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Assessing The Potential for School Lunch Programme Ka Ora, Ka Ako to Enhance Education, Sustainability and Health Goals

Abstract

The Ka Ora, Ka Ako school lunch programme introduced in 2020 provides nutritious lunches to around 220,000 students in low-advantage schools. While the food security impacts of this programme have been well documented, its potential to enhance outcomes in other areas of public policy is underappreciated. We conducted a policy analysis to map the programme's intersection with current public policy agendas in education, sustainability and health in Aotearoa New Zealand. We conclude that Ka Ora, Ka Ako can be a powerful platform to effect broad societal outcomes through alignment with school curricula, concerted effort to reduce carbon emissions, and commitment to delivering highly nutritious foods to all students in qualifying schools.

Keywords school meal programmes, food systems, sustainability, policy outcomes, public health, wellbeing, children

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Conflicts of interest: Boyd Swinburn is co-chair of Health Coalition Aotearoa, which has advocacy positions on Ka Ora, Ka Ako. The rest of the authors have no competing interests to declare.

Aotearoa New Zealand's food system is deeply 'troubled' (King, 2023). The latest *State of Food and Agriculture* report released by the Food and Agriculture Organization of the United Nations uses true cost accounting to report on the environmental, health and social costs of agrifood systems across 154 countries (Food and Agriculture Organization, 2023). In 2020, the hidden cost of food in New Zealand was estimated to be US\$22,007 million, shared between environmental costs (greenhouse gas and nitrogen emissions, \$9,887 million) and health costs from the burden of disease (dietary patterns, \$12,119 million). Globally, every dollar of agricultural value added generates 31 cents of hidden environmental costs. In New Zealand, given our unique profile, with high economic and social reliance on the dairy, beef and lamb industries, this is likely to be even higher.

One important metric demonstrating the failure of the current New Zealand food system is food security (Rose, 2021). One in five New Zealand children are reported to live in households that experience food insecurity (Ministry of Health, 2023a);

however, the rate is higher for children of Pacific and Māori ethnicity and children living in neighbourhoods of higher deprivation (Gerritsen et al., 2023). Recently published data from the Programme for International Student Assessment (PISA) shows that 14% of New Zealand students missed a meal at least once a week due to lack of money, compared with 8% across the OECD. In addition, by age 15, New Zealand students with any degree of food insecurity were two to four years behind their food-secure peers in academic scores in reading, maths and science (OECD, 2023). Concurrently, New Zealand faces an epidemic of childhood obesity: 13.5% of children aged 2–14 years were classified as living with obesity in 2022/23, further demonstrating our food system’s inability to meet children’s nutritional needs. Only 5.4% of children in this 2–14 age group eat the recommended daily amount of vegetables (Ministry of Health, 2023a). Meanwhile, about half of five-year-olds’ energy intake comes from ultra-processed foods – typically, energy-dense products that are high in sugar, unhealthy fats and salt, while low in dietary fibre, protein, vitamins and minerals (Fangupo et al., 2021).

In 2020, in response to rising food insecurity concerns and as part of the national Child and Youth Wellbeing Strategy (Department of the Prime Minister and Cabinet, 2019), the New Zealand government introduced healthy school lunches in targeted low-advantage schools, calling the programme Ka Ora, Ka Ako (be well, and thereby learn well). In an adapted universal approach, all students in targeted schools receive daily free nutritious lunches from either an external provider (commercial caterer) or an internal (on-site school cook) provider, or delivered by or in partnership with a local iwi/hapū. The programme was introduced based on the global evidence that universal school lunch provision improves food security (Huang, Kim and Barnidge, 2016; Lindberg et al., 2022), dietary quality (Andersen et al., 2014; Asakura and Sasaki, 2017; Sabinsky et al., 2019), health (Bartelink et al., 2019; Holford and Rabe, 2022), educational outcomes and student behaviour (Aldintag et al., 2020; Gordon and Ruffini, 2018, 2021). Ka Ora, Ka Ako

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now serves approximately 220,000 students (New Zealand Government, 2022), of whom 48% are Māori (Vermillion Peirce et al., 2022). A wide variety of lunches are provided through 156 approved suppliers, including hot lunches (e.g., spaghetti and meatballs, butter chicken) or cold lunches (e.g., wraps, sandwiches), usually with fruit, dips, carrot sticks and other vegetables to meet the nutrition guidelines.

Early evaluations show the programme reduced hunger and improved school functioning and intake of healthy foods among all participating students (Vermillion Peirce et al., 2022; Vermillion Pierce et al., 2021), and removed barriers to attendance for the most underserved students (Ministry of Education, 2024b). The kaupapa Māori evaluation of the iwi and hapū social procurement and partnership model extended these findings, reporting that this model fosters a sense of community in schools, contributes to broader food security and resilience for whānau, and provides a vehicle for the incorporation of mātauranga and tikanga Māori concepts, both at school and at home (Ministry of Education, 2023a).

The primary reasons for introducing Ka Ora, Ka Ako were to improve nutrition and food security at the student level, and local employment at the community level.

After around three years of delivery in the majority of schools, the potential for this programme to produce broader benefits is becoming evident (Garton et al., 2023; McKelvie-Sebileau et al., 2023), though these wider benefits are yet to be articulated into a clear broad purpose for the programme.

In Budget 2024, the National-led government committed two further years of funding for the programme at a significantly lower investment (\$239 million per year, reduced from the current \$323 million per year). In the new model for 2025–26, there will be no change to the programme for primary learners in years 0–6; however, students in years 7–13 will receive an ‘alternative provision model’ involving schools ordering bulk deliveries of food from a central supplier up to a value of \$3 per child/day. This substantial reduction in investment in the lunches for this age group from the current \$6.52–\$8.29 per child/day is accompanied by substantial cuts to Ministry of Education staff for the programme, including almost all the nutrition team.

In the context of the current government’s announced review and redesign of Ka Ora Ka Ako beyond 2026, it is timely to articulate how this programme fits into food systems more widely, and contributes to broader national goals in sustainability, education, economy and health.

The aim of the study reported in this article was to conduct a policy analysis, utilising a systems perspective, to describe the potential outcomes of the Ka Ora, Ka Ako school lunch programme in its current (2024) form, in relation to other national policy and strategic initiatives for health, educational, sociocultural, environmental and economic outcomes. Our objective was to demonstrate the potential value of Ka Ora, Ka Ako in prospectively supporting a wide spectrum of current national policy priorities, as an aid to political decision making regarding the programme’s future.

Methods

Study design

We carried out a qualitative policy analysis of the potential value of Ka Ora, Ka Ako to support wider government policy priorities. This included policy document

review and informal consultation with policy officials and other knowledge end users to help us navigate the policy environment and sense check the results to ensure accuracy and relevance. Data was collected between September and December 2023.

Policy analysis is a well-established approach to shedding light on the intersections between interests, ideas and institutions as they relate to a given policy (Walt et al., 2008). Applied prospectively, policy analysis can be utilised to: formulate an effective response to policy problems before actions are carried out; provide timely advice towards meeting policy objectives that are sensitive to local contextual factors and constraints; and reveal policy windows and identify the information and resources required to drive policy change in a particular setting (Buse, 2008; Reeve et al., 2021). Our study drew mainly on the third of these purposes, using the debate about the future of Ka Ora, Ka Ako as a policy window to define the wider settings and policies that the programme can influence. To some degree, the second purpose is also included, because each of the policy areas that the programme can influence have their own contexts and constraints. Our intent was to be responsive to concurrent political debate regarding the value of the school lunch programme and future government investment in Ka Ora, Ka Ako.

Theoretical framework

The research was guided by well-established theory of policy process and policy change (Walt et al., 2008; Walt and Gilson, 1994; World Health Organization, 2012), as well as systems science (Meadows, 2008), considering the potential synergies between Ka Ora, Ka Ako and other in-school initiatives or national programmes. Specifically, we consider school food programmes to be part of the wider interconnected food system involving producers, supply chain, industry, retail, food preparation and consumers (King, 2023), and hypothesised that potential synergies could be identified in any of these areas.

We applied a logic model based on previous work by the research team (Garton et al., 2023), which reviewed the

Of note, the data collection for this analysis was completed prior to the general election and does not represent the policy framework for the National-led coalition's triennium in government (2023–26).

international literature on the primary outcomes of school lunch/meal programmes. This previous work allowed us to identify the areas of government policy that intersect with the established Ka Ora, Ka Ako programme outcomes.

Document review

The lead author carried out a desktop analysis of all relevant national government policies in place and all relevant announced policy reform. The websites of all government ministries related to the logic model (Education, Environment, Health, Te Puni Kōkiri, Social Development, Primary Industries) were reviewed to identify current government policies and new policies and strategies announced (up to October 2023, prior to the change of government). The findings were reviewed in consultation with the research team and additional areas were added based on researcher knowledge.

Once the policies and frameworks were identified, we reviewed the content and outcomes of these policies, identifying the overlap with established or potential outcomes of the Ka Ora, Ka Ako programme. These Ka Ora, Ka Ako

outcomes related to the child, whānau, school, community and food systems areas as identified in Garton et al. (2023).

Informal consultations with policy officers and stakeholders

We held informal consultations with public servants from the Ministry of Education and the Ministry for the Environment who work closely with the school lunch programme, as well as conversations with school principals, commercial caterers and waste minimisation specialists from the not-for-profit and local government sectors. We also spoke with groups running other food-in-schools programmes across New Zealand. The purpose of these consultations was to help navigate the policy environment to identify key government policies and pathways that Ka Ora, Ka Ako could potentially influence and to sense check the potential policy impacts for accuracy and plausibility. Formal interviews were not conducted because the public servants were not in a position to provide analyses or comments on a current government programme. For this reason, ethics committee approval was not sought and those who helped guide the research team knew that the discussions would not be recorded, analysed or quoted. Since the discussions depended on the different navigation and sense-checking needs of the research team, a formal sampling strategy, template guide of questions, or discussion recordings were not used.

Coding and analysis

The lead author coded data deductively, based on the domains of the applied logic model, using Microsoft Excel software. Building on our earlier analysis that documented the observed and potential outcomes of the programme based on the literature available (Garton et al., 2023), we then organised these with respect to policy sectors in both a tabulated format and a visualisation.

Of note, the data collection for this analysis was completed prior to the general election and does not represent the policy framework for the National-led coalition's triennium in government (2023–26). However, the primary purpose was to describe the pathways via which a healthy

Table 1: Main potential outcomes of school meal programmes and their intersection with government policy sectors

School meal programme potential outcomes*	Domain	Policy sector
Mitigating food insecurity	student/whānau	health, social development
Promoting nutritional awareness	student /whānau	health
Cultivating lifelong healthy eating habits	student /whānau	health
Enhancing mental health	student	health
Enabling better learning environments	school	education
Impact on food waste	environment	environment
Fostering environmental awareness	environment	environment
Promoting sustainable agriculture	environment	environment, primary industries
Supporting local economies	economy	employment, primary industries
Integrating cultural diversity/ mātauranga Māori	community	Te Puni Kōkiri
Strengthening social equity	community	Ministry for Social Development

* Based on the literature review by Garton et al. (2023), each of these potential outcomes is supported by evidence (i.e., has been observed in New Zealand evaluations of Ka Ora, Ka Ako or is supported by systematic reviews of relevant international school food programmes).

school meal programme can enhance the outcomes of policies in multiple other areas. The policy reforms due to political leadership changes may change the details

of some of these pathways, but not the substantive conclusions of the study.

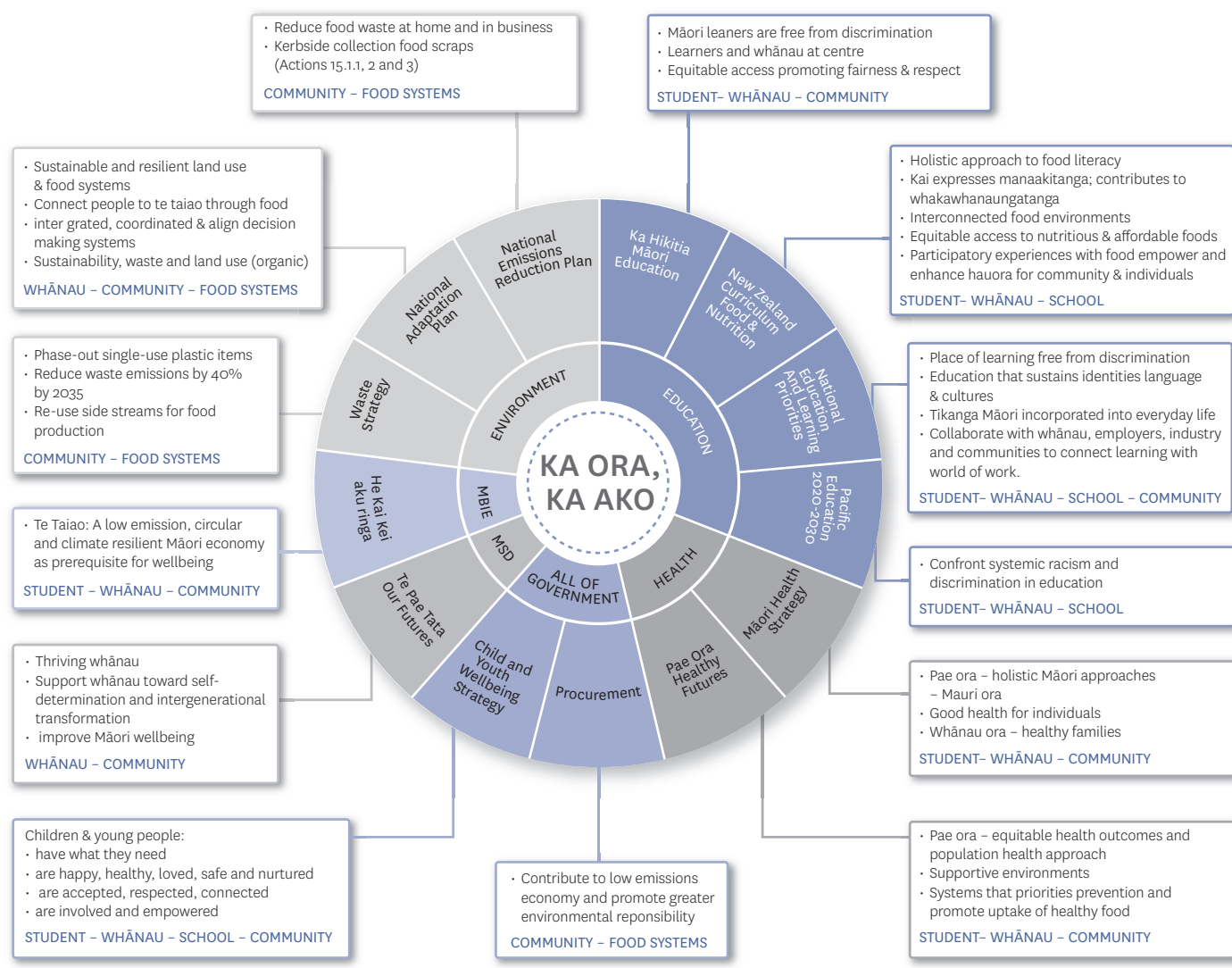
Results

Impact sectors

Table 1 describes the main evidence-supported outcomes of school meal programmes with respect to their domain of influence and related governmental policy sector, including: education, health, social development, Māori wellbeing and development, environment, primary industries, and Business, Innovation and Employment.

The policy document review data and stakeholder consultations allowed us to identify 13 existing policies in these areas and analyse how the healthy school lunch programme has contributed, or could contribute, to amplify the desired outcomes of these policies. This analysis revealed the breadth of policy areas that interact with

Figure 1: Ka Ora, Ka Ako programme ‘ripple out’ effect into other priority areas of government policy and reform



Ka Ora, Ka Ako, and the system of interactions. That is, the Ka Ora, Ka Ako programme influences outcomes in these policy areas as well as being influenced by the policies from these sectors. For example, reducing the number of hungry students will help to achieve the goals of the national education and learning priorities, and the structure of the curriculum refresh could affect how much Ka Ora, Ka Ako could be used for educational purposes.

Figure 1 illustrates the main policies and outcomes to which *Ka Ora, Ka Ako* contributes based on an analysis of each

sector and its relevant policies. The text in the boxes is extracted directly from policy document goals and outcomes. It shows Ka Ora, Ka Ako at the centre of the figure, with wide-reaching impact into outcomes in Environment, Education, Health, Social Development, Business, and Māori development, clearly placing this school lunch programme within the broader policy context and within the wider food system. The level of impact is indicated in each boxed text by child, whānau, school, community and wider food systems. For more information on the levels of impact

of the school food programme, see the modified socio-ecological model in Garton et al. (2023). Level of impact is indicated in each boxed text by child, whānau, school, community and wider food systems (see Garton et al., 2023 for more detail).

Table 2 gives more detail to these relationships, describing how Ka Ora, Ka Ako can enhance the desired outcomes within each of the domains of education, health and environment. The potential to enhance each of these sectors is included in the discussion.

Table 2: How Ka Ora, Ka Ako can enhance the outcomes within each of the domains of education, health, environment, and business and procurement

Policy	Outcomes extracted from policy and strategy documents	How Ka Ora, Ka Ako enhances these outcomes
Education		
Statement of National Education and Learning Priorities	<p><i>Objective 1: Learners at the centre</i></p> <ul style="list-style-type: none"> Priority 1: Ensure places of learning are safe, inclusive, and free from racism, discrimination and bullying. Priority 2: have high aspirations for every learner/ākonga, and support these by partnering with their whānau and communities to design and deliver education that responds to their needs, and sustains their identities, languages and cultures. <p><i>Objective 3: Quality teaching and leadership</i></p> <ul style="list-style-type: none"> Priority 5: Meaningfully incorporate te reo Māori and tikanga Māori into the everyday life of the place of learning. <p><i>Objective 4: Future of learning and work</i></p> <ul style="list-style-type: none"> Priority 7: Collaborating more with whānau, employers, industry and communities. Support learners/ākonga to see the connection between what they're learning and the world of work. 	<ul style="list-style-type: none"> Universal free school meals create safe and inclusive learning environments, breaking down barriers such as discrimination and stigma. Students eating together (consistent with tikanga Māori) contributes to social cohesion. Reciprocal relationship whereby children's healthy consumption affects that of their parents, and vice versa. Providing the same food for everyone, eating together, and learning about the kai is mana-enhancing and fits with whānau aspirations. Through inclusion of an iwi/hapū provision model and engagement processes, including teaching and learning around kai and strengthening school connections with Māori businesses and iwi, Ka Ora, Ka Ako provides a pathway for integration of mātauranga Māori in school lunch provision. Through inclusion of an iwi/hapū provision model and engagement processes, including teaching and learning around kai and strengthening school connections with Māori businesses and iwi providers, Ka Ora, Ka Ako provides a direct pathway for integration of mātauranga Māori in school lunch provision. Through teaching about kai and sharing meals, Ka Ora, Ka Ako provides a platform to incorporate te reo Māori and tikanga. In all schools, the ability to eat the same food together offers opportunities for manaakitanga and whanaungatanga. By involving students in the creation of menus, production and distribution of meals, Ka Ora, Ka Ako provides a platform to learn practical food science skills. Opportunities for Pathway students. The far-reaching benefits of Ka Ora, Ka Ako and flow on effects extend into communities and industry through relationships with suppliers, job creation and employment for whānau.
Te Mataiaho – Curriculum Refresh – updated draft released in Term 4, 2023 – Food & Nutrition 'Five big ideas'	<ol style="list-style-type: none"> Approaching food literacy holistically enhances health and wellbeing for individuals, whānau, and community. Kai as expression of manaakitanga unifies individuals, whā nau and communities, and contributes to whakawhanaungatanga. Interconnected food environment navigated through personal, interpersonal & societal perspectives. Equitable access to nutritious and affordable food lies within social justice principles of fairness and inclusivity. Participatory experiences with food can empower and enhance hauora of both community and individuals. 	<ul style="list-style-type: none"> Providing the same nutritious food to all learners within a school promotes equity outcomes and values of manaakitanga. School lunches provide holistic opportunities for students to be involved in food preparation, consumption and disposal. Free school meals provide equitable access to nutritious kai and all students eating the same food offers inclusivity and contributes to nutritional learning. The holistic learning outcomes of the new curriculum provide unique and powerful opportunities for the school meal programme to be integrated into schools' educational goals, developing learners' capabilities.

Policy	Outcomes extracted from policy and strategy documents	How Ka Ora, Ka Ako enhances these outcomes
Ka Hikitia, Māori Education Strategy	Outcome domains <i>Te Tangata</i> : - Māori are free from racism, discrimination and stigma in education. <i>Te Tuakiritanga</i> - Identity, language and culture matter for Māori learners	<ul style="list-style-type: none"> · Inclusion of tikanga Māori around kai and sharing meals provides opportunity for inclusion of language and culture for Māori students. Universal approach reduces stigma and discrimination. · Through the direct inclusion of an iwi/hapū provision model and engagement processes, including teaching and learning around kai and strengthening school connections with Māori businesses and iwi providers, Ka Ora, Ka Ako provides a pathway for integration of mātauranga Māori in school lunch provision.
Pacific Education Action Plan	Confront systemic racism and discrimination in education.	<ul style="list-style-type: none"> · Universal free school meals create safe and inclusive learning environments, breaking down barriers such as discrimination and stigma.
Health		
Child and Youth Wellbeing Strategy	<ul style="list-style-type: none"> - Children and young people have what they need - Children and young people are <ul style="list-style-type: none"> ° happy and healthy ° loved, safe and nurtured ° accepted, respected, connected. 	<ul style="list-style-type: none"> · Universal free school meals provide food security and good nutrition to children, enhancing health outcomes as well as providing a nurturing and equitable environment in schools where children feel cared for without stigma
Pae Ora (Healthy Futures) and Te Pae Tata – Interim New Zealand Health Plan 2022	<ul style="list-style-type: none"> - Pae Ora aims to improve equitable health outcomes and implement a population health approach. - Pae Ora legislation implements the five strategies from the WHO Ottawa Charter for Health Promotion: strengthen community action; create supportive environments; and build healthy public policy. - Pae ora Action 4 – Make healthy choices the easy choice. - Implement a system that prioritises prevention and promotes the uptake of healthy food. - To kai as expression of manaakitanga, implement evidence-based policy interventions to address health priorities for Māori, including obesity and diet. 	<ul style="list-style-type: none"> · Universal free school meals provide food security and good nutrition to children, enhancing health outcomes as well as providing a nurturing and equitable environment in schools where students feel cared for. · Nutritious free lunches provided in schools creates a health-promoting, supportive environment in schools. · School meal programmes are an equitable health prevention strategy targeted at students living in lower-income neighbourhoods. · Nutritious school meals can contribute to lower obesity and improved nutritional intake.
He Korowai Oranga: Māori Health Strategy and interim update Pae Tū: Hauora Māori Strategy	<ul style="list-style-type: none"> - Pae ora includes Mauri ora - good health for individuals and whānau ora - healthy families. - Pae ora envisages a platform on which Māori can live with good health and wellbeing in an environment that supports them to flourish and thrive. - Pae ora affirms holistic Māori approaches – strongly supporting Māori-led solutions. - Outcome 1: Whānau, hapā, iwi and Māori communities can exercise their authority to improve their health and wellbeing. This requires system shifts that better enable whānau, hapū, iwi and Māori communities to thrive as Māori, and create healthy and sustainable environments and communities in which to live and raise children. 	<ul style="list-style-type: none"> · Children receiving food at school contribute to lessening the financial pressure on families to purchase school food items. Children also learn and influence their families with broader (healthier) nutritional preferences. · Through the iwi/hapū model, Māori have the right to self-determine their aspirations for health related to kai according to their kawa and tikanga. · Nutritious free lunches provided in schools creates a health-promoting environment in schools.
Environment		
Waste Strategy	<ul style="list-style-type: none"> - Phase-out of a range of single-use plastic items and hard-to-recycle plastic packaging by mid-2025 - Reduce emissions from waste by 40% by 2035 - Greater opportunities to re-use side streams for food production (e.g. grains from brewing used in crackers) 	<ul style="list-style-type: none"> · Large-scale school meal programme offers leverage for procurement policies for food criteria and packaging. Recycling and composting opportunities become available regionally and nationally as minimum feasible volume is reached.
Emissions Reduction Plan	<ul style="list-style-type: none"> - Actions 15.1.1, 2 and 3 to reduce food waste at home and in businesses and support kerbside collection 	<ul style="list-style-type: none"> · If schools are producing a volume of food waste, kerbside collection of scraps so they can be reused may be possible. Uptake and participation are likely to be higher at a school than for households.
Adaptation Plan	<ul style="list-style-type: none"> - Sustainable resilience land-use and food systems 	<ul style="list-style-type: none"> · Localised food production, shorter distribution chain between producer and consumers.

Policy	Outcomes extracted from policy and strategy documents	How Ka Ora, Ka Ako enhances these outcomes
Business / Social Services / Procurement		
He kai kei aku ringa – Māori–Crown Economic Growth Partnership 2023	<ul style="list-style-type: none"> - Te taiao: a low emissions, circular and climate-resilient Māori economy as a prerequisite for wellbeing - Mana tuku iho: Māori identity in the economy enables Māori success - Mana whanake: building foundations for the future 	<ul style="list-style-type: none"> • Including Māori businesses as suppliers of the programme which in turn enhance the Māori economy. • Mātauranga Māori shared and connections created around growing and eating food, and diversifying supply chains through the iwi/hapu provision model may contribute to greater food system resilience at a larger scale. • Iwi/hapū model enables Māori economy success.
Te Pae Tata – Healthy Futures – Māori Strategy and Action Plan	<ul style="list-style-type: none"> - Key shift 3: Kia takatū tātou: Supporting long-term social and economic development. We will support Māori aspirations. 	<ul style="list-style-type: none"> • With 50% of students receiving school lunches of Māori ethnicity, Ka Ora, Ka Ako supports financial stability for whānau Māori and long-term development. • The Iwi/hapū model supports and diversifies supply chains through the iwi/hapu provision model.
Procurement	<ul style="list-style-type: none"> - Government commitment to achieving positive environmental outcomes through sustainable procurement by buying low-emissions and low-waste goods, services and works (Rule 2o). 	<ul style="list-style-type: none"> • The scale of Ka Ora, Ka Ako can be leveraged to contribute through procurement policy to low emissions and low waste school lunches.

Discussion

At the 2023 United Nations Framework Convention on Climate Change conference of the parties (COP28), school lunches were recognised as an important social protection for food security and nutrition (Conference of the Parties to the United Nations Framework Convention on Climate Change, 2023). Moreover, planet-friendly school meal programmes are increasingly recognised as an investment in tackling food systems' climate, environment, biodiversity and food sovereignty challenges (Pastorino et al., 2023). Previous evaluations of Ka Ora, Ka Ako have documented how the programme enhances satiety, wellbeing and school functioning for most learners, particularly those in greatest need (Vermillion Peirce et al., 2022; Vermillion Pierce et al., 2021; Ministry of Education, 2024b), and has a ripple-out effect creating positive impacts for whānau, schools, community and potentially the wider food system (Garton et al., 2023; McKelvie–Sebileau et al., 2023); and how the iwi/hapū partnership model enhances outcomes for Māori learners and communities (Ministry of Education, 2023a)

Despite this relatively rich base of evidence of impact from New Zealand and internationally, and a very positive value for investment analysis (Toro and Swinburn, 2024), the associate minister of education, David Seymour, voiced opinions that the programme was a 'huge waste' of taxpayers' money and that the food loss and food waste was unacceptably

high (Swift, 2024). Budget 2024 continued the programme for a further two years, but with over \$100m per year being cut from provision for years 7–13. It remains unclear what criteria (if any) will be used to evaluate the outcomes of this new model for nutrition, learning, food insecurity and local economies.

The present discussion demonstrates how a well-designed and well-implemented Ka Ora, Ka Ako programme can enhance policy outcomes within education, health and the environment. It takes a systemic view where food and feeding are not considered in isolation, but are considered to be widely interconnected, context-dependent and both influenced by, and influencers of, the broader environment (King, 2023).

Curriculum connections

The ways in which Ka Ora, Ka Ako can enhance outcomes in education through alignment of its goals with the Ministry of Education's New Zealand Curriculum are robust and multiple (Ministry of Education, 2023c). While these alignments may be considered indirect benefits, the importance of this learning opportunity should not be underestimated. Students can see the values and practices they are learning in the health and nutrition curriculum in the ways they share healthy school lunches within their school communities (Garton et al., 2023; Ministry of Education, 2023c).

In the New Zealand Curriculum, food and nutrition education sits within the

health and physical education subject area, guided by the whakataukī (proverb): He oranga ngākau, he pikinga waiora (positive feelings in your heart will raise your sense of self-worth) (Ministry of Education, 2023c). The pathways for nutritious meals at school to enhance the learning outcomes in food and nutrition, and the broader area of the health curriculum, are clear. The five big ideas in the food and nutrition curriculum listed in Table 2 clearly link to the objectives of the school meal programme. These curriculum ideas, reinforced through the school meal programme, involve a holistic and participatory approach to food literacy, an interconnected food environment, and equitable access to nutritious food (Garton et al., 2023). In addition, curriculum materials state that gaining a holistic understanding of our food environment requires the inclusion of diverse Māori and Pacific world views such as attitudes, values, beliefs and perspectives; and that learning about food offers lifelong skills contributing to students' own health and wellbeing, as well as that of their whānau and wider community. Social justice and sustainability are also present in the curriculum, which describes the recognition of food inequities and injustice and describes how students' learning will develop care and concern for others and the environment. Ka Ora, Ka Ako aligns with these goals and can directly contribute to these learning outcomes (Vermillion Peirce et al., 2022; Ministry of Education, 2023a; Garton et al., 2023; Glassey et al., 2023).

Health connections

Alignment and intersection with other government policies, such as the Child and Youth Wellbeing Strategy, Pae Ora and the Māori Health Strategy, are also demonstrated (Department of the Prime Minister and Cabinet, 2019; Ministry of Health, 2023d, 2023c). While improved nutritional health of the population in general and children and Māori in particular contributes to these policies, New Zealand lacks any specific strategic policy documents or policy goals for nutritional health. This is a startling policy gap, given that overweight/obesity and dietary risk factors are two of the biggest causes of loss of disability-adjusted life-years in New Zealand (7.55% and 5.82% respectively, compared to tobacco at 6.95%) (IHME, 2024). Diet-driven diseases such as obesity, diabetes and dental caries are high-prevalence, high-cost diseases in New Zealand (Ministry of Health, 2023b; Hipgrave, 2021; Barton and Love, 2021; PwC, 2021), with no specific prevention policies or strategies in place.

Universal free school meals provide food security and good nutrition to children, enhancing health outcomes as well as providing a nurturing and equitable environment in schools where children feel cared for without stigma (Vermillion Peirce et al., 2022; Garton et al., 2023; Yu, Lim and Kelly, 2019; Leos-Urbel et al., 2013). Providing nutritious free lunches in schools is an equitable health strategy that creates a health-promoting, supportive environment in schools, contributing to improved nutritional intake and reduced obesity (Bartelink et al., 2019; Holford and Rabe, 2022).

Public food procurement policies

Ka Ora, Ka Ako is a large public procurement initiative involving the purchase, transport, preparation and consumption of food costing about \$1.8 million per school day (Ministry of Education, 2021). Government procurement in New Zealand is guided by rules that help to 'promote broader environmental, social, cultural and economic outcomes' (New Zealand Government, n.d.). The rules align with the government's expectations that procurement can be leveraged to achieve broader outcomes, promoting public value. The Ministry of Health

Major improvements have been made since the beginning of the programme to remove any non-recyclable single-use plastic packaging, which aligns with the goals of the revised national waste strategy, which phases out various types of single-use packaging between 2021 and 2025 ...

acknowledges that food-purchasing decisions by health sector (and all government) institutions exert a powerful influence on food production, processing and supply and import activity (Ora Taiao New Zealand Climate and Health Council, 2021; Te Whatu Ora Health New Zealand, 2023). In this sense, any embedded requirements around nutritional value (or environmental impact) have the potential to incentivise shifts in the food system. The volume of food procurement involved in Ka Ora, Ka Ako has the power to affect local food supply systems, and potentially national food supply – for example, when ingredients are required in the menu that are not produced in New Zealand (such as brown rice). Currently, procurement appears fragmented and, while there are

pathways to more social and sustainable procurement through internal school models and iwi/hapū models, the focus of the current National-led government is to use government procurement power to source cheaper, shelf-stable food which can be transported around the country (Ministry of Education, 2024), rather than purchasing local, more environmentally friendly supplies of fresh food for schools, as recommended by the World Health Organization and implemented in other jurisdictions internationally (World Health Organization, 2021; Soares et al., 2013; Sonnino, 2009). This represents a policy difference between recommended and existing best practice and the proposed new model for New Zealand.

Environmental sustainability connections

One of the four priority outcomes of government procurement rules is to support the transition to a net zero emissions economy and assist the government to meet its goal of significant reduction in waste (New Zealand Government, n.d., rule 20). While this only applies to designated contracts (such as supply of military rations), the emissions produced by the meals served in Ka Ora, Ka Ako have been measured as part of the Carbon Neutral Government Programme. The Ministry of Education recently conducted its first evaluation of greenhouse gas emissions for 2022, estimating that the Ka Ora, Ka Ako programme emits 71,655 tonnes of CO₂ equivalent across the year (Ministry of Education, 2023b). This was the third-largest sector of emissions for the Ministry of Education (following construction and transport). Taking into account the full food life cycle from production and distribution to consumption and waste, food emissions were primarily from the 100,000 school lunches served each day through Ka Ora, Ka Ako, with a small amount coming from in-school canteens (tuck shops) where it was possible to estimate emissions from food.

Another specific sustainability focus of the programme is food packaging, as around 75% of lunches are made off-site and transported to the schools by external caterers. Major improvements have been

made since the beginning of the programme to remove any non-recyclable single-use plastic packaging, which aligns with the goals of the revised national waste strategy, which phases out various types of single-use packaging between 2021 and 2025 (Ministry for the Environment, 2023). Recently, the Ministry of Education released the Ka Ora, Ka Ako 2023 waste minimisation guidance and legislation update (Ministry of Education, n.d.), providing recommendations on how suppliers and schools can minimise food waste and create procurement and waste management plans. The guidance details the food recovery and packaging waste hierarchies, aligning with the ministry's 2030 waste sector target to reduce greenhouse gas emissions from the sector by 42% (Ministry of Education, 2023b). However, efforts are still required to find appropriate long-term solutions for the 'compostable' packaging that has replaced much of the single-use plastic packaging. The Ministry for the Environment position statement on compostable packaging sets out some of the principles of how compostable packaging can be used in a circular economy approach to help divert food waste from landfill, as well as some of the challenges (Ministry for the Environment, 2022). In our experience in regional New Zealand, while these products are biodegradable and theoretically compostable, there are no facilities to accept them for composting as they may lengthen time required for composting, or due to concerns around contamination from added chemicals and toxins such as per- and polyfluoroalkyl substances (PFAS) (WasteMINZ, 2023). With the volume of Ka Ora, Ka Ako lunches, this is an area that requires further work, including, for example, investigating opportunities to include school food scraps in kerbside collection which will be introduced in urban areas by 2030 (Ministry for the Environment, 2024), and potentially converting food waste to waste-to-energy sites such as the Ecogas site in Reporoa. However, we note that these initiatives may require capital funding, and with the school lunch programme model 'under review' until 2026, this makes investment riskier until sustainable funding is ensured. Moreover, it is possible that the new

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programme delivery model announced for secondary schools to come into effect from 2025, relying on bulk deliveries of shelf-stable foods, will increase packaging waste.

Other diverse opportunities offered by the scale of Ka Ora, Ka Ako

Importantly, the organised structure of the Ka Ora, Ka Ako programme and the volume of food moving through the schools provides opportunities to reduce food waste through menu design, student engagement in menu design, food rescue, side-stream products and compost production. The programme has previously been criticised based on anecdotal evidence of excessive food surplus (untouched lunches) and food waste (partly eaten lunches) (Stewart, 2024). Existing evidence of food surplus being about 5–10% is in line with standards for public provision of food (Toro and Swinburn, 2024), but there is very little data on the programme's food waste. One New Zealand analysis of food waste from school lunchboxes analysed the proportions of types of food in school rubbish bins, noting that sandwiches, fruit

and vegetables and dairy were much more commonly wasted than processed energy-dense foods (Dresler-Hawke, Whitehead and Coad, 2009). With fluctuating attendance rates in schools, ensuring there are lunches for all students means some surplus food is inevitable. The redistribution of these uneaten lunches can enhance social justice and equity goals, enhancing outcomes in the social sector.

The ability to reduce emissions from school food at scale offers opportunities for targeted actions that can be implemented collectively, monitored and evaluated. Options that are already being implemented through Ka Ora, Ka Ako for positive environmental benefits are composting in schools of food waste, redistribution or reuse of surplus food and improvements to food packaging. However, the bulk of the school lunch emissions come from the inclusion of beef and lamb in the menus. Introducing meat-free days and changing the type of meat included, as other countries have done in their school meals, could have a large impact on these emissions and contribute to pathways for achieving our carbon budgets, legislative targets and nationally declared contributions. For example, in an effort to reduce greenhouse gas emissions, France implemented a meat-free Monday in school meals in 2019, and now requires 50% of ingredients to be sustainable and 20% to be organic (Ministère de L'agriculture et de la Souveraineté Alimentaire, 2022).

Identifying the way other countries have incorporated sustainability in their school lunch programmes provides insights into potential pathways for Ka Ora, Ka Ako. In a review of initiatives to improve the sustainability of school lunches, Gardner et al. (2023) identified three clear interventions for the sustainability of school meal programmes: reduce waste (in packaging and food) – primarily involving educational interventions for students, with some degree of success; change menu composition using climate-conscious menus (primarily reducing consumption of red meat in school lunches); and sustainable food system education using school gardens. Dos Santos et al.'s review aligns to this list, indicating that sustainable distribution of meals and making sustainability universally part of the school

curricula are paramount (Dos Santos et al., 2022). It should be noted, however, that most of the reviewed studies were undertaken in a school canteen-type environment as opposed to the New Zealand environment, where, for the most part, individual lunch portions are delivered by an external caterer (Vermillion Peirce et al., 2022). Critically, the concept of reducing meat consumption to increase health and reduce carbon footprints is relatively unpopular in New Zealand, with only 22% of New Zealanders already doing this to limit their contribution to climate change and an additional 35% ‘likely’ to do this, compared to 19% and 43% globally (Ipsos Global Advisor, 2022). New Zealand Health Survey data from 2018–21 indicates that 93% of New Zealand adults eat red meat (Bradbury et al., 2024).

Finally, we note that since the introduction of Ka Ora, Ka Ako, we have observed a ‘mindset evolution’ in programme approach from an initial focus on alleviating food insecurity by feeding hungry children. This quickly evolved into a desire to offer healthy and nutritious food that could change nutritional behaviours for life and offer health and wellbeing benefits. The programme that was initially called the Free School Lunch programme (RNZ, 2020) was rapidly rebranded as the Free and Healthy School Lunch programme (New Zealand Government, 2020) and then given its name Ka Ora, Ka Ako. Since 2022 we have observed a further shift towards sustainability concerns in food waste and packaging with the introduction of a Ministry of Education role of lead advisor for sustainability and collaboration with Ministry for the Environment teams. Guidance has been released on how to reduce food waste and packaging (Ministry of Education, n.d.). These are encouraging signs and show how the programme has been able to broaden its approach, recognising the potential for impact on the food system at all levels. With ongoing feedback from students, schools, providers and communities, it will continue to evolve.

Opportunities to create equitable outcomes for ākonga Māori

While not the primary purpose of this article, it is important to acknowledge the potential for this programme to create

There is mounting international and national pressure for food systems to address these multiple goals and this requires a transformation beyond the current paradigm of considering food only as an economic commodity.

equitable outcomes for ākonga Māori (Māori students), who make up around half of the learners receiving the lunches. With higher food insecurity for Māori children (Ministry of Health, 2023a) and higher rates of nutrition-related disease (Ministry of Health, 2019), this is a key feature of the programme. The introduction of the iwi and hapū social procurement model and roles for kaupapa Māori nutrition advisors indicate the desire to incorporate tikanga Māori into the programme, as reports from principals in schools with a strong mātauranga Māori focus had indicated that they felt challenged in aligning their values and their mātauranga Māori-bound teaching practices with Ka Ora, Ka Ako, in particular due to the strict nutritional guidelines (Glassey et al., 2023). Overall, this work shows that understanding is growing about how Ka Ora, Ka Ako fits within the wider New Zealand food system.

Strengths and limitations

A key strength of this study is its timeliness and relevance to current policy debate.

In addition, the support of policymakers and other stakeholders, such as school principals and lunch providers, in navigating the policy landscape and sense-checking our analyses added robustness to the mapping of these potential policy benefits of Ka Ora, Ka Ako. Integrating a systems perspective with existing theoretical frameworks for policy analysis strengthened the analysis, providing a more complex and nuanced view of the intersections of the school lunch programme across sectors of government and levels of society.

Policy analysis research can be challenging for ‘outsiders’ like our research team who are not immersed in the policy processes, whereas the ‘insiders’ who are immersed are in no position to conduct that research or even be formal interviewees for sensitive policy areas. Because there was no likelihood of obtaining formal interviews with policymakers and thus to use their analyses of policy potential for Ka Ora, Ka Ako that we were seeking, we opted for engagement with them on the terms that would be safe for them, yet helpful for the research team. We integrated a range of policy perspectives and drew upon an interdisciplinary research team (with expertise across public health, mātauranga Māori, political science and systems modelling) to ensure a robust analysis, but we acknowledge that some major documents may have been missed. Finally, as noted earlier, a changing political context and set of government priorities means that some of the identified policy synergies may no longer be in place at the time of publication.

Conclusion

The Ka Ora, Ka Ako free, healthy school lunches programme is much more than a feeding programme to reduce food insecurity. This policy analysis demonstrates how it has multiple co-benefits and can be a powerful platform to advance policy goals on equity, health, education, climate change and other environmental objectives. There is mounting international and national pressure for food systems to address these multiple goals and this requires a transformation beyond the current paradigm of considering food only as an economic commodity. New Zealand has many strategic policy objectives which

Ka Ora, Ka Ako could enhance, but an identified clear policy gap is the absence of any policies on food for health. Many countries have strategic policy approaches to reducing the nutritional health burden of obesity and non-communicable disease. Obesity and poor diet are the largest risk factors in New Zealand for preventable disease and food for health policies are urgently needed.

Ka Ora, Ka Ako will be under review until a new model is unveiled in 2026, and it will be important for this review to recognise the wide scope of the

programme's impact, and consider opportunities to explicitly align the programme to these broader health, education and sustainability policy objectives. In the interim, it will be particularly important to evaluate the new delivery model in intermediate and secondary schools against the government's policy priorities, to ascertain the potential ripple effects and impacts at scale.

Acknowledgements

The authors would like to thank staff members from the Ministry of Education,

Ministry for the Environment, WasteMINZ, Garden to Table and local councils who gave their time to discuss sustainability pathways for Ka Ora, Ka Ako in the context of this report, and schools that contributed to earlier phases of this research. We also thank members of Nourishing Hawke's Bay, who work to continue this research focusing on improving regional food systems in Hawke's Bay. Funding from A Better Start National Science Challenge.

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