Meeting of the Climate Action Joint Committee

Date: Monday 11 March 2024

Time: 1.00pm

Venue: Napier War Memorial
Large Exhibition Hall
Marine Parade, NAPIER

Agenda

Climate Action Joint Committee
Monday 11 March 2024

Subject: Joint Committee funding update

Reason for Report

1. The Climate Action Technical Advisory Group (TAG) has further considered ways in which joint funding for regional climate action work from the Climate Action Joint Committee Partner Councils could be spent over the next three years.
2. This report presents the joint views of the TAG for the Committee's consideration.

Officers' Recommendations

3. The TAG recommends that the Committee supports option 2 and endorses a revised budget and high-level work programme as its preferred option for allocating any joint funding received for the 2024-25, 2025-26 and 2026-27 financial years.

Executive Summary

4. The Council members of the Climate Action Joint Committee (Hawke's Bay Regional Council, Central Hawke's Bay District Council, Hastings District Council, Napier City Council and Wairoa District Council) have been urged by the Committee's Chairs to provide funding to jointly fund regional climate action work over the next three years.
5. A proposed budget for a high-level climate action programme of work was provided as part of the request for funding from Councils.
6. Having further considered this programme of work, the Technical Advisory Group (TAG) has agreed to recommend that the Joint Committee prioritises funding received towards undertaking a regional climate change risk assessment, which includes data acquisition and risk modelling.

Background /Discussion

7. At their meeting of December 11, Climate Action Joint Committee members considered a proposal for shared funding for regional climate action including mitigation and adaptation approaches.
8. The high-level budget for the next three years proposed joint funding of $230,000 per year split between Partner Councils.
9. Following Joint Committee discussions regarding the appropriate funding allocations between Partner Councils, Dr Nic Peet, Chief Executive of the Hawke's Bay Regional Council wrote to all Chief Executives to agree on a proposed funding split of 26% (HBRC): 26% (HDC): 26% (NCC): 11% CHBDC: 11% (WDC).
10. Joint Committee Chair and Deputy Chair then wrote to the Mayors of all Partner Councils to request that they allocate funding in their long-term plans under this basis for the workplan of the Climate Action Joint Committee.
11. At the same 11 December 2023 meeting, Joint Committee members also requested more information from staff about the proposed work plan and estimated costs over the three years.

12. This paper provides more information on the proposed costs and components of the work plan, as proposed by the Climate Action Technical Advisory Group at their meeting of 26 February.

13. Having taken away lessons from Cyclone Gabrielle, and in the context of preparing their Long Term Plans, Councils are applying a future focussed climate change and resilience focus to future planning and decision making.

14. Council officers in the TAG have discussed and agreed that that there is a critical need to better understand the exposure of Hawke's Bay communities and critical lifeline assets (e.g. 3-Waters infrastructure, land transport assets etc) to climate change risk. This is particularly important to ensure that Councils can build their maturity to incorporate climate change risk into decision-making and activity and asset management planning in the future.

15. The TAG, for example, discussed that a measure of success for Councils could be that a GIS layer reflecting climate-related risks (e.g. flooding, landslides, coastal erosion etc) in relation to critical assets is available to Councils in 2026 to inform Asset Management Plans in time for the next round of Long Term Plans due in 2027.

16. This climate risk assessment would likely involve acquiring data to build an understanding of climate-related risk across the region, as well as modelling this risk to communities and infrastructure assets and potentially offering options on how to mitigate/manage these risks.

17. The TAG has agreed that leveraging and maximising joint funding for a climate risk assessment across Hawke's Bay will benefit all Climate Action Committee member Councils and communities who need information about risks under projected climate change.

18. The TAG has therefore agreed to recommend to the Committee that joint regional funding for the 2024-25 financial year should be prioritised towards undertaking a regional climate change risk assessment.

19. The TAG is seeking endorsement from the Committee on a revised high-level budget and work plan that represents this recommendation, aligning the costs with where they will actually fall within the next three years but maintaining the same overall 3-year budget, as per the table below.

Table 1. Revised budget on climate action work programme (maintaining same overall 3-year budget)

Climate Action Joint Committee budget	**FY2024-25**	**FY2025-26**	**FY2026-27**
Climate change risk assessment (data acquisition and risk modelling)	$200,000	$140,000	$140,000
Risk explorer portal and community engagement	$0	$40,000	$40,000
Measurement and monitoring of regional carbon contributions to climate change	$0	$60,000	$0
Communication, engagement and events	$0	$10,000	$15,000
Committee administration costs (remuneration mana whenua, workshop facilitation)	$15,000	$15,000	$15,000
Community grants for climate action / adaptation	$0	$0	$0
Total Joint Committee costs	**$215,000**	**$265,000**	**$210,000**
Proposed annual contributions			
HBRC, NCC, HDC (26%)	$55,900	$68,900	$54,600
WDC, CHBDC (11%)	$23,650	$29,150	$23,100

20. Note that we propose to undertake this work through the Joint Committee to enable efficiencies of scale, ensure consistency in approach, reduce and risk of duplication and to maximise work that is done through other shared workstreams such as Civil Defence.

21. The TAG is prioritising work to build a business case for the regional climate change risk assessment, including user requirements from all parties, potential providers, associated costs, preferred climate change approach, and community engagement requirements. This will be brought back to the Joint Committee for discussion at their meeting in May.

22. As a result, the TAG wishes to highlight that we do not yet understand the full costs involved in the regional climate change risk assessment. However, based on discussions at the TAG meeting on 26 February 2024, there is broad agreement that the budget initially allocated to the climate risk assessment is likely to be too low. The revised table therefore reflects an updated budget for the climate change risk assessment line.

Options Assessment

23. **Option 1**: The status quo as presented in the funding request sent by the Climate Action Joint Committee Chairs in the letter to Mayors dated 14 February 2024, and presented in table 2.

Table 2: Option 1 (status quo)

Climate Action Joint Committee budget	FY2024-25	FY2025-26	FY2026-27
Climate change risk assessment (data acquisition and risk modelling)	$100,000	$100,000	$100,000
Risk explorer portal and community engagement	$40,000	$40,000	$40,000
Measurement and monitoring of regional carbon contributions to climate change	$20,000	$20,000	$20,000
Committee administration costs (remuneration mana whenua, workshop facilitation)	$20,000	$20,000	$20,000
Communication, engagement and events	$20,000	$20,000	$20,000
Community grants for climate action / adaptation	$30,000	$30,000	$30,000
Total Joint Committee costs	**$230,000**	**$230,000**	**$230,000**
Proposed annual contributions			
HBRC, NCC, HDC (26%)	$59,800	$59,800	$59,800
WDC, CHBDC (11%)	$25,300	$25,300	$25,300

24. **Option 2 (preferred option)**: A revised budget for the same overall amount and high-level work programme as recommended by the Climate Action Technical Advisory Group presented in table 3 below.

Table 3: Option 2 (recommended)

Climate Action Joint Committee budget	FY2024-25	FY2025-26	FY2026-27
Climate change risk assessment (data acquisition and risk modelling)	$200,000	$140,000	$140,000
Risk explorer portal and community engagement	$0	$40,000	$40,000
Measurement and monitoring of regional carbon contributions to climate change	$0	$60,000	$0
Communication, engagement and events	$0	$10,000	$15,000
Committee administration costs (remuneration mana whenua, workshop facilitation)	$15,000	$15,000	$15,000
Community grants for climate action / adaptation	$0	$0	$0
Total Joint Committee costs	**$215,000**	**$265,000**	**$210,000**
Proposed annual contributions			
HBRC, NCC, HDC (26%)	$55,900	$68,900	$54,600
WDC, CHBDC (11%)	$23,650	$29,150	$23,100

Tangata whenua implications

25. Funding is not requested from the Joint Committee members appointed from Post-Settlement Governance Entities. These members are remunerated for their time and contributions to the committee.

Decision-making process

26. Council and its committees are required to make every decision in accordance with the requirements of the Local Government Act 2002 (the Act). Staff have assessed the requirements in relation to this item and have concluded:

    26.1. The decision does not significantly alter the service provision or affect a strategic asset, nor is it inconsistent with an existing policy or plan.

    26.2. The use of the special consultative procedure is not prescribed by legislation.

    26.3. The decision is not significant under the criteria contained in Council's adopted Significance and Engagement Policy.

    26.4. The persons affected by this decision are all residents of Hawke's Bay.

    26.5. Given the nature and significance of the issue to be considered and decided, and also the persons likely to be affected by, or have an interest in the decisions made, Council can exercise its discretion and make a decision without consulting directly with the community or others having an interest in the decision.

Recommendations

That the Climate Action Joint Committee:

1. Receives and considers the *Joint Committee Funding Update* staff report.

2. Agrees that the decisions to be made are not significant under the criteria contained in Hawke's Bay Regional Council's adopted Significance and Engagement Policy, and that the Joint Committee can exercise its discretion and make decisions on this issue without conferring directly with the community or persons likely to have an interest in the decision.

3. Endorses the revised budget for the same overall amount and high-level work programme as recommended by the Climate Action Technical Advisory Group presented in table 1 below.

Table 1: Option 2

Climate Action Joint Committee budget	**FY2024-25**	**FY2025-26**	**FY2026-27**
Climate change risk assessment (data acquisition and risk modelling)	$200,000	$140,000	$140,000
Risk explorer portal and community engagement	$0	$40,000	$40,000
Measurement and monitoring of regional carbon contributions to climate change	$0	$60,000	$0
Communication, engagement and events	$0	$10,000	$15,000
Committee administration costs (remuneration mana whenua, workshop facilitation)	$15,000	$15,000	$15,000
Community grants for climate action / adaptation	$0	$0	$0
Total Joint Committee costs	**$215,000**	**$265,000**	**$210,000**
Proposed annual contributions			
HBRC, NCC, HDC (26%)	$55,900	$68,900	$54,600
WDC, CHBDC (11%)	$23,650	$29,150	$23,100

Authored by:

Dylan Muggeridge
Group Manager Strategic Planning & Development

Pippa Mckelvie-Sebileau
Climate Action Ambassador

Approved by:

Desiree Cull
Strategy & Governance Manager

Attachment/s

There are no attachments for this report.

Climate Action Joint Committee
Monday 11 March 2024

Subject: Natural Hazards Gap Analysis

Reason for Report

1. At the 11 December 2023 meeting of the Joint Committee, the scope and requirements of a regional climate change risk assessment were discussed and officers were asked to gather more information on the current status of regional knowledge and coverage of hazards and risks affected by climate change.
2. This paper first details the Ministry for Environment (MFE) and Inter-governmental Panel on Climate Change approaches to climate change risk assessment and presents a stocktake of the current status of known climate change hazards in the region.
3. This information will be used to inform a broader project to scope and define priorities and requirements for a regional climate change assessment as part of the work programme of the Joint Committee.

Executive Summary

4. Phase 1 – As part of their work on the *Resilience Explorer* spatial-based hazard and vulnerability platform, Urban Intelligence delivered a climate change hazards data gap analysis that was presented to Climate Action Joint Committee in May 2023.
5. Phase 2 – The Climate Action Joint Committee requested further investigation of current knowledge on climate change risks to inform the workplan and budget. The tables contained and attached to this paper responds to that request, covering hazards affected directly by climate change and identifying potential gaps. Note that this paper does not yet prioritise hazards or actions which would be the focus of future work.
6. Phase 3 – Establish a working group of the Technical Advisory Group to undertake a business case analysis of our requirements for the climate change risk assessment and to provide market options and associated budgets. This will be the focus of a decision paper to be presented to Joint Committee in May.

Background – *HB Climate Change Risk Assessment*

7. At the 11 December 2023 Climate Action Joint Committee meeting, the need for a regional climate change risk assessment was discussed. Council officers signalled that this piece of work may cost $300k or more. Given the sizeable expense, the joint committee requested that officers develop a proposal and provide different options for risk assessments.
8. The first step of this is to establish what is currently known, including geographical coverage and data suitability.
9. This builds on the work by Urban Intelligence who uploaded all available and spatially-based risk and asset information into one online platform Resilience Explorer (screenshot presented below as presented to the Joint Committee in May 2023).

10. Since that date, the regional climate change risk assessment has not progressed significantly due to a governance focus on setting a joint Vision & Strategy, and an operational focus on Cyclone recovery, including post cyclone hazard research.

11. With the Climate Action Joint Committee now fully established with membership from all five partner councils and appointed mana whenua representatives, a regional climate change risk assessment is clearly part of the mandate of this committee, where collaboration can ensure a consistent approach is used to the climate scenarios used in modelling risk, and where working collaboratively will enable cost-savings.

Background on climate change risk and hazards

IPCC risk definition

12. Climate change risk comes from the overlap of hazards, vulnerability and exposure.

    12.1. Exposure and vulnerability can be reduced through climate adaptation.

    12.2. Hazard probability can be reduced through climate mitigation (reduction of carbon pollution).

13. Comprehensive risk assessments should take into account all three of these factors in assessing current and future levels of risk.

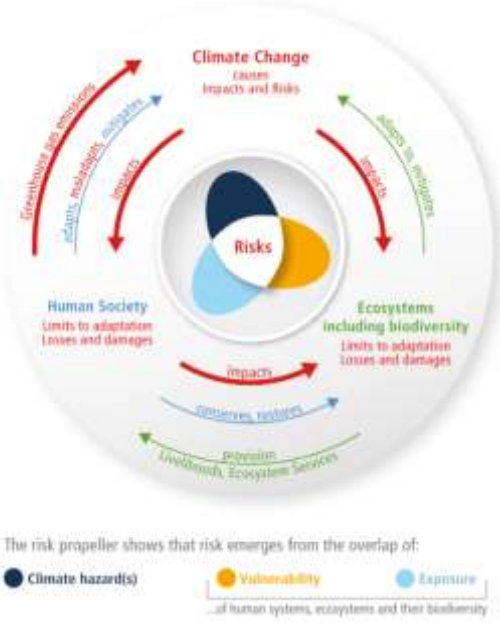


Figure TS.2 IPCC AR6 – Risk propeller

Approach to risk communication with communities

14. As we progress into greater climate destabilisation and increased hazard probability, it will be necessary to provide regular updates to hazard and risk projections so that communities and mana whenua can utilise this to inform their own decision making.

15. This technical risk and hazard information should be presented in an understandable and interpretable format.

16. Council officers working in climate adaptation believe that it is important to a) provide information in a spatial form, and b) ensure that risk information is holistic and multi-layered, considering compounding risks, rather than a hazard-by-hazard isolated approach.

Why did we do this scoping?

17. Current hazards information is made available to the public via the HB Hazards portal. However, for technical reasons, the portal can only show a limited number of climate scenarios and timeframes. There are differences in the climate models used for each hazard and for some hazards, climate change future projections are not taken into account.

18. Some of the current hazard information on HB hazards portal does not align with MFE recommendations[1]:

    18.1. use the best available data for the middle-of-the-road scenario (SSP2-4.5 or RCP4.5) and the fossil-fuel intensive development scenario (SSP5-8.5 or RCP8.5)

[1] *Ministry for the Environment. 2022. National adaptation plan and emissions reduction plan: Resource management Act 1991. Guidance note.* **https://environment.govt.nz/assets/publications/national-adaptation-plan-and-emissions-reduction-plan-guidance-note.pdf**

18.2. screen hazard and risk assessments for longer-term coastal impacts up to 2130 (SSP5-8.5 or RCP8.5).

18.3. The national adaptation plan recommends local government should use these climate change scenarios at a minimum. However, where possible, local government are encouraged to use the full range of relevant scenarios.

19. Current hazard maps on the HB Hazards portal use different climate scenarios (RCP/SSP), do not offer full geographical coverage and, for some hazards, are based on potentially outdated data.

20. In addition, and importantly in the context of risk communication, the hazard portal is not designed to indicate vulnerability for assets or people, or to describe compounding risks (where one area is affected by multiple risks).

21. The hazard information on the HB Hazards portal is used by various groups from civil defence, assets management, policy and planning teams, and climate change strategy.

22. Risk information is also contained in the Risk Register managed by CDEM but this is not spatial based and ranking of risks requires updating.

Current status of hazards information

23. The following table outlines the status of the hazards information for various hazards directly impacted by climate change across the four geographical areas and districts of Hawke's Bay. The table in the attachment gives links to the sources of data and more detailed description as to potential gaps in the data or need for more updated modelling.

24. The table is arranged in order of risk rating from the CDEM risk register (July 2021).

25. For further information and links to the source of the data, refer to the attached table HB Hazard Information Stocktake (4 March) where rationale behind the certainty rating in this table can be found for each hazard.

Certainty key

High
Medium
Low
Does not currently exist

Certainty of data has been assessed and rated by Officers by considering the year the model was released, age of the data used, the method utilised for the the model and the specificity of it (e.g. national, regional or local)

Climate hazard	Hazard risk rating (CDEM, July 2021)	Source	Year	Geographical Coverage: CHB	Hastings	Napier	Wairoa
Fire	Extreme	No future projections or geographical modelling exists	-				
Pluvial Flooding	Very High	Hazards Portal (HBRC) - Pluvial flooding layer	2000 onwards				
Fluvial Flooding	Very High	Hazards Portal (HBRC) - Fluvial flooding layer	2000 onwards				
		NIWA extreme weather research	2024				
		NIWA composite flood hazard areas	2019				
Tsunami	Very High	Tsunami, CDEM (Clifton to Tangoio Model)	2020				
		Tsunami, CDEM (Whangaehu to Mahia)	2014				
Landslide	Very High	Highly erodible land, Stats NZ / MfE	2012				
		Erosion susceptibility, MPI	2020				
		Landslide probability grids, GNS	2024				
		Landcare report	2008				
		Earthquake induced landslide forecast, GNS	2020				
Earthquake Amplification	Very High	Earthquake hazard analysis program	1998				
Coastal Inundation	High	Clifton to Tangoio - Coastal inundation	2023				
		Coastal inundation, NIWA / Deep South Challenge	2023				
Coastal Erosion	High	Coastal erosion, Hazards Portal (HBRC)	2003/2012				
Drought	High	NIWA's letter report to HBRC	2020				
	High	NIWA high resolution drought forecasting (35 days)					
Hail / extreme storm	Medium	Climate variability report, NIWA	2020				
Heatwaves	Medium	Climate variability report, NIWA	2020				
Liquefaction	(see earthquake)	Liquefaction risk, GNS	2017				
Water availability	(see drought)	Regional water assessment	2023				
Cyclonic Activity	(see extreme storm)	No regional future projections exist	-				
Marine heatwaves	n/a	Behrens et al. analysis	2022				
Biodiversity loss	n/a	Hawkes's Bay Biodiversity Inventory	2014				
		State of the Environment report	2021				
		In progress					
Fluvial Flooding		*NIWA Endeavour Project*	2024/2025				
Groundwater rise & increased salinity		*Groundwater stuudy, NCC & HB Airport*	2024				
Landslide		*Rainfall induced shallow landslide, Mangaki Whenua / HBRC*	2024				

Discussion

26. Climate change affects hazard frequency and exposure to the hazard, increasing the associated risk.

27. Climate change risk assessment covers multiple Regional and District/City Council workstreams and as such there is a need for collaborative approach both within and between councils.

28. As shown in the following figure, various teams within Councils and within the community then respond to risk through preventative and response mechanisms like emissions reduction, coastal hazards strategy, flood protection, and emergency preparedness.

29. Good data on spatial-based hazards, economic impact and opportunities of climate change is required to inform a Climate Adaptation Strategy for the region.

30. The table presented in this paper provides a high-level overview of current sources of hazard information and status based on age of the data, geographical coverage and methodology used. The information is intended to inform a prioritization process for the next step to scope user requirements and priorities for a regional climate change risk assessment.

Next Steps

31. TAG to establish user requirements, potential providers, full costs and priorities for a regional climate change assessment and present this to the Joint Committee in May.

Decision-making process

32. Staff have assessed the requirements of the Local Government Act 2002 in relation to this item and have concluded that, as this report is for information only, the decision-making provisions do not apply.

Recommendation

That the Climate Action Joint Committee receives and notes the *Natural Hazards Gap Analysis* staff report.

Authored by:

Pippa Mckelvie-Sebileau
Climate Action Ambassador

Steffi Bird
HDC Risk Manager

Approved by:

Desiree Cull
Strategy & Governance Manager

Attachment/s

1⇩ Hawke's Bay Hazard Information Stocktake March 2024

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hazard	Commissioned by	Model date	Current data	Gaps in data / methodology comments
Coastal inundation	NCC, HDC, HBRC	2023	Clifton to Tangoio - Coastal inundation in 2100 for 1% and 2% Annual Exceedance Probabilities (AEP)* under VLM, SLR and RCP8.5 (worst emissions scenario) modelled using 2020 LiDAR model	Only one climate model. Not full regional coverage. Only one future date.
	NIWA / Deep South Challenge	2023	Nationwide Coastal inundation model under different rates of SLR & timeframes modelled, for Hawke's Bay utilises 2012 LiDAR data.	Uses less accurate method (bathtub) at local scale. Model methods do not use best methodology for the region / old LiDAR. Regional data more specific. Not consistent with other flooding models using different climate scenario.
Coastal Erosion	Coastal Hazards Committee	2015/ 2017	Clifton to Tangoio coastal erosion Hazards Portal • Year 2065 Coastal Erosion • Year 2120 Coastal Erosion	Extent of model limited to Clifton to Tangoio SLR rise included but data used is generic SLR not localised and dates from 2015. Does not include VLM. Uses old LiDAR data 2003/2012 SLR is accelerating and should be modelled under different scenarios and timeframes, see Interim-guidance-on-the-use-of-new-sea-level-rise-projections-August-2022.pdf (environment.govt.nz)
Pluvial Flooding	NCC, HDC, HBRC	2000 to present	Hazard portal information shows many locations subject to pluvial flooding – coverage is not complete. Recent analysis combined works of NCC and HBRC for flood analysis of Napier Urban catchments. Results include CC scenarios.	No hazard maps yet published. HDC are working with consultants to progress urban flood models in Hastings City and Havelock North.
	CHBDC	2021	Interim flood Hazard mapping for CHB	
Fluvial Flooding	HBRC	2000 to present	Maps loaded on hazards portal • 1 in 100 yr (1% AEP) for river flood risk areas • 1 in 50 year (2% AEP) for floodplain flood risk areas.	Limited to flood management scheme areas. Climate change not included. AEPs likely to be out of date. Post Cyclone, HBRC commissioned scheme reviews (variety of consultants). Results may be used to update flood hazard maps.
	NIWA extreme weather research	Jan 2024	Flood frequency analysis being undertaken by NIWA to recalculate Annual return intervals after Gabrielle. For approx. 20 sites where flood management already exists, recalculating ARI. No maps, but could be used for mapping.	No CC as historical based. Not future focussed, historical modelling
	NIWA Endeavour project	2024/ 25	Increasing flood resiliency Endeavour research – PI Emily Lane. National flood models for range of AEP under CC (various degrees of warming). Will deliver to MBIE in 2024 then engage with councils for sense checking. Maps won't be released until 2025 and while some will be made available freely,	May not have enough regional specificity

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hazard	Commissioned by	Model date	Current data	Gaps in data / methodology comments
			some may be under a payment model.	
	Deep South Challenge	2019	2021 NIWA composite flood hazard area maps. Created from modelled and historic flood hazard maps and flood prone soil maps, publicly available in August 2018 at national level. Uses riskscape to estimate $ impact of flood hazard. In HB flood hazard areas: 19,000 people living, 8,000 residential buildings ($3.5 billion replacement value), 200 commercial buildings ($100M), and 2200 industry buildings ($600M).	HB maps are not very specific.
Tsunami	CDEM	2022	Clifton to Tangoio Model generated using Level 3 probabilistic modelling, 2020 LiDAR model (approach recommended by NEMA's Guidelines for Tsunami Evacuation Zones) and various sea level rise scenarios (0.65m, 1m and 1.99m).	Vertical Land Movement (tectonic deformation) and coastal environmental changes not accounted for if model is used for future state projections.
	CDEM	2014	Whangaehu to Mahia (excluding Clifton to Tangoio) generated using inundation by attenuation rule and 2012 LiDAR model	Simple modelling approach with no probabilistic component.
Landslide	Stats NZ / MFE	2012	Nationwide data on highly erodible land – 2012 data, does not include climate change	
	Manaaki Whenua / HBRC	Draft – complete June 2024	Regional wide rainfall induced shallow landslide susceptibility data (Manaaki Whenua)	
	MPI	2020	Erosion susceptibility classification – used by forestry and consents	Doesn't take into account connectivity to waterways
	GNS	2024	Landslide probability grids, available to HBRC. ARI 50, 100 and 250 with and without climate change.	
	Landcare report 2008	2008	Referenced on hazards portal	
	GNS report 2020, HBRC	2020	Earthquake induced landslide forecast – loaded to hazards portal	This data is being updated post Gabrielle for all active landslides
Liquefaction	GNS Science	2017	Liquefaction risk with regional coverage but less certainty for Wairoa and CHB areas. Does not take changes in groundwater due to SLR under climate change into account.	Reliable but outdated.
Earthquake Amplification		1998	HBRC Earthquake hazard analysis program Moderate quality with good regional coverage. No return intervals and climate change not taken into account	Reliable but outdated.
Fire			NIWA / FENZ fire indicators forecast one week out. FW: Hawkes Bay (niwa.co.nz) HDC district plan includes mention of fire risk but unclear if maps developed.	No known future projections
Cyclonic			No known HB data at the moment	

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hazard	Commissioned by	Model date	Current data	Gaps in data / methodology comments
activity				
Groundwater rise and increased salinity		2023	NCC and HB airport engaged in groundwater study 2023 but limited geographical coverage. HBRC monitors groundwater for water availability purposes, and has discrete projects for impacts of land use. Mourot et al. 2022 HB Case study – indicates potential increased failure of bores that draw water near the water table; increasing inundation issues.	No specific climate change risk focus looking at increasing salinisation/ land use and SLR.
Hail storms and extreme storm weather		2020	NIWA climate variability report identifies increases in frequencies of severe weather events but is more focussed on climate patterns than extreme events. Good rainfall data under various ARI for RCP 4.5 and 8.5 in the NIWA Client report and for all RCPs on NIWA's HIRDs website. Timeframes: 2040 and 2090	
Marine heatwaves			Behrens et al. 2022 -National projections under climate models (SSP1, SSP2 and SSP3) out to 2099 include HB data. Moana project forecast marine heatwaves over next week - Marine heatwave forecast — Moana Project Metservice also forecast - Sea Surface Temperature - MetService New Zealand Deep South Challenge may be undertaking regional projections in 2024.	No locally-modelled projections for frequency or duration of marine heatwaves in HB over mid to long term under climate change.
Droughts	HBRC	2020	NIWA's letter report details the projected changes in drought conditions based on the NZDI for the Hawke's Bay region. Past (1990) and future projections (2040 and 2090) of four drought indices and NZDI for several sites across Hawke's Bay are included (Bridge Pa, Wairoa, Waipukurau and Ruahine Range) under four climate models (RCPs) are reported. Report focusses on future drought occurrences, frequency, onset and changes. NIWA's high resolution drought forecasting tool also available for 35-day forecast.	NIWA tool - Future forecasting is for 35 days, not for climate timescales. NIWA letter report not available publicly.
Heatwaves, more hot days			Harrington & Frame, 2022 synthesis report identifies HB as high risk for heatwave. Some data in NIWA report.	
Water availability			Regional water assessment 2023 under various climate scenarios to project water availability, quality and needs in the future.	
Note that there are other hazards affected by climate change indirectly such as increased ash distribution from volcanic eruptions due to higher winds, risks to human health, governance, economy and social cohesion as well as further risks to biodiversity and habitats. These are not the focus of this table but will be considered in a regional climate change risk assessment.				

*SLR – Sea Level Rise; VLM – Vertical Land Movement; RCP – representative concentration pathways; SSP – Shared Socioeconomic Pathways, CPT - Seismic Cone Penetration Testing (SCPT)

Climate Action Joint Committee
Monday 11 March 2024

Subject: Napier City Council Natural Hazards: Issues And Options Consultation

Reason for Report

1. Napier City Council (NCC) is currently consulting on issues and options relating to the Natural Hazards Chapter of the Napier District Plan, specifically looking to understand the community's risk tolerance for natural hazards.
2. The consultation document, which was released on Friday 1 March, is presented to the Joint Committee for awareness.

Background

3. The community perspective gained during consultation will contribute to the development of a variation to the Proposed Napier District Plan.
4. This chapter was not included in the Proposed District Plan released for formal consultation in December of last year due to a need to reassess the content in the wake of Cyclone Gabrielle.
5. NCC is required to completely review its District Plan every 10 years, since 2001 when the current Operative District Plan was made Operative significant advancements have been made in terms of hazards mapping and climate change awareness and understanding.
6. Utilising this newer information, national direction and understanding the community's risk tolerance staff will be enabled to develop objectives, polices and rules for incorporation into a draft Natural Hazards Chapter for formal consultation later in the year.

Decision-making process

7. Staff have assessed the requirements of the Local Government Act 2002 in relation to this item and have concluded that, as this report is for information only, the decision-making provisions do not apply.

Recommendation

That the Climate Action Joint Committee receives and notes the *Napier City Council Natural Hazards: Issues and Options Consultation* staff report.

Authored by:

Heather Bosselmann
NCC Senior Policy Analyst

Attachment/s

1⇩ Napier District Plan - Natural Hazards Chapter Issues and Options paper

NAPIER'S DISTRICT PLAN

NATURAL HAZARDS CHAPTER

Issues and Options Paper

NAPIER CITY COUNCIL
Te Kaunihera o Ahuriri

The District Plan is how Napier City Council (NCC) enables and manages growth within our city. The Natural Hazards Chapter sets out the plan for how we will deal with the hazards. There are a number of potential hazards impacting Napier:

- Coastal hazards including erosion, inundation, and tsunami;
- Groundwater and liquefaction;
- Fluvial (river) flooding;
- Pluvial (stormwater) flooding;
- Landslide/slope instability;
- Earthquake.

When we created the current Operative District Plan we had limited mapping and climate change was not taken into account. Today we have more technical information and understanding of the risks we are facing. We need to make sure we do our best to build in a way that is resilient for our changing climate.

This requires us to consider both the likelihood of an event happening and the consequences if it occurred. In some cases, even when the likelihood of something occurring is high (like coastal erosion) the consequences may not be as significant as another hazard (like tsunami), which is far less likely to occur. We also need to consider risk tolerance and that is where you come in. Risk tolerance is what the affected community is willing to tolerate. That doesn't just mean those that are directly impacted by the hazard but also those in the wider community who share the consequences (often financial) of that impact.

We want to hear from you about what level of risk tolerance our community has. You can tell us that by reading this paper and letting us know which of the options you prefer. Find out more and give your feedback at sayitnapier.nz by Friday 29 March.

Note: There are no options proposed for earthquake and slope instability/ erosion. These hazards are best managed via the Building Act, through setting requirements around foundations/build materials and slope management conditions.

MAPPING

We use hazard mapping to identify which areas are at risk from which hazard. We then set rules for each hazard depending on the level of risk. People can use the maps to identify where rules may apply to them. We have the opportunity to consider how to best use the District Plan to manage development, so that it is resilient to current and future hazards as part of the review of the Natural Hazards Chapter, and we want your input.

WHAT WE DO NOW

Our maps sit as a layer in the Operative District Plan maps. They are fixed at the date the plan comes into effect and cannot be changed except through a plan change process. This provides clarity for people wanting to develop land and means that there will be formal opportunities for consultation before any changes are made to the maps. However, it also means that the maps can easily become out-of-date and as these maps are used as the basis for development, this may mean that NCC allows development to occur without appropriate precautions. A plan change is expensive and time consuming, and as the risk from hazards increases and we map them more frequently, it is becoming difficult to keep maps fixed in the plan up-to-date.

THE CHANGE WE COULD MAKE

NCC could sit the maps outside of the District Plan on a separate portal. The rules would still be fixed in the Plan and could not be changed without a Plan change process, but the maps could be updated as soon as new information became available. This creates less certainty for developers and there is no formal right to consultation in this process. However, it would ensure new development took into account the most up-to-date hazards mapping and would cost significantly less as Plan changes would not be required.

This approach is used in Auckland. Hazard maps for Auckland Council are outside of their District Plan. If the mapping changes include a specific property, the landowners have the right to object and provide a site-specific hazard report to Auckland Council as part of a resource consent process. If Auckland Council accepts that the hazard does not exist on the property, then the property will be removed from the mapping. Napier City Council would provide a similar provision if the maps sat outside the District Plan.

WHAT DO YOU THINK?

kōrero mai!

1. Status quo: keep the maps fixed in the District Plan and initiate Plan changes to update the maps; OR
2. Fix the rules in the Plan but sit the maps in a separate portal, which can be updated as soon as new information becomes available.

HAZARD SENSITIVITY

Hazard sensitive activities are activities that are more at risk from hazards. These activities might include kindergartens or rest homes where the occupants can't self-evacuate, or marae or churches where people gather in large numbers. In Wellington, whether an activity is sensitive to hazards is taken into account when deciding whether the activity should be allowed to go ahead in that location. We want to make sure the Plan is building both the resilience of our infrastructure as well as the resilience of our people.

We have the opportunity to consider whether including hazard sensitivity in our decisions would increase our resilience as part of the Natural Hazards Chapter review and we want your input.

WHAT WE DO NOW

In the Operative District Plan there is scope to take the sensitivity of an activity into account where an activity falls into the discretionary category of resource consents. However, there is no clear policy direction to ensure hazard sensitivity is considered.

THE CHANGE WE COULD MAKE

We could be directive in the Natural Hazards Chapter of the District Plan on how to manage hazard sensitive activities in locations that are at risk from hazard. We could do this by having more requirements where the activity is hazard sensitive and including specific policies relating to hazard sensitive activities. This would allow us to make decisions that could, for example, make evacuating people easier if an event occurs.

WHAT DO YOU THINK?

1. Status quo – hazard sensitivity is considered sometimes with no clear policy direction; OR
2. Change to including hazard sensitivity as a criteria.

kōrero mai!

MULTI-HAZARD ASSESSMENT

Napier is at risk of many natural hazards. Some of those affect the majority of the city, in particular tsunami and liquefaction. It is not practical to manage these hazards individually in the Natural Hazards Chapter of the District Plan because it would mean everyone would need to get a resource consent, which would be too onerous.

However, there may be occasions where it is appropriate to take these hazards into account under the District Plan. We are beginning to move our hazard mapping towards mapping multiple hazards and how they relate to each other, and this would be a similar step when managing development. We have the opportunity to consider whether this change would make Napier more resilient as part of the Natural Hazard Chapter review and we want your input.

WHAT WE DO NOW

Liquefaction is managed under the Building Act and tsunami is managed by Civil Defence Emergency Management, with a focus on escape routes. We do not consider the cumulative effect of the hazards that are currently managed under the District Plan, which are:

- Fluvial (river) flooding
- Coastal erosion
- Coastal inundation

THE CHANGE WE COULD MAKE

Under the 's3 Meaning of Effect' in the Resource Management Act, effect includes any cumulative effect that arises over time or in combination with other effects, regardless of the scale, intensity, duration, or frequency of the effect.

Where a resource consent is required, it is possible to consider the cumulative effect of multiple hazards.

In Napier those hazards would include:

- Fluvial (river) flooding
- Pluvial (stormwater) flooding
- Coastal erosion
- Coastal inundation
- Tsunami
- Liquefaction

In our future planning for where the city will grow, the presence of multiple hazards will likely result in an area not being considered appropriate for development. However, in some cases multiple hazards exist on land already zoned for development. Although the intent of consent conditions is to mitigate the effects of hazards, there may be times when the cumulation of many hazards might result in a development proposal being declined.

WHAT DO YOU THINK?

kōrero mai!

1. Status quo: do not consider cumulative effect of hazards when assessing resource consent applications; OR
2. Include cumulative effect as a matter of discretion when considering resource consent applications.

COASTAL HAZARDS

There are three coastal hazards:

- Erosion
- Inundation
- Tsunami

Outside of the multi-hazard assessment proposed above, there is no intention to manage tsunami in this chapter of the District Plan. The issues and options in this section relate to erosion and inundation, which are both significant hazards impacting Napier now and in the future.

We have an opportunity as part of Natural Hazards Chapter review to think about the best way to manage development to ensure it is resilient to the impacts of erosion and inundation and we need your input.

COASTAL EROSION

WHAT WE DO NOW

We have a coastal erosion zone in the Operative District Plan that runs from the Inner Harbour entrance to the Esk River mouth. New buildings are prohibited within this zone. Outside of this zone Hawke's Bay Regional Council (HBRC) manage some erosion risk for new development along the rest of the Napier coast, from the Inner Harbour entrance to the Tutaekuri River mouth. However, some areas where erosion is likely in the next 100 years (based on the 2016 erosion zones) currently have no restrictions in place.

THE CHANGE WE COULD MAKE

We could use the erosion zones mapped in 2016 (available on the Hawke's Bay Hazard Portal) to set rules in the Natural Hazards chapter for the coast, from the Inner Harbour entrance to the Tutaekuri River mouth. This would allow us to align our approach along the whole coast of Napier, outside of the area already managed by HBRC, while ensuring that we are not allowing development in areas at significant risk from erosion in the next 100 years.

Note: We are also working with HBRC and Hastings District Council (HDC) on a Coastal Hazard Management Strategy, which may result in HBRC eventually managing coastal hazards along the coast. In the interim we need to ensure that sound decisions are made for development along the Napier coastline.

WHAT DO YOU THINK?

kōrero mai!

1. Status quo – continue to manage development within the coastal erosion hazard zone from the Inner Harbour entrance to Esk River mouth and leave HBRC to manage the rest of the coast as they see fit; OR
2. Change to manage the whole coast using the 2016 modelling for the coast from the Inner Harbour entrance to the Tutaekuri River mouth, outside of the areas already managed by HBRC, aligning our approach for the entire coast.

COASTAL INUNDATION

WHAT WE DO NOW

We manage inundation risk under the Building Act through setting floor heights using the 2% AEP* data from the 2023 Coastal Inundation Modelling, which was released in December. That report modelled inundation risk in 2100 which is the 75-year timeframe considered appropriate for the economic life of a building.

THE CHANGE WE COULD MAKE

We could manage coastal inundation risk in the District Plan, which would allow us to set floor heights based on the 1% AEP (1% chance in any given year) from the 2023 Coastal Inundation Modelling. This would make floor heights higher, adding to the cost of development but also making those homes more resilient. The 1% AEP in the report was also modelled for the year 2100. The most appropriate timeframe for the District Plan is 100 years, although best practice is for NCC to work with the best available data to make sound decisions regarding natural hazard risk.

WHAT DO YOU THINK?

1. Status quo – manage coastal inundation risk by setting floor heights under the Building Act; OR
2. Change to manage coastal inundation risk in the District Plan including setting floor heights.

kōrero mai!

*Annual Exceedance Probability, which means the annual chance

PLUVIAL FLOODING (STORMWATER)

After the 2020 Napier flood event we have a good understanding of what happens when our stormwater network gets overwhelmed. NCC is making significant improvements to reduce the chance of a similar flood happening again, but we also need to make sure we are building homes that are resilient if there is another flood.

We have an opportunity as part of Natural Hazards Chapter review to think about the best way to manage development to ensure it is resilient if the network gets overwhelmed and we need your input.

WHAT WE DO NOW

We manage pluvial flood risk under the Building Act through setting floor heights. The Building Act uses the 2% AEP (2% risk in any year) to set floor heights. There is also a new Stormwater Chapter in the Proposed District Plan that says that any new development must attenuate (hold) stormwater on site until after the peak of the rain has passed. This helps to even out the flow of stormwater entering the network, reducing the likelihood of flooding.

THE CHANGE WE COULD MAKE

We could manage pluvial flood risk in the District Plan, which would allow us to set floor heights based on 1% AEP (1% risk in any given year) data. This would make floor heights higher adding to the cost of development but also make those homes more resilient.

WHAT DO YOU THINK?

1. Status quo – manage pluvial flood risk by setting floor heights under the Building Act; OR
2. Change to manage pluvial flood risk in the District Plan, including setting floor heights.

kōrero mai!

FLUVIAL FLOODING (RIVER)

The mitigation of fluvial or river flood risk is managed by HBRC while NCC manages the risk to developments by setting site specific mitigation measures and, where appropriate, restricting development.

In the wake of Cyclone Gabrielle in 2023, HBRC is undertaking an extensive review of fluvial flood risk and mitigations, however NCC also needs to make sure that the homes we build are resilient to future flood risk.

We have an opportunity as part of Natural Hazards Chapter review to think about the best way to manage development, to ensure it is resilient if there is another flood event and we need your input.

WHAT WE DO NOW

Our river hazard zone is very small. Most development is discretionary within the river hazard zone (requires a resource consent and can be declined). Network utility activities (i.e. substations) wanting to locate in the river hazard zone also require a resource consent but this must be granted.

THE CHANGE WE COULD MAKE

It is likely the updated modelling from HBRC will greatly increase the river hazard zone. If we leave the rules the same there is a risk this would mean a resource consent will be required for large parts of Napier's suburban areas. The alternative is to change the rules so that a resource consent is only required where the risk from the river hazard is significant.

Under this change proposal, NCC would also consider whether it was appropriate to enable resource consents to be declined for network utilities looking to locate within river hazard zones, where the risk is significant.

WHAT DO YOU THINK?

kōrero mai!

1. Status quo: continue to allow network utilities to locate structures in river hazards zones as a controlled activity and continue to require a resource consent for all other developments (where these can be declined) within the river hazard zone; OR
2. Change to a nuanced approach, which requires resource consents for all activities within a defined high risk zone and allows development to go ahead, subject to mitigation in lower risk zones.

Climate Action Joint Committee
Monday 11 March 2024

Subject: Regional Community Carbon Footprint update

Reason for Report

1. This paper informs the Climate Action Joint Committee of the annual update to the levels of greenhouse gases emitted and removed from the atmosphere in the Hawke's Bay region for the financial year (1 July – 30 June) 2021-22.
2. This work extends the baseline inventory (2018-2021) conducted by AECOM New Zealand Limited for the Hawke's Bay Regional Council (HBRC); with community carbon footprints for the region and each district presented to Hawke's Bay Regional Council on 28 September 2022.
3. Annual updates of the region's emissions inventory are invaluable for monitoring progress in emissions reduction and will serve as a vital tool to transition to a low emissions economy and contribute to legislated national carbon budgets.

Executive Summary

4. In the financial year of 2021-2022 Hawke's Bay region's gross greenhouse gas emissions were 4,340 kilotonnes carbon dioxide equivalent (kt CO_2-e). The agriculture sector (68%) and energy sector (transport and stationary energy, 29%), were the two largest contributors to gross emissions.
5. Net emissions, once sequestration from forestry was accounted for, were 1,489 kt CO_2-e.
6. Over the last four years of measurement, greenhouse gas emissions in Hawke's Bay show minimal change.
7. Annual monitoring of regional emissions is proposed by the HBRC Senior Climate Scientist with support from TLA staff to provide data, with three-yearly externally verified reports.
8. Updating the community carbon footprint is important in building a comprehensive knowledge base on the region's emissions profile and working towards the regional goal to be net zero greenhouse gas emissions by 2050. This 2021-2022 update shows that gross emissions are not reducing in line with the reductions needed to achieve this goal.

Background

9. In 2016, the New Zealand government signed and ratified the Paris Agreement, which is a legally binding international treaty aimed at limiting global warming to below two degrees (United Nations Climate Change, 2016). In response to this commitment, the New Zealand's Climate Change Response (Zero Carbon) Amendment Act 2019 was adopted. This act serves to guide climate change policies and stipulates that the country must reduce annual greenhouse gas emissions, other than biogenic methane, to net zero by 2050. The target for biogenic methane is 24% to 47% less than 2017 emissions by 2050.
10. To better understand the country's emissions profile, the Ministry of Environment analysed and compiled New Zealand's Greenhouse Gas Inventory 1990 – 2021 with estimates of the national greenhouse gas emissions (Ministry for the Environment, 2023). While this inventory provided key findings on the country's emissions sources and sinks, it is recognised that the transition to a low (or net carbon zero) economy requires a regional understanding of emission profiles and trends.

11. In 2017, the Mayors and Chairs of New Zealand including the Hawke's Bay Regional Council (HBRC) and many of the region's territorial authorities signed the Local Government Leader's Climate Change Declaration, committing to developing climate change actions aimed at reducing greenhouse gas emissions (Local Government New Zealand, 2017).

12. In June 2019, HBRC declared a climate emergency, with a regional goal to be net zero greenhouse gas emissions by 2050 (HBRC, 2023).

13. In 2022, HBRC commissioned the first community carbon footprint for the region. This inventory provided important details on the region's emissions sources and trends for the period 2018 to 2021 and profiled the contributions of the territorial districts (Napier, Wairoa, Hastings, and Central Hawke's Bay).

14. The baseline inventory indicated that the emissions profile of the region is strongly influenced by agriculture, followed by the energy sectors (transport and stationary), while waste and industrial processes and product use (IPPU) are minimal contributors (AECOM New Zealand Limited, 2022). Biogenic methane (CH_4) contributes more than half of the region's total carbon dioxide equivalent (CO_2-e) driven in part by methane's global warming impact. Likewise, nitrous oxide (N_2O) follows a similar pattern, contributing only a small amount to the total tonnage but displays a greater influence in terms of CO_2-e. Although forestry plays a key role in sequestering almost 2/3rd of the region's gross emissions, greenhouse gases such as biogenic methane and nitrous oxide have strong global warming effects and priority should be given to reducing the sources of these emissions.

Methodological approach

15. In this paper, we refer to greenhouse gas inventory as an estimation of all emissions and removals of greenhouse gases for the financial year of 2021-22. Gross emissions are the total emissions from agriculture, transport, stationary energy, waste and IPPU. Net emissions are gross emissions combined with the emissions and removals from the forestry sector. Greenhouse gases are reported as CO_2-e, which is a measure used for comparing greenhouse gases (such as CH_4, N_2O, carbon dioxide (CO_2)) based on the warming effect of each gas relative to an equivalent amount of CO_2. All emissions are based on 100-year global warming potential (GWP100) values with climate feedback from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Report.

16. In this annual update paper, emissions from transport, waste, agriculture, forestry, IPPU, and stationary energy were estimated, like the baseline inventory, using the Global Protocol for Community Scale Greenhouse Gas Emissions Inventory methodology. The methodological approach provides a clear and structured framework for estimating and reporting greenhouse gas emissions.

17. Emission profiles of the territorial authorities (Napier City, Wairoa District, Central Hawke's Bay District and Hastings District) and the region were estimated. This paper presents a summary of this project output for the financial year 2021-22, which was compared with the baseline emissions inventory to establish any changes in the emissions footprint for the individual territorial authorities.

18. The results presented in this paper are based on the baseline inventory but have been updated with the most recent activity data, emission factors and methodologies.

Regional emissions in 2021-2022

19. Total gross greenhouse gas emissions for the Hawke's Bay region were 4,340 kt CO_2-e in 2021-22.

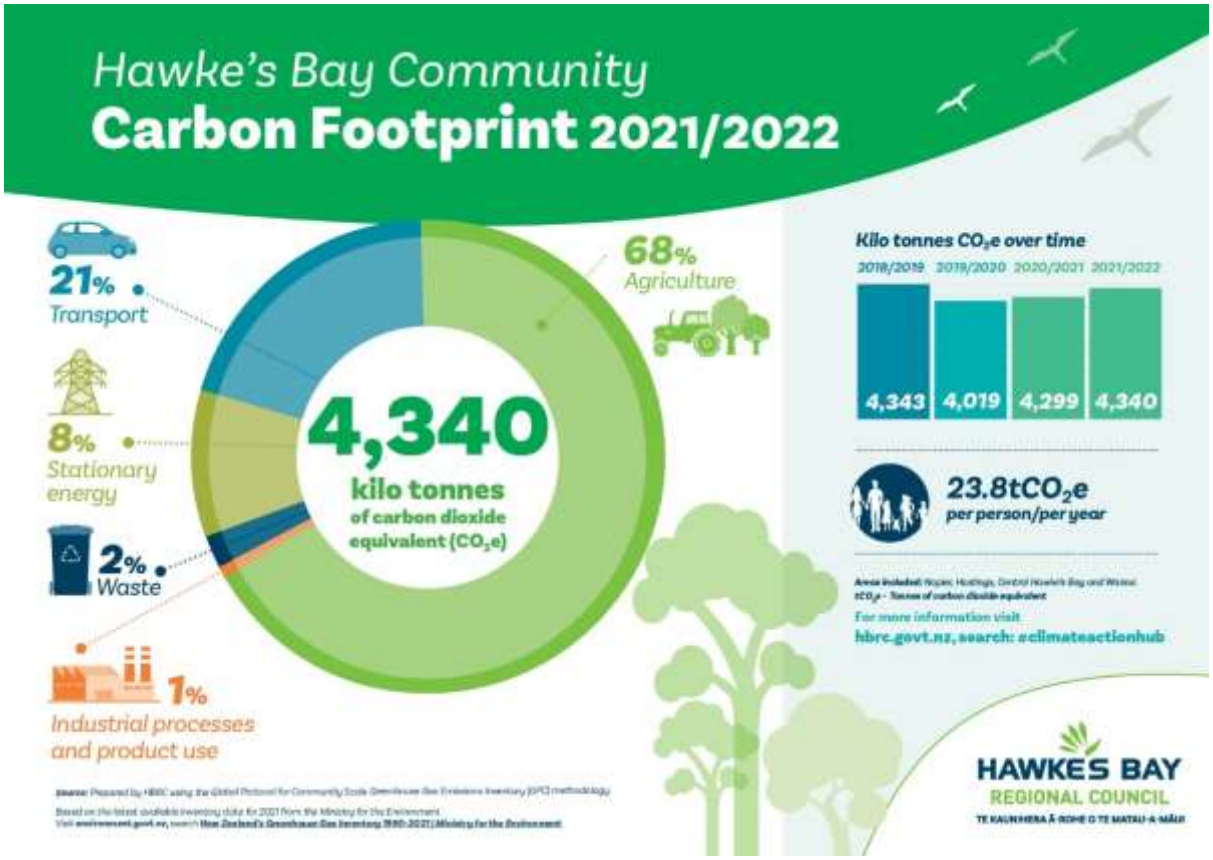
    19.1. Agriculture contributed the most to the region's gross emissions at 68%, followed by transport (21%) and stationary energy (8%).

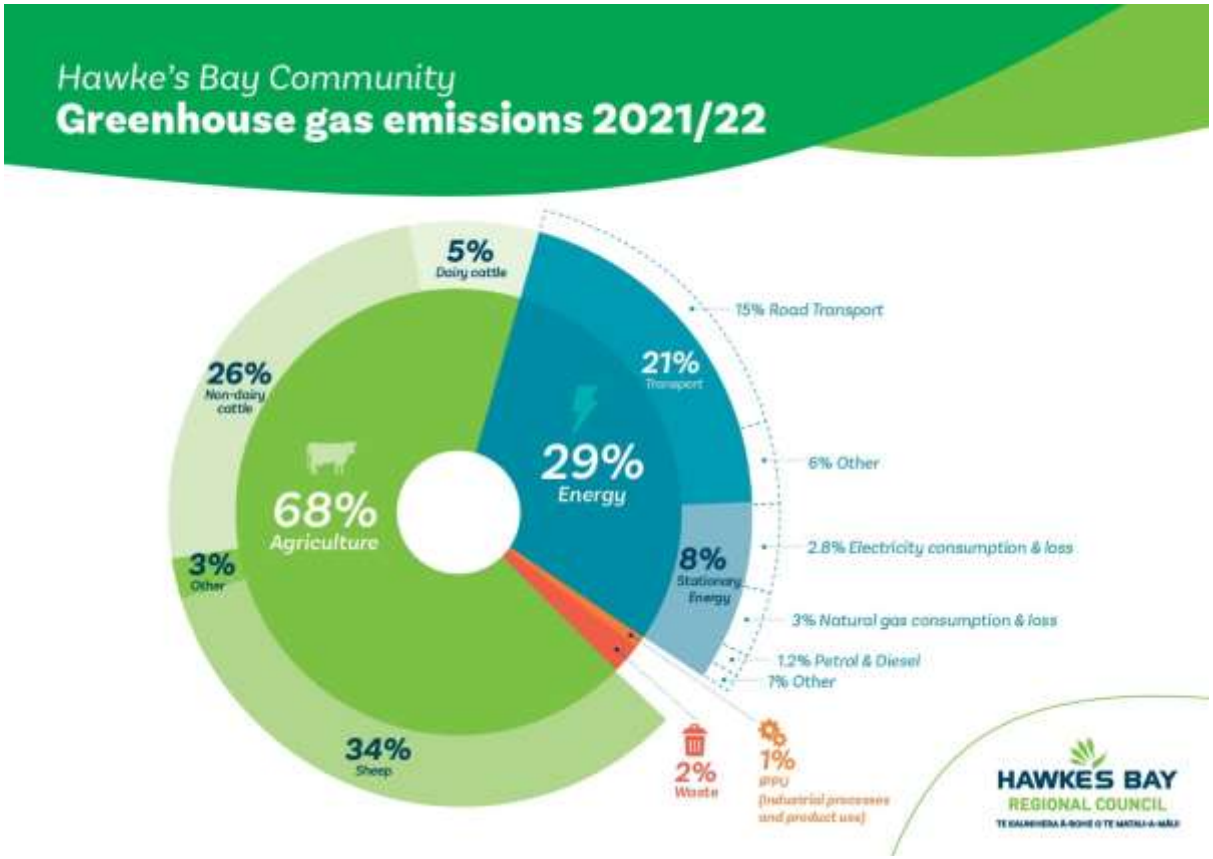
19.2. Emissions from waste made up 2%, while the remaining 1% of gross emissions came from IPPU.

19.3. In terms of gases (t CO_2-e), biogenic CH_4 and N_2O, mostly from agriculture, accounted for almost 2/3rd of the gross emissions (57% and 13% respectively). The rest of the emissions were made up of mostly CO_2 (28%) with small contributions from non-biogenic CH_4 (1%) and other gases (1%).

19.4. The five highest emission sources for Hawke's Bay region are: enteric fermentation (54%), diesel and petrol use for transportation (17%), manure from grazing animals (8%), marine freight (4%) and other agricultural emissions (3%).

19.5. Regional greenhouse gas emissions split by sector and source are presented in the figures below.





20. Forests are both carbon sinks and sources. Plants remove CO_2 from the atmosphere but also release CO_2 when harvested. **Hawke's Bay forests are a net carbon sink removing approximately 2/3rd of the gross emissions.**

21. Hawke's Bay net emissions for the financial year 2021-22 are 1,489 kt CO_2-e.

Distinct district profiles

22. The emissions profiles of the territorial authorities exhibit notable differences. It is however important to note that each district differs in terms of population size, geographical features, and industrial operations.

    22.1. Wairoa District is carbon positive. Forestry in Wairoa removed more greenhouse gases from the atmosphere than emitted. Total net emissions for Wairoa District were -321 kt CO_2-e.

    22.2. In Napier City, forestry is a source of emissions- this means carbon sequestered by the forest is less than that emitted during harvesting. The main source of emissions for Napier City is from the transport sector. Total net emissions for Napier City were 444 kt CO_2-e.

    22.3. The emissions profile of Central Hawke's Bay District indicates that agriculture is a significant contributor to the gross emissions and only a small amount of sequestration occurs through forestry. Total net emissions for Central Hawke's Bay were 1,162 kt CO_2-e.

    22.4. Hastings District emits high levels of greenhouse gases from agriculture, but also sequesters large amounts of CO_2 from its forestry sector. Total net emissions for Hastings District were 606 kt CO_2-e.

Changes since 2020-2021

23. Over the past four years, regional emissions have remained relatively stable. A 1% increase in total gross emissions is observed from 2020-21. As we move closer in time to the 2050 net zero regional carbon goal, greenhouse gas emissions have demonstrated little overall change.

24. Changes observed in 2021-2022 compared to 2020-2021:

    24.1. Stationary energy decreased on average 20% for Hawke's Bay, partly driven by a lower emissions intensity of the national grid.

    24.2. Agriculture increased by 6% across the region, largely associated with increased sheep and non-dairy cattle numbers.

    24.3. An 8% increase in transport emissions were observed for Wairoa District, partly driven by higher petrol and diesel sales during 2021-22.

    24.4. Sequestration in Central Hawke's Bay has increased by 57% since 2021-22, primarily due to a reduction in harvesting.

Conclusions

25. Hawke's Bay region's emission profile is unique as agriculture and transport together accounted for a significant amount of total gross emissions. Because of this, the majority of the region's emissions are biogenic CH_4 and N_2O.

26. This 2021-2022 update to regional emissions shows that gross emissions are not reducing in line with the reductions needed to achieve the goal of net zero greenhouse gas emissions by 2050.

27. This suggests that for the region to transition to a lower emissions pathway, strong and difficult changes are required in the more challenging-to-reduce sectors of agriculture and transport. The updated inventory further reiterates the importance of targeting specific gases including high global warming potentials CH_4 and N_2O as the region embarks on its emissions reduction journey.

Next steps

28. Work has already begun to collect and analyse data to update the greenhouse gas inventory for the financial year 2022-23. We will continue to develop this to be presented to the Joint Committee before the end of the year, dependent on data acquisition. Data acquisition remains a major challenge. Obtaining sufficient, correct, and accurate activity data will likely remain a challenge without a collective effort from all stakeholders. Essentially, this highlights the importance of a collaborative approach in addressing the most valuable piece of any greenhouse gas inventory- data.

29. HBRC staff remain available to discuss and present this data to Partner Council staff and governors and mana whenua groups as useful and to discuss potential impact of emissions reductions actions.

30. The next full externally verified report is planned for the 2023-2024 inventory if provisions are allocated in Council Long Term Plan budgets (FY2025-26).

Decision-making process

31. Staff have assessed the requirements of the Local Government Act 2002 in relation to this item and have concluded that, as this report is for information only, the decision-making provisions do not apply.

Recommendation

That the Climate Action Joint Committee receives and notes the *Regional Community Carbon Footprint update* staff report.

Authored by:

Nariefa Abrahim-Bennet
Senior Climate Scientist

Approved by:

Pippa Mckelvie-Sebileau
Climate Action Ambassador

Attachment/s

1⇩ Regional Carbon Footprint - 2021-22

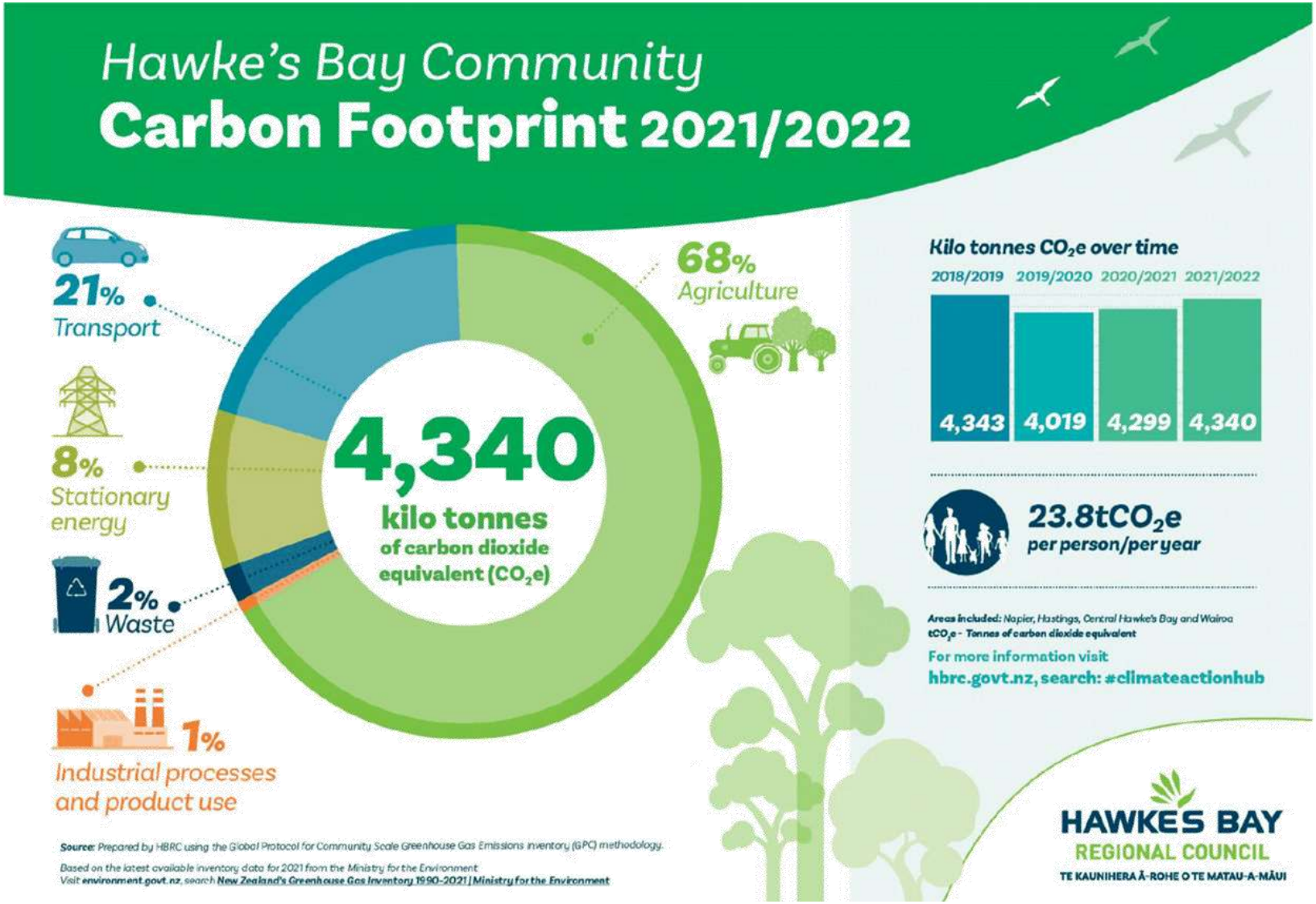
Hawke's Bay Community Carbon Footprint 2021/22

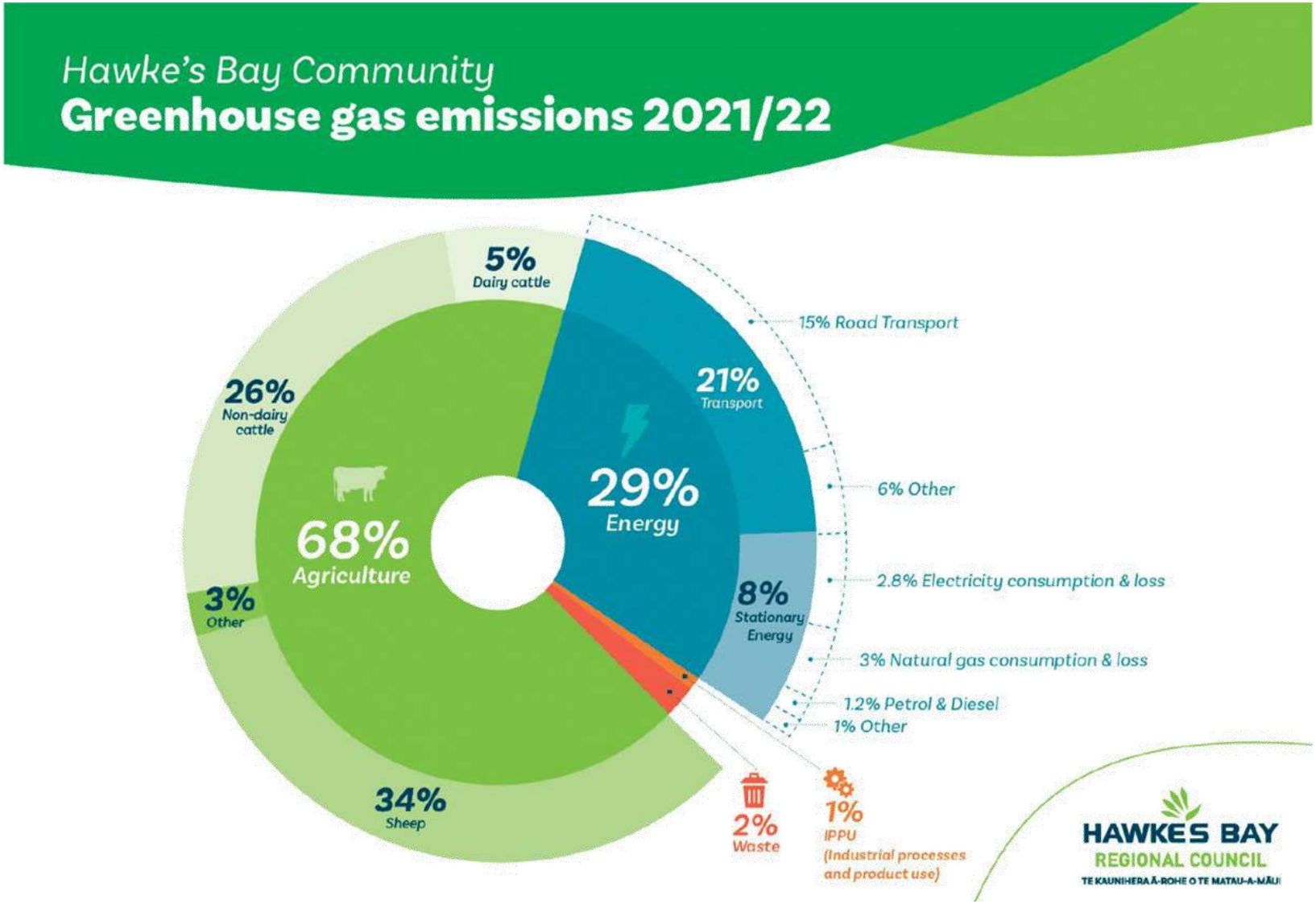
HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Methodology

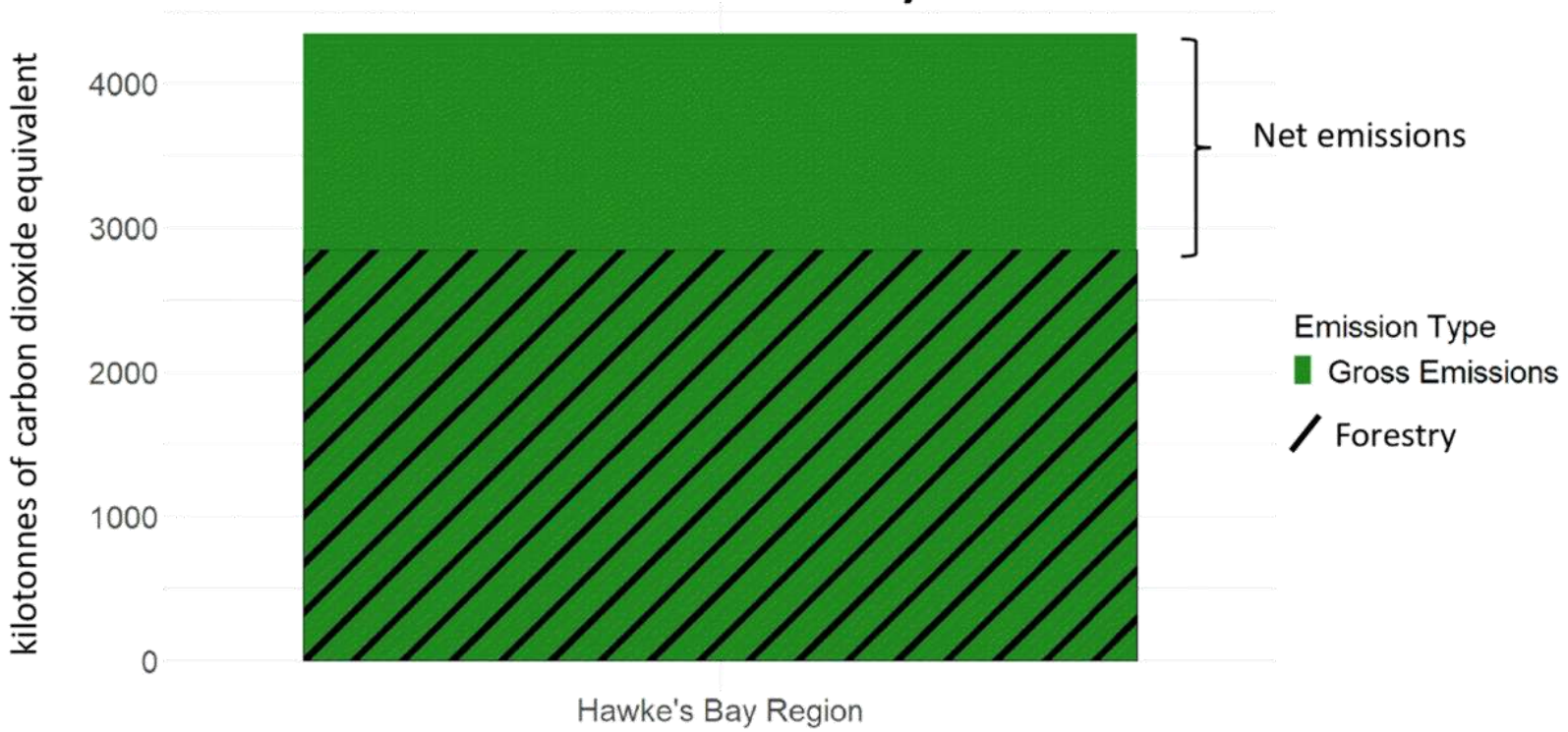
- ✓Global Protocol for Community Scale Greenhouse Gas Emissions Inventory (GPC) methodology
- ✓Includes emissions from Stationary Energy, Transport, Waste, Industrial Processes and Product Use (IPPU), Agriculture and Forestry
- ✓Extends the baseline inventories (2018-2021) done by AECOM
- ✓Results are based on the most recent emission factors, activity data and methodologies.

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI


Hawke's Bay Community
Carbon Footprint 2021/2022
21% Transport
8% Stationary energy
2% Waste
1% Industrial processes and product use
68% Agriculture
4,340
kilo tonnes
of carbon dioxide
equivalent (CO_2e)
Kilo tonnes CO_2e over time
2018/2019 2019/2020 2020/2021 2021/2022
4,343 4,019 4,299 4,340
23.8tCO_2e
per person/per year
Areas included: Napier, Hastings, Central Hawke's Bay and Wairoa
tCO_2e - Tonnes of carbon dioxide equivalent
For more information visit
hbrc.govt.nz, search: #climateactionhub
Source: Prepared by HBRC using the Global Protocol for Community Scale Greenhouse Gas Emissions Inventory (GPC) methodology.
Based on the latest available inventory data for 2021 from the Ministry for the Environment
Visit environment.govt.nz, search New Zealand's Greenhouse Gas Inventory 1990-2021 | Ministry for the Environment
HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

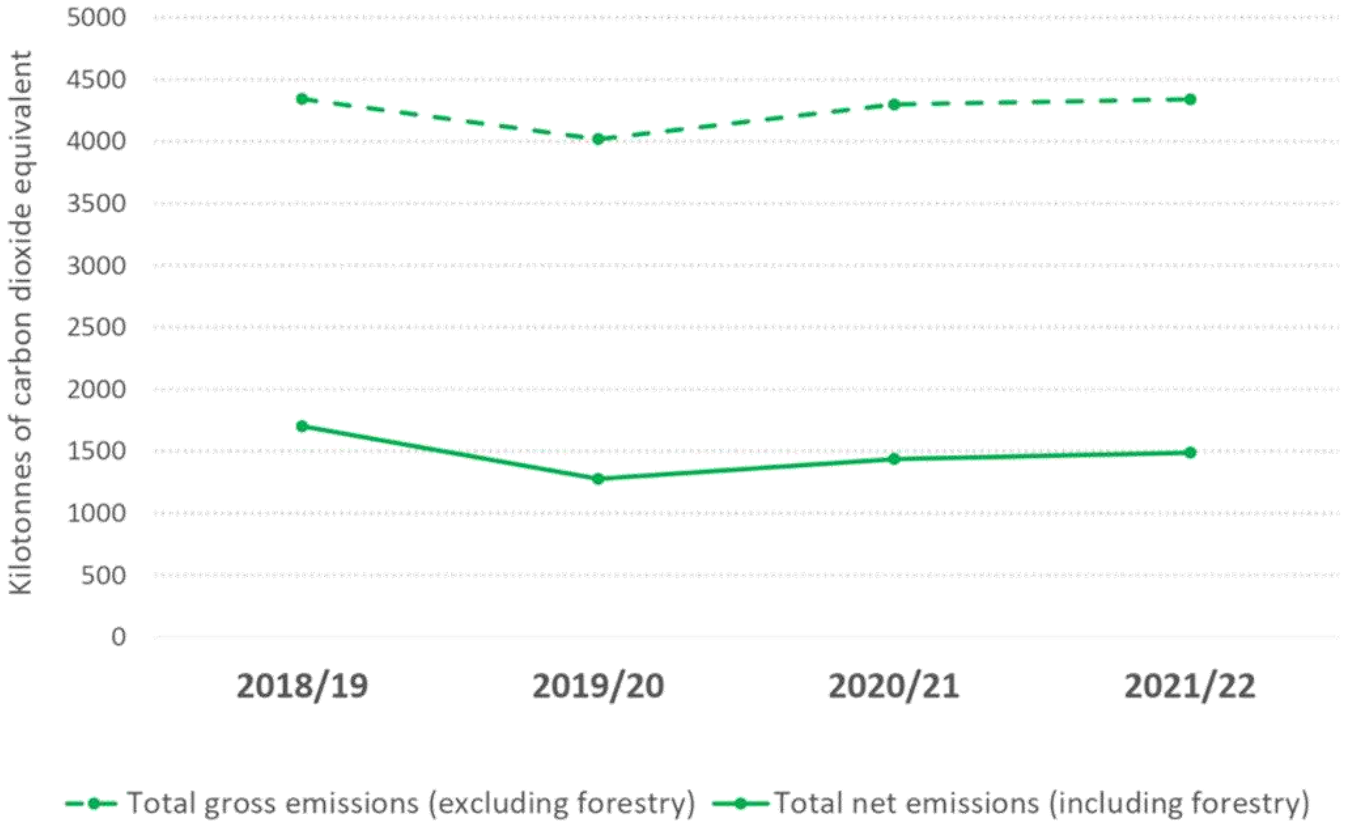

Hawke's Bay Community
Greenhouse gas emissions 2021/22
5%
Dairy cattle
26%
Non-dairy cattle
68%
Agriculture
3%
Other
34%
Sheep
29%
Energy
21%
Transport
15% Road Transport
6% Other
8%
Stationary Energy
2.8% Electricity consumption & loss
3% Natural gas consumption & loss
1.2% Petrol & Diesel
1% Other
2%
Waste
1%
IPPU
(Industrial processes and product use)
HAWKES BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hawke's Bay's gross emissions and net forestry contributions- 2021/22



HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hawke's Bay gross and net emissions (in kilotonnes of carbon dioxide equivalent) from 2018/19 to 2021/22



HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Observed regional changes between 2020/21 and 2021/22

6%
increase in agriculture emissions

2%
increase in waste emissions

1%
increase in IPPU emissions

3%
decrease in transport emissions

21%
decrease in stationary emissions

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

* At the national level, New Zealand's Greenhouse Gas Inventory shows that for 2021 an estimate of gross emissions uncertainty was +/- 8.5%.

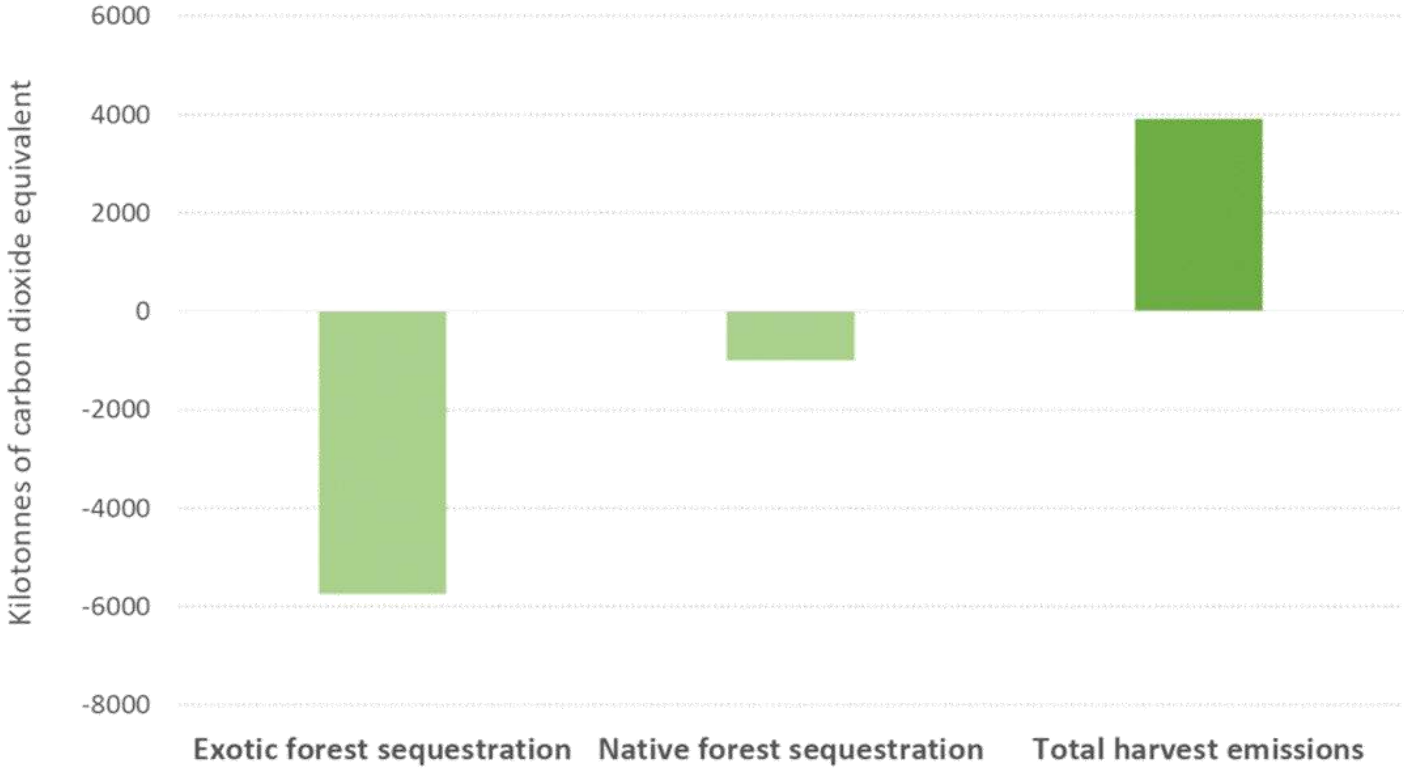
Key points 2021/22

- ✓ Agriculture and transport together are the main contributors to emissions in Hawke's Bay.
- ✓ Emissions are not reducing in line with the reductions needed to achieve the goal of carbon neutral by 2050.
- ✓ To transition to a lower emissions pathway, strong and difficult changes are required in the more challenging-to-reduce sectors of agriculture and transport.
- ✓ District profiles are very different, so challenges and opportunities differ accordingly.

HAWKES BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

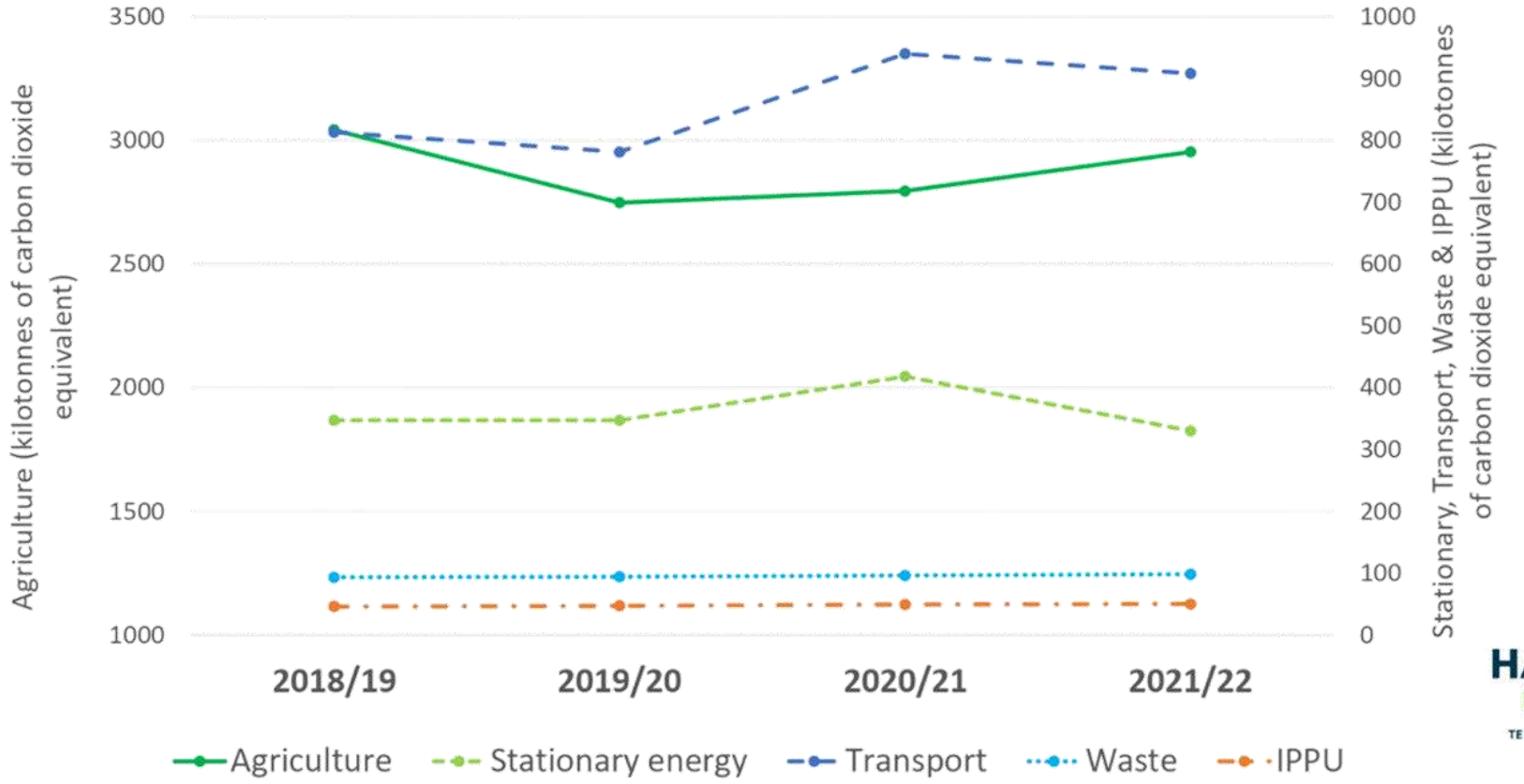
Additional results

Hawke's Bay forestry emissions and sequestration for 2021/22



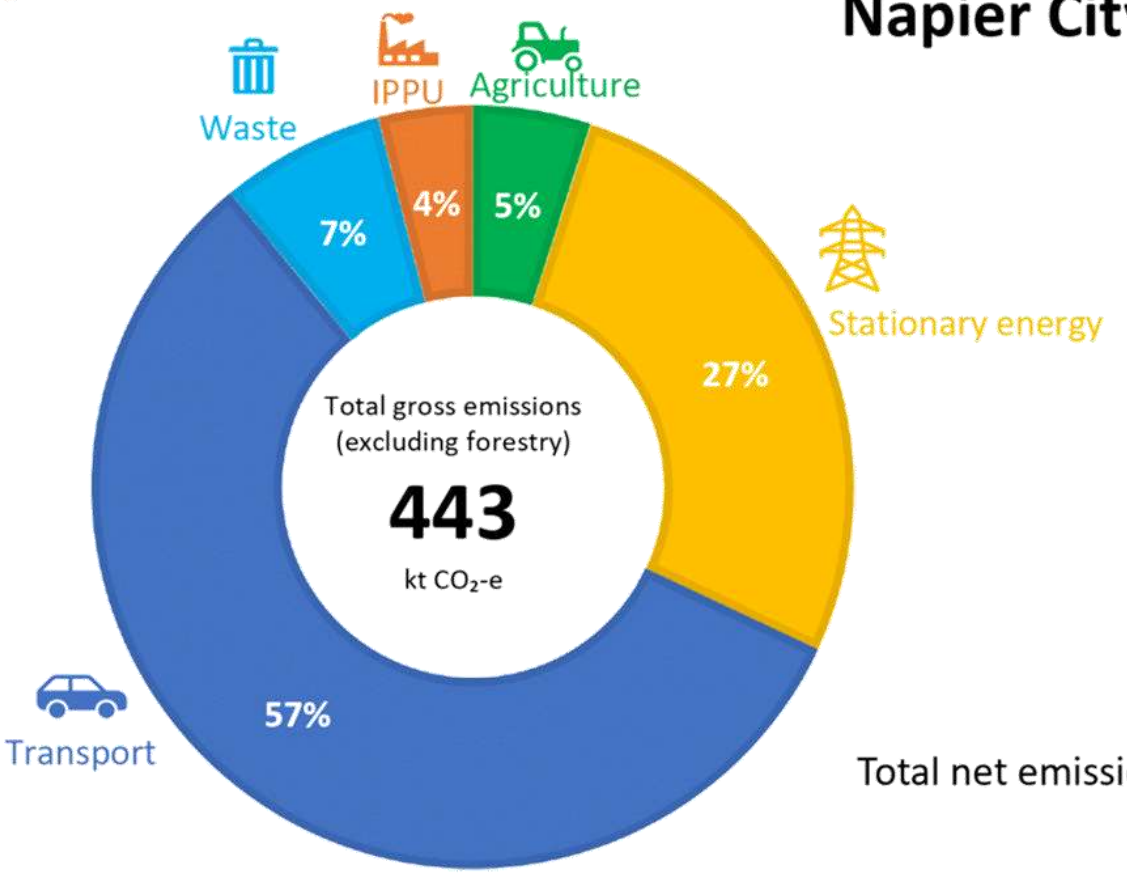
HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hawke's Bay greenhouse gas emissions (in kilotonnes of carbon dioxide equivalent) by sector from 2018/19 to 2021/22

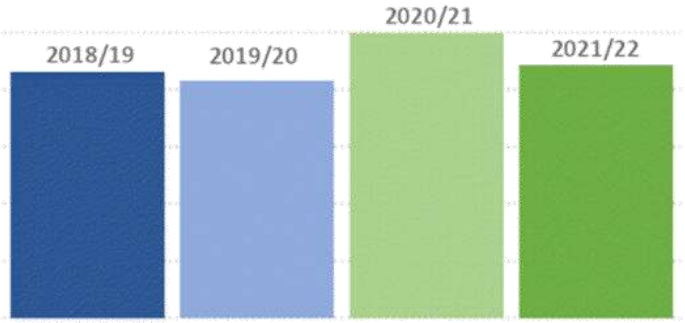


HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Napier City Community Carbon Footprint 2021/22



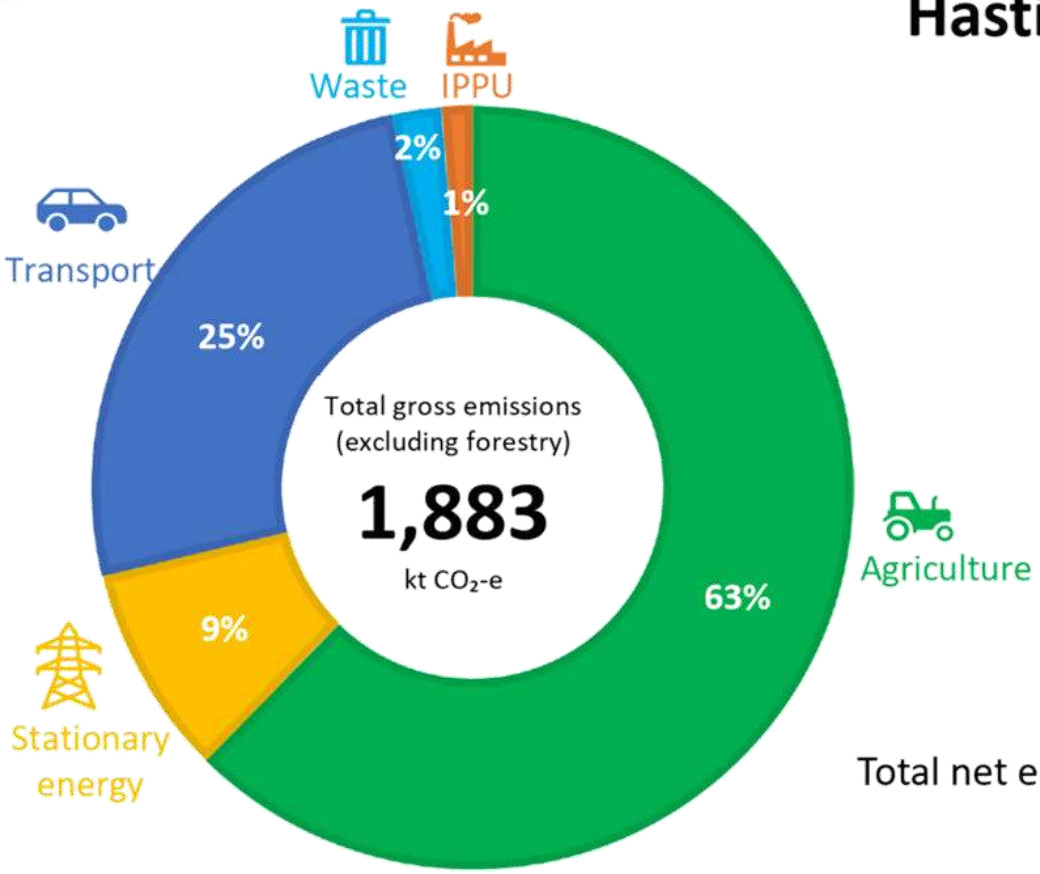
Napier City gross emissions kt CO_2-e

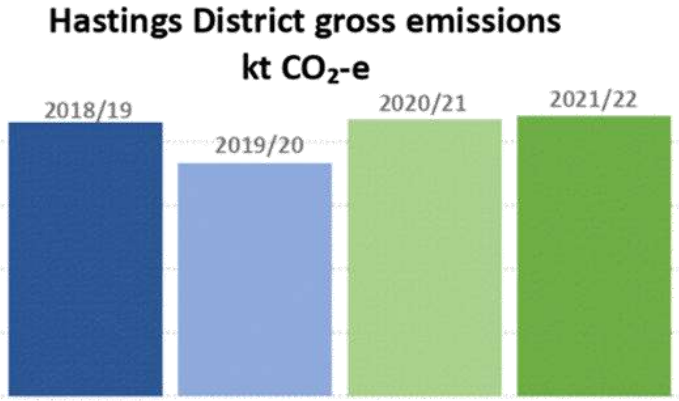


Total net emissions is **444** kt CO_2-e

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Hastings District Community Carbon Footprint 2021/22

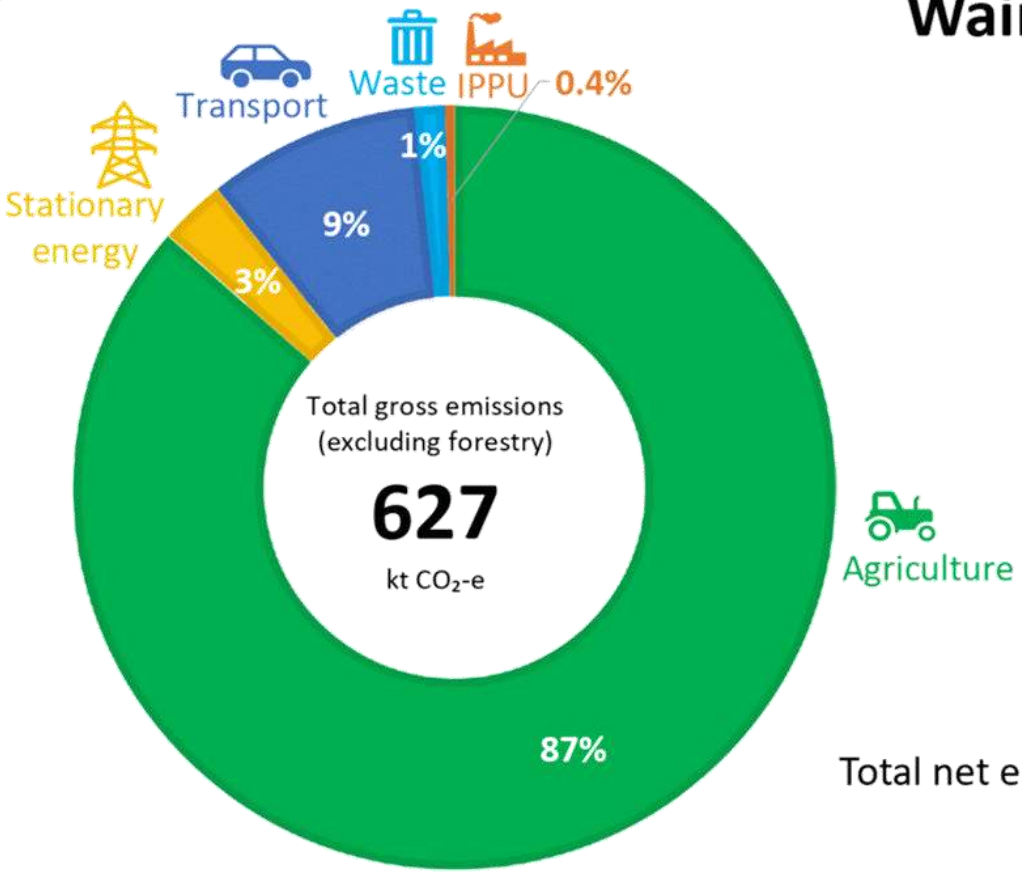




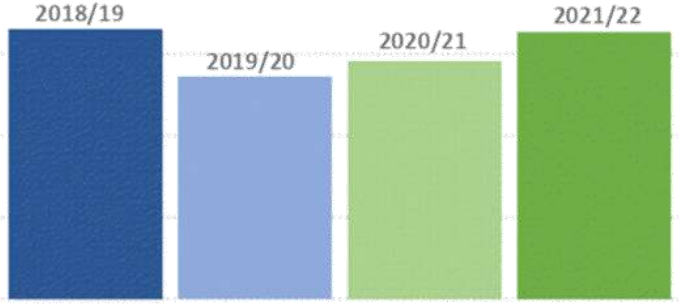
Total net emissions is **606** kt CO_2-e

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Wairoa District Community Carbon Footprint 2021/22



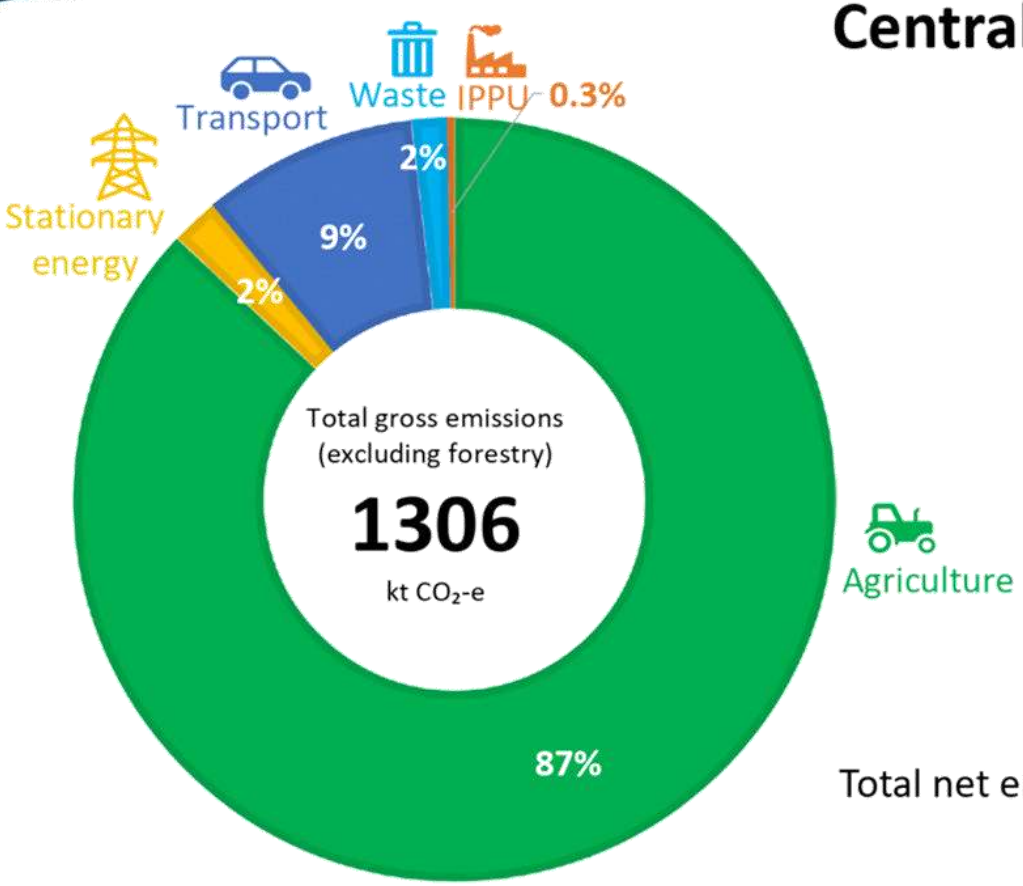
Wairoa District gross emissions kt CO_2-e

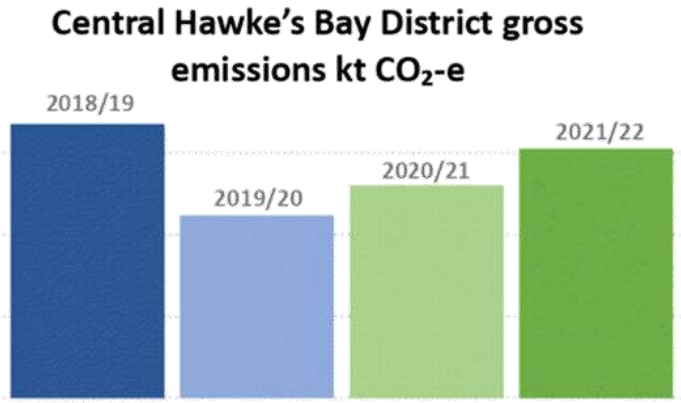


Total net emissions is **-321** kt CO_2-e

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Central Hawke's Bay District Community Carbon Footprint 2021/22

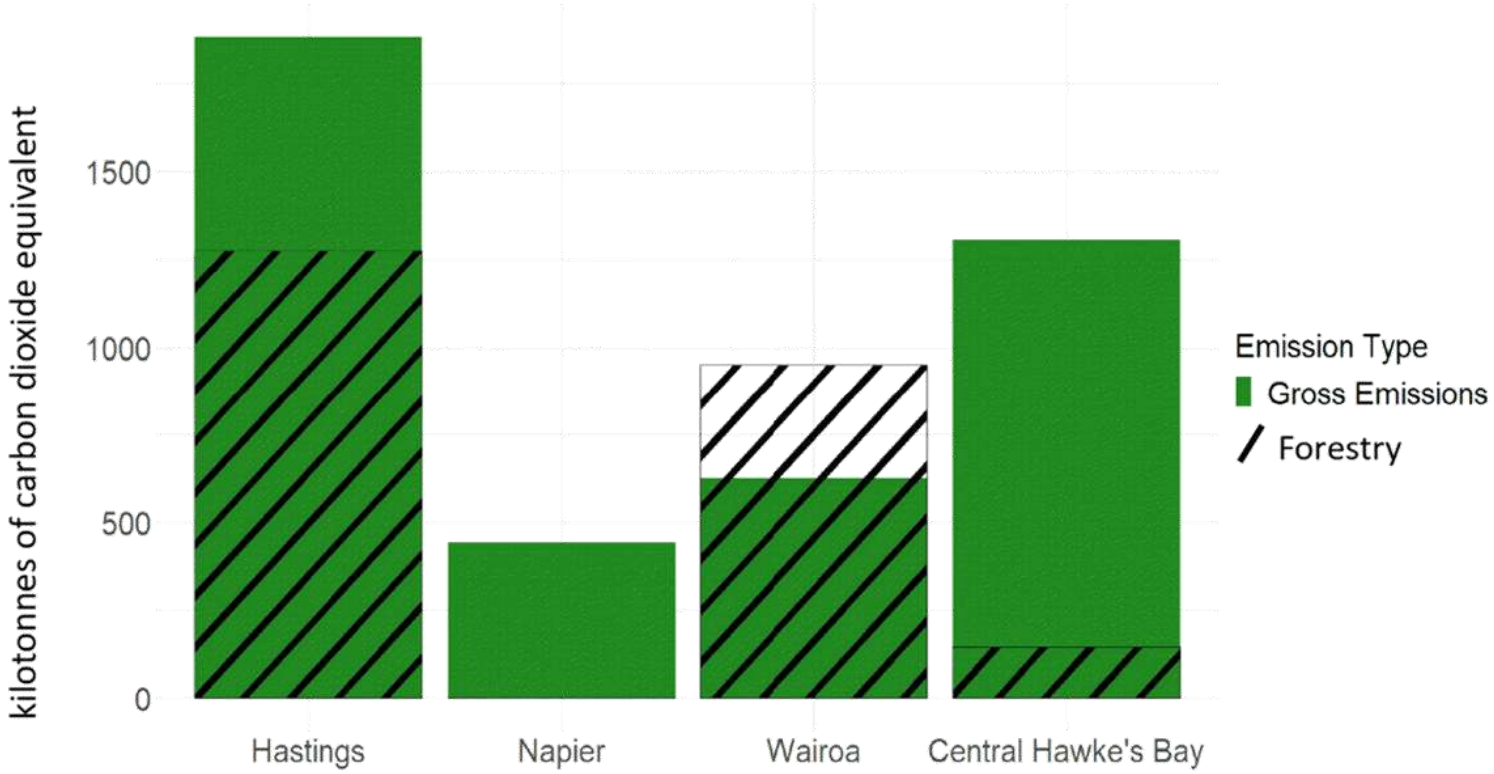




Total net emissions is **1,162** kt CO_2-e

HAWKES BAY REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Gross emissions and net forestry contributions for each district - 2021/22



Climate Action Joint Committee
Monday 11 March 2024

Subject: Climate Action Plan: Risks And Opportunities

Reason for Report

1. This report summarises the risks and opportunities by priority domain identified by the Climate Action Technical Advisory Group (TAG) as a step towards agreeing actions and seeks direction from the Joint Committee about how to progress.

Background/Discussion

2. At its meeting on 11 December 2023 the Joint Committee endorsed the attached living *Vision and Strategy*. This was the culmination of two workshops independently facilitated by Karl Wixon.
3. Following this Joint Committee meeting, the Climate Action TAG workshopped the six priority domains to identify risks and opportunities. This workshop was designed and facilitated by Napier City Council staff on behalf of the TAG.
4. This was then written up into the present report prepared by Napier City and Hastings District Council staff and reviewed by staff from HBRC and CHBDC.
5. The six identified domains are:
    - 5.1. Biodiversity
    - 5.2. Primary Industry
    - 5.3. Transport
    - 5.4. Waimāori/Fresh water
    - 5.5. Urban/Housing.
    - 5.6. Waste

Biodiversity

6. There are threats posed to indigenous biodiversity by climate change and the greater probability of drought, flooding, and severe weather events in Hawke's Bay. Severe weather events are predicted to increase in intensity and magnitude, and this will impact on habitat availability and indigenous species. An accelerated changing climate will impact on biodiversity stressors such as increased competition, predation from tolerant and more resilient invasive species, isolation of already fragmented habitats and populations, and the disappearance of suitable conditions and habitats along with a reduction in connectivity. Climate change now adds to existing threats of habitat loss and invasive species and drives biodiversity decline by exacerbating them. In addition, the process of climate change is accelerated by biodiversity loss as degraded ecosystems have a reduced ability to absorb and store CO_2.
7. Staff have identified several key risks. The predominant risk is loss of biodiversity which is compounded by the pace of climate change, with effects accelerating faster than biodiversity restoration and protection work can respond to. There are also risks in the revise and reform of national policy direction which may seem as though some progress has stalled, or even reversed.

8. Of particular concern is our lack of understanding of how climate change will impact local biodiversity. We can infer impacts from international and national research, for example we expect the loss of some habitats as a result of erosion or saltwater egress into freshwater sources. However, we do not have local research to provide clarity on specific impacts. To make real progress in this space we need a better idea of the interaction between biodiversity and climate change at a local level. Research in this area would help to give us the knowledge we need and also empower our community to make good choices that both increase our biodiversity and protect it from the impacts of climate change.

9. Further risks include a potential lack of leadership in this space given the importance of the relationship with the primary sector. If there is no willingness to work together, we will not be able to achieve the biodiversity goals we need to, to ensure the future resilience of our indigenous flora and fauna. The cross over between the primary sector and biodiversity is an opportunity for relationship building, which will be the key to progress within both domains. In particular there is space to capitalize on public/private partnership to create new ways to improve biodiversity. Whether we work alongside the Biodiversity Trust or take the lead in this space there is an opportunity to create a sense of direction for our community and pride in our biodiversity. We should focus on setting clear goals and realistic actions that allow us to do what we can in the environment we are in and celebrate those successes while always striving for more.

Biodiversity opportunities

10. Ensure that biodiversity items feature on the Joint Committee agenda, bringing stories of biodiversity restoration to the committee.

11. Offer climate action / adaptation funds through Joint Committee, administered through an existing body that supports biodiversity which could be extended with community climate action fund (e.g. Sustainable HB Centre for Climate & Resilience/ HB Biodiversity Trust).

12. Research into the local impact of climate change on biodiversity.

13. Build biodiversity considerations into our planning decisions – this is a space the Joint Committee could advocate in back to the TLAs/HBRC.

14. Support a high profile anchor project, for example, biodiversity corridors to connect our region, ensure flora and fauna can retreat/adapt and create opportunities for tourism – something that makes us stand out.

15. Promote, build awareness and celebrate existing partnership programmes to improve biodiversity on rural/farming land including pest management.

16. Map the current projects in this space and identify gaps.

Primary Industry

17. The effects of climate change on our primary industries will be significant. Climate change will affect what and how much can be grown or harvested across Hawke's Bay. Increasingly unpredictable weather will impact production with more (production) in some years and less in others. Increased variability in weather patterns resulting in higher rainfall events will increase the effects of erosion, increasing sediment in waterways, with soil loss damaging soil stability and reducing productivity. Weather impacts may also increase frequency of extreme dry weather events, leading to increased production (lower and variable) risks, arrival of new and novel pests in the form of plant and animal diseases.

18. The primary sector is a major contributor to the Hawke's Bay economy, in terms of its economic contribution through export earnings, employment and contribution to the social fabric of the community. Therefore, climate action is targeting adaptation as opposed to elimination strategies. Successful adaptation will require in depth understanding not only of the impacts, but also risk management implications, decisions that need to be made to reduce exposure to

this risks and effective ways to motivate action by primary producers.

Primary industry opportunities

19. Climate change preparedness and adaptation.
20. Education – existing climate change adaptation practices.
21. Community engagement to build understanding and identify community led practice change.
22. An integrated approach to catchment and community management – erosion control, wetland construction, biodiversity.
23. Increased land use diversification – planting trees, forest farming, integrated systems, new horticultural systems that adapt to a changing climate, land for life etc.
24. Research – using existing knowledge to identify new research.
25. Targeting at risk systems and identifying change options.
26. Co-benefit opportunities in reducing burning which reduces emissions and improves air quality (composting).

Transport

27. Staff considered that a key risk in transport is the competing goals between transport resiliency, transport efficiency, cost and safety, while also reducing emissions, which is no longer a priority area for the coalition-led government. Efficiency is essential to our system but we also need to reduce emissions and the expectation is that most emission reductions in the immediately future will come from transport. Post cyclone with all the damage to our roading infrastructure it is unlikely that new public and active transport measures will be priorities. It is a difficult balance to ensure that our infrastructure is fit for current use patterns and also responsive to changes in use over the next 20 years. There Regional Land Transport Committee made up of representatives from across the region leads in this space, following national policy direction. The Joint Committee has an advisory role to the RLTC and has in the past collaborated on a proposed table of emissions reduction actions in transport. Maintaining a climate lens and continuously advocating for climate action will be important over the next period of infrastructure and resiliency focus.
28. However, on top of advocating for smart sustainable and future-proofed options for transport in Hawke's Bay there is also space to support innovation in the transport space.

Transport opportunities

29. Supporting innovation and acting as a connector between the public and private sector (an example is the carpooling app).
30. District profiles differ and for urban areas, transport is the biggest emitter (e.g. Napier).
31. Advocating for and celebrating alternative modes of transport including regional rail.
32. Encouraging urban form considerations when taking action in the transport space.
33. Co-benefits for health and air quality.
34. Regional green hydrogen development.
35. Advocating for climate action to the Regional Land Transport Committee and each Council.
36. Utilising & refreshing the list of transport actions as endorsed and prioritised by Regional Land Transport Committee in August 2023.

Waimāori /freshwater

37. Significant risk for this pou is that there will be periods of too much water that has to be managed through nature-based solutions or engineered solutions to mitigate flood risk; as well as periods with not enough water. This includes water availability and quality under climate change and how the water is equitably allocated for environmental, human and consumptive purposes. The regional water assessment published last year documents the water security challenges facing the region, changes to national policy for water, and projected water supply and use in the next 50 years.

38. Climate change in Hawke's Bay is predicted to result in higher annual mean temperatures, more hot days and fewer frost days. Rainfall patterns are expected to change, with more extreme rainfall events and longer dry periods, more rain in winter and less in spring, and more droughts. Sea level rise will impact use of some coastal land, whether through gradual inundation of low-lying land, greater frequency of coastal flooding events, exacerbation of shoreline erosion or saltwater intrusion to lowland rivers and nearby aquifers.

39. Staff identified that one of the key risks in this space as the different perspectives on water use and protection. However, this challenge is also what creates the opportunities in this space. For us to make genuine progress as a region we need to find a way to move forward together. Water is essential to all of us and there is an opportunity here to challenge our perspectives. With support of mana whenua on the committee we could lead in this space, especially while there is uncertainty and delay in the three waters space.

Waimāori /freshwater opportunities

40. Utilise the information provided in the 50-year Regional Water Assessment completed in 2023 to inform the climate action plan.

41. Provide leadership in the gap that three waters leaves.

42. Work alongside mana whenua and the primary sector to find innovative solutions and mediate conversations: clear links to biodiversity and primary sector pou.

Urban/Housing

43. Staff identified that there is a difficult balance to strike between providing enough housing that also works for everyone and ensuring the housing is resilient to a changing climate future. The impact of climate change on the risk from natural hazards combined with the need to coordinate across multiple councils to ensure consistency and reduce costs creates both risks and opportunities. While the Future Development Strategy leads where development goes in Napier and Hastings there is plenty of space for the joint committee to investigate multi-risk assessments across the region and use this information to guide resilient development decisions.

Urban/Housing opportunities

44. Region-wide multi-hazard risk assessments.

45. Energy-efficient homes that provide health benefits, reduce emissions and reduce costs for residents.

46. Co-benefits for health, air quality and cost of living.

47. Supporting and guiding a region-wide approach to hazard management in future development.

48. Encourage and advocate for intensification of already developed areas and sponge cities (this action supports the waimāori and biodiversity pou, as well as protecting rural land).

49. Advocate for green star ratings for new buildings.

50. Planning improvements to include sustainability actions like solar panels, water retention.

Waste

51. While waste emissions are a small sector in the regional emissions profile, this is a sector where real reductions can be made that are cost-effective and appealing to the wider community. Individual actions and council services can play a big role in changing consumption and waste behaviour encouraging a more circular economy and enhancing overall environmental and social outcomes.
52. In the Napier-Hastings area the Waste Management and Minimisation Committee leads waste reduction measures and education. The Climate Action Joint Committee should support the work of this committee and advocate for actions that will reduce emissions and build resilience such as gas capture.

Waste opportunities

53. Support the direction of the Waste Management and Minimisation Joint Committee and leverage our position to advocate for waste reduction measures.
54. Partnerships between groups – e.g. transport of Wairoa landfill material to Hastings where there is methane capture at the landfill.
55. Individual waste reduction actions act as doorways to other climate action.
56. Waste reduction linked to food production.
57. Area where individuals can take immediate, cost free action.
58. Reducing waste reducing other environmental micropollutants.

Decision-making process

59. Staff have assessed the requirements of the Local Government Act 2002 in relation to this item and have concluded that, as this report is for information only, the decision-making provisions do not apply.

Recommendations

That Climate Action Joint Committee:

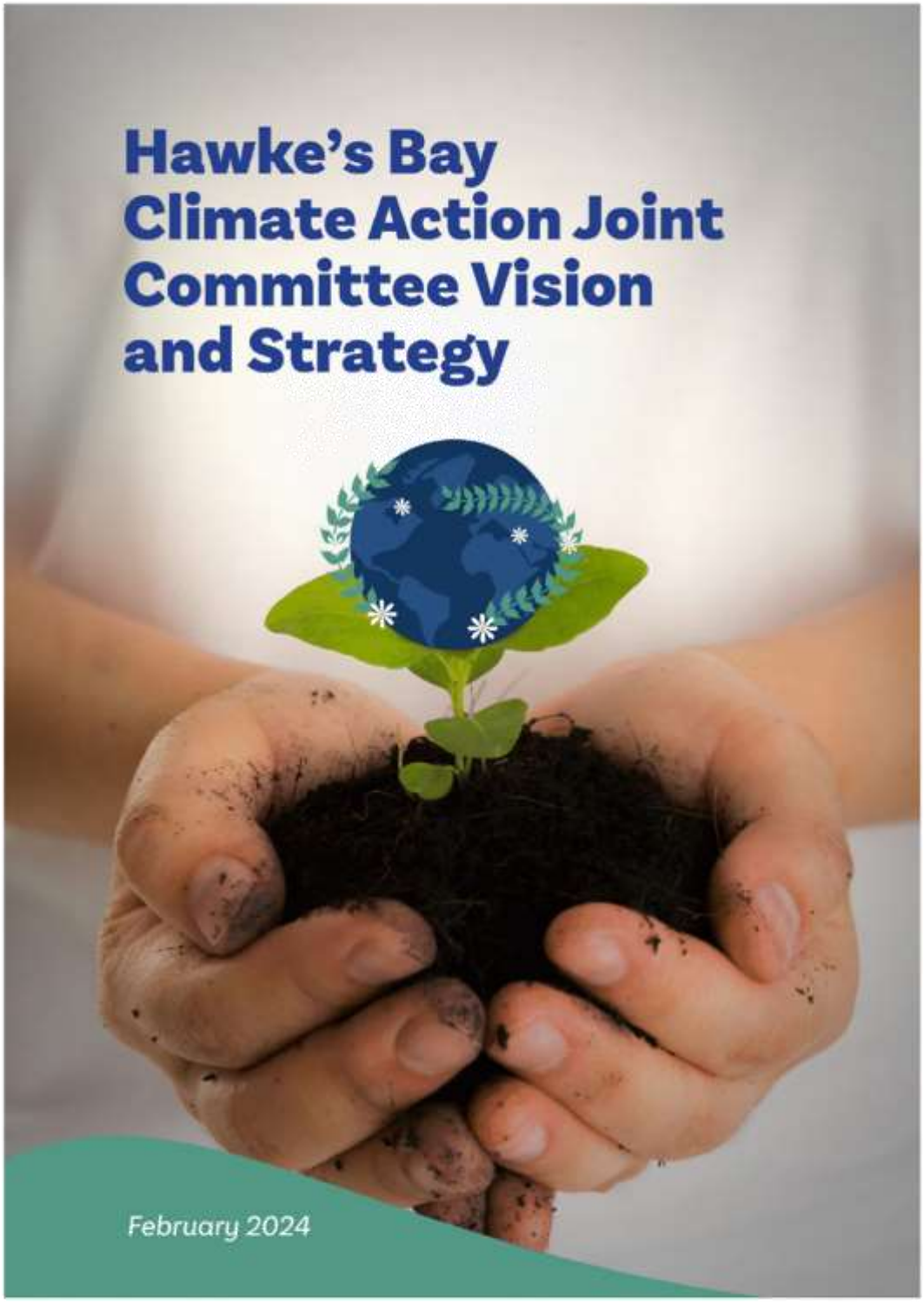
1. Receives and considers the *Climate Action Plan: Risks and Opportunities* staff report.
2. Provides feedback on the opportunities presented for each of the six the priority domains.

Authored by:

Heather Bosselmann
SENIOR POLICY ANALYST

Attachment/s

1⇩ Climate Action Joint Committee Living Vision and Strategy


Hawke's Bay
Climate Action Joint
Committee Vision
and Strategy
February 2024

Hawke's Bay is a climate resilient region where communities understand and are prepared for change. Together, we all work to reduce our regional contribution to climate change and respond to its impacts.

Inclusive Collaboration
Ngātahi- we work together to achieve the best outcomes for communities. We recognise our collective responsibility and individual strengths. We recognise that our outcomes are interconnected. We value Mātauranga Māori in all we do to restore and protect te Tai Ao.

Adaptation
We take a proactive approach to the urgent transformative changes required to keep our communities safe and thriving in a changed climate.

Mitigation
We reduce our contribution to climate change. We will play our part to reduce regional emissions in line with national targets. We will deliver emissions reductions for core council activities and enable and facilitate industry and community reductions.

The Climate Action Joint Committee plays a leadership role to address the complex challenge of regional climate resilience. We work collectively with a common purpose, share costs and maintain a sense of urgency for action. We show leadership, empower our community and connect back into our own organisations as advocates for climate action.

TUHINGA HUKIHUKI RAUTAKI / VISION & STRATEGY

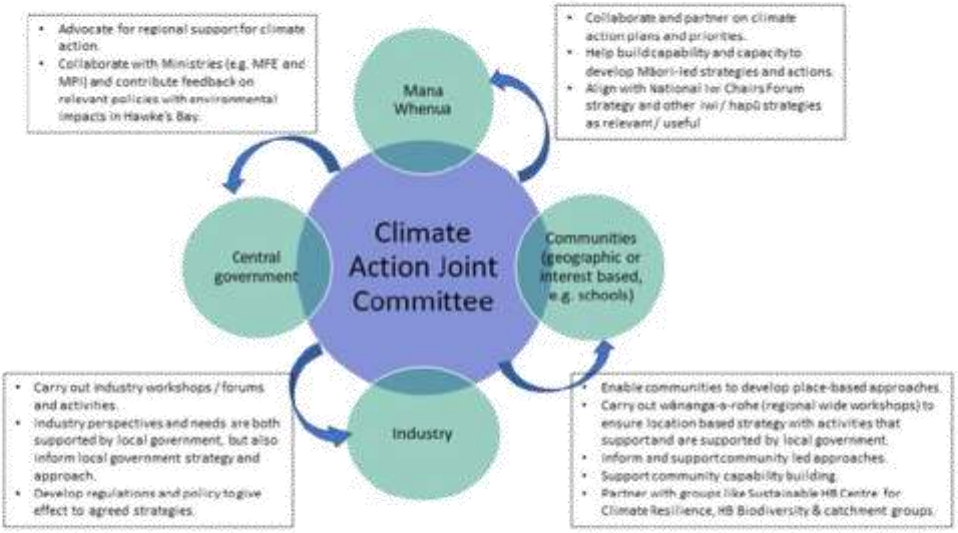
For *Adaptation* and *Mitigation* in all domains

This is a living document that will be updated as the work of the Committee progresses. The current version (Feb 2024) is based on outcomes from workshops of the Hawke's Bay *Te Matau-a-Māui Joint Climate Action Committee and Technical Advisory Group* hosted in October and November 2023.

Kaupapa / Domain	Moemoeā / Vision 2050	Rautaki / Strategy *Mitigation and Adaptation actions to develop*
	Biodiversity is rich, varied and everywhere. Native birds and plants are in every garden and public space, and able to move through green corridors across Te Matau-a-Māui Hawke's Bay.	• Include biodiversity as part of every project using enablers / incentives. • Leadership, collaboration and investment. • Ensuing ongoing commitment, e.g. management beyond planning and monitoring. • Knowledge sharing and devolving power / empowering community. • Pest control for enhanced biodiversity and carbon sequestration.
	People are walking more and using active modes of personal transport. Public transport is frequent, accessible, affordable and well utilised. Our cities provide access to amenities within reach of active personal or public transport. Freight is delivered through a sustainable, carbon neutral, clean energy network. Infrastructure is resilient and future proof.	• Normalising walking and use of active modes of personal transport. • Ensuring urban planning prioritises and provides access to amenities within reach of walking and active modes of personal transport. • Enable and promote public transport. • Making freight infrastructure more resilient, and potentially using freight corridors, as energy corridors, e.g. solar banks.
	Forestry mixes commercial species and selectively-harvested native plantings. Sustainable and resilient food production sector, operating within a mix of land uses and mosaic of landscapes. Agriculture, horticulture, viticulture and forestry employ best practices, such as farm environmental and freshwater management plans, to minimize environmental impact and achieve climate resilience. Provisions are made for community access and kai. Regional food production is sustainable and meets market demands, adopting best practice technology and standards. Water & soil health monitoring and science informs industry, behaviour and practices.	• Creating awareness, building knowledge and developing long term plans informed by best practices, Crown R&D, mātauranga Māori and youth aspirations. • Enabling practice change to build resilience through investment, incentives and enabling regulations. • Engaging community in land use planning. • Supporting Industry-led approaches to achieving the vision. • Enabling change through policy, planning and incentive.
	A circular economy is supported and enabled through principles of waste hierarchy. The planet's finite resources are respected, used with care, re-utilised and repurposed to provide for future generations. Waterways and environment are clear from pollution and litter.	• Keeping abreast with and utilising advances in technology in transport, waste, energy, materials and waste elimination, reduction and management. • Supporting community initiatives to reduce waste.

Kaupapa / Domain	Moemoeā / Vision 2050	Rautaki / Strategy *Mitigation and Adaptation actions to develop*
	Our urban environments are higher density with affordable resilient housing close to work, community facilities, amenities, recreation and active spaces. We have walkable streets that promote use of active and public transport, and car-sharing. Rural and semi-rural communities are connected and empowered to support climate-resilient growth. People are planting their own properties and greening our urban environment.	• Ensuring District Plans and design principles and approaches promote climate resilience within the framework of the Regional Policy Statement and national legislation.
	We have abundant, flowing, healthy, clean water. You can drink water and eat kai from our rivers which are safe to swim in. Tangata whenua exercise tino rangatiratanga to achieve sustainable outcomes in freshwater management.	• Catchment plans are needed that address all of the identified strategies. • Community engagement and support for community-led solutions. • Develop enabling policies and incentives.

Climate Action Joint Committee Relationship Framework & Critical Partnerships



Key partners	How Joint Committee engages / supports
Mana Whenua	Work with mana whenua to co-identify, co-design and co-decide climate action plans and priorities. Help build mana whenua capability and capacity to develop their own plans. Support mana whenua to undertake the mahi needed to develop mana whenua led strategy and action. Align with National Iwi Chairs Forum strategy and other iwi / hapū strategies as relevant / useful.
Communities*	Enable communities to develop their own place-based approaches in line with agreed priority foci. Carry out wānanga-a-rohe (regional wide workshops) to ensure location based strategy and activities are both supported by local government, but also inform local government strategy and approach. Inform and support community led approaches that can deliver impact. Support community capability building. Partner with groups and initiatives like Sustainable HB Centre for Climate Resilience, HB Biodiversity and catchment groups.
Industry	Carry out industry workshops / forums and activities. Industry perspectives and needs are both supported by local government, but also inform local government strategy and approach. Develop regulations and policy to give effect to agreed strategies.
Central Government	Advocate for regional support for climate action. Collaborate with Ministry for Environment, Ministry for Primary Industries and other key ministries and contribute feedback on relevant policies with environmental impacts in Hawke's Bay.

*Communities might be geographically based or based on a community of interest e.g. schools.


NAPIER
HASTINGS
HAWKE'S BAY
REGIONAL COUNCIL
CENTRAL
HAWKE'S BAY
NGĀTI
KUAPAMI
TĀTAU TĀTAU
NGĀTI
PĀHAUWERA
Development Trust
TANGITŪ
HINEURU

Climate Action Joint Committee
Monday 11 March 2024

Subject: Priority Ecosystem presentation

Reason for Report

1. This item introduces a presentation by Annabel Beattie – Hawke's Bay Regional Council's *Senior Scientist – Terrestrial Ecology* and Mark Mitchell – Principal Advisor Biodiversity Biosecurity on the Priority Ecosystem Programme and what it delivers for climate adaptation and mitigation.
2. This programme directly contributes to the Biodiversity pou in the Joint Committee's living *Vision and Strategy* document.

Background

3. This programme was consulted on and established as part of HBRC's 2018-28 Long Term Plan. It provides funding for on-the-ground action such as deer fencing and pest control on prioritised ecosystems across the Hawke's Bay region.

Presentation

4. The presentation (to be circulated separately) will cover the history of the programme including the methodology used to prioritise ecosystems, partnerships with private landowners, leveraged funding and present the work done to date to restore forest remnants and wetlands.

Recommendation

That the Climate Action Joint Committee receives and notes the *Priority Ecosystems Programme Presentation*.

Authored by:

Annabel Beattie
Senior Scientst - Terrestrial Ecology

Mark Mitchell
Team Leader Principal Advisor Biosecurity Biodiversity

Approved by:

Iain Maxwell
Group Manager Integrated Catchment Management

Attachment/s

There are no attachments for this report.