. Trade is both an important source of food for countries through imports, as well as a financial resource through food that is exported. As highlighted by the Organisation for Economic Co-operation and Development, food and nutritional security is dependent on production and trade, necessitating open and well-functioning supply chains to ensure food availability.[14]

25. In relation to the COVID-19 pandemic, the World Health Organisation, the Food and Agriculture Organisation, and the World Trade Organisation (WTO) released a joint statement which recognised that millions of people globally depend on international trade for food security and that protecting free trade flows is vital to avoid food shortages.

26. Open trade also ensures better socioeconomic outcomes. New Zealand, along with other WTO members emphasised in a statement in April 2020 that increasing trade barriers would have negative impacts on the food security, nutrition and health of WTO Members and their populations.

Climate change and food security in a food systems context

27. New Zealand notes growing international recognition of the value of taking a food systems approach to address complex and interconnected issues such as socioeconomic and food security impacts of climate change in a holistic way. This approach considers the activities, outcomes and people involved in agricultural production all the way through to consumption, along with the various pressures and drivers.

28. Applying a systems lens can help identify synergies and trade-offs and enable the design of coherent policies that avoid unintended consequences from interventions in one part of the system adversely affecting another. While it is a challenging task, New Zealand is working towards such an approach.

29. The New Zealand Government has developed a Living Standards Framework that prompts consideration of policy impacts across different dimensions of wellbeing, as well as the long-term and distributional implications. New Zealand is currently exploring a sustainable food systems approach grounded in the Treasury Living Standards Framework and the UN Sustainable Development Goals. We would welcome insights from other countries that have implemented integrated food systems policies or strategies.

30. To foster a sustainable food system and successfully address the socioeconomic and food security impacts of climate change, New Zealand suggests that policymakers need to work closely with

[14] The Organisation for Economic Co-operation and Development, *COVID-19 and Global Food Systems*, 2020, p3.

stakeholders including farmers – those responsible for making change on the ground. Understanding implications of policies for producers will help avoid unintended consequences and ensure positive change can occur in a way that is socially, economically, environmentally and culturally feasible and desirable.

31. Consistent with these views, New Zealand is actively engaged in preparations for the 2021 UN Food Systems Summit. The Summit is positioned to bring stakeholders together to better understand and manage the complex choices that affect the future of food systems, and to accelerate progress towards the Sustainable Development Goals. It will provide an opportunity for countries to address some of the anticipated impacts of climate change on socioeconomic outcomes and food security. We look forward to engaging with other countries in preparation for and at the Summit.

New Zealand's contribution to the Global Research Alliance on Agricultural Greenhouse Gases

32. New Zealand works collaboratively through the Global Research Alliance on Agricultural Greenhouse Gases (GRA) on enhancing global food security and increasing the resilience of agricultural systems.

33. The GRA is focussed on finding ways to grow more food without growing greenhouse gas emissions. New Zealand is a founding member and places great importance on the work of the GRA. In 2020, the New Zealand Government provided additional funding of $34 million over four years, contributing to New Zealand's continued leadership, participation and investment in the GRA, including working with other countries to build capability of researchers, policy makers and farmers, and accelerating mitigation research.

34. In particular, the New Zealand Government is supporting the Livestock Research Group of the GRA by jointly funding a project with the FAO and the Climate and Clean Air Coalition. The project, "Reducing enteric methane for improving food security and livelihoods" is a collaboration between the New Zealand Agricultural Greenhouse Gas Research Centre and FAO.

Conclusion

35. Climate change is likely to cause multiple social effects including disruption to health services, social and economic factors including migration, housing and livelihood stresses, food security, socioeconomic deprivation and health inequality. These effects are not likely to be spread evenly across the globe or different national populations, exacerbating existing socioeconomic and ethnic health inequalities.

36. Finally, although there are many negative impacts that climate change poses on our agriculture and horticulture sectors, the effects will not be felt the same everywhere. There are likely to be increasing changes in global food trade as countries and agricultural systems are differentially affected.

37. In line with this view, rather than prescribing one-size-fits-all solutions, New Zealand supports pragmatic, evidence-based, outcomes-focused approaches to address climatic impacts on food security and socioeconomic outcomes. We hope that the workshop can help to elaborate on some of these approaches. In particular, we suggest the following questions be incorporated into the workshop discussion:

- What barriers do countries face when it comes to implementing actions and policies to address food security and socioeconomic issues in agriculture?
- What are the common impacts of climate change on food security and socioeconomic outcomes in the agriculture sector that span across most of the UNFCCC Parties?
- How can Parties incorporate more indigenous knowledge in the development of solutions and adaptation policies?
- How can Parties balance rural productivity and emissions reductions while achieving positive food security, other environmental benefits and socioeconomic outcomes?
- How can Parties continue to facilitate free and unencumbered trade in food to address the production and demand for food security globally?